ProSoft Technology

Technical Reference Catalog



January 26, 2007

1675 Chester Avenue, Fourth Floor
Bakersfield, CA 93301
+1 (661) 716-5100
+1 (661) 716-5101 (Fax)



About Us

Where Automation Connects

ProSoft Technology serves the automation industry's communications and specialized application needs with high quality products, application expertise, and technical support. With our home office in Bakersfield, CA, ProSoft Technology is committed to providing localized sales and support to customers worldwide.

Sales, application engineering, and support services are provided internationally by our channels served by our Regional Area Offices:

North America	Seven Regional Area Managers provide coverage for our distributors across the continent.
Latin America	Two full-service offices; one servicing Brazil exclusively, and the other provides coverage to South America.
Europe	One full-service office based in France serves Europe, Middle East, and Africa.
Asia Pacific	Offices in India, China, and Malaysia servicing Asia, India, Australia, and New Zealand.

ProSoft Technology, Inc. specializes in the development of communication solutions compatible with the large automation supplier's controllers such as Rockwell Automation and Schneider Electric. The primary focus is to provide connectivity solutions that link dissimilar automation products. ProSoft Technology's offerings consist of four primary product families: Protocol and network connectivity modules known as inRAx for Rockwell Automation and ProTalk for Schneider Electric, stand-alone gateways, protocol converters, and wireless gateways known as ProLinx, and industrial serial and Ethernet wireless modules known as RadioLinx.

Over the last 15 years, ProSoft Technology's product lines have grown to over 400 communication modules supporting more than 60 different protocols. ProSoft Technology provides field-proven connectivity and communication solutions that bridge between various automation products as seamlessly as if they were all from the same supplier. These connectivity options enable controller platforms to provide solutions in areas such as computing gas flow calculations and SCADA telemetry applications. These solutions also enable interfacing to motor controls, drives and other devices in industries such as water/wastewater, power generation, oil & gas, machinery, packaging, and production.

ProSoft Technology is committed to providing localized sales and support to customers worldwide. Sales, application engineering and support services are provided internationally by over 500 distributors in 52 countries and served by Regional Area Offices in North America, Latin America, Europe and Asia Pacific.

ProSoft is now a major supplier of communication products for the industrial automation industry. Facilitated by our extremely active product development program and customer recognition of our product quality, ProSoft now has five product families including:

inRAx®

In-chassis Interface Modules for Rockwell Automation control platforms PLC-5, SLC 500, ControlLogix, Flex I/O, CompactLogix, and SCANport/Drives

ProLinx®

ProLinx stand-alone industrial gateways offer communication solutions between automation platforms, controllers, field instrumentation, Ethernet, and serial networks

ProTalk®

In-chassis Interface Modules for Schneider Electric's Quantum platform

RADIOLINX®

Wireless industrial communication networks

ProSoft Software

Software tools for module configuration and plant automation

ProSoft Technology, Inc.
1675 Chester Avenue, Fourth Floor
Bakersfield, CA 93301
+1 (661) 716-5100
+1 (661) 716-5101 (Fax)
http://www.prosoft-technology.com

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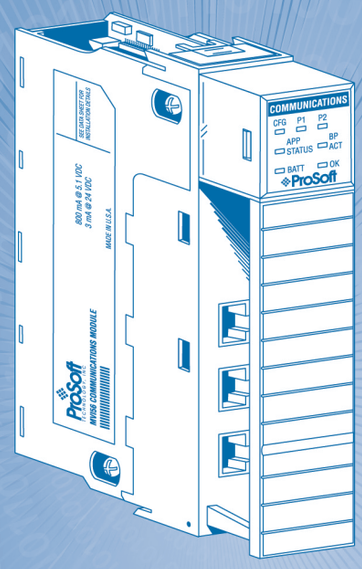

inRAx®

inRAx Application Chart

Platform	ControlLogix	SLC	PLC	CompactLogix
Protocol/ Application	**Part #**			
AGA/API Liquid & Gas Flow Computer	MVI56-AFC	MVI46-AFC	MVI71-AFC	MVI69-AFC
ASCII	MVI56-GSC	MVI46-GSC	MVI71-GSC	MVI69-GSC
Bardac drive.web	MVI56-BDW	MVI46-BDW	MVI71-BDW	
BASIC	MVI56-BAS			MVI69-BAS
Bristol Babcock	MVI56-BSAPS	MVI46-BSAPS		
'C' Programmable	MVI56-ADM	MVI46-ADM	MVI71-ADM	MVI69-ADM
'C' Programmable over Ethernet	MVI56-ADMNET	MVI46-ADMNET	MVI71-ADMNET	MVI69-ADMNET
Command Language (SICK barcode scanner devices)	MVI56-CLVM	MVI46-CLVM		
DF1 Master/Slave	MVI56-DFCM MVI56-DFCMR	MVI46-DFCM	MVI71-DFCM	MVI69-DFCM
DH-485	MVI56-DH485 MVI56-DH485R			MVI69-DH485
DNP 3.0 Master/Slave	MVI56-DNP	MVI46-DNP	MVI71-DNP	MVI69-DNP
DNP 3.0 over Ethernet	MVI56-DNPSNET	MVI46-DNPSNET	MVI71-DNPSNET	MVI69-DNPSNET
Emerson FX		3150-EMC	3100-EMC	
EtherNet/IP		MVI46-DFNT	MVI71-DFNT	MVI69-DFNT
FA Control Network	MVI56-FLN			MVI69-FLN
Fisher ROC		3150-ROC	3100-ROC	
Foxboro/ Systronics Minimote RTU		3150-FOX/ 3150-SYS	3100-FOX/ 3100-SYS	
GARECO Check Weigher	MVI56-GRCM	MVI46-GRCM		
GE Ethernet Global Data	MVI56-EGD	MVI46-EGD		MVI69-EGD
Generic Ethernet	MVI56-GEC	MVI46-GEC	MVI71-GEC	MVI69-GEC
Harris 5000/5500/6000		3150-HAR	3100-HAR	
HART Multi-drop	MVI56-HART	MVI46-HART	MVI71-HART	MVI69-HART
Honeywell DE Master	MVI56-DEM	MVI46-DEM 3750-DEM		
Honeywell 7800		3150-CBM	3100-CBM	
In-Rack PC	PC56			
In-Rack PC Historian	PC56-HIST			

Platform	ControlLogix	SLC	PLC	CompactLogix
Protocol/ Application	**Part #**			
IEC 60870-5-101 Master	MVI56-101M	MVI46-101M	MVI71-101M	MVI69-101M
IEC 60870-5-101 Slave	MVI56-101S	MVI46-101S	MVI71-101S	MVI69-101S
IEC 60870-5-103 Master	MVI56-103M MVI56-103MR	MVI46-103M	MVI71-103M	MVI69-103M
IEC 60870-5-104 Server	MVI56-104S	MVI46-104S	MVI71-104S	MVI69-104S
Johnson Controls Metasys	MVI56-N2	MVI46-N2 3150-N2	MVI71-N2 3100-N2	MVI69-N2
KOS 150	MVI56-KOS			
Landis & Gyr 8979F Slave	MVI56-LNG	MVI46-LNG 3150-LNG	3100-LNG 3100-LNG	
Limitorque Master	MVI56-LTQ	3150-LTQ	3100-LTQ	
MDA Scientific	MVI56-MDA16 MVI56-MDA4	MVI46-MDA16 MVI46-MDA4 3150-MDA	3100-MDA16 3100-MDA4 3100-MDA-USA	
MetOne PCX Water			3100-PCX	
Modbus Master/Slave	MVI56-MCM MVI56-MCMR	MVI46-MCM 3150-MCM 3150-GDF	MVI71-MCM 3100-MCM 3100-GDF	MVI69-MCM
Modbus Plus	MVI56-MBP	MVI46-MBP 3350-MBP		MVI69-MBP
Modbus TCP/IP	MVI56-MNET MVI56-MNETC MVI56-MNETR MVI56-MNETCR	MVI46-MNET MVI46-MNETC	MVI71-MNET	MVI69-MNET MVI69-MNETC
MTS Level Plus Interface		3150-MTS	3100-MTS	
Phantom Network Protocol	MVI56-PNPM			
PROFIBUS DP Master/ Slave	MVI56-PDPMV1 MVI56-PDPS			
Siemens 3964R	MVI56-3964R	MVI46-3964R	MVI71-3964R	MVI69-3964R
Siemens SEABus Plus		3150-SEA	3100-SEA	
SM General	MVI56-SMGC			
Teledyne CA	MVI56-CAS	MVI46-CAS 3150-CAS	3100-CAS	
YORK		3150-YRK	3100-YRK	
High Speed Wireless	MVI56-WA-PWP	MVI46-WA-PWP		MVI69-WA-PWP
High Speed Wireless Ethernet/IP	MVI56-WA-EIP			
In-Rack Industrial PC	PC56 PC56-CE-EZ PC56-HIST PC56-OPC PC56-SLS			

Platform	FLEX Adapters	FLEX I/O FLEXLogix	SCANport Adapters
Protocol/Application	**Part #**		
ASCII		MVI94-GSC-E	
Bosch		MVI94-BSCH	
'C' Programmable		MVI94-ADM	
DF1 Master/Slave		MVI94-DFCM	
DNP 3.0 Master/Slave		MVI94-DNP	
INTERBUS Slave	3170-INTB		
Johnson Controls Metasys			1550-N2
LonWorks Communications	3170-LNW		
Modbus Master/Slave	3170-MBS	MVI94-MCM	1550-MBS
Modbus Plus			1560-MBP
PROFIBUS DP Master/Slave	3170-PDP		1560-PDP



inRAx®

ControlLogix Interfaces

ControlLogix Interfaces

Specification	Description
Form Factor	Single Slot 1756 Chassis Compatible Local or Remote Rack
Backplane Current Load	800 mA @ 5 V
Operating Temperature	0 to 60°C (32 to 140°F)
Storage Temperature	–40 to 85°C (–40 to 185°F)
Shock	30g Operational 50g Non-operational Vibration: 5 g from 10 to 150 Hz
Relative Humidity	5 to 95% (non-condensing)
LED Indicators:	Module Status Backplane Transfer Status Application Status Serial Activity
Debug/Configuration port (CFG)	
CFG Port (CFG)	RJ45 (DB-9M with supplied cable) RS-232 only
Application ports (PRT1 & PRT2) Full hardware handshaking control, providing radio, modem and Multi-drop support	
Software configurable communication parameters	Baud rate: 110 to 115,200 baud, depending on the protocol RS-232, 485 and 422 Parity: none, odd or even Data bits: 5, 6, 7, or 8 Stop bits: 1 or 2 RTS on/off delay: 0 to 65535 milliseconds
App Ports (P1,P2) (Serial modules)	RJ45 (DB-9M with supplied cable) RS-232 handshaking configurable 500V Optical isolation from backplane
Shipped with Unit	RJ45 to DB-9M cables for each port 6-foot RS-232 configuration cable
Application port (Ethernet)	
Ethernet Port (Ethernet modules)	10/100M RJ45 Connector Link and activity LED indicators
Shipped with Unit	RJ45 to DB-9M cables for each port 6-foot RS-232 configuration cable

ControlLogix Interfaces

IEC 60870-5-101 Master Communication Module

MVI56-101M

The MVI56 IEC 60870-5-101 Master Communication Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with IEC 60870-5-101 slave (controlled unit) devices.

Features and Benefits

The MVI56-101M module interfaces up to 32 serial communication devices with the Rockwell Automation ControlLogix processor. Two communication ports on the module act as controlling devices (masters) to interface with controlled devices on their own networks. Each port is individually configurable and can be set for balanced or unbalanced mode. Data is exchanged between the serial network and the ControlLogix processor using the internal database contained in the module and direct control by the controller's ladder logic.

Applications

The MVI56-101M module is the ideal solution for many applications where IEC protocol connectivity must be added to a ControlLogix system. The IEC solution is designed to address the expanding interest in the IEC protocol and the use of IEC compatible devices in industrial applications such as those in the water/wastewater, power and oil & gas industries.

Compatible devices include relays, breakers, substation communication modules and other serial communication devices.

Functional Specifications

- Built in accordance to the approved international specification
- Two independent master ports completely user configurable
- Support for balanced and unbalanced mode
- Up to 32 sessions
- Up to five sectors (separate databases) for each session
- Individual database definition for each sector
- 1000 commands to control stations
- Processor can issue control commands directly to the module or a controlled device (10 at each scan)
- Pass-through of event messages from controlled device to processor for logging of time-tagged events
- Operation via simple ladder logic
- Supports clock synchronization from/to the ControlLogix
- Receives events from the slave and sends them to the processor
- Supports monitored data
  - Single-point
  - Double-point
  - Step-point
  - Measured-point
  - Bitstring 32-bit
  - Integrated total point
- Class 1 and Class 2 delay parameter in the configuration file
- Complete set up and monitoring of module through RSLogix 5000 software and user constructed configuration file (IEC101M.CFG)
- All data related to the module is contained in user data files to ease in the monitoring and interfacing with the module

The MVI56 IEC 60870-5-101 Slave Communication Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with IEC 60870-5-101 protocol compatible hosts. The module's two powerful and highly configurable redundant ports allow the many SCADA host systems supporting the IEC protocol to be integrated into the ControlLogix platform.

Features and Benefits

The MVI56-101S module is the fastest and easiest way to add IEC 60870-5-101 protocol interface support to the ControlLogix platform. It is a single slot, backplane compatible solution for the ControlLogix platform. This module has two powerful and highly configurable IEC 60870-5-101 Slave ports, allowing the many SCADA and field devices supporting the IEC protocol to be integrated into the ControlLogix platform.

The MVI56-101S module acts as an input/output module between the IEC 60870-5-101 telecontrol network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the network. A 5000-word register space in the module exchanges data between the processor and the telecontrol network.

Applications

The MVI56-101S Slave module is designed to address the application where a host systems using the IEC 60870-5-101 protocol must communicate with a ControlLogix processor. As such, the IEC Slave module can be used as a gateway in many SCADA installations in industries such as:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- Oil & Gas production

Functional Specifications

The MVI56-101S module accepts commands from an attached master unit. A port configured as a virtual slave permits a remote master to interact with all data contained in the module. This data can be derived from the ControlLogix processor. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs. The module can operate in balanced or unbalanced mode.

- Supports time stamp events
- Supports time and data synchronization from a master or the processor
- Supports monitored data
- Event queue supports 99 points for each data type
- Reports events by configurable priority order
- Order monitored points by interrogation groups
- Configurable deadband for monitored measured points
- Supports Master Class 1 and Class 2 polls with configurable parameters
- Acknowledgement transmission is handled internally by the module
- Configurable data link address, Common ASDU address and Information Object Address
- Configurable pulse duration

ControlLogix Interfaces

IEC 60870-5-103 Master Communication Module

MVI56-103M

The MVI56 IEC 60870-5-103 Master Communication Module allows Rockwell Automation ControlLogix backplane I/O compatible processors to interface easily with IEC 60870-5-103 compatible devices. Devices commonly supporting the protocol include relays, breakers, substation communication modules and other serial communication devices used in power monitoring.

Features and Benefits

The MVI56-103M supports up to 32 total field devices between the module's two IEC 60870-5-103 Master ports. The module's communication ports can each be independently configured, allowing two separate field networks to be implemented. The field device data is exchanged between the MVI module and the ControlLogix processor over the backplane.

Applications

The MVI56-103M module is the ideal solution for many applications where IEC protocol connectivity must be added to a ControlLogix system. The IEC solution is designed to address the expanding interest in the IEC protocol and the use of IEC compatible devices in industrial applications such as those in the water/wastewater, power and oil & gas industries.

Compatible devices include relays, breakers, substation communication modules and other serial communication devices.

Functional Specifications

The MV56-103M module supports the IEC 60870-5-103 protocol to the following specifications:

- The IEC 60870-5-103 communication driver is built in accordance to the approved IEC specification
- The module has two independent master ports, each configurable via a simple configuration file
- Supports up to 32 sessions (controlled devices) between the two ports
- Supports up to five sectors (separate databases) for each session, with individual database definition for each sector
- Total of 1000 user configurable commands to control data transfer to/from devices (controlled devices)
- Supports clock synchronization from/to the processor
- Event data received from the control devices updates the module database (Date and Time stamping is not stored or used by module)
- Class 1 and Class 2 delay parameters are configurable for each session
- An IEC Interoperability Document for the module is available from the web site, which fully documents data types supported by the module

The MVI56 IEC 60870-5-103 Master Communication Module with Reduced Data Block allows Rockwell Automation ControlLogix backplane I/O compatible processors to interface easily with IEC 60870-5-103 compatible devices. Devices commonly supporting the protocol include relays, breakers, substation communication modules and other serial communication devices used in power monitoring.

This module uses a small I/O data area for data transfer between the module and the ControlLogix processor, making it ideal for ControlNet applications.

Features and Benefits

The MVI56-103MR supports up to 32 total field devices between the module's two IEC 60870-5-103 Master ports. The module's communication ports can each be independently configured, allowing two separate field networks to be implemented. The field device data is exchanged between the MVI module and the ControlLogix processor over the backplane.

Applications

The MVI56-103MR module is the ideal solution for many applications where IEC protocol connectivity must be added to a ControlLogix system. The IEC solution is designed to address the expanding interest in the IEC protocol and the use of IEC compatible devices in industrial applications such as those in the water/wastewater, power and oil & gas industries.

Compatible devices include relays, breakers, substation communication modules and other serial communication devices.

Functional Specifications

The MVI56-103MR module supports the IEC 60870-5-103 protocol to the following specifications:

- The IEC 60870-5-103 communication driver is built in accordance to the approved IEC specification
- This module uses a small I/O data area for data transfer between the module and the ControlLogix processor
- Module memory usage is completely user definable
- The module has two independent master ports, each configurable via a simple configuration file
- Supports up to 32 sessions (controlled devices) between the two ports
- Supports up to five sectors (separate databases) for each session, with individual database definition for each sector
- Total of 1000 user configurable commands to control data transfer to/from devices (controlled devices)
- Supports clock synchronization from/to the processor
- Event data received from the control devices updates the module database (Date and Time stamping is not stored or used by module)
- Class 1 and Class 2 delay parameters are configurable for each session
- An IEC Interoperability Document for the module is available from the web site, which fully documents data types supported by the module

ControlLogix Interfaces

IEC 60870-5-104 Server Communication Module

MVI56-104S

The MVI56 IEC 60870-5-104 Server Communication Module allows ControlLogix backplane I/O compatible processors to interface easily with IEC 60870-5-104 protocol-compatible hosts.

Features and Benefits

The MVI56-104S module acts as an input/output module between the IEC 60870-5-104 Ethernet network and the ControlLogix processor. The data transfer from the ControlLogix processor is asynchronous from the actions on the network. A 4000-word register space in the module exchanges data between the processor and the Ethernet network.

Applications

The MVI56-104S module has been designed to address the application where a device using the IEC 60870-5-104 protocol needs to communication with the ControlLogix processor. As such, the IEC server module can be used as a gateway in many SCADA installations in industries such as:

- Power
- Petrochemical
- Water treatment
- Oil & gas production

Functional Specifications

The MVI56-104S module accepts data read/write commands from a master/client on the network. In addition, the module can be configured to generate unsolicited messages in either a spontaneous or cyclic fashion.

The module has 4000 words of user defined internal register space that are accessible to the protocol driver and to the ControlLogix processor memory. Any of the supported database types can be individually located (within the total database size limit of 4000 words) and each database point is mapped within the module and can be assigned to one or more groups. The supported database point types are:

Database Type	Description
M_SP_NA	Monitored single-point database
M_DP_NA	Monitored dual-point database
M_ST_NA	Monitored step-point database
M_ME_NA	Monitored normalized-point database
M_ME_NB	Monitored scaled-point database
M_ME_NC	Monitored short-float point database
M_IT_NA	Monitored integrated total database
C_SC_NA	Command single-point database
C_DC_NA	Command dual-point database
C_RC_NA	Command step-point database
C_SE_NA	Command normalized-point database
C_SE_NB	Command scaled-point database
C_SE_NC	Command short-float point database

IEC 60870-5-104 Server Specifications

Operating in the Server mode, the module accepts commands from a Client(s) to read/write data stored in the module's internal registers. This data is easily and continuously transferred between the MVI module and the ControlLogix processor's data registers.

The IEC 60870-5-104 Server functionality supported by the module includes:

- The IEC 60870-5-104 communication driver is built in accordance to the approved IEC specification
- The module functions as a Server on the network supporting data read/write commands from an IEC 60870-5-104 client on the network
- One TCP server socket
- Supports unsolicited messages, either cyclic or spontaneous (cyclic rate is configurable)
- Supports clock synchronization commands from client or from the ControlLogix processor
- Supports Group interrogation (Global, General 1 to 16, Global Counters, Counters 1-4)
- Event timestamping configurable by type (None, 24 bit, 56 bit)
- Event queue supports 99 points for each data type
- Optional user defined list of acceptable client host IP addresses
- Configurable Common ASDU address (sector) and Information Object Address
- An IEC Interoperability Document for the MVI56 is available which fully documents data types supported by the module

The MVI56 3964R Protocol module from ProSoft Technology allows point-to-point communication between a ControlLogix controller (1756-L1, -L1Mx, L55, L63) and a partner with 3964R (with or without RK512) communication capability.

Features and Benefits

The 3964R protocol was designed by Siemens for bi-directional data communication through a point-to-point connection. It is a master-slave protocol with read and write access. A BCC checksum ensures the integrity of the transfer.

Applications

The module is ideal in control configurations where there is a need for the ControlLogix controller to exchange data with other non-Rockwell Automation control devices in low speed applications.

The MVI56-3964R can communicate with devices using two RS-232, RS-422 communication lines (ports). The ports operate independently from each other.

Functional Specifications

- Single-slot, ControlLogix backplane compatible
- Multiple modules can be placed in a rack up to the chassis power supply limit
- While in 3964R with RK512 mode on PRT1 and PRT2, DB-SEND and DB-FETCH instructions can be initiated from the ControlLogix processor or received by the communications partner
- While in 3964R without RK512 mode on PRT1 and PRT2, data can be sent from the ControlLogix processor or be received from the communications partner
- The maximum transfer size is 512 bytes in any mode
- Data byte swapping can be configured to adjust to a different word format
- While in 3964R with RK512 mode on PRT1 and PRT2, evaluation of the header information DB (data block), DW (data word) and coordination bytes 9 and 10 is possible
- Communication activity and diagnostics are available through LEDs and acknowledgment telegrams

Ladder Logic

Ladder logic programming in the ControlLogix processor is required in order to enable and support the Siemens 3964R protocol functionality. The ladder program handles the encoding/decoding of data transferred from the module as well as the initiation of protocol-specific functionality in the module. Example ladder programs are provided with the module to ease the implementation of the module in the user application.

ControlLogix Interfaces

'C' Programmable Application Development Module

MVI56-ADM

The MVI56 Application Development Module is a ControlLogix backplane compatible module that allows user-developed 'C' applications to operate on the ControlLogix platform. A great way to speed up custom ASCII data communications or to protect a proprietary algorithm, the ADM is a powerful tool for the ControlLogix platform.

Features and Benefits

Powerful platform for developing and running 'C' applications on Rockwell Automation's ControlLogix processors. The MVI56-ADM module is a single slot, backplane compatible solution for the ControlLogix platform. This module is a powerful and programmable solution supporting two fully isolated serial ports allowing the many serial field devices to be integrated into the ControlLogix platform.

- The MVI56-ADM module has three serial ports, two of which are isolated for field interfaces:
  - CFG – Debug/configuration RS-232
  - PRT1 – Application RS-232, RS-422 or RS-485
  - PRT2 – Application RS-232, RS-422 or RS-485

PRT1 and PRT2 are jumper configured for direct or multi-drop field communication. The application program can be written to control the two application ports independently, allowing maximum flexibility in the design.

Applications

The MVI56-ADM module is the ideal solution for many applications where serial connectivity must be added to a ControlLogix platform. Applications using the MVI56-ADM module include:

- Bar code scanner interface
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)
- Customized protocol implementations

Functional Specifications

Development Environment

- Operating system: General software DOS 6-XL
- Compatible compiler (16-bit DOS target)
  - Digital Mars C++ V8.49 (included)
  - Borland C++ V5.02

Application Programming Interfaces (API)

- Serial Port API: serial port functions
- Backplane API: low level backplane functions
- ADM API debug port functions: debug port functions, database functions timer functions, high level backplane transfer functions, LED functions, flash read functions

The MVI56 Application Development Communication Module with Ethernet is a ControlLogix backplane compatible module that allows Rockwell Automation ControlLogix processors to interface easily with Ethernet protocol (Explicit Messaging) compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs, and host HMI systems.

Features and Benefits

The ADMNET module is a powerful that supports both Client and Server applications. This broad support enables the module to function as a data collection client, or a to another host. Applications for the module are found in most industries, especially Manufacturing, Oil & Gas, Electrical Power and Food processing.

The MVI56-ADMNET module is a single slot, backplane compatible solution for the ControlLogix platform. This module is a powerful and programmable solution supporting two fully isolated serial ports and one Ethernet port allowing the many field devices to be integrated into the ControlLogix platform.

- The MVI56-ADMNET module has three serial ports, two of which are isolated for field interfaces, and one Ethernet port
  - CFG - debug/configuration - RS-232
  - PRT1– application - RS-232, RS-422 or RS-485
  - PRT2– application - RS-232, RS-422 or RS-485
  - Ethernet port

PRT1 and PRT2 are jumper configured for direct or multi-drop field communication. The application program can be written to control the two application ports independently, allowing maximum flexibility in the design.

Applications

The MVI56-ADMNET module is the ideal solution for many applications where Ethernet and serial connectivity must be added to a ControlLogix platform. Applications using the MVI56-ADMNET module include:

- Bar code scanner interface
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)
- Customized protocol implementations

Functional Specifications

The MVI56-ADM API Suite allows software developers access to the top layer of the ControlLogix backplane and serial ports. The MVI56-ADMNET API suite accesses the Ethernet port.

Both APIs can be easily used without having detailed knowledge of the module's hardware design. The MVI56-ADMNET API Suite consists of the Ethernet Port API. The Ethernet Port API provides access to the Ethernet network. Applications for the MVI56-ADMNET module may be developed using industry-standard DOS programming tools and the appropriate API components.

General Protocol Specifications

- Allows software developers to access Rockwell Automation backplane and serial/Ethernet ports without needing detailed knowledge of the module's hardware design
- API library functions are specified using the 'C' programming language syntax
- Supports multi-threaded applications
- The following compiler versions are compatible with the MVI module API:
  - Digital Mars C++ 8.49 (included)
  - Borland C++ V5.02
- Operating System - General software DOS 6-XL
- Flash ROM program space: 896 KB
- RAM program and data space: 640 KB
- Compact Flash socket: Up to 64 MB

ADM/ADMNET API Libraries

Each API provides a library of function calls. This library supports any programming language that is compatible with the Pascal calling convention.

- Initialization - Open and close the API
- Debug Port - Debug port user interface
- Database - Read and write data to database
- Timer - Start and check timers
- Backplane - Transfer data over the backplane
- LED - Set user LED indicators
- Flash - Parse configuration files
- Miscellaneous - Configure the console

ControlLogix Interfaces
Liquid & Gas Flow Computer
MVI56-AFC

The MVI56 Liquid & Gas Flow Computer Module is a ControlLogix backplane compatible module that allows ControlLogix processors to easily support flow applications with 16 meter runs performing measurement of hydrocarbon gases or liquids using AGA 3, 7, 8 and API 2540 measurement standards.

Features and Benefits

The MVI56-AFC is an in-rack Liquid & Gas Flow Computer Module for the ControlLogix platform. The MVI56-AFC Flow Computer module supports 16 meter channels for the measurement of hydrocarbon gases and liquids using currently accepted industry measurement standards.

The module calculates flow rates, accumulated volumes, accumulated mass and accumulated energy (heating value). The calculation results are transferred back to the processor memory for use in the application ladder program or for transfer back to a SCADA host.

Applications

The MVI56-AFC module is the ideal solution for the many applications where hydrocarbon flow and SCADA communication must be added to the ControlLogix platform.

Applications using the MVI56-AFC module can be found mainly in the oil & gas industrial sectors.

Functional Specifications

The AFC module operates as a powerful flow computer module, augmenting the operation of the ControlLogix processor by providing a dedicated and accurate set of flow calculations, the results of which are easily available to process monitoring and control applications developed on the ControlLogix platform.

The module is highly-configurable (see PSW-AFC), allowing each of the 16 meter runs to be individually set up to meet the specific requirements of an application.

Configurable options

- Gas analysis concentrations for any or all 21 components
- Physical data for all meter runs including orifice and pipe diameters, selection of type of taps and tap location, etc.
- Reference pressure, temperature and local atmospheric conditions
- Default process and operating parameters like DP threshold for flow cutoff, etc.
- Metric or imperial units
- User selectable units for totalizers and flow rates on a per channel basis
- Resettable and/or non-resettable totalizers for every meter channel
- Process I/O: analog inputs (pressure, temperature, diff pressure) from analog modules and pulse inputs from pulse/frequency input modules in ControlLogix I/O rack
- Number of meter channels: 16 differential (AGA3) or linear (AGA7) Gas; MPMS 12.2 Liquid
- Calculation methods: AGA3-1992, AGA 7, AGA8-1992 (detailed characterization method), API MPMS Ch12.2 API 2540
- Meter scan time under 1 second for all 16 channels
- Product measurement: hydrocarbon gases and liquids
- Data archiving: Hourly for 2 days for each meter run (48 records per channel), Daily for 35 days (optional extended archives up to 1260 hourly and 350 daily). All archived data is available in the onboard Modbus memory map (archive size and contents are fully-configurable)
- Event log report for all security sensitive configuration data (for example, orifice diameter) are date and time stamped and mapped to the local Modbus memory map. This data can be imported into any spreadsheet program and saved to disk or printed as hard copy

Modbus interface

- The two Modbus slave ports allow the unit to be used as a SCADA interface and to broaden access to the AFC module's data table
- Either port may be configured for RTU or ASCII Modbus mode
- Modbus table may be re-mapped for user assigned contiguous register polling from a SCADA master (up to 20,000 registers)
- Port 3 can be configured as a Modbus Master port to poll data from a remote chromatograph device

This single-slot module is a powerful solution that allows the large installed base of legacy BASIC programs for the 1771-DB and 1747-BAS modules to be migrated to the ControlLogix platform with minimal effort.

Features and Benefits

The MVI56-BAS module allows you to:

- Create BASIC programs to transfer data between the ControlLogix and the MVI56-BAS module
- Create foreign device interface for specific applications and easily integrate the device with the ControlLogix processor
- Interface to many devices that use ASCII interface to a ControlLogix backplane such as modems, printers, bar code readers, and scales
- Save ControlLogix processor memory by running math algorithms.

The module acts as DF1 full-duplex device or a DF1 half-duplex slave.

The BASIC programs are stored in the MVI56-BAS Compact Flash disk allowing the user to easily backup the BASIC programs to another Compact Flash disk or to a local PC. Up to 24064 bytes of RAM are available.

The module contains three ports:

- DH-485: DH-485 communication or BASIC program transfer
- PRT1: ASCII communication or program port
- PRT2: ASCII communication or DF1 communication

The user can either create the BASIC programs using the command line, then saving it to Compact Flash, or create the program on a PC and download it to the MVI56-BAS module. The user can also configure the module to execute a BASIC program automatically at power up.

Applications

The MVI56-BAS module allows existing legacy BASIC programs to be migrated from the 1771 and 1746 platforms to the ControlLogix platform. This provides interface capability for many devices using the ASCII interface to the ControlLogix backplane including:

- Bar code scanner interfaces
- Weigh scale interfaces
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)

Functional Specifications

- Supports BASIC-52 Programming language
- Stores BASIC programs on Compact Flash disk
- Supports 24064 bytes of RAM
- Easy BASIC program backup

DF1 Communications

- PRT2 can be enabled and configured for DF1 communications through BASIC calls
- Uses ladder logic to transfer data between the DF1 device and the ControlLogix processor
- PRT2 port can be configured to act as a full-duplex device or half-duplex slave.

The MVI56-BAS can send the following DF1 commands:

- PLC-2 unprotected READ command
- PLC-2 unprotected WRITE command
- PLC-3 word range READ command
- PLC-3 word range WRITE command
- PLC-5 typed READ command
- PLC-5 typed WRITE command

The MVI56-BAS accepts the following commands:

- PLC (word range writes)
- PLC (typed writes)
- PLC (unprotected write)
- SLC 5/02 (unprotected write)
- SLC 5/02 (typed writes)

DH-485 Communications

- The MVI56-BAS DH-485 port can be used to interface the ControlLogix processor with DH-485 Devices
- Rockwell Automation AIC+ device is required (user-supplied)
- Ladder logic is required to transfer data between the ControlLogix processor and remote data file or common interface file

MVI56-BDW

The MVI56 Bardac Drive Interface Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with Bardac drive.web devices.

Features and Benefits

The MVI56-BDW module acts as a client collecting and controlling data in a Bardac drive.web compatible device. Four independent clients are contained in the module to interface with Bardac drives simultaneously. The data is passed from the network to the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the UDP/IP network. A 5000-word register space in the module exchanges data between the processor and the network.

Applications

The MVI56 Bardac Drive module incorporates a powerful library of drive control function blocks for a wide range of applications. The Bardac drive protocol uses UDP over Ethernet to provide robust connectivity between drives, PLCs, operator stations, remote I/O and SCADA systems.

Functional Specifications

A client configured as a Bardac master device on the MVI56-BDW module will actively issue Bardac-DW commands to other nodes on the Bardac-DW network. One hundred commands are supported for each client. The ControlLogix processor can be programmed to control the activity on the client by actively selecting commands from the command list to execute, or issuing commands directly from the ladder logic.

Some of the general specifications include:

- Support for the storage and transfer of up to 5000 registers to/from the ControlLogix processor's controller tags
- Module memory usage that is completely user-definable
- Ability for the user to define commands to set or get parameters from the Bardac device
- 10/100 Mbps Ethernet compatible interface
- Supports up to 100 user-defined read or write commands that can be sent to a Bardac device
- Configurable parameters for the client include
  - Error/Status Pointer
  - Command Error Pointer
  - Response Timeout
  - Retry Count

The MVI56 Bristol Babcock Serial Slave Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with Bristol Babcock Serial communication devices.

Features and Benefits

The MVI56-BSAPS module acts as an input/output module between the BSAP network and the ControlLogix processor. The module acts as a slave receiving commands from a BSAP master device. The data transfer from the ControlLogix processor is asynchronous from the actions on the BSAP network. An internal database in the module exchanges data between the processor and the BSAP network.

BSAP operates in a polled environment. Each link in the network supports a different poll rate. The rate selected depends on a variety of application-dependent factors.

BSAP has been designed and implemented according to the functional layers of the International Standards Organization (ISO) model. Because each layer is independent of its adjacent layers, both synchronous and asynchronous transmission modes can be supported.

Applications

The Bristol Babcock Synchronous/Asynchronous Communication Protocol (BSAP) is used in process control applications in the energy, water and wastewater industries.

Typical industrial sectors include:

- Security monitoring
- Pump and lift station control for water & wastewater market
- Flow measurement and metering station control for the natural gas market

Functional Specifications

The Bristol Babcock Synchronous/Asynchronous Communication Protocol (BSAP) is the foundation for a proprietary network that has a tree structured topology. This open-ended topology supports a variety of configurations which may include one or more nodes at each of up to six levels. Messages can be sent between nodes on the same level or on different levels. Messages can be sent between nodes (local message only). Each message is uniquely identified and has an error checking code associated with it.

Some of the general specifications include:

- Slave implementation
- Support for the storage and transfer of internal database registers to/from the ControlLogix processor's controller tags
- Two ports to emulate a BSAP slave RTU
- Peer-to-Peer communication for Local BSAP formatted messages – slave to master only

Configurable parameters include:

Parameter	Value
Analog Input Count	0 to 255
Logical Input Count	0 to 255
String Count	0 to 30
Slave Address	1 to 255
Baud Rate	110 to 115,200
Parity	None, Odd, Even
Data Bits	5 to 8
Stop Bits	1 or 2
RTS On and Off Timing	0 to 65535 milliseconds
Minimum Response Delay	0 to 65535 milliseconds
Use of CTS Modem Line	Yes or No

ControlLogix Interfaces

Teledyne CA Slave Communication Module

MVI56-CAS

The MVI56 Teledyne CA Slave Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with TCA protocol compatible devices.

Features and Benefits

The MVI56-CAS module acts as an input/output module between the TCA network and the ControlLogix processor. The data transfer from the ControlLogix processor is asynchronous from the actions on the TCA network. A 5000-word register space in the module exchanges data between the processor and the TCA network.

Applications

The MVI56-CAS module provides highly-configurable TCA slave capabilities to the ControlLogix platform. The product is frequently used as a SCADA slave. In a SCADA slave application, the module could be used in remote controller racks as is often used in the oil & gas, or wastewater industries.

Functional Specifications

- Function codes
  - 1: Read output data
  - 2: Read analog data
  - 3: Read meter data
  - 10: Read frozen analog values
  - 11: Read frozen meter data
  - 16: Read all data
  - 20: Read tank data from RTU
  - 30: Control momentary select
  - 31: Control momentary operate
  - 32: Control continuous select
  - 33: Control continuous operate
  - 34: Setpoint select
  - 35: Setpoint operate
  - 43: Freeze meters
  - 44: Freeze analogs
  - 45: Freeze meters/analogs
  - 46/6: Special freeze
  - 50: Exception data request
- Supports broadcast commands from master
- Register addressing
  - Status: Up to 250 words
  - Analog: Up to 250 words
  - Meter: Up to 125 values (2 words per value)
  - Tank: Up to 250 words
- Supports write commands from host
- Operates in both direct or indirect modes
- Setpoint select and operate
  - Control point continuous and momentary

The MVI56 Command Language Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with SICK bar code scanner devices.

Features and Benefits

The MVI56-CLVM module acts as an input/output module between the scanners and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the scanners.

Applications

Compatible devices include CLV SICK bar code scanner devices.

Functional Specifications

Some of the general specifications include:

- Support for the storage and transfer of up to 5000 registers to/from the ControlLogix processor's data files
- Module memory usage that is completely user definable

Two ports to emulate a slave device. Configurable parameters include:

Parameter	Value
Protocol	RTU or ASCII
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1
Minimum Command Delay	0 to 65535 milliseconds

ControlLogix Interfaces

Honeywell DE Master Communication Module

MVI56-DEM

The MVI56 DE Master Communication Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with Honeywell DE instruments. Compatible devices include a large array of field devices including pressure, temperature, metering and many other instruments.

Features and Benefits

The module supports 16 DE channels, allowing both single and/or multivariable Honeywell transmitters operating in the DE mode to be directly integrated in the ControlLogix platform.

Data exchange between the DEM module and the processor data table is performed using standard ladder logic. Included in the system is the pre-programmed ControlLogix DEM module and the Honeywell field terminal assembly and cable.

Applications

Supported Honeywell instruments include:

- ST 3000 smart pressure transmitter
- STT 3000 smart temperature transmitter
- SMV 3000 smart multivariable transmitter
- MagneW 3000 smart magnetic flowmeter
- SCM 3000 smart coriolis mass flowmeter
- SGC 3000 smart gas chromatograph

Functional Specifications

- Backplane data transfer via input/output files
- Interfaces with Honeywell smart transmitters operating in the DE mode
- Support multiple DE channels CLX - up to 16 Channels with single PV transmitter, multivariable transmitters
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA)
- Single cable connection from DEM module to FTA
- External 24 VDC source connection on front of DEM module for instrument loop power
- LEDs for visual module status
  - Module active
  - Module fault
- Operation via simple ladder logic

The MVI56 DF1 Master/Slave Communication Module is a ControlLogix backplane compatible module that allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with DF1 protocol compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs and power monitoring equipment, as well as several other third party devices in the marketplace.

Features and Benefits

The ProSoft Technology MVI56-DFCM module is the fastest and easiest way to add DF1 Half/Full Duplex Master and Slave capability to the ControlLogix platform. This module has two powerful and fully configurable DF1 Half/Full Duplex Master/Slave ports allowing the many SCADA and field devices supporting the DF1 protocol to be integrated into the ControlLogix platform.

The module has two serial ports supporting the DF1 protocol, with each port user-configurable to act as a master or as a slave. Data transfer between the module and the ControlLogix processor is asynchronous to the DF1 network, with the module's internal database being used to exchange data between the processor and the DF1 network.

Applications

The MVI56-DFCM module is the ideal solution for many applications where DF1 protocol connectivity must be added to a ControlLogix platform. The MVI56-DFCM module can be found in many industrial sectors and in the following applications:

- Foreign device data concentrator
- SCADA System Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper

Functional Specifications

DF1 ports

- Full and half duplex modes supported
- CRC and BCC error checking
- Full hardware handshaking control provides radio, modem and multi-drop support
- Memory usage is completely user configurable, supporting the storage and transfer of up to 5000 registers to/from the control processor
- Up to 125 word read and write command lengths supported
- Floating point data movement supported

DF1 Master Protocol Specifications

The ports on the DF1 module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices, enabling the ControlLogix platform to act as a SCADA sub-master.

- Command List: Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/byte count
- Status Data: Error codes available on an individual command basis. In addition, a slave status list is maintained per active master port
- Polling of Command List: User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The module accepts DF1 commands from an attached DF1 master unit. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers. This data can be derived from other DF1 slave devices on the network through a master port or from the processor and is easily transferred to the processor's data registers.

Tested Hardware Connections

Several hardware connections have been tested by ProSoft Technology or have been customer field tested. The following physical connections have been tested successfully:

- Rockwell Automation Panel view (Full Duplex point-point, DFCM as slave)
- Rockwell Automation Processors (Full/Half duplex, DFCM as either master or slave)
- Rockwell Automation Power Monitors (485 Half-Duplex, DFCM as Master)

ControlLogix Interfaces

DF1 Half/Full Duplex Master/Slave Communication Module for Remote Chassis

MVI56-DFCMR

The MVI56 DF1 Master/Slave Communication Module with Reduced Data Block is a ControlLogix backplane compatible module that allows Rockwell Automation ControlLogix I/O compatible processors to easily interface with DF1 protocol compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs and power monitoring equipment, as well as several other third party devices in the marketplace.

This module uses a small I/O data area for data transfer between the module and the ControlLogix processor, making it ideal for ControlNet or Ethernet applications with the module in a remote rack.

Features and Benefits

The MVI56-DFCMR (DF1 Communication Module for Remote Chassis) allows ControlLogix I/O compatible processors to interface easily with other DF1 protocol compatible devices. Compatible devices include not only Modicon PLCs (which all support the DF1 protocol) but also a wide assortment of end devices.

The module has two serial ports supporting the DF1 protocol, with each port user-configurable to act as a master or as a slave. Data transfer between the module and the ControlLogix processor is asynchronous to the DF1 network, with the module's internal database being used to exchange data between the processor and the DF1 network.

Applications

The MVI56-DFCMR module is the ideal solution for many applications where DF1 protocol connectivity must be added to a ControlLogix platform. The MVI56-DFCMR module can be found in many industrial sectors and in the following applications:

- Foreign device data concentrator
- SCADA System Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper

Functional Specifications

This module uses a small I/O data area for data transfer between the module and the ControlLogix processor.

DF1 ports

- Full and half duplex modes supported
- CRC and BCC error checking
- Full hardware handshaking control provides radio, modem and Multi-drop support
- Memory usage is completely user configurable, supporting the storage and transfer of up to 5000 registers to/from the control processor
- Up to 125 word read and write command lengths supported
- Floating point data movement supported

DF1 Master Protocol Specifications

The ports on the DF1 module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices, enabling the ControlLogix platform to act as a SCADA sub-master.

- Command List: Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/byte count
- Status Data: Error codes available on an individual command basis. In addition, a slave status list is maintained per active master port
- Polling of Command List: User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The module accepts DF1 commands from an attached DF1 master unit. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers. This data can be derived from other DF1 slave devices on the network through a master port or from the processor and is easily transferred to the processor's data registers.

Tested Hardware Connections

Several hardware connections have been tested by ProSoft Technology or have been customer field tested. The following physical connections have been tested successfully:

- Rockwell Automation Panel view (Full Duplex point-point, DFCM as slave)
- Rockwell Automation Processors (Full/Half duplex, DFCM as either master or slave)
- RA Power Monitors (485 Half-Duplex DFCM as Master)

The MVI56 DH-485 Communication Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with other DH-485 protocol compatible devices. Compatible devices include not only Rockwell Automation PLCs (which support the DH-485 protocol) but also a wide assortment of end devices.

Features and Benefits

The MVI56-DH485 module actively issues DH-485 commands to other nodes on the DH-485 network. One hundred user-defined commands are supported by the module on each port. The ControlLogix processor can be programmed to control the activity on the port by actively enabling or disabling each command directly from the ladder logic.

The module also accepts DH-485 commands from an attached DH-485 master unit (for example, SLC 5/03 processor ladder logic MSG instruction). The module permits a remote master to interact with all data contained in the module. This data can be derived from other DH-485 slave devices on the network through a master port or from the ControlLogix processor.

Applications

The MVI56-DH485 module can be used in any application where DH-485 network connectivity is required with the ControlLogix platform. Compatible devices on a DH-485 network include:

- SLC 5/03
- SLC 5/05 (RS-232 Channel)
- 1746BAS
- MVI56-BAS

Functional Specifications

The MVI56-DH485 module acts as an input/output module between the DH-485 network and the ControlLogix processor. The data transfer from the ControlLogix processor is asynchronous from the actions on the DH-485 network. A 4000-word register space in the module exchanges data between the processor and the DH-485 network.

- The module has a Common Interface File (CIF) with 244 words that can be accessed by remote DH-485 nodes
- Read and write commands can be sent associated to the following file types: status, bit, timer, counter, control, integer, float, and CIF
- User-definable module memory usage
- Two ports emulate the DH-485 devices (peer-to-peer) with distinct node addresses
- All configuration information contained in a single, user-defined text file
- ControlLogix backplane interface
- All module-related data is contained in an internal database
- Ability to add or remove nodes without disruption of the network
- Baud rates: 9600 or 19200 baud

ControlLogix Interfaces

DH-485 Communication Module for Remote Chassis

MVI56-DH485R

The MVI56 DH-485 Communication Module with Reduced Data Block allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with other DH-485 protocol compatible devices. Compatible devices include not only Rockwell Automation PLCs (which support the DH-485 protocol) but also a wide assortment of end devices.

This module uses a small I/O data area for data transfer between the module and the ControlLogix processor, making it ideal for ControlNet or Ethernet applications with the module in a remote rack.

Features and Benefits

The MVI56-DH485R module actively issues DH-485 commands to other nodes on the DH-485 network. One hundred user-defined commands are supported by the module on each port. The ControlLogix processor can be programmed to control the activity on the port by actively enabling or disabling each command directly from the ladder logic.

The module also accepts DH-485 commands from an attached DH-485 master unit (for example, SLC 5/03 processor ladder logic MSG instruction). The module permits a remote master to interact with all data contained in the module. This data can be derived from other DH-485 slave devices on the network through a master port or from the ControlLogix processor.

Applications

The MVI56-DH485R module can be used in any application where DH-485 network connectivity is required with the ControlLogix platform. Compatible devices on a DH-485 network include:

- SLC 5/03
- SLC 5/05 (RS-232 Channel)
- 1746BAS
- MVI56-BAS

Functional Specifications

The MVI56-DH485R module acts as an input/output module between the DH-485 network and the ControlLogix processor. The data transfer from the ControlLogix processor is asynchronous from the actions on the DH-485 network. A 4000-word register space in the module exchanges data between the processor and the DH-485 network.

This module uses a small I/O data area for data transfer between the module and the ControlLogix processor.

- The module has a Common Interface File (CIF) with 244 words that can be accessed by remote DH-485 nodes
- Read and write commands can be sent associated to the following file types: status, bit, timer, counter, control, integer, float, and CIF
- User-definable module memory usage
- Two ports emulate the DH-485 devices (peer-to-peer) with distinct node addresses
- All configuration information contained in a single, user-defined text file
- ControlLogix backplane interface
- All module-related data is contained in an internal database
- Ability to add or remove nodes without disruption of the network
- Baud rates: 9600 or 19200 baud

The MVI56 DNP 3.0 Master/Slave Communication Module is a single slot, backplane compatible DNP 3.0 interface solution for the Rockwell Automation ControlLogix platform. This module provides highly configurable support of both DNP 3.0 Master and Slave implementations (level 2 minimum), allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the powerful ControlLogix platform.

Features and Benefits

The module supports DNP Subset Level 2 features and some of the Level 3 features allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the ControlLogix platform. The module acts as an input/output module between the DNP network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the DNP network. Databases are user defined and stored in the module to hold the data required by the protocol.

Applications

The MVI56-DNP module is the ideal solution for many applications where DNP 3.0 Master and/or Slave connectivity must be added to a ControlLogix system.

The DNP solution addresses the expanding interest in the DNP 3.0 protocol. The protocol was originally developed for the power utility industry and is recommended by the IEEE for RTU-IED communication applications. Additional applications include Water/Wastewater and Oil & Gas industries.

Functional Specifications

The module has two DNP protocol ports that can be user configured to operate in a Master/Slave or in a Slave/Slave redundant port configuration.

User defined internal register space is accessible to the protocol driver and to the ControlLogix processor memory.

DNP 3.0 Slave Protocol Specifications

The DNP Slave port(s) accepts DNP commands to control and monitor data stored in the module's DNP Slave databases. If a DNP Master port is also configured, a portion of these slave databases can be derived from or can control IED devices connected to the DNP master port.

- Report-by-Exception data is logged to the module's database
- Supports unsolicited messaging
- Each DNP point type is user configurable by point
- Class assignments are completely user-definable on a Type and point basis (BI, AI, FI, DI point types)
- Supports clock synchronization from a master or from the processor
- Up to 400 events are stored for Floats, Binary In, Analog In and Double Inputs
- Collision avoidance algorithm per DNP organization for redundant port switching (redundant slave mode)
- Special modem AT command string and timing support for dialing out on redundant port (redundant slave mode)

DNP 3.0 Master Protocol Specifications

The DNP 3.0 Master port can be configured as a virtual DNP Master device that actively issues user-defined DNP commands to nodes on the network.

- The Master port supports 300 user defined commands, each one containing its own set of data link and application layer characteristics
- Master port logically supports up to 40 slave devices
- Individual command configuration includes conditional or continuous polling and Poll Delay Time
- Slave status and Command status available for transfer to the processor
- Event data received from the slave devices updates the module database (Date and Time stamping is not stored or used by module)
- Special command handling for Digital Output CROB under processor control for pulse output control

DNP 3.0 ports (PRT1 & PRT2)

- Memory usage is user definable
- Support for the storage and transfer of all DNP data types across the backplane
- Communication parameters
  - Address: 0 to 65534 (slave mode)
  - Baud rate: 110 to 115K
  - Parity: none, data bits: 8, Stop bit: 1
  - RTS on delay: 0 to 65535 milliseconds
  - RTS off delay: 0 to 65535 milliseconds

MVI56-DNPSNET

The MVI56 DNP 3.0 Server over Ethernet Communication Module supports the implementation of the DNP 3.0 (Distributed Network Protocol) over Ethernet, allowing ControlLogix processors to easily communicate with host systems supporting the protocol. The module supports DNP Subset Level 2 features and some Level 3 features.

Features and Benefits

The MVI56-DNPSNET (Distributed Network Protocol Module over Ethernet) allows Rockwell Automation ControlLogix processors to easily communicate with other DNP protocol-compatible devices.

The module supports DNP subset level 2 features and some Level 3 features. The MVI56-DNPSNET module acts as an input/output module between the DNP Ethernet network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the DNP network. Databases are defined in the module to house the data required by the protocol.

Applications

With the growing usage of the DNP protocol over Ethernet technology in the industrial marketplace, this product has a wide variety of application uses. Industries that use this technology include:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- SCADA and DCS applications

Functional Specifications

The MVI56-DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. This data is passed between the module and the ControlLogix processor over the backplane for use in user applications.

- DNP databases to house data for the slave port supporting the following maximum point counts
  - Binary input: 8000 points (500 words)
  - Binary output: 2000 points (500 words)
  - Counter: 250 (500 words)
  - Analog input: 500
  - Analog output: 500
- Module memory usage that is definable up to maximum point counts
- Data movement between module using and ControlLogix processor using input/output image
- Ethernet port supports both TCP and UDP over Ethernet
- Supports DNP 3.0 in a level 2 implementation
- Supports sending of input event data from the ladder to the module
- Supports time synchronization from/to processor
- Configurable via text file
- Status and error information
- All data in the DNP slave is contained in user-defined files

The Ethernet Global Data (EGD) module can be used to interface many different protocols with EGD devices. The EGD driver supports both the producer/consumer service port (18246) and the command service port (7937) using the UDP protocol over an IP network. The user defines the data to be produced and consumed in a configuration file downloaded to the module.

Features and Benefits

Ethernet Global Data (EGD) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. High reliability means fewer communication failures and having the ability to detect failures upon occurrence. Particular emphasis is delivered for applications requiring periodic or frequent updates and time synchronization of devices. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the network can produce these types of messages and each device determines which of these messages to consume.

Applications

Use the MVI56-EGD module to connect various field devices which use different networks or protocols, and share data between these devices over a wired connection. This is accomplished by exchanging shared common database information with the efficient but powerful Ethernet Global Data protocol.

Functional Specifications

The driver interfaces with a common internal database in the module. This permits the sharing of data across many different networks.

The module supports UDP of service port 7927 (0x1F01) to handle all requests made of the module. The module will only service the requests and generate response messages. It will not generate command requests. The module supports the following functions specified in the EGD protocol:

Code	Description
3	Retrieve Configuration Request
4	Retrieve Configuration Response
7	Summary Request
8	Summary Response
9	Capabilities Request
10	Capabilities Response
15	Statistics Request
16	Statistics Response
18	Command NAK
32	Read Request
33	Read Response
34	Write Request
35	Write Response
36	Masked Write Request
37	Masked Write Response

The producer functionality provided in the EGD protocol is used to transfer portions of the module's database to other EGD nodes on the network. The consumer functionality is used to transfer data from other nodes on the network into the module's database.

The EGD module generates produced data as defined in the user configuration exchange list, from the module's internal database, and is produced at the frequency defined in the exchange list. This data can be broadcast to all nodes or to a specific node on the network.

The EGD module consumes data as defined in the user configuration exchange list. This data is derived from other nodes on the network and is placed in the module's internal database. If a consumer exchange is not received at the specified timeout, the driver will update the status of the exchange. When the driver again receives the exchange, the status will be updated.

ControlLogix Interfaces

FA Control Network Communication Module

MVI56-FLN

The MVI56 FA Control Network Communication Module is a single slot solution that allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with other FL-net protocol compatible devices. The module implements FL-net version 2.00 (OPCN-2) defined by JEMA (The Japan Electrical Manufacturers Association) for the standard FA control network. FL-net is a masterless system and is specified for a 50 milliseconds cycle time for 32 nodes with addressing for up to 254 nodes.

Features and Benefits

The MVI56-FLN module acts as an input/output module between the FL-net network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the FL-net network. The module's internal database can be used to exchange 512 bytes of cyclic data and up to 4000 words of status data between the processor and the FL-net network.

Applications

The MVI56-FLN module provides highly configurable FL-net capabilities to the ControlLogix platform. FL-net (OPCN-2) is a controller-level network conforming to specification Japan Electrical Manufacturers Association JEM1479. Developed to focus on multi-vendor communications of programmable controllers, NC controllers, Robotic and other Motion Control systems.

Functional Specifications

- Message transfer:
  Server Functionality
  - Log data read service
  - Log data clear service
  - Network Parameter Read
  - Return Message
  - Profile Read
- Network Management Table: According to FL-net version 2.00 specification
- Own-node Management Table: According to FL-net version 2.00 specification
- Participating Node Management Table: According to FL-net version 2.00 specification
- Network configurable via a text file
- Status and Error information

The MVI56 Generic ASCII Ethernet Interface module is designed to allow ControlLogix processors to interface easily with ASCII devices using the TCP/IP protocol and the ControlLogix processor. Compatible devices may be either ASCII instruments with Ethernet built-in or Ethernet connection via a thin server to the existing ASCII device.

Features and Benefits

Five servers and clients are present on the module permitting both the reception and transmission of data between the ControlLogix processor and attached devices.

The MVI56-GEC module is a powerful communication interface for ControlLogix processors. Developed under license from Rockwell Automation, the module incorporates proprietary backplane technology that enables powerful data access between the module and the ControlLogix processor.

Applications

The use of the TCP/IP protocol with Ethernet at the device level on the plant floor is becoming widespread in many industry segments. Using the MVI56-GEC the advantage of Ethernet speed is realized while allowing greater distances between networked devices.

- Bar code scanner interfaces
- Weigh scale interfaces
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)

Functional Specifications

- Five Servers and five Clients to receive and/or transmit data
- 10/100 Mbps Ethernet-compatible interface
- Configurable parameters
  - Service port number
  - Connection timeout
  - Close type
- Simple ladder logic operation
- Setup and monitoring through RS-Logix 5000 software and user-constructed configuration file (GEC.CFG)
- ControlLogix backplane interface via I/O access
- Each Server monitors:
  - State
  - IP and port number of connected Client
  - Error codes
- Each Client monitors:
  - State
  - IP and port number of connected Server
  - Message related parameters
- ASCII character strings up to 2048 characters in length supported
- Memory usage is completely user-configurable, supporting the storage and transfer of up to 4000 bytes to/from the control processor
- Module error and status conditions returned to processor for diagnostic purposes
  - Module status
  - Port error status word (bit mapped)
  - Port receive state
  - Port receive character count
  - Port receive block count
  - Port transmit state
  - Port transmit character count
  - Port transmit block count
- All data related to the module is contained in a single controller tag with defined objects to ease in the configuration, monitoring, and interfacing with the module
- Module configuration and communication configuration data is transferred to the MVI56-GEC via a pre-defined user data type in the processor

ControlLogix Interfaces

GARECO Check Weigher Interface Module

MVI56-GRCM

The MVI56 GARECO Check Weigher Interface Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with GARECO Check Weigher using Remote Control Instruction. The driver supports two independent ports that provide accessibility to as many as two independent serial networks.

Features and Benefits

The MVI56-GRCM module acts as an input/output module between the Check Weighers and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the check weigher.

Applications

Applications using the GARECO Checkweigher Module can be found in many industrial sectors, including:

- Packaging machinery
- Batch and process manufacturing
- Production lines or transport lines
- Weighing and sorting goods in motion
- Monitoring/automatic controlling of filling processes

Functional Specifications

- Ports: two independent ports to receive and/or transmit data
- Receive buffer size: 255 bytes
- Receive termination: Termination character
- Receive database location: 0 to 7000
- Communication Configuration
  - Baud Rate: 300 to 115,200
  - Parity: None, Odd, Even
  - Data Bits: 5 to 8
  - Stop Bits: 1 or 2
  - RTS On and Off Timing: 0 to 65535 milliseconds
  - Minimum Response Delay: 0 to 65535 milliseconds
  - Hardware Handshaking: RTS/CTS
- Supports device types of Topline VS/VO, “S” Series, and “E” Series

The MVI56 Generic ASCII Serial Interface Module is a fast and easy way to add two fully configurable ASCII communication ports to the ControlLogix platform without consuming the front port of the processor, or using valuable processing time.

Features and Benefits

The MVI56-GSC module is a single slot, backplane compatible solution for the Rockwell Automation ControlLogix platform. This module has two powerful and fully configurable ASCII communication ports, each supporting the sending and receiving of large ASCII character strings. With the implementation of some supporting ladder logic in the processor, the many different devices supporting ASCII communications can be integrated into the ControlLogix platform.

Applications

The MVI56-GSC module is the ideal solution for the many applications where ASCII character communications must be added to the ControlLogix platform. Applications using the MVI56-GSC module can be found in many industrial sectors generally involving:

- Bar code scanner interfaces
- Weigh scale interfaces
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)

Functional Specifications

- ASCII Communication ports 1 & 2 (PRT1, PRT2)
  - Both ports are capable of transmitting and/or receiving ASCII character strings. Each port is individually configurable
- Termination types: Stream mode, Termination character(s), Message timeout, Intercharacter timeout and/or Packet size limit
- Baud rate: 110 to 115.2K baud
- Parity: none, even, odd
- Stop bits: 1 or 2
- Data bits: 5 to 8
- RTS on/off timing: 0 to 65535 milliseconds
- Minimum response delay: 0 to 65535 milliseconds
- Handshaking (optional)
  - Hardware: RTS/CTS, DTR/DSR
  - Software: XON/XOFF
- Receive ASCII character strings up to 4096 characters in length
- Full hardware handshaking control provides radio, modem and multi-drop support
- Module error and status conditions returned to processor for diagnostic purposes
  - Module status
  - Port error status word (bit mapped)
  - Port receive state
  - Port receive character count
  - Port receive block count
  - Port transmit state
  - Port transmit character count
  - Port transmit block count
- All data related to the module is contained in a single controller tag with defined objects to ease in the configuration, monitoring and interfacing with the module
- Module configuration and communication configuration data is transferred to the module via a predefined user data type in the processor

ControlLogix Interfaces

HART Multi-drop Master Communication Module

MVI56-HART

The MVI56 HART Multi-drop Master Communication Module is a ControlLogix backplane-compatible module that allows ControlLogix processors to interface easily with HART compatible devices. Devices commonly supporting the protocol include pressure, temperature, flow transmitters, as well as other similar instruments commonly found in the process (and other) industry.

HART® is a registered trademark of the HART Communication Foundation

Features and Benefits

The MVI56-HART Master Communication Module allows Rockwell Automation ControlLogix I/O compatible processors to easily communicate with HART slave devices. The MVI56-HART module interfaces up to 15 devices on each HART channel with the ControlLogix processor. Four channels on the module support master protocol commands to interface with slave devices on their own networks. Each port is individually configurable. Data is exchanged between the HART network and the ControlLogix processor using the internal database contained in the module and direct control by the controller's ladder logic and pre-defined data objects (5000 registers maximum).

The MVI56-HART module is the perfect solution for industrial applications in chemical and refining operations, gas and liquid distribution systems, and remote offshore monitoring stations, addressing virtually all aspects of control, data acquisition, and maintenance.

Applications

The HART protocol is supported by major instrument suppliers and the HART Communication Foundation (HCF).

Today, HART is the most widely used digital communications protocol for instruments in the process control industry. More than 105 manufacturers support HART with a choice of more than 170 different field instruments.

Functional Specifications

The MVI56-HART module supports the HART Multi-drop implementation of the protocol. Following are some general specifications for the module:

- Built in accordance to the HART Bell 202 Frequency Shift Keying (FSK) standard to superimpose digital signals at a low level on top of the 4 – 20mA
  - Four independent HART master ports that are completely user-configurable
  - Supports up to 15 devices per port
  - Point-to-point (slave address 0) or Multi-drop (slave address 1 to 15) modes supported
- Supports 99 universal and common practice commands per port to control and monitor devices with integer, IEEE754 floating-point and packed ASCII character string data blocks
- Burst mode can be used for faster update of data from a single slave
- Supports an auto polling feature that will automatically collect data from each HART instrument on the channel and store the data in the module database
- Communication ports can be configured as a secondary master (that is, handheld configuration device)

Protocol Supported: HART protocol uses the Bell 202 standard frequency shift-keying (FSK) digital signal to communicate at 1200 baud, superimposed at a low level on the 4 to 20mA analog measurement signal.

Supported Function Codes: HART Universal Commands Set supported are 00-03, 06-09, and 11-22. HART Common Practice Commands Set supported are 33-83 and 105–110.

HART Network Communications: Supports four master channels. Each channel on the module is configured independently to emulate a HART master. Burst mode can be used for faster update of data from a slave device.

Command polling is also user-configurable, including disabled, continuous, on change of data (write only), and dynamically user or automatic enabled.

Status: Error codes returned by the HART protocol available on an individual command basis. In addition, a slave status list is maintained per active channel.

The MVI56 Landis & Gyr Telegyr Slave Communication Module is a ControlLogix backplane compatible module that allows ControlLogix processors to interface easily with Telegyr Master host devices. SCADA systems supporting this application are commonly found in the power utility industry.

Features and Benefits

The MVI56-LNG module acts as a communication gateway between the Telegyr 8979 Rev. F version of the protocol and the ControlLogix processor. The module functions as a Telegyr slave, receiving commands from the host. Data transfer between the module and the processor is asynchronous to the Telegyr network, with the module's internal database being used to exchange data between the processor and the Telegyr network.

Applications

The MVI56-LNG module is the perfect solution for existing Landis & Gyr Telegyr 8979 Rev. F master devices requiring Rockwell Automation ControlLogix platform integration. Industries and services that benefit from this integration include:

- Power and distribution applications
- Energy Management Systems
- Water and Gas Applications
- Substation Automation

Functional Specifications

The MVI56-LNG module supports the Landis & Gyr Telegyr 8979 Rev F slave protocol to the following specifications:

- Supports two serial ports emulating the protocol, each individually configurable for:
  - Slave Address
  - Communication parameters
  - Timing
- The module supports a database common to both serial ports. The supported point types and their maximum point counts are:
  - Binary Input: 800 points
  - Binary Output: 800 points
  - Analog Input: 300 points
  - Analog Output: 50 points
  - Accumulators: 50 points
  - Indication Points: 800 points

Supported Function Codes

Code	Description
0	Analog Change Report
1	Analog Force Report
2	Analog Group Change Report
3	Analog Group Force Report
5	ADC Reference Force Report
6	Indication Change Report
7	Indication Force Report
11	Digital Input Force Report
12	Accumulator Change Report
13	Accumulator Force Report
20	Analog Report
21	SBO Select
22	SBO Operate
23	Digital Output
24	Accumulator Freeze
25	Pulse Output
26	Pulse Train Output
30	Restart RTU
31	RTU Configuration
32	Time Synchronization
34	Analog Deadbands
35	Analog Group Define
36	Accumulator Preset
37	Continuation Request
38	Repeat Last Message
39	Firmware Configuration

ControlLogix Interfaces

Limitorque Valve Master Communication Module

MVI56-LTQ

The MVI56 Limitorque Valve Actuator Master Communication Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with Limitorque Valve Actuators and other Limitorque protocol compatible devices.

Features and Benefits

The MVI56-LTQ module acts as an input/output module between the Limitorque valve network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the network. The 1500-word register space in the module transfers the valve information from the module to the processor. Ladder logic is responsible for control of the valves. Data transferred from the processor to the module instructs the module to execute commands to valves on the Limitorque network.

Applications

Industries and services that benefit from this integration include Aerospace, Chemical, Food/Beverage, Industrial Gases, Oil & Gas production, exploration, processing and refining, Mining, Pharmaceutical, Power, Pulp & Paper, Water/Wastewater.

Functional Specifications

- Support for the storage and transfer of up to 150 valves to the ControlLogix processor's controller tags
- Emulates Limitorque's Port A/B polling scheme using both ports on the module
- Supports the following valves
  - MX/DDC Modbus
  - UEC-3-DDC Modbus
  - DDC-100M I/O module
  - DDC-100M field unit
  - Valvcon IVO (unit in Multi-drop mode only)
- Software configuration
  - Baud rate: 1200-115200
  - Message response timeout
  - Number of active slaves
  - Last state on communication failure for valve data
  - Network polling scheme
  - Active slave table (bit mapped)
  - Use of CTS module line option
  - Backplane failure affect on communication port availability
- Support command
  - Continuously polled
  - Read registers 40008-40013, optional 40055 or 40006/40007
  - Commands: open, stop, close, initiate network ESD, terminate network ESD, engage contactors 1 to 6, disengage contactors 1 to 6, position valve (0-100%)
- Data returned to the processor for each valve
  - Valve position
  - Status register
  - Fault register
  - Digital outputs
  - Digital inputs registers 1 and 2
  - Communication error code
  - Communication poll counter
  - Special polled registers

The MVI56 Modbus Plus Communication Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with other Modbus Plus protocol compatible devices.

The Modbus Plus module is a powerful module designed with both Master and Slave support, enabling easy connection to other Modbus devices (Modicon processors and many others).

Features and Benefits

Compatible devices include not only Modicon PLCs (which support the Modbus Plus protocol) but also a wide assortment of end devices licensed through the Collaborative Automation Partner Program. The MVI56-MBP module acts as an input/output module between the Modbus Plus network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the Modbus Plus network. A 4000-word register space in the module exchanges data between the processor and the Modbus Plus network.

These modules allow ControlLogix processors to connect directly on Modbus Plus networks as a peer. In addition, the modules act as slaves to processors that must read/write data from the module's memory.

Crossing all industrial boundaries, potential applications include the connection of ControlLogix processors to Modicon processors, and the connection of Modbus Plus speaking devices such as drives, relays, and power monitor hardware to the ControlLogix backplane.

Applications

Applications using the Modbus Communication Module can be found in many industrial sectors and include:

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper

Functional Specifications

- Communication parameters
  - Baud: 57,600 (fixed)
  - Parity: none (fixed)
  - Stop: 1 (fixed)
- Modbus Plus ports
  - Memory usage is user definable
  - Support for the storage and transfer of up to 4,000 registers across the backplane
  - 100 word reads and writes (max. allowed)
  - Supports all five levels of Modbus Plus routing
  - Software configurable parameters
    Node address: 1-64
  - Global out size: 0-32 words
  - Global in size: 0-32 words
  - Module data transfer: 0 to 4,000 words
  - Master command count.: 0 to 100 commands
- Function codes supported: 1, 2, 3, 4, 5, 6, 15, 16

Global Data Specifications

The MBP module actively exchanges global in (32 words max. per node) and global out (32 words max.) data on the Modbus Plus network. Priority is given to these data types to provide a high speed mechanism for the transfer of control data.

Modbus Slave Mode Specifications

- Supports broadcast commands from host
- Communication error codes returned to ladder logic

Modbus Master Mode Specifications

- Command list support of up to 100 commands
- Conditional and continuous command list polling
- Each command list entry is fully configurable for function register to/from addressing and word/bit count/word and byte swap
- Event driven bit and register write commands (ladder logic controlled)
- Supports sending of broadcast commands
- Communication status error codes returned to ladder logic on a per command basis

ControlLogix Interfaces

Modbus Master/Slave Communication Module

MVI56-MCM

The MVI56 Modbus Master/Slave Communication Module allows Rockwell Automation ControlLogix processors to interface easily with other Modbus protocol compatible devices.

Compatible devices include not only Modicon PLCs (which support the Modbus protocol) but also a wide assortment of end devices. The module acts as an input/output module between the Modbus network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the Modbus network. A 5000-word register space in the module exchanges data between the processor and the Modbus network.

Features and Benefits

The MVI56 Modbus Master/Slave Communications module is designed to allow ControlLogix processors to interface easily with Modbus protocol-compatible devices and hosts.

The MVI56-MCM module acts as an input/output module between the Modbus network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the Modbus network. A 5000-word register space in the module exchanges data between the processor and the Modbus network.

Many host SCADA packages support the Modbus protocol, while devices commonly supporting the protocol include several PLCs, as well as many other third party devices in the marketplace. (For a partial list of devices that speak Modbus, please visit the ProSoft Tested section of the ProSoft Technology web site).

Applications

Applications using the Modbus Communication Module can be found in many industrial sectors and include:

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper
- SCADA communications

Functional Specifications

- Support for the storage and transfer of up to 5000 registers to/from the ControlLogix processor's data files
- Module memory usage that is completely user definable
- Two ports to emulate any combination of Modbus master or slave device
- Supports Enron version of Modbus protocol for floating point data transactions

Slave Specifications

A port configured on the MVI56-MCM module as a Modbus slave permits a remote master to interact with all data contained in the module. This data can be derived from other Modbus slave devices on the network, through a master port, or from the ControlLogix processor. The module accepts Modbus function code commands of 1, 2, 3, 4, 5, 6, 8, 15, 16, 17, 22 and 23 from an attached Modbus master unit.

Master Specifications

A port configured as a virtual Modbus master device on the MVI56-MCM module actively issues Modbus commands to other nodes on the Modbus network. One hundred (100) commands are supported on each port. Additionally, the master ports have an optimized polling characteristic that polls slaves with communication problems less frequently. The ControlLogix processor can be programmed to control the activity on the port by actively selecting commands from the command list to execute or issuing commands directly from the ladder logic.

MVI56-MCMR

The MV56 Modbus Master/Slave Communication Module with Reduced Data Block allows Rockwell Automation ControlLogix processors to interface easily with other Modbus protocol compatible devices.

Compatible devices include not only Modicon PLCs, but also a wide assortment of end devices.

This module uses a small I/O data area for data transfer between the module and the ControlLogix processor, making it ideal for ControlNet or Ethernet applications with the module in a remote rack.

Features and Benefits

The MVI56 Modbus Master/Slave Communications module with reduced data block is designed to allow ControlLogix processors to interface easily with Modbus protocol-compatible devices and hosts.

The module acts as an input/output module between the Modbus network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the Modbus network. A 5000-word register space in the module exchanges data between the processor and the Modbus network.

Many host SCADA packages support the Modbus protocol, while devices commonly supporting the protocol include several PLCs, as well as many other third party devices in the marketplace. (For a partial list of devices that speak Modbus, please visit the ProSoft Tested section of the ProSoft Technology web site).

Applications

Applications using the Modbus Communication Module can be found in many industrial sectors and include:

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper
- SCADA communications

Functional Specifications

The MVI56-MCMR transmits smaller data packets than the MVI56-MCM, which makes it ideal for remote rack or where bandwidth is limited

- 40 word data blocks (scheduled)
- Status is passed by request using the MSG instruction
- Pass-through not supported
- Special functions (command control, event commands, status, etc.) are supported by message transfer (unscheduled) using the MSG instruction

Some of the general specifications include:

- Support for the storage and transfer of up to 5000 registers to/from the ControlLogix processor's data files
- Module memory usage that is completely user definable
- Two ports to emulate any combination of Modbus master or slave device
- Supports Enron version of Modbus protocol for floating point data transactions

Slave Specifications

The MVI56-MCMR module accepts Modbus function code commands of 1, 2, 3, 4, 5, 6, 8, 15, 16, 17, 22 and 23 from an attached Modbus master unit. A port configured as a Modbus slave permits a remote master to interact with all data contained in the module. This data can be derived from other Modbus slave devices on the network, through a master port, or from the ControlLogix processor.

Master Specifications

A port configured as a virtual Modbus master device on the MVI56-MCMR module actively issues Modbus commands to other nodes on the Modbus network. One hundred (100) commands are supported on each port. Additionally, the master ports have an optimized polling characteristic that polls slaves with communication problems less frequently. The ControlLogix processor can be programmed to control the activity on the port by actively selecting commands from the command list to execute or issuing commands directly from the ladder logic.

Function codes supported: 1, 2, 3, 4, 5, 6, 15 and 16.

MVI56-MDA16

The MVI56 MDA Scientific System 16 Gas Analyzer Slave Module allows Rockwell Automation ControlLogix processors to interface easily as a host with MDA Scientific CM4 gas monitoring hardware (See MVI56-MDA4 for a CM4 solution).

Features and Benefits

The MVI56-MDA16 module acts as an input/output module between the System 16 network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the System 16 network. A 1600-word register space in the module is used to exchange data between the processor and the System 16 network.

Applications

This application is useful for any industry producing, using, or exposed to toxic or corrosive gases, where interfacing the System 16 Gas Analyzer with a ControlLogix processor is required.

Functional Specifications

- Support for the storage and transfer of up to 1600 registers to/from the ControlLogix processor's data files
- Two System 16 slave ports
- Configurable parameters include:
  - Baud Rate 110 to 115,200
  - Parity None, Odd and Even
  - Data Bits 5 to 8
  - Stop Bits 1 or 2
  - RTS On and Off Timing 0 to 65535 milliseconds
  - Use of CTS Modem Line Yes or No

Operating Specifications

The MDA-16 product includes the following standard features:

- Two fully configurable serial ports, each capable of supporting the System 16 Slave functionality
- Supports one System 16 unit per serial port, two total per module
- Memory mapping is pre-defined in the module to ease implementation in the ladder program
- RS-485 connection from each port directly to the System 16 unit
- Supported System 16 command codes:
  - Write Commands
  - 0x30 Sequential Sample Results
  - 0x50 System Configuration
  - 0x52 Point Enable Masks
  - 0x53 Current System State
  - 0x54 Point Configuration
  - 0x56 Gas Table Data
  - 0x61 Fault
  - 0x68 Fault and Alarm Reset
- Operating Mode returned to ladder processor
- Error Codes returned to the ladder processor

The MVI56 MDA Scientific CM4 Gas Analyzer Master Module allows Rockwell Automation ControlLogix processors to interface easily as a host with MDA Scientific CM4 gas monitoring hardware (See MVI56-MDA16 for a System 16 solution).

Features and Benefits

The MVI56-MDA4 module acts as an input/output module between the CM4 network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the CM4 network. A 5000-word register space in the module is used to exchange data between the processor and the CM4 network.

Applications

This application is useful for any industry producing, using, or exposed to toxic or corrosive gases, where interfacing the MDA4 Gas Analyzer with a ControlLogix processor is required.

Functional Specifications

Some of the general specifications include:

- Support for the storage and transfer of up to 5000 registers to/from the ControlLogix processor's data files
- Two CM4 master ports
- Configurable parameters include:
  - Baud Rate 110 to 115,200
  - Parity None, Odd and Even
  - Data Bits 5 to 8
  - Stop Bits 1 or 2
  - RTS On and Off Timing 0 to 65535 milliseconds
  - Use of CTS Modem Line Yes or No
  - Response Timeout 0 to 65535 milliseconds
  - Number of Slaves 1 to 10
  - Reduced Data Structure Y/N
  - Protocol Version 1 or 2
  - Polling Delay 0 to 65535 milliseconds

A port configured as a virtual CM4 master device on the MVI56-MDA4 module will actively issue CM4 commands to other nodes on the CM4 network. Four read and five write commands are supported.

The MDA-4 product includes the following standard features:

- Two fully configurable serial ports, each capable of supporting the CM4 Master functionality
- Supports up to 10 CM4 units per serial port, 10 total per module
- Support movement of binary, integer, ASCII, and floating point data types
- Memory mapping will be pre-defined in the module to ease implementation in the ladder program
- RS-485 connection from each port directly to the CM4 units
- Software configuration (from processor ladder logic)
  - Slave Addr: 0 to 31
  - Command: Select command to be executed
- Supported CM4 command codes:
  - Read Commands
  - 0x30 Get System Information
  - 0x31 Get Unit Status
  - 0x36 Get Alarm History
  - 0x37 Get Current Point Status
  - Write Commands
  - 0x51 Reset Fault or Alarm
  - 0x52 Set Key-Code
  - 0x53 Lock Keyboard
  - 0x60 End Point Lock-On
  - 0x61 Start Point Lock-On
- Operating Mode returned to ladder processor
- Error Codes returned to the ladder processor

ControlLogix Interfaces

Modbus TCP/IP Communication Module

MVI56-MNET

The MVI56 Modbus TCP/IP Communication Module is designed to allow ControlLogix processors to interface easily with other Modbus TCP/IP protocol-compatible devices.

Compatible devices include not only Modicon PLCs (which support the Modbus TCP/IP protocol) but also a wide assortment of other clients and server devices.

Features and Benefits

The MVI56-MNET module is a single slot solution that provides a powerful connection between Rockwell Automation's ControlLogix processor and Modbus TCP/IP network applications.

The Modbus TCP/IP network applications include those networks hosted by Modicon Quantum processors, networks controlled by operator interface software packages, and the growing number of manufactured devices that support this protocol. The MVI56-MNET module acts as an input/output module between the Modbus TCP/IP network and a ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the Modbus TCP/IP network. A 5000-word register space in the module exchanges data between the processor and the Modbus TCP/IP network.

- Support for the storage and transfer of up to 5000 registers to/from the ControlLogix processor using the block transfer or side-connect interface
- User-definable module memory usage
- 10/100 Mbps Ethernet compatible interface
- Configurable parameters for the client including a minimum response delay of 0 to 65535 milliseconds and floating point support

Applications

With the growing trend of Ethernet technology in the industrial marketplace, this product has a wide variety of application uses.

- Food processing
- Petrochemical
- Pulp and paper
- Automobile manufacturing
- Water and Wastewater
- Oil & Gas
- Power and Electric

Functional Specifications

General Protocol specifications

Type	Specifications
Floating Point Data	Floating point data movement supported, including configurable support for Enron implementation
Modbus Server Protocol Specifications	The server driver supports connections to Modbus TCP/IP clients supporting Service Port 502 using the standard MBAP protocol, and clients supporting Modbus on Service Port 2000.

Modbus Server Protocol Specifications

The server driver supports connections to Modbus TCP/IP clients supporting Service Port 502 using the standard MBAP protocol, and clients supporting Modbus on Service Port 2000.

General

- Supports five independent server connections for Service Port 502
- Supports five independent server connections for Service Port 2000
- All data mapping begins at Modbus register 40001

Status Data

Error codes, counters, and port status available

Modbus Function Codes

Code	Description
1:	Read Output Status
2:	Read Input Status
3:	Read Multiple Data Registers
4:	Read Input Registers
5:	Write Single Bit
6:	Write Single Data Register
15:	Write Multiple Bits
16:	Write Multiple Data Register

Modbus TCP/IP Client

The client driver supports the active reading and writing of data with Modbus TCP/IP compatible devices.

One client connection available (connect up to 100 servers/devices with 100 commands).

The MVI56 Modbus TCP/IP Client Communication Module is designed to allow ControlLogix processors to interface easily with other Modbus TCP/IP protocol-compatible devices.

Compatible devices include not only Modicon PLCs (which support the Modbus TCP/IP protocol) but also a wide assortment of other server devices.

Features and Benefits

This module was created to improve the performance when servers are not needed on a Modbus TCP/IP network. The module supports up to 30 clients with up to 16 commands for each client, making it easy to enable/disable the commands from the ladder logic. The client command control word contains one bit for each command. This module does not support the conditional write command.

Some of the other features include:

- Support for the storage and transfer of up to 5000 registers to/from the ControlLogix processor's controller tags
- Module memory usage that is completely user definable
- 10/100 Mbps Ethernet compatible interface
- Configurable parameters for the client include:
  - Minimum Command Delay
  - User Defined Commands (Read/Write)

Applications

With the growing trend of Ethernet technology in the industrial marketplace, this product has a wide variety of application uses.

- Food processing
- Petrochemical
- Pulp and paper
- Automobile manufacturing
- Water and Wastewater
- Oil & Gas
- Power and Electric

Functional Specifications

- Operation via simple ladder logic
- Complete set up and monitoring of module through software and user-constructed configuration file (MNET.CFG)
- Backplane interface via I/O access

General Protocol specifications

Type	Specifications
Floating Point Data	Floating point data movement supported, including configurable support for Enron implementation

Modbus TCP/IP Client

- The client driver supports the active reading and writing of data with Modbus TCP/IP compatible devices
- Up to 30 client connections available

ControlLogix Interfaces

Modbus TCP/IP Client Communication Module for Remote Chassis

MVI56-MNETCR

The MVI56 Modbus TCP/IP Client Communication Module with Reduced Data Block is designed to allow ControlLogix processors to interface easily with other Modbus TCP/IP protocol-compatible devices.

Compatible devices include not only Modicon PLCs (which support the Modbus TCP/IP protocol) but also a wide assortment of other server devices.

This module uses a small I/O data area for data transfer between the module and the ControlLogix processor, making it ideal for ControlNet or Ethernet applications with the module in a remote rack.

Features and Benefits

This module was created to improve the performance when servers are not needed on a Modbus TCP/IP network. The module supports up to 30 clients with up to 16 commands for each client, making it easy to enable/disable the commands from the ladder logic. The client command control word contains one bit for each command.

Some of the other features include:

- Support for the storage and transfer of up to 5000 registers to/from the ControlLogix processor's controller tags
- Module memory usage that is completely user definable
- 10/100 Mbps Ethernet compatible interface
- Configurable parameters for the client include:
  - Minimum Command Delay
  - User Defined Commands (Read/Write)

Applications

With the growing trend of Ethernet technology in the industrial marketplace, this product has a wide variety of application uses.

- Food processing
- Petrochemical
- Pulp and paper
- Automobile manufacturing
- Water and Wastewater
- Oil & Gas
- Power and Electric

Functional Specifications

The MVI56-MNETCR transmits smaller data packets than the MVI56-MNETC, which makes it ideal for remote rack or where bandwidth is limited.

- 40 word data blocks (scheduled)
- Special functions (command control, event commands, status, etc.) are supported by unscheduled instructions
- Operation via simple ladder logic
- Complete set up and monitoring of module through software and user-constructed configuration file (MNET.CFG)
- Backplane interface via I/O access

General Protocol specifications

Type	Specifications
Floating Point Data	Floating point data movement supported, including configurable support for Enron implementation

Modbus TCP/IP Client

- The client driver supports the active reading and writing of data with Modbus TCP/IP compatible devices
- Up to 30 client connections available

MVI56-MNETR

The MVI56 Modbus TCP/IP Communication Module with Reduced Data Block allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with other Modbus TCP/IP protocol compatible devices.

Compatible devices include not only Modicon processors (which support the Modbus TCP/IP protocol) but also a wide assortment of other clients and server devices.

This module uses a small I/O data area for data transfer between the module and the ControlLogix processor, making it ideal for ControlNet or Ethernet applications with the module in a remote rack.

Features and Benefits

The MVI56-MNETR module is a single slot solution that provides a powerful connection between Rockwell Automation's ControlLogix processor and Modbus TCP/IP network applications.

The Modbus TCP/IP network applications include those networks hosted by Modicon Quantum processors, networks controlled by operator interface software packages, and the growing number of manufactured devices that support this protocol. The MVI56-MNETR module acts as an input/output module between the Modbus TCP/IP network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the Modbus TCP/IP network. A 5000-word register space in the module exchanges data between the processor and the Modbus TCP/IP network.

- Support for the storage and transfer of up to 5000 registers to/from the ControlLogix processor using the block transfer or side-connect interface
- User-definable module memory usage
- 10/100 Mbps Ethernet compatible interface
- Configurable parameters for the client including a minimum response delay of 0 to 65535 milliseconds and floating point support

Applications

With the growing trend of Ethernet technology in the industrial marketplace, this product has a wide variety of application uses.

- Food processing
- Petrochemical
- Pulp and paper
- Automobile manufacturing

Functional Specifications

- Support for the storage and transfer of up to 5000 registers to/from the ControlLogix processor's controller tags
- Module memory usage that is completely user definable
- 10/100 Mbps Ethernet compatible interface
- Configurable parameters for the client include
  - Minimum Command Delay
  - Pass-Through Mode
- The ControlLogix processor can be programmed to control the activity on the client by actively selecting commands from the command list to execute or issue commands directly from the ladder logic
- The module supports 10 servers for Modbus TCP/IP (Port 502) and 10 servers for MNET (Port 2000)
- One hundred commands are supported on each port.
- A client configured as a virtual Modbus master device on the MVI56-MNETR module will actively issue Modbus TCP/IP commands to other nodes on the Modbus TCP/IP network
- The servers permit remote clients to interact with all data contained in the module. This data can be derived from other Modbus clients on the network through the client on the module or from the ControlLogix processor
- The module can be configured to pass write commands (functions 5, 6, 15 and 16) directly from the remote host to the processor
- Accepts Modbus function code commands of 1, 2, 3, 4, 5, 6, 7, 15, 16, 22 and 23 from an attached Modbus TCP/IP client

ControlLogix Interfaces

Johnson Controls Metasys Slave Interface Module

MVI56-N2

The MVI56 Johnson Controls Metasys Slave Communication Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with other Johnson Controls N2 master devices.

Features and Benefits

The MVI56-N2 module acts as an input/output module between the Johnson Controls Metasys network and the ControlLogix processor. The module acts as a slave receiving commands from a master device. The data transfer from the ControlLogix processor is asynchronous from the actions on the Johnson Controls Metasys network. An internal database in the module exchanges data between the processor and the Johnson Controls Metasys Master (NCM, N-30, NAE, NIE).

Applications

The MVI56-N2 module is ideal for Energy Management Applications.

Applications benefiting from the N2 module are prevalent in commercial building and energy management projects. Single or multiple processor applications will benefit through reduced installation costs and increased functionality.

Functional Specifications

- Support for the storage and transfer of internal database registers to/from the ControlLogix processor's controller tags
- Two ports to emulate a Johnson Controls N2 slave
- Supports the following N2 objects:
  - Binary Input: Up to 960 points
  - Analog Input: Up to 300 points
  - Binary Output: Up to 960 points
  - Analog Output: Up to 300 points
- Supported Commands/Sub-commands
  - 0/4: Poll Message No Acknowledge
  - 0/5: Poll Message with Acknowledge
  - 0/9: Status Update
  - 1/1: Read Analog Input Attributes
  - 1/2: Read Binary Input Attributes
  - 1/3: Read Analog Output Attributes
  - 1/4: Read Binary Output Attributes
  - 2/1: Write Analog Input Attributes
  - 2/2: Write Binary Input Attributes
  - 2/3: Write Analog Output Attributes
  - 2/4: Write Binary Output Attributes
  - 7/2/3: Override Analog Output
  - 7/2/4: Override Binary Output
  - F: Identify Device Type
- The following commands are recognized, and acknowledged, but are not communicated in any way to the processor, and do not return any data:
  - 0/0: Time Update
  - 0/8: Warm Start
  - All other commands return a Bad Command Error Code
- Configurable through the configuration file for the following:
  - Slave Address (assignable individually for Port 1 and 2)
  - Analog Input Object Count
  - Binary Input Object Count
  - Analog Output Object Count
  - Binary Output Object Count
- Warning and Alarming functions performed on Analog Input and Binary Input data types
- Change of State Response buffering
- Communication status error codes and statistics returned per port
- Communication parameter: Baud rate 9600 bps
- Memory mapping is pre-assigned to optimize data access and to ease implementation

A port configured as a Johnson Controls N2 slave permits a remote master to interact with data contained in the module. This data is derived from the ControlLogix processor.

The MVI56 PROFIBUS DPV1 Master Communication Module is a powerful communication interface for ControlLogix platform processors. Developed under license from Rockwell Automation, the module incorporates proprietary backplane technology that enables powerful data exchange with ControlLogix processors.

Features and Benefits

The module supports complete Master specifications according to IEC 61158. Acyclic parameter data can be transferred with Class 1 or Class 2 DPV1 services, allowing processors to easily communicate with slave devices supporting PROFIBUS DPV0/V1 protocol.

The module acts as an input/output module between the PROFIBUS network and the ControlLogix processor. Data transfer from the processor is asynchronous with the I/O data transfer on the PROFIBUS network. Databases are user-defined and stored in the module to hold the data required by the protocol.

Applications

With the growing usage of the PROFIBUS DPV1 protocol in the industrial marketplace, this product has a wide variety of application uses. Industries that use this technology include:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- SCADA and DCS applications

Functional Specifications

The MVI56 PDPMV1 PROFIBUS Master module acts as a PROFIBUS network scanner, transferring Input and Output data between PROFIBUS devices and the ControlLogix data memory over the backplane.

- Master Busview configuration interface via included ProSoft Configuration Builder software (see PSW-PCB)
- Project-unique GSD file import library
- Monitoring and Modification of process data and DPV1 acyclic data
- Multi-drop on a PROFIBUS DPV1 network drop with other compatible devices
- Ability to be used with a repeater as a PROFIBUS Master with PROFIBUS PA slaves on the network
- Automatic project documentation
- Automatic Bus Parameter calculation
- Online slave diagnostics
- Supports all standardized baud rates, up to 12 Mbps
- Supports extended diagnostic data (DPV1)
- Auto baud detection at all valid PROFIBUS DPV1 rates
- Multiple modules can be placed in a single rack
- CRC checksum determination of slave configuration consistency to processor
- Master Status LED Indicators for Operations, Network Drop Communication, Master Token-Hold

PROFIBUS Master Specifications

- Up to 125 Slaves can be connected with a repeater
- Up to 1536 cyclic bytes input and 1536 bytes output data
- Supports Extended Diagnostic Data
- RS-485 optically isolated PROFIBUS Interface with on board DC-DC converter
- Acyclic communications (DPV1), Read and Write
- Alarm Handling (DPV1)
- Supports Sync and Freeze commands
- Supports PROFIdrive 3.1 compliant parameter read and write operations
- Supports Multicast and Broadcast telegrams (DPV1)

PROFIBUS Master Port

- DB-9F Optically Isolated RS-485
- Ready, Run, Error and Token LED Indicators
- PROFIBUS DPV1 RS-485 interface with a 9-pin D shell female connector and isolated Opto-Couplers

ControlLogix Interfaces

PROFIBUS DP Slave Communication Module

MVI56-PDPS

The MVI56 PROFIBUS DP Slave Communication Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with a PROFIBUS DP Master device.

Features and Benefits

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the module and a ControlLogix processor. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

The MVI56 module Configuration/Debug Serial port connects a PC to the module for configuration, status, monitoring, and troubleshooting (serial cable is included with product shipment). After editing on a PC, a configuration file is downloaded and stored on the MVI56 module.

The PROFIBUS DP Slave gives access to the unit's input and output images with up to 244 bytes of Input and Output data, for a maximum of 400 bytes total. These Input and Output data blocks are mapped by the user within the module's data memory allowing maximum flexibility and data transfer with other protocols.

Applications

With the growing usage of the PROFIBUS DP protocol in the industrial marketplace, this product has a wide variety of application uses. Industries that use this technology include:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- SCADA and DCS applications

Functional Specifications

PROFIBUS Slave

- Communication parameters
  - Baud Rate: 9.6 kbps/12 Mbps
- Supported I/O length
  - Up to 244 bytes Input data
  - Up to 244 bytes Output data
  - Total not to exceed 400 bytes
- Freeze Mode
- Sync Mode
- Auto Baud Setting
  - Configurable Parameters
  - PROFIBUS Node Address: 0 to 125
  - Data byte swapping
  - Action on loss of PROFIBUS connection
  - Comm Fail Timeout Multiplier
  - Status Data location in Internal Database
- Status Data
  - PROFIBUS Status Data for slave
- Physical Connection
  - PROFIBUS Connector
  - Standard PROFIBUS DB-9F communication connector. Cable connection matches PROFIBUS pin out specification.

The MVI56 Phantom Network Protocol Master Communication Module allows Rockwell Automation ControlLogix I/O compatible processors to easily interface with Phantom metal detector devices.

Features and Benefits

The MVI56-PNPM module acts as a gateway between the Phantom network and the ControlLogix processor. The data transfer from the processor is asynchronous from the actions on the Phantom network. A 5000-word register space in the module is used to exchange data between the processor and the Phantom network.

Applications

Metal detection systems are commonly used to enhance product safety in packaging and production lines for food products, pharmaceuticals, pipelines, components, and in any application that requires detection of the presence (or absence) of metal particles.

Functional Specifications

A port configured as a virtual Phantom master device on the MVI56-PNPM module will actively issue Phantom commands to other nodes on the Phantom network. One hundred commands are supported on each port. Additionally, the master ports have an optimized polling characteristic that will poll slaves with communication problems less frequently. The ControlLogix processor can be programmed to control the activity on the port by actively selecting commands from the command list to execute or issuing commands directly from the ladder logic. The ControlLogix processor also has the ability to control the scanning of slaves on the port.

ControlLogix Interfaces

SM General Communication Protocol Module

MVI56-SMGC

The MVI56 SM General Communication Protocol Module allows Rockwell Automation ControlLogix I/O compatible processors to interface easily with SM General Communication Protocol devices over an Ethernet network.

Features and Benefits

The MVI56-SMGC module interfaces an Ethernet communication device using the SM General Communication Protocol with the ControlLogix processor. A single client is present in the module to interface with a single server. The client permits both the reception and transmission of data between the ControlLogix processor and attached device.

Applications

The MVI56 SM General module is typically used to interface with devices in downhole applications in the petroleum exploration and production industry.

Functional Specifications

- One client to initiate a connection to a server and to receive and/or transmit data. This client will also set the tag indexes for all data points to be monitored and controlled based upon the user configuration
- The module makes the TCP/IP Connection automatically to the remote server
- Data exchange between the ControlLogix processor and the MVI module is optimized for use on a Control Net network
- 10/100 Mbps Ethernet compatible interface
- Configurable parameters for the client include:
  - Server IP address
  - Service Port number
  - Connection timeout
  - Tag lists for each data type

The In-Chassis Wireless Communication Module creates a powerful wireless connection between devices located remotely, and the ControlLogix processor. The efficient but powerful PWP protocol allows data exchange in one-to-one or one-to-many wireless scenarios.

Features and Benefits

ProSoft Wireless Protocol (PWP) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed. Wireless bandwidth utilization is optimized by using efficient communication methods. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact that each device on the wireless network can produce these types of messages and each device determines which of these messages to consume.

Applications

The inRAx series of wireless products provides users more flexibility than ever before seen in wireless solutions. Use the MVI56-WA-PWP module to connect various field devices using different networks or protocols, and share data between these devices "over-the-air." This is accomplished by exchanging shared common database information wirelessly with ProSoft Technology's efficient but powerful wireless protocol, PWP.

Functional Specifications

Includes ProSoft Configuration Builder (PCB) configuration software (see PSW-PCB).

General Radio Specifications

Specification	Value
Frequency	2.4 GHz band (2400 to 2483.5 MHz)*
Wireless medium	DSSS - Direct Sequence Spread Spectrum (802.11b)
Output power	32 mW (15 dBm)
Channel data rates	11, 5.5, 2, 1 Mbps
Channels - user selectable	11 - North America 13 - Europe** 14 - Japan
Security	PWP + WEP 64/128 Encryption with WEP key rollover management
Antenna Ports	(2) RP-SMA connectors, automatic antenna diversity
Bit Error Rate (BER)	Better than 10^{-5}

Range / Transmit Rate	High Speed 11 Mbps	Medium Speed 5.5 Mbps	Standard Speed 2 Mbps	Low Speed 1 Mbps
Open Office Environment	160 m (525 ft.)	270 m (885 ft.)	400 m (1300 ft.)	550 m (1750 ft.)
Semi-Open Office Environment	50 m (165 ft.)	70 m (230 ft.)	90 m (300 ft.)	115 m (375 ft.)
Closed Office	25 m (80 ft.)	35 m (115 ft.)	40 m (130 ft.)	50 m (165 ft)
Receiver Sensitivity	–83 dBm	–87 dBm	–91 dBm	–94 dBm

General range guidelines (actual results may vary)

* Varies with country regulation

** Some European countries such as France allow fewer channels

ControlLogix Interfaces

In-Chassis High Speed Wireless Ethernet/IP Communication Module

MVI56-WA-EIP

The In-Chassis High Speed Wireless Ethernet/IP Communication Module creates a powerful wireless connection between your PC or Laptop and a remote ControlLogix processor. The module emulates similar 1756-ENBT Ethernet module features when used with PC (RSLinx) to processor communications.

Features and Benefits

Wireless EIP communications extend and enhance ProSoft Technology's range of wireless products. The MVI56-WA-EIP allows PC to ControlLogix processor communications using an 802.11 wireless network. The module acts as a server to RSLinx based connected services bridged between ControlLogix processor and PC running RSLinx. The module allows for multiple programs including RSLogix 5000 and RSView32 to communicate simultaneously to the processor. The 802.11 wireless networks can be set up for PC to Wireless Router (infrastructure) or PC to PC (Ad hoc) modes of communications.

Applications

The MVI56-WA-EIP module provides users with wireless ControlLogix bridge functionality. With the MVI56-WA-EIP module, you can communicate over wireless Ethernet from your PC to any ControlLogix chassis. Use the MVI56-WA-EIP module to connect PC and Laptops running RSLinx. Connect online with your processor using RSLogix 5000 or RSView32.

Functional Specifications

Includes ProSoft Configuration Builder (PCB)configuration software (see PSW-PCB)..

General Radio Specifications

Specification	Value
Frequency	2.4 GHz band (2400 to 2483.5 MHz)*
Wireless medium	DSSS - Direct Sequence Spread Spectrum (802.11b)
Output power	32 mW (15 dBm)
Channel data rates	11, 5.5, 2, 1 Mbps
Channels - user selectable	11 - North America 13 - Europe** 14 - Japan
Security	WEP 64/128 Encryption with WEP key rollover management
Antenna Ports	(2) RP-SMA connectors, automatic antenna diversity
Bit Error Rate (BER)	Better than 10^{-5}

Range / Transmit Rate	High Speed 11 Mbps	Medium Speed 5.5 Mbps	Standard Speed 2 Mbps	Low Speed 1 Mbps
Open Office Environment	160 m (525 ft.)	270 m (885 ft.)	400 m (1300 ft.)	550 m (1750 ft.)
Semi-Open Office Environment	50 m (165 ft.)	70 m (230 ft.)	90 m (300 ft.)	115 m (375 ft.)
Closed Office	25 m (80 ft.)	35 m (115 ft.)	40 m (130 ft.)	50 m (165 ft)
Receiver Sensitivity	–83 dBm	–87 dBm	–91 dBm	–94 dBm

General range guidelines (actual results may vary)

* Varies with country regulation

** Some European countries such as France allow fewer channels

PC56

The PC56 is an industrial in-rack PC for the ControlLogix platform. Driven by a powerful 500MHz AMD processor, the module serves as a powerful platform for those applications requiring or benefiting from custom development. A direct connection to the ControlLogix backplane gives the PC56 read and write connectivity to the CLX 555X processor data tables. This direct connection between the CLX data tables and the PC56's ability to support Serial, Ethernet, ControlNet and DeviceNet communications makes the PC56 an ideal solution for today's analytical and data centric applications. The PC56 is a high-performance tool capable of supporting those needing to meet today's IT and e-commerce requirements, or simply those that need a powerful processing engine to augment their ControlLogix solution.

Features and Benefits

- Supports several operating systems: Windows NT, CE, 2000, XP, DOS
- Embedded 266 MHz Pentium© CPU
- 10/100 10-BaseT Ethernet
- Direct CLX processor read/write access
- Type II Compact Flash socket with up to 1 GB storage
- Stacking PCI Expansion Bus for high-speed connection to accessory modules
- Available PCE Expansion Modules (2)
  - PCMCIA
  - 1 GB and 10 GB IDE Drives
- ControlNet, DeviceNet (Contact the Factory)

Applications

- HMI and SCADA integration
- IT Server applications – Java, CGI, HTML, PHP
- Industrial WEB Server
- eDiagnostics
- Integrated Bar code Management System
- Relational Database Management with SQL
- OEM/User C/C++ application development
- Automated Process Quality and Optimization
- Data Historical and Analysis

Functional Specifications

In addition to PC based standards, the PC56 has factory floor specific functions that a standard or industrial PC do not have:

- 3 auxiliary timers sharing a common NMI
- 512 KB of battery backed SRAM with power fail warning
- ControlLogix backplane interface
- Supports several operating systems:
  - Windows NT
  - Windows CE
  - Windows 2000
  - Windows XP
  - DOS
- Embedded AMD 500 MHz CPU
- 10/100 10-BaseT Ethernet
- Direct CLX Processor read/write data access
- Compact Flash Type I or II socket, up to 1 GB Microdevice™
- Stacking PCI expansion bus for high speed connection to accessory modules
- Available PCI expansion modules (up to 3 supported per system)
- PCMCIA
- 40G IDE Drives
- ControlNet (Contact Factory)
- DeviceNet (Contact Factory)

ControlLogix Interfaces
In-Rack PC with EZ RTE

PC56-CE-EZ

The PC56 is an industrial in-rack PC for the ControlLogix platform. Driven by a powerful 500MHz AMD processor, the module serves as a powerful platform for those applications requiring or benefiting from custom development. A direct connection to the ControlLogix backplane gives the PC56 read and write connectivity to the CLX 555X processor data tables. This direct connection between the CLX data tables and the PC56's ability to support Serial, Ethernet, ControlNet and DeviceNet communications makes the PC56 an ideal solution for today's analytical and data centric applications. The PC56 is a high-performance tool capable of supporting those needing to meet today's IT and e-commerce requirements, or simply those that need a powerful processing engine to augment their ControlLogix solution.

Features and Benefits

EZ Design Studio (sold separately) features include:

- Windows Tree-structured EZ Manager to view and edit control NT/2000/XP nodes; multiple document interface (MDI) to configure and program control applications
- User-Defined Functions
- Re-useable Program Objects
- Portable Application Code
- Task Objects and Task Management
- Use a combination of the two supported IEC 61131-3 programming languages in one control application:
  - Function Block Diagram for analog signal processing and any control process or algorithm that runs on a continuous basis
  - Structured Text for complex algorithms, string and file operations, and manipulation of data structures best done in a procedural (text based) language
- Function Library includes all defined IEC 61131-3 functions and function blocks and is augmented with many custom developed functions
- Create your own functions and function block libraries in 'C' and import them into EZ Design Studio to further enhance functionality
- Re-useable programs and configurations
  - Central database for storage and management of all program objects
  - Node Templates and Object Archive to easily duplicate and reuse all or parts of existing programs and configurations
  - Libraries simplify re-using functions and function blocks
- Place a program object in one or more tasks and have it run continuously
- On-Line Monitoring. Observe control application program operation graphically and in real-time, within the same editors used to create the control application programs
- Integrated Watch Window to watch and force variables; Control Node
- Monitor to observe node status (running, faults, statistics). Monitoring and HMI can run on the development station, the monitor station, or locally at the embedded node
- Online Help Tutorials and sample applications are provided to assist System you in quickly learning to use EZ Design Studio

Applications

The PC56 CE EZ Application Development Module is a highly flexible product that delivers communication protocols. The module functionality is fully customizable. The PC56 CE EZ is the ideal solution for applications requiring custom 'C' programming.

Development Tools	
EZ Manager	EZ Manager provides a project-level view of your applications. You can look at and monitor any PC56-CE-EZ applications on the network. You can also add and delete PC56-CE-EZ applications.
EZ Design Studio	EZ Design Studio lets you develop 'C' applications that run on the PC56 in the Logix rack.
Libraries	Contain 'C' application libraries, function and function block algorithms.
Interfaces	Allow the 'C' applications to communicate with external devices.
Run Time Engine	Runs your 'C' application on the PC56-CE-EZ.
Watch Window	Watch Window lets you monitor, set, and force interface tags on the PC56-CE-EZ. It runs within EZ Design Studio.

The PC56-HIST is an industrial PC for the ControlLogix platform that provides high speed, time series, data storage and retrieval with both local and remote ControlLogix processors. The PC56-Historian allows customers to perform data collection in an efficient, distributed, and cost-effective fashion. In addition, the PC56-HIST is the ideal solution for those customers who want to implement an electronic data storage solution while maintaining compliance with FDA Regulation 21 CFR Part 11.

Features and Benefits

- No software development required
- Communicates with the ControlLogix processor directly through the ControlBus backplane, which simplifies installation and improves performance
- No modifications to the ControlLogix processor program are necessary
- Supports multiple ControlLogix processors
- Supports both local (same rack as PC56-HIST) and remote (via 1756-ENET or 1756-CNET modules) processors
- Includes configuration tools for online or offline configuration. Tag scan rates can be individually configured for optimal performance

Applications

The PC56 Data Historian allows you to archive data from the ControlLogix processor to an archive engine (ECHO) located on the PC56-HIST. Multiple ControlLogix processors may be accessed, either in the local rack or in remote racks connected via Ethernet or ControlNet.

Functional Specifications

The PC56 Historian consists of:

- PC56 Industrial PC for the ControlLogix platform
- Historian Configurator
- Historian Scheduler/Server
- Embedded Component Historian Object (ECHO)

Included with System:

- Windows XP Professional
- 10GB IDE Hard Drive

General Specifications

High-speed real-time data collection:

- Communicates directly with the ControlLogix processor across the backplane for the fastest data collection speeds available

An ideal solution for electronic documentation:

- Provides an audit trail and data flags for tracking modified, inserted, or incomplete data. Provides key features to meet the strict 21 CFR Part 11 Standard for FDA-regulated industries

Locally stored data:

- Locally stored data reduces the risk of data loss due to interrupted network communications

Remote access:

- Local or remote database access using interfaces such as OPC, OLE DB, ADO and ECHO API

Plug and Play:

- Can be added to new or existing ControlLogix PLCs without changing the control application

Built-in operational intelligence:

- Provides for predictive maintenance, machine optimization, remote diagnostics, and other value-added services
- Ability to read tags from networked processors
- No network connection required for local processors
- Multiple tag count ECHO licenses available

Historian

The PC56-HIST uses licensed software technology from OSIsoft to deliver an integrated data historian. The PC56-HIST can log up to 500 tags of real-time data at sub-second speed accessible using OSIsoft's PI product. Additionally, 5 tags of data can be accessed via an OPC HDA server. This historical data is ideal for sequence-of-event recording, process optimization and compliance reporting (FDA, EPA, etc.).

Historian Configurator

This application provides a Graphical User Interface (GUI) to map tags defined in a local or remote processor to a data historian file. The Configurator defines the data type, scan rate, and throw-away limit for a particular data stream. Use the Configurator to create new data files and define the "Fill-up Strategy" for the file.

Historian Scheduler/Server

The Historian Scheduler/Server reads a configuration file and performs real-time scanning of the ControlLogix controller tags, then sends the tag values to the mapped ECHO data streams.

Embedded Component Historian Object (ECHO)

The Embedded Historian object provides actual data storage functionality. The ECHO database has several open interfaces:

- OPC
- OLE DB
- ADO
- ECHO API

PC56-OPC

The PC56 with OPC Server allows you to access data from a ControlLogix processor directly across the backplane, and connect to an OPC Client.

The PC56-OPC is an industrial PC for the ControlLogix platform that provides high speed communication with both local and remote ControlLogix processors. The PC56-OPC allows users to communicate with ControlLogix processors in an efficient, distributed, and cost-effective fashion.

Features and Benefits

- Improved reliability and performance: No middleware between client software and ControlLogix hardware
- Easy Hardware Redundancy using two PC56-OPC, and then specifying two IP addresses for a very fast switching mechanism to support Redundancy
- Communicates with the ControlLogix processor directly through the ControlBus backplane, which simplifies installation and improves performance
- No modifications to the ControlLogix controller program are necessary
- Supports multiple ControlLogix processors
- Supports both local (same rack as PC56-OPC) and remote (via 1756-ENET or 1756-CNET modules) processors
- Includes configuration tools. Tag scan rates can be individually configured for optimal performance

Applications

The PC56-OPC allows you to access data from the ControlLogix processor and transfer it to an OPC Server located on the PC56-OPC. Multiple ControlLogix processors may be accessed, either in the local rack or in remote racks connected via Ethernet or ControlNet.

Functional Specifications

The PC56-OPC consists of:

- PC56 Industrial PC for the ControlLogix platform
- SMC (Management Console) for easy configuration
- OPC Server
- Windows XP Professional
- 4 GB Compact Flash Drive

PC56-SLS

The PC56 with SLS-DAServer (Data Access Server) allows you to access data from a ControlLogix processor directly across the backplane, and then communicate via SuiteLink, DDE, or FastDDE to local or remote Application Objects.

The PC56-SLS is an industrial PC for the ControlLogix platform that provides high speed communication with both local and remote ControlLogix processors. The PC56-SLS allows users to communicate with ControlLogix processors in an efficient, distributed, and cost-effective fashion. The PC56-SLS includes a graphical interface called Archestra SMC (Management Console) for easy configuration and diagnostic support.

Features and Benefits

- Improved reliability and performance: No middleware between client software and ControlLogix hardware
- Ability to run Application Objects: Application Objects can be run locally on the PC56-SLS providing highly reliable applications, because the application is right in the rack with the ControlLogix processor
- Easy Hardware Redundancy using two PC56-SLS, and then specifying two IP addresses for a very fast switching mechanism to support Redundancy
- Communicates with the ControlLogix processor directly through the ControlBus backplane, which simplifies installation and improves performance
- No modifications to the ControlLogix processor program are necessary
- Supports multiple ControlLogix ControlLogix processor
- Supports both local (same rack as PC56-SLS) and remote (via 1756-ENET or 1756-CNET modules) processors
- Includes configuration tools. Tag scan rates can be individually configured for optimal performance

Applications

The PC56 SLS allows you to access data from the ControlLogix processor and transfer it to a DAS Engine located on the PC56-SLS. Multiple ControlLogix processor may be accessed, either in the local rack or in remote racks connected via Ethernet or ControlNet.

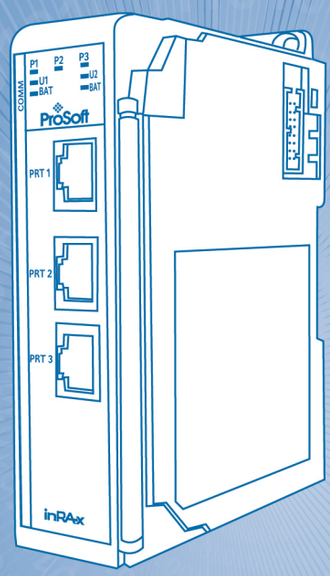
Functional Specifications

The PC56 SLS consists of:

- PC56 Industrial PC for the ControlLogix platform
- SMC (Management Console) for easy configuration
- SuiteLink, DDE, and FastDDE
- Windows XP Professional
- 4 GB Compact Flash Drive

CompactLogix Interfaces

Specification	Description
Dimensions	Standard 1769 Single-slot module
Current Load	800 mA max@ 5 VDC Power supply distance rating of 2
Operating Temp.	0 to 60°C (32 to 140°F)
Storage Temp.	40 to 85°C (40 to 185°F)
Relative Humidity	5 to 95% (non-condensing)
LED Indicators	Battery and Module Status Application Status CFG Port Activity Serial Port Activity Ethernet Port Activity Backplane Activity
CFG Port (CFG)	RJ45 (DB-9F with supplied cable) RS-232 only No hardware handshaking
App Ports (P1,P2) (Serial modules)	RJ45 (DB-9F with supplied cable) RS-232 handshaking configurable 500V Optical isolation from backplane
App Port (Ethernet modules)	10/100 Mbps Ethernet compatible interface
Shipped with Unit	RJ45 to DB-9M cables for each port 6-foot RS-232 configuration Cable



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CompactLogix Interfaces

The MVI69 IEC 60870-5-101 Master Communication Module allows Rockwell Automation CompactLogix I/O compatible processors to interface easily with IEC 60870-5-101 master (controlled unit) devices.

Features and Benefits

The MVI69-101M module interfaces up to 32 serial communication devices with the CompactLogix processor. Two communication ports on the module act as controlling devices (masters) to interface with controlled devices on their own networks. Each port is individually configurable and can be set for balanced or unbalanced mode. Data is exchanged between the serial network and the CompactLogix processor using the internal database contained in the module and direct control by the controller's ladder logic.

Applications

The MVI69-101M module is the ideal solution for many applications where IEC protocol connectivity must be added to a CompactLogix system. The IEC solution is designed to address the expanding interest in the IEC protocol and the use of IEC compatible devices in industrial applications such as those in the water/wastewater, power, and oil & gas industries.

Compatible devices include relays, breakers, substation communication modules and other serial communication devices.

Functional Specifications

- Built in accordance to the approved international specification
- Two independent master ports completely user configurable
- Support for balanced and unbalanced mode
- Up to 32 sessions
- Up to five sectors (separate databases) for each session
- Individual database definition for each sector
- 1000 commands to control stations
- Processor can issue control commands directly to the module or a controlled device (10 at each scan)
- Pass-through of event messages from controlled device to processor for logging of time-tagged events
- Operation via simple ladder logic
- Supports clock synchronization from/to the ControlLogix
- Receives events from the slave and sends them to the processor
- Supports monitored data:
  - Single-point
  - Double-point
  - Step-point
  - Measured-point
  - Bitstring 32-bit
  - Integrated total point
- Class 1 and Class 2 delay parameter in the configuration file
- Complete set up and monitoring of module through RSLogix 5000 software and user constructed configuration file (IEC101M.CFG)
- All data related to the module is contained in user data files to ease monitoring and interfacing with the module

CompactLogix Interfaces

IEC 60870-5-101 Slave Communication Module

MVI69-101S

The MVI69 IEC 60870-5-101 Slave Communication Module allows Rockwell Automation CompactLogix I/O compatible processors to interface easily with IEC 60870-5-101 protocol compatible hosts. The module's two powerful and highly configurable ports allow the many SCADA host systems supporting the IEC protocol to be integrated into the CompactLogix platform.

Features and Benefits

The MVI69-101S module is the fastest and easiest way to add IEC 60870-5-101 protocol interface support to the CompactLogix platform. It is a single slot, backplane compatible solution for the CompactLogix platform. This module has two powerful and highly configurable IEC 60870-5-101 Slave ports, allowing the many SCADA and field devices supporting the IEC protocol to be integrated into the CompactLogix platform.

The MVI69-101S module acts as an input/output module between the IEC 60870-5-101 telecontrol network and the CompactLogix backplane. The data transfer from the CompactLogix processor is asynchronous from the actions on the network. A 5000-word register space in the module exchanges data between the processor and the telecontrol network.

Applications

The MVI69-101S module is designed to address the application where a host systems using the IEC 60870-5-101 protocol must communicate with a CompactLogix processor. As such, the IEC Slave module can be used as a gateway in many SCADA installations in industries such as:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- Oil & gas production

Functional Specifications

The MVI69-101S module accepts commands from an attached master unit. A port configured as a virtual slave permits a remote master to interact with all data contained in the module. This data can be derived from the CompactLogix processor. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs. The module can operate in balanced or unbalanced mode.

- Supports time stamp events
- Supports time and data synchronization from a master or the processor
- Supports monitored data
- Event queue supports 100 points for each data type
- Supports Master Class 1 and Class 2 polls with configurable parameters
- Acknowledgement transmission is handled internally by the module
- Configurable data link address (session) and common ASDU address (sector)
- Configurable pulse duration

The MVI69 IEC 60870-5-103 Master Communication Module allows Rockwell Automation CompactLogix I/O compatible processors to interface easily with IEC 60870-5-103 slave (controlled unit) protection devices. Devices commonly supporting the protocol include relays, breakers, substation communication modules and other serial communication devices used in power monitoring.

Features and Benefits

The MVI69-103M supports up to 32 total field devices between the module's two IEC 60870-5-103 Master ports. The module's communication ports can each be independently configured, allowing two separate field networks to be implemented. The field device data is exchanged between the MVI module and the CompactLogix processor over the backplane.

The MVI69-103M module is a powerful communication interface for CompactLogix platform processors. Developed under license from Rockwell Automation, the module incorporates proprietary backplane technology that enables powerful data access to the CompactLogix processor.

Applications

The MVI69-103M module is the ideal solution for many applications where IEC protocol connectivity must be added to a CompactLogix system. The IEC solution is designed to address the expanding interest in the IEC protocol and the use of IEC compatible devices in industrial applications such as those in the water/wastewater, power and oil & gas industries.

Compatible devices include relays, breakers, substation communication modules and other serial communication devices.

Functional Specifications

The MVI69-103M module supports the IEC 60870-5-103 protocol to the following specifications:

- The IEC 60870-5-103 communication driver is built in accordance to the approved IEC specification
- Module memory usage is completely user definable
- The module has two independent master ports, each configurable via a simple configuration file
- Supports up to 32 sessions (controlled devices) between the two ports
- Supports up to five sectors (separate databases) for each session, with individual database definition for each sector
- Total of 1000 user configurable commands to control data transfer to/from devices (controlled devices)
- Supports clock synchronization from/to the processor
- Event data received from the Control Devices updates the module database (Date and Time stamping is not stored or used by module)
- Class 1 and Class 2 delay parameters are configurable for each session
- An IEC Interoperability Document for the module is available from the web site, which fully documents data types supported by the module

CompactLogix Interfaces

IEC 60870-5-104 Server Communication Module

MVI69-104S

The MVI69 IEC 60870-5-104 Server Communication Module allows Rockwell Automation CompactLogix backplane I/O compatible processors to interface easily with IEC 60870-5-104 protocol-compatible hosts.

Features and Benefits

The MVI69-104S module acts as an input/output module between the IEC 60870-5-104 processor, Ethernet network and the CompactLogix backplane. Data transfer between the module and the processor is asynchronous from the actions on the network. Databases are defined by the user for the module to hold data as required by the protocol.

The MVI69-104S module is a powerful communication interface for CompactLogix platform processors. Developed under license from Rockwell Automation, the module incorporates proprietary backplane technology that enables powerful data access to the CompactLogix processor.

Applications

The MVI69-104S module is designed to address the application where a device using the IEC 60870-5-104 protocol must communicate with a CompactLogix processor. As such, the IEC Server module can be used as a gateway in many SCADA installations in industries such as:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- Oil & gas production
- SCADA and DCS applications

Functional Specifications

- Protocol implementation conforms to the IEC 60870-5-104 specification and parameters are fully configurable by the user
- The module accepts commands from an attached master unit (client) on the network and generates unsolicited messages. These sets of messages are either spontaneous or cyclic. This data can be derived from the processor. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs
- Supports clock synchronization (set in ladder) from the module to the processor, or from the processor to the module
- Supports group interrogation
- Processes information in control direction and monitored direction
- Configurable monitored and command data located in the module database
- Supports timestamp events

The MVI69-3964R module from ProSoft Technology allows point-to-point communication between a CompactLogix controller and a partner with 3964R (with or without RK512) communication capability.

Features and Benefits

The 3964R protocol was designed by Siemens for bi-directional data communication through a point-to-point connection. It is a master-slave protocol with read and write access. A BCC checksum ensures the integrity of the transfer.

Applications

The module is ideal in control configurations where there is a need for the CompactLogix controller to exchange data with other non-Rockwell Automation control devices in low speed applications.

The MVI69-3964R can communicate with devices using two RS-232, RS-422 communication lines (ports). The ports operate independently from each other.

Functional Specifications

- Single-slot, CompactLogix backplane compatible
- Multiple modules can be placed in a rack up to the chassis power supply limit
- While in 3964R with RK512 mode on PRT1 and PRT2, DB-SEND and DB-FETCH instructions can be initiated from the CompactLogix processor or received by the communications partner
- While in 3964R without RK512 mode on PRT1 and PRT2, data can be sent from the CompactLogix processor or be received from the communications partner
- The maximum transfer size is 512 bytes in any mode
- Data byte swapping can be configured to adjust to a different word format
- While in 3964R with RK512 mode on PRT1 and PRT2, evaluation of the header information DB (data block), DW (data word) and coordination bytes 9 and 10 is possible
  - Communication activity and diagnostics are available through LEDs and acknowledgment telegrams

Ladder Logic

Ladder logic programming in the CompactLogix processor is required in order to enable and support the Siemens 3964R protocol functionality. The ladder program handles the encoding/decoding of data transferred from the module as well as the initiation of protocol-specific functionality in the module. Example ladder programs are provided with the module to ease the implementation of the module in the user application.

CompactLogix Interfaces

'C' Programmable Application Development Module

MVI69-ADM

The MVI69 Application Development Module is a CompactLogix backplane compatible module that allows user-developed 'C' applications to operate on the CompactLogix platform. A great way to speed up custom ASCII data communications or to protect a proprietary algorithm, the ADM is a powerful tool for the CompactLogix platform.

Features and Benefits

Powerful platform for developing and running 'C' applications on Rockwell Automation's CompactLogix processors. The MVI69 Application Development Module is a single slot, backplane compatible solution for the CompactLogix platform. This module is a powerful and programmable solution supporting two fully isolated serial ports allowing the many serial field devices to be integrated into the CompactLogix platform.

The MVI69-ADM module has three serial ports, two of which are isolated for field interfaces:

- CFG – Debug/configuration RS-232
- PRT1 – Application RS-232, RS-422 or RS-485
- PRT2 – Application RS-232, RS-422 or RS-485

PRT1 and PRT2 are jumper configured for direct or multi-drop field communication. The application program can be written to control the two application ports independently, allowing maximum flexibility in the design.

Applications

The MVI69-ADM module is the ideal solution for many applications where serial connectivity must be added to a CompactLogix platform. Applications using the MVI69-ADM module include:

- Bar code scanner interface
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)
- Customized protocol implementations

Functional Specifications

Development Environment

- Operating system: General software DOS 6-XL
- Compatible compiler (16-bit DOS target)
  - Digital Mars C++ V8.49 (included)
  - Borland C++ V5.02

Application Programming Interfaces (API)

- Serial Port API: serial port functions
- Backplane API: low level backplane functions
- ADM API debug port functions: debug port functions, database functions, timer functions, high level backplane transfer functions, LED functions, flash read functions

The MVI69 'C' Programmable Application Development Module with Ethernet is a CompactLogix backplane compatible module that allows Rockwell Automation CompactLogix processors to interface with other Ethernet protocol compatible devices and hosts utilizing custom 'C' code.

Features and Benefits

The ADMNET module is a powerful solution that supports both Client and Server applications. This broad support enables the module to function as a data collection client, or as a server to be another host. Applications for the module are found in most industries, especially Manufacturing, Oil & Gas, Electrical Power and Food processing.

The MVI69-ADMNET module is a single slot, backplane compatible solution for the CompactLogix platform. This module is a powerful and programmable solution supporting one fully isolated serial port, one non-isolated serial port, and one Ethernet port, allowing the many field devices to be integrated into the CompactLogix platform.

Applications

The MVI69-ADMNET module is the ideal solution for many applications where Ethernet and serial connectivity must be added to a CompactLogix platform. Applications using the MVI69-ADMNET module include:

- Bar Code Scanner interface
- Legacy ASCII protocol connections
- Terminal Port Emulation
- Printer Driver (Alarm/Status printer)
- Customized protocol implementations

Functional Specifications

The MVI69-ADM API Suite allows software developers access to the top layer of the CompactLogix backplane and serial ports. The MVI69-ADMNET API suite accesses the Ethernet port.

Both APIs can be easily used without having detailed knowledge of the module's hardware design. The MVI69-ADMNET API Suite consists of the Ethernet Port API. The Ethernet Port API provides access to the Ethernet network. Applications for the MVI69-ADMNET module may be developed using industry-standard DOS programming tools

PRT1 is jumper configured for direct or Multi-drop field communication. The application program can be written to control the two application ports independently, allowing maximum flexibility in the design.

General Protocol Specifications

- Allows software developers to access Rockwell Automation backplane and Serial/Ethernet ports without needing detailed knowledge of the module's hardware design
- API library functions are specified using the C programming language syntax
- The following compiler versions are compatible with the MVI module API:
  - Digital Mars C++ 8.49 (included)
  - Borland C++ V5.02
- Operating System - General software DOS 6-XL
- Flash ROM program space: 896 KB
- RAM program and data space: 640 KB
- Compact Flash socket: Up to 64 MB

ADM/ADMNET API Libraries

Each API provides a library of function calls. This library supports any programming language that is compatible with the Pascal calling convention.

- Initialization - Open and close the API
- Debug Port - Debug port user interface
- Database - Read and write data to database
- Timer - Start and check timers
- Backplane - Transfer data over the backplane
- LED - Set user LED indicators
- Flash - Parse configuration files
- Miscellaneous - Configure the console

MVI69-AFC

The MVI69 Liquid & Gas Flow Computer Module is a CompactLogix backplane compatible module that allows CompactLogix processors to easily support flow applications with 8 meter runs performing measurement of hydrocarbon gases or liquids using AGA 3, 7, 8 and API 2540 measurement standards.

Features and Benefits

The MVI69-AFC is an in-rack Liquid & Gas Flow Computer Module for the CompactLogix platform. The MVI69-AFC Flow computer module supports 8 meter channels for the measurement of hydrocarbon gases and liquids using currently accepted industry measurement standards.

The module calculates flow rates, accumulated volumes, accumulated mass and accumulated energy (heating value). The calculation results are transferred back to the processor memory for use in the application ladder program or for transfer back to a SCADA host.

The MVI69-AFC Flow Computer package contains built-in support for system configuration, monitoring, documenting, and overall management such as:

- System configuration via a user-friendly MS Windows-based AFC Manager (see PSW-AFC)
- Ability to manage multiple site installations as separate projects saved on a PC
- Option to access archives online and print/save to a spreadsheet compatible file
- Option to generate, print, and save configuration and on-line management reports
- Ability to monitor the meter runs on-line
- Password protection for preventing unauthorized configuration changes

Applications

The MVI69-AFC module is the ideal solution for the many applications where hydrocarbon flow and SCADA communication must be added to the CompactLogix platform. Applications using the MVI69-AFC module can be found mainly in the oil & gas industrial sectors.

Functional Specifications

The AFC module operates as a powerful flow computer module, augmenting the operation of the CompactLogix processor by providing a dedicated and accurate set of flow calculations, the results of which are easily available to process monitoring and control applications developed in the CompactLogix.

The module is highly-configurable, allowing each of the 8 meter runs to be individually setup to meet the specific requirements of an application.

Configurable options

- Gas analysis concentrations for any of all 21 components
- Physical data for all meter runs including orifice and pipe diameters, selection of type of taps and tap location
- Reference pressure, temperature and local atmospheric conditions
- Default process and operating parameters like DP threshold for flow cutoff
- Metric or imperial units
- User selectable units for totalizers and flow rates on a per channel basis
- Resettable and/or non-resettable totalizers for every meter channel
- Process I/O: analog inputs (pressure, temperature, diff pressure) from analog modules and pulse inputs from pulse/frequency input modules in CompactLogix I/O rack
- Number of meter channels: 8 differential (AGA3) or linear (AGA7) Gas; MPMS 12.2 (Liquid)
  - Calculation methods
  - AGA3-1992
  - AGA 7
  - AGA8-1992 (detailed characterization method)
  - API MPMS Ch12.2 API 2540
  - Meter scan time under 1 second for all 16 channels
- Product measurement: hydrocarbon gases and liquids
- Data archiving
  - Hourly for 2 days for each meter run (48 records per channel)
  - Daily for 35 days (optional extended archives up to 1260 hourly and 350 daily)
- Each record consists of nearly 20 process and other variables. All archived data is available in the onboard Modbus memory map (archive size and contents are fully-configurable)

Reports

- Event log report for all security sensitive configuration data (for example, orifice diameter) are date and time stamped and mapped to the local Modbus memory map. This data can be imported into any spreadsheet program and saved to disk or printed as hard copy
- Hourly and daily archive reports mapped to local Modbus memory. This data can be imported into any spreadsheet program and saved to disk or printed as hard copy
- System configuration which can be downloaded or uploaded from the module, can also be printed for hard reference or archiving

Modbus interface

- The two Modbus slave ports allow the unit to be used as a SCADA interface and to broaden access to the AFC module's data table
- Either port may be configured for RTU or ASCII Modbus mode
- Both Modbus slave ports provide access to all configuration and measurement data mapped to the Modbus table
- Modbus table may be re-mapped for user assigned contiguous register polling from a SCADA master (up to 20,000 registers)

The MVI69 DF1 Master/Slave Communication Module is a CompactLogix backplane compatible module that allows Rockwell Automation CompactLogix I/O compatible processors to interface easily with DF1 protocol compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs and power monitoring equipment, as well as several other third party devices in the marketplace.

Features and Benefits

The MVI69 DF1 Master/Slave Communications module (MVI69-DFCM) allows CompactLogix processors to interface easily with DF1 protocol-compatible devices and hosts. Many host SCADA packages support the DF1 protocol, while devices commonly supporting the protocol include Rockwell Automation PLCs, power monitoring equipment, as well as several other third-party devices in the marketplace.

The module has two serial ports supporting the DF1 protocol, with each port user-configurable to act as a master or as a slave. Data transfer between the module and the CompactLogix processor is asynchronous to the DF1 network, with the module's internal database being used to exchange data between the processor and the DF1 network.

Applications

The MVI69-DFCM module is the ideal solution for many applications where DF1 protocol connectivity must be added to a CompactLogix platform. The MVI69-DFCM module can be found in many industrial sectors and in the following applications:

- Foreign device data concentrator
- SCADA System Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper

Functional Specifications

Debug/Configuration port

- Communication parameters:
  - 115,200, no parity, 1 stop (fixed)
- Configuration of module
- Communication and backplane transfer stats
- Protocol data monitor
- Internal database viewer

DF1 ports

- Full and half duplex modes supported:
  - Full-duplex: point to point
  - Half-duplex: master-slave polling by master, peer to peer (slave to slave), report by exception (slave to master)
- CRC and BCC error checking
- Full hardware handshaking control provides radio, modem and multi-drop support
- Memory usage is completely user configurable, supporting the storage and transfer of up to 4000 registers to/from the control processor
- 125 word read and write command lengths supported
- Floating point data movement supported
- Software configurable communication parameters:
  - Local station ID: 0 to 254
  - Mode: full or half duplex
- Baud rate: 110 to 115,200 baud
- Parity: none, odd or even
- Data bits: 5, 6, 7, or 8
- Stop bits: 1 or 2
- RTS on/off delay: 0 to 65535 milliseconds
- Supported DF1 commands:
  - Basic command set
  - Protected read and write
  - Unprotected read and write
  - Protected and unprotected bit write
  - PLC 5 command set
  - Word range read and write
  - PLC command set
  - Protected typed logical read and write
  - Two and three address supported

DF1 Master Protocol Specifications

The ports on the DF1 module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices, enabling the CompactLogix platform to act as a SCADA sub-master.

- The DF1 Master functionality supported by the module includes:
  - DF1 Master Driver
- DF1 Modes:
  - Full-Duplex Master (Module generates commands), Multi-drop addressing
  - Half-Duplex Polling, Slave to Slave Routing
- Command List:
  - Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
- Status Data:
  - Error codes available on an individual command basis. In addition, a slave status list is maintained per active master port.
- Polling of Command List:
  - User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The module accepts DF1 commands from an attached DF1 master unit. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers. This data can be derived from other DF1 slave devices on the network through a master port or from the processor and is easily transferred to the processor's data registers.

Tested Hardware Connections

Several hardware connections have been tested by ProSoft or have been customer field tested. To our knowledge, the following physical connections have been successful:

- Rockwell Automation Panel view (Full Duplex point-point, DFCM as slave)
- Rockwell Automation Processors (Full/Half duplex, DFCM as either master or slave)
- RA Power Monitors (485 Half-Duplex, DFCM as Master)

CompactLogix Interfaces

EtherNet/IP Client/Server Communication Module

MVI69-DFNT

The MVI69 EtherNet/IP (DF1 for Ethernet) Client/Server Communication Module is a CompactLogix backplane compatible module that allows CompactLogix processors to interface easily with EtherNet/IP protocol (Explicit Messaging) compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs, and host HMI systems.

Features and Benefits

The MVI69-DFNT module is a single slot solution that provides a powerful connection between Rockwell Automation's CompactLogix processor and EtherNet/IP (DF1 for Ethernet) network applications.

The module can send read or write commands to remote devices on the EtherNet/IP network. The MVI69-DFNT also has 20 servers that allows the module to receive commands from remote devices. The MVI69-DFNT Pass-Through server allows the user to edit and transfer the CompactLogix ladder logic using an Ethernet connection. Up to 100 commands can be configured by the user.

Applications

With the growing trend of EtherNet/IP technology in the industrial marketplace, this product has a wide variety of application uses. Industries that use this technology include:

- Food Processing
- Petrochemical
- Pulp and Paper
- Automobile Manufacturing

Functional Specifications

- CompactLogix processor in-chassis EtherNet/IP bridge to optimize data throughput while communicating with MMI or SCADA and other control platforms without losing valuable process control bandwidth
- Support of up to 4000 CompactLogix registers user data files
- User-definable module memory usage
- 10/100 Mbps Ethernet compatible interface
- Functions as a server or a client
- Configurable parameters for the client include:
  - A minimum response delay of 0 to 65535 milliseconds
  - A response timeout of 1 to 65535 milliseconds
  - A retry count of 0 to 20
- Status data available in ladder logic

Server Specifications

- Supports EtherNet/IP explicit, connected, and unconnected class messaging
- Twenty independent server connections permit remote clients to interact with all data contained in the module
- Data can be derived from other clients on the network, through the client on the module, or from the CompactLogix processor

Client Specifications

- Actively issues connected, explicit messages to other nodes on the network
- Supports 100 user-defined commands from a single client
- Allows command control from ladder logic
- Pass-through services
- Permits remote programming of the CompactLogix processor on the Ethernet network via a pass-through TCP/IP service and a serial communication port (pass-through port) on the module connected to the serial port of the processor
- The third port on the module can emulate the Channel 0 port on the CompactLogix. This allows a DF1 master device attached to the emulated (Channel 0) port to monitor and control data in the CompactLogix

The MVI69 DH-485 Communication Module allows Rockwell Automation CompactLogix I/O compatible processors to interface easily with other DH-485 protocol compatible devices. Compatible devices include not only Rockwell Automation PLCs (which support the DH-485 protocol) but also a wide assortment of end devices.

Features and Benefits

The MVI69-DH485 module actively issues DH-485 commands to other nodes on the DH-485 network. One hundred user-defined commands are supported by the module on each port. The CompactLogix processor can be programmed to control the activity on the port by actively enabling or disabling each command directly from the ladder logic.

The module also accepts DH-485 commands from an attached DH-485 master unit (for example, CompactLogix processor ladder logic MSG instruction). The module permits a remote master to interact with all data contained in the module. This data can be derived from other DH-485 slave devices on the network through a master port or from the CompactLogix processor.

Applications

The MVI69-DH485 module can be used in any application where DH-485 network connectivity is required with the CompactLogix platform. Compatible devices on a DH-485 network include:

- SLC 5/03
- SLC 5/05 (RS-232 Channel)
- 1746BAS
- MVI69-BAS

Functional Specifications

The MVI69-DH485 module acts as an input/output module between the DH-485 network and the CompactLogix processor. The data transfer from the processor is asynchronous from the actions on the DH-485 network. A 4000-word register space in the module exchanges data between the processor and the DH-485 network.

- The module has a Common Interface File (CIF) with 244 words that can be accessed by remote DH-485 nodes
- Read and write commands can be sent associated to the following file types: status, bit, timer, counter, control, integer, float, and CIF
- User-definable module memory usage
- Two ports emulate the DH-485 devices (peer-to-peer) with distinct node addresses
- All configuration information contained in a single, user-defined text file
- CompactLogix backplane interface
- All module-related data is contained in an internal database
- Ability to add or remove nodes without disruption of the network
- Baud rates: 9600 or 19200 baud

CompactLogix Interfaces

DNP 3.0 Master/Slave Communication Module

MVI69-DNP

The MVI69 DNP 3.0 module is a single slot, backplane compatible DNP 3.0 interface solution for the Rockwell Automation CompactLogix platform. This module provides highly configurable support of both DNP 3.0 Master and Slave implementations (level 2 minimum), allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the powerful CompactLogix platform.

Features and Benefits

The MVI69 DNP module supports DNP Subset Level 2 features and some of the Level 3 features allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the CompactLogix platform. The module acts as an input/output module between the DNP network and the CompactLogix processor. The data transfer from the processor is asynchronous from the actions on the DNP network. Databases are user defined and stored in the module to hold the data required by the protocol.

Applications

The MVI69-DNP module is an ideal solution where DNP 3.0 Master/Slave protocol connectivity must be added to the CompactLogix platform.

The DNP solution addresses the expanding interest in the DNP 3.0 protocol. The protocol was originally developed for the power utility industry and is recommended by the IEEE for RTU-IED communication applications. Additional applications include Water/Wastewater and Oil & Gas industries.

Functional Specifications

The MVI69-DNP module supports the DNP 3.0 protocol with a minimum of Level 2 functionality. DNP protocol Subset Definitions for the Master and the Slave drivers are available in the module's User Manual.

The module has two DNP protocol ports that can be user configured to operate in a Master/Slave or in a Slave/Slave redundant port configuration.

User defined internal register space is accessible to the protocol driver and to the CompactLogix processor memory.

Redundant Slave Port Operation

When configured in the Slave/Slave port configuration, the module's slave ports operate in a primary and secondary fashion. In this mode, a single host polls the module via redundant physical layer connections. Several methods are supported to automatically switch between the primary and secondary slave ports.

DNP 3.0 Slave Protocol Specifications

The DNP Slave port(s) accepts DNP commands to control and monitor data stored in the module's DNP Slave databases. If a DNP Master port is also configured, a portion of these slave databases can be derived from or can control IED devices connected to the DNP master port.

- Report-by-Exception data is logged to the module's database
- Supports unsolicited messaging
- Each DNP point type is user configurable by point
- Total point counts must be configured so that Class 0 responses do not exceed 2048 bytes in size
- Class assignments are completely user-definable on a Type and point basis (BI, AI, FI, DI point types)
- The analog inputs are class and deadband configurable on a point basis for all formats (integer, float, double float)
- Supports clock synchronization from a master or from the processor
- Support for four octet-strings are supported (object type 110) in the slave driver to return version and other module information
- Up to 400 events are stored for Floats, Binary In, Analog In and Double Inputs
- In addition to the module generated events, AI and BI events can be generated in the processor and transferred to the module (useful with external timestamping hardware)
- Configurable event buffer transmission threshold based on count and/or time since last event transmission
- Collision avoidance algorithm per DNP organization for redundant port switching (redundant slave mode)
- Special modem AT command string and timing support for dialing out on redundant port (redundant slave mode)

DNP 3.0 Master Protocol Specifications

The DNP 3.0 Master port can be configured as a virtual DNP Master device that actively issues user-defined DNP commands to nodes on the network.

- The Master port supports 300 user defined commands, each one containing its own set of data link and application layer characteristics
- Master port logically supports up to 40 slave devices
- Individual command configuration includes conditional or continuous polling and Poll Delay Time
- Slave status and Command status available for transfer to the processor
- Event data received from the slave devices updates the module database (Date and Time stamping is not stored or used by module)
- Special command handling for Digital Output CROB under processor control for pulse output control
- Supports Report-by-Exception and Unsolicited Responses on a Time Interval basis or on a user determined Event Count basis. Analog and Binary input points are supported.

Debug/Configuration port (CFG)

- Communication parameters:
  - Baud: 57600 (fixed)
  - Parity: none (fixed)
  - Stop: 1 (fixed)
- Configuration of module
- Communication and backplane transfer stats
- Protocol data monitor
- Internal database viewer

DNP 3.0 ports (PRT1 & PRT2)

- Memory usage is user definable
- Full radio, modem and multi-drop support
- Support for the storage and transfer of all DNP data types across the backplane
- Communication parameters:
  - Address: 0 to 65534 (slave mode)
  - Baud rate: 110 to 115K
  - Parity: none, data bits: 8, Stop bit: 1
  - RTS on delay: 0 to 65535 milliseconds
  - RTS off delay: 0 to 65535 milliseconds

The MVI69 DNP 3.0 Server over Ethernet Communications Module supports the implementation of the DNP 3.0 (Distributed Network Protocol) over Ethernet, allowing CompactLogix processors to easily communicate with host systems supporting the protocol. The module supports DNP Subset Level 2 features and some Level 3 features.

Features and Benefits

The MVI69-DNPSNET (Distributed Network Protocol Module over Ethernet) allows Rockwell Automation CompactLogix processors to easily communicate with other DNP protocol-compatible devices.

The module supports DNP subset level 2 features and some Level 3 features. The MVI69-DNPSNET module acts as an input/output module between the DNP Ethernet network and the CompactLogix processor. The data transfer from the processor is asynchronous from the actions on the DNP network. Databases are defined in the module to house the data required by the protocol.

Applications

With the growing usage of the DNP protocol over Ethernet technology in the industrial marketplace, this product has a wide variety of application uses. Industries that use this technology include:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- SCADA and DCS applications

Functional Specifications

The MVI69-DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. This data is passed between the module and the CompactLogix processor over the backplane for use in user applications.

- DNP databases to house data for the slave port supporting the following maximum point counts:
  - Binary input: 8000 points (500 words)
  - Binary output: 8000 points (500 words)
  - Counter: 250 (500 words)
  - Analog input: 500
  - Analog output: 500
- Module memory usage that is definable up to maximum point counts
- Data movement between module using Input/Output image
- Ethernet port supporting both TCP and UDP over Ethernet
- Supports DNP 3.0 in a level 2 implementation
- Supports sending of input event data from the ladder to the module
- Supports time synchronization from/to processor
- Configurable via text file
- Status and error information
- All data in the DNP slave is contained in user-defined files

MVI69-EGD

The Ethernet Global Data (EGD) module can be used to interface many different protocols with EGD devices. The EGD driver supports both the producer/consumer service port (18246) and the command service port (7937) using the UDP protocol over an IP network. The user defines the data to be produced and consumed in a configuration file downloaded to the module.

Features and Benefits

Ethernet Global Data (EGD) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. High reliability means fewer communication failures and having the ability to detect failures upon occurrence. Particular emphasis is delivered for applications requiring periodic or frequent updates and time synchronization of devices. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the network can produce these types of messages and each device determines which of these messages to consume.

Applications

Use the MVI69-EGD module to connect various field devices using different networks or protocols, and share data between these devices over a wired connection. This is accomplished by exchanging shared common database information with the efficient but powerful Ethernet Global Data protocol.

Functional Specifications

The driver interfaces with a common internal database in the module. This permits the sharing of data across many different networks.

The module supports UDP of service port 7927 (0x1F01) to handle all requests made of the module. The module will only service the requests and generate response messages. It will not generate command requests. The module supports the following functions specified in the EGD protocol:

Code	Description
3	Retrieve Configuration Request
4	Retrieve Configuration Response
7	Summary Request
8	Summary Response
9	Capabilities Request
10	Capabilities Response
15	Statistics Request
16	Statistics Response
18	Command NAK
32	Read Request
33	Read Response
34	Write Request
35	Write Response
36	Masked Write Request
37	Masked Write Response

The producer functionality provided in the EGD protocol is used to transfer portions of the module's database to other EGD nodes on the network. The consumer functionality is used to transfer data from other nodes on the network into the module's database.

The EGD module generates produced data as defined in the user configuration exchange list, from the module's internal database, and is produced at the frequency defined in the exchange list. This data can be broadcast to all nodes or to a specific node on the network.

The EGD module consumes data as defined in the user configuration exchange list. This data is derived from other nodes on the network and is placed in the module's internal database. If a consumer exchange is not received at the specified timeout, the driver will update the status of the exchange. When the driver again receives the exchange, the status will be updated.

The MVI69-FLN FA Control Network Communication Module is a single slot solution that allows Rockwell Automation CompactLogix I/O compatible processors to easily interface with other FL-net protocol compatible devices. The module implements FL-net version 2.00 (OPCN-2) defined by JEMA (The Japan Electrical Manufacturers Association) for the standard FA control network. FL-net is a masterless system.

The MVI69-FLN module acts as a gateway between the FL-net network and the CompactLogix processor. The data transfer from the processor is asynchronous from the actions on the FL-net network. The module's internal database can be used to exchange Area 1 and Area 2 cyclic, network, and module status data between the processor and the FL-net network.

Features and Benefits

The MVI69-FLN module accepts commands to control and monitor the data stored in the databases. This data is passed between the module and the CompactLogix processor over the backplane for use in user applications.

General features include:

- Master-less token control method
- FA link protocol on Ethernet UDP/IP
- Cyclic data transfer: Supports virtual memory Area 1 and Area 2. The cyclic data is mapped to the modules I/O area. It allows the transfer of a total of 8704 words of data (Area 1 and Area 2) between the CompactLogix processor and the FL-net network

Applications

The MVI69-FLN module provides highly configurable FL-net capabilities to the CompactLogix platform. FL-net (OPCN-2) is a controller-level network conforming to specification Japan Electrical Manufacturers Association JEM1479. Developed to focus on multi-vendor communications of programmable controllers, NC controllers, Robotic and other Motion Control systems.

Functional Specifications

- Message transfer:
  Server Functionality
  - Log data read service
  - Log data clear service
  - Network Parameter Read
  - Return Message
  - Profile Read
- Network Management Table: According to FL-net version 2.00 specification
- Own-node Management Table: According to FL-net version 2.00 specification
- Participating Node Management Table: According to FL-net version 2.00 specification
- Network configurable via a text file
- Status and Error information

CompactLogix Interfaces

Generic ASCII Ethernet Interface Module

MVI69-GEC

The MVI69 Generic ASCII Ethernet Interface module is designed to allow CompactLogix I/O compatible processors to interface easily with ASCII devices using the TCP/IP protocol and the CompactLogix I/O compatible processor. Compatible devices may be either ASCII instruments with Ethernet built-in or Ethernet connection via a thin server to the existing ASCII device.

Features and Benefits

Five servers and clients are present on the module permitting both the reception and transmission of data between the Rockwell Automation processor and attached devices.

The MVI69-GEC module is a powerful communication interface for CompactLogix or MicroLogix platform processors. Developed under license from Rockwell Automation, the module incorporates proprietary backplane technology that enables powerful data access between the module and the CompactLogix or MicroLogix processor.

Applications

The use of the TCP/IP protocol with Ethernet at the device level on the plant floor is becoming widespread in many industry segments. Using the MVI69-GEC, the advantage of Ethernet speed is realized while allowing greater distances between networked devices.

- Bar code scanners
- Weigh scale interfaces
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)

Functional Specifications

- Five Servers and Clients to receive and/or transmit data
- 10/100 Mbps Ethernet-compatible interface
- Configurable parameters:
  - Service port number
  - Connection timeout
  - Close type
- Simple ladder logic operation
- Setup and monitoring through RS-Logix 5000 (CompactLogix) or RS-Logix 500 (MicroLogix) software and user-constructed configuration file (GEC.CFG)
- CompactLogix backplane interface via I/O access
- Each Server monitors:
  - State
  - IP and port number of connected Client
  - Error codes
- Each Client monitors:
  - State
  - IP and port number of connected Server
  - Message related parameters
- ASCII character strings up to 2048 characters in length supported
- Full hardware handshaking control, providing radio, modem, and multi-drop support
- Memory usage is completely user-configurable, supporting the storage and transfer of up to 4000 bytes to/from the control processor
- Module error and status conditions returned to processor for diagnostic purposes:
  - Module status
  - Port error status word (bit mapped)
  - Port receive state
  - Port receive character count
  - Port receive block count
  - Port transmit state
  - Port transmit character count
  - Port transmit block count
- All data related to the module is contained in a single controller tag with defined objects to ease in the configuration, monitoring, and interfacing with the module
- Module configuration and communication configuration data is transferred to the MVI69-GEC via a pre-defined user data type in the processor

The ProSoft Technology MVI69 Generic ASCII Serial module is a fast and easy way to add two fully configurable ASCII communication ports to the CompactLogix platform without consuming the front port of the processor.

Features and Benefits

The MVI69-GSC module is a single slot, backplane compatible solution for the Rockwell Automation CompactLogix platform. This module has two powerful and fully configurable ASCII communication ports, each supporting the sending and receiving of large ASCII character strings. With the implementation of some supporting ladder logic in the processor, the many different devices supporting ASCII communications can be integrated into the CompactLogix platform.

Applications

The MVI69-GSC module is the ideal solution for the many applications where ASCII character communications must be added to the CompactLogix platform. Applications using the MVI69-GSC module can be found in many industrial sectors generally involving:

- Bar code scanner interfaces
- Weigh scale interfaces
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)

Functional Specifications

- ASCII Communication ports 1 & 2 (PRT1, PRT2)
  - Both ports are capable of transmitting and/or receiving ASCII character strings
- Each port is individually configurable:
- Termination types:
  - Stream mode
  - Termination character(s)
  - Message timeout
  - Intercharacter timeout
  - Packet size limit
- Baud rate: 110 to 115.2K baud
- Parity: none, even, odd
- Stop bits: 1 or 2
- Data bits: 5 to 8
- RTS on/off timing: 0 to 65535 milliseconds
- Minimum response delay: 0 to 65535 milliseconds
- Handshaking (optional):
  - Hardware: RTS/CTS, DTR/DSR
  - Software: XON/XOFF
- ASCII character strings up to 4096 characters in length supported
- Full hardware handshaking control provides radio, modem and multi-drop support
- Memory usage is completely user configurable supporting the storage and transfer of up to 4000 registers to/from the control processor
- Module error and status conditions returned to processor for diagnostic purposes:
  - Module status
  - Port error status word (bit mapped)
  - Port receive state
  - Port receive character count
  - Port receive block count
  - Port transmit state
  - Port transmit character count
  - Port transmit block count
- All data related to the module is contained in a single controller tag with defined objects to ease in the configuration, monitoring and interfacing with the module
- Module configuration and communication configuration data is transferred to the module via a predefined user data type in the processor

CompactLogix Interfaces

HART Multi-drop Master Communication Module

MVI69-HART

The MVI69 HART Multi-drop Master Communication Module is a CompactLogix backplane-compatible module that allows CompactLogix processors to interface easily with HART compatible devices. Devices commonly supporting the protocol include pressure, temperature, flow transmitters, as well as other similar instruments commonly found in the process (and other) industry.

HART® is a registered trademark of the HART Communication Foundation.

Features and Benefits

The MVI69-HART Master Communication Module allows CompactLogix I/O compatible processors to easily communicate with HART slave devices. The MVI69-HART module interfaces up to 15 devices on each HART channel with the Rockwell Automation CompactLogix processor. Four channels on the module support master protocol commands to interface with slave devices on their own networks. Each port is individually configurable. Data is exchanged between the HART network and the CompactLogix processor using the internal database contained in the module and direct control by the controller's ladder logic and pre-defined data objects (5000 registers maximum).

The MVI69-HART module is the perfect solution for industrial applications in chemical and refining operations, gas and liquid distribution systems, and remote offshore monitoring stations addressing virtually all aspects of control, data acquisition, and maintenance.

Applications

The HART protocol is supported by major instrument suppliers and the HART Communication Foundation (HCF).

Today, HART is the most widely used digital communications protocol for instruments in the process control industry. More than 105 manufacturers support HART with a choice of more than 170 different field instruments.

Functional Specifications

The MVI69-HART module supports the HART Multi-drop implementation of the protocol. Following are some general specifications for the module:

- Built in accordance to the HART Bell 202 Frequency Shift Keying (FSK) standard to superimpose digital signals at a low level on top of the 4 to 20mA
  - Four independent HART master ports that are completely user-configurable
  - Supports up to 15 devices per port
  - Point-to-point (slave address 0) or Multi-drop (slave address 1 to 15) modes supported
- Supports 99 universal and common practice commands per port to control and monitor devices with integer, IEEE754 floating-point and packed ASCII character string data blocks
- Burst mode can be used for faster update of data from a single slave
- Supports an auto polling feature that will automatically collect data from each HART instrument on the channel and store the data in the module database
- Communication ports can be configured as a secondary master (that is, handheld configuration device)

Protocol Supported: HART protocol uses the Bell 202 standard frequency shift-keying (FSK) digital signal to communicate at 1200 baud, superimposed at a low level on the 4 to 20mA analog measurement signal.

Supported Function Codes: HART Universal Commands Set supported are 00 to 03, 06 to 09, and 11 to 22. HART Common Practice Commands Set supported are 33 to 83 and 105 to 110.

HART Network Communications: Supports four master channels. Each channel on the module is configured independently to emulate a HART master. Burst mode can be used for faster update of data from a slave device.

Command polling is also user-configurable, including disabled, continuous, on change of data (write only), and dynamically user or automatic enabled.

Status: Error codes returned by the HART protocol available on an individual command basis. In addition, a slave status list is maintained per active channel.

The ProSoft Technology MVI69 Modbus Plus Dual Port module is the fastest and easiest way to add Modbus Plus interface capability to the CompactLogix I/O compatible processors, allowing these platforms to interface easily with other Modbus Plus networks and/or compatible devices.

These modules allow CompactLogix platforms to connect directly on Modbus Plus networks as a peer. In addition, the modules act as slaves to processors that must read/write data from the module's memory.

Features and Benefits

Compatible devices include not only Modicon PLCs but also a wide assortment of end devices licensed through the Collaborative Automation Partner Program. The MVI69-MBP module acts as an input/output module between the Modbus Plus network and the CompactLogix processor. The data transfer from the processor is asynchronous from the actions on the Modbus Plus network. A 4000-word register space in the module exchanges data between the processor and the Modbus Plus network.

This module allows CompactLogix platforms to connect directly on Modbus Plus networks as a peer. In addition, the module acts as a slave to processors that must read/write data from the module's memory.

Crossing all industrial boundaries, potential applications include the connection of CompactLogix processors to Modicon processors, and the connection of Modbus Plus speaking devices such as drives, relays, and power monitor hardware to the CompactLogix backplane.

Applications

Applications using the Modbus Plus Communication Module can be found in many industrial sectors and inncluge:

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper

Functional Specifications

- Communication parameters:
  - Baud: 57,600 (fixed)
  - Parity: none (fixed)
  - Stop: 1 (fixed)
- Modbus Plus ports:
  - Memory usage is user definable
  - Support for the storage and transfer of up to 4,000 registers across the backplane
  - 100 word reads and writes (max. allowed)
  - Supports all five levels of Modbus Plus routing
  - Software configurable parameters Node address: 1-64
  - Global out size: 0-32 words
  - Global in size: 0-32 words
  - Module data transfer: 0 to 4,000 words
  - Master command count.: 0 to 100 commands
- Function codes supported: 1, 2, 3, 4, 5, 6, 15, 16 (Slave), 3 and 16 (Type 1 and 2) as a Master

Global Data Specifications

The MBP module actively exchanges global in (32 words max. per node) and global out (32 words max.) data on the Modbus Plus network. Priority is given to these data types to provide a high speed mechanism for the transfer of control data.

Modbus Slave Mode Specifications

- Supports broadcast commands from host
- Communication error codes returned to ladder logic

Modbus Master Mode Specifications

- Command list support of up to 100 commands
- Conditional and continuous command list polling
- Each command list entry is fully configurable for function register to/from addressing and word/bit count/word and byte swap
- Event driven bit and register write commands (ladder logic controlled)
- Supports sending of broadcast commands
- Communication status error codes returned to ladder logic on a per command basis

CompactLogix Interfaces

Modbus Master/Slave Communication Module

MVI69-MCM

The MV69 Modbus Communication Module allows Rockwell Automation CompactLogix processors to interface easily with other Modbus protocol compatible devices.

Compatible devices include not only Modicon PLCs (which all support the Modbus protocol) but also a wide assortment of end devices. The module acts as an input/output module between the Modbus network and the CompactLogix processor. The data transfer from the processor is asynchronous from the actions on the Modbus network. A 5000-word register space in the module exchanges data between the processor and the Modbus network.

Features and Benefits

The MVI69 Modbus Master/Slave Communications module (MVI69-MCM) is designed to allow CompactLogix processors to interface easily with Modbus protocol-compatible devices and hosts.

Many host SCADA packages support the Modbus protocol, while devices commonly supporting the protocol include several PLCs, as well as many other third party devices in the marketplace. (For a partial list of devices that speak Modbus, please visit the ProSoft Tested section of the ProSoft web site).

Applications

Applications using the Modbus Communication Module can be found in many industrial sectors and include:

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper
- SCADA communications
- Supports Enron version of Modbus protocol for floating point data transactions.

Functional Specifications

Type	Specifications
Communication parameters (configurable)	Port 1: Baud Rate: 110 to 38.4K baud Port 2,3: Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 5 to 8 bits Parity: None, Odd, Even RTS Timing delays: 0 to 65535 milliseconds
Modbus Modes	RTU Mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point Data	Floating point data movement supported, including configurable support for Enron implementation

Modbus Slave Protocol Specifications

The ports on the MVI69-MCM module can be individually configured to support the slave mode of the Modbus protocol. When in slave mode, the module can accept Modbus commands from a master to read/write data stored in the module's internal registers. This data is easily transferred to the CompactLogix processor's data registers.

Modbus Slave Driver	
Node Address	1 to 247 software selectable
Status Data	Error codes, counters, and port status available per configured slave port starting at memory register 4400
Modbus Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register

Modbus Master Protocol Specifications

The ports on the MVI69-MCM module can be individually configured as Master ports. When configured in master mode, the MCM module is capable of reading and writing data to remote Modbus devices, enabling the CompactLogix platform to act as a SCADA sub-master, or a device data concentrator.

Modbus Master Driver	
Command List	Up to 100 commands per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Status Data	Error codes available on an individual command basis. In addition, a slave status list is maintained per active Modbus master port
Polling of Command List	Configurable polling of command list, including continuous and on change of data
Modbus Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register

The MVI69 Modbus TCP/IP Communication Module is designed to allow CompactLogix processors to interface easily with other Modbus TCP/IP protocol-compatible devices.

Compatible devices include not only Modicon PLCs (which support the Modbus TCP/IP protocol) but also a wide assortment of other clients and server devices.

Features and Benefits

The MVI69-MNET module is a single slot solution that provides a powerful connection between Rockwell Automation's CompactLogix processor and Modbus TCP/IP network applications.

The TCP/IP Modbus network applications include those networks hosted by Modicon Quantum processors, networks controlled by operator interface software packages, and the growing number of manufactured devices that support this protocol. The module acts as an input/output module between the Modbus TCP/IP network and the CompactLogix processor. The data transfer from the processor is asynchronous from the actions on the Modbus TCP/IP network. A 5000-word register space in the module exchanges data between the processor and the Modbus TCP/IP network.

- Support for the storage and transfer of up to 5000 registers to/from the PLC processor using the block transfer or side-connect interface
- User-definable module memory usage
- 10/100 Mbps Ethernet compatible interface
- Configurable parameters for the client including a minimum response delay of 0 to 65535 milliseconds and floating point support

Applications

With the growing trend of Ethernet technology in the industrial marketplace, this product has a wide variety of application uses.

- Food processing
- Petrochemical
- Pulp and paper
- Automobile manufacturing

Functional Specifications

General Protocol Specifications

Type	Specifications
Communication parameters (configurable)	Port 1: Baud Rate: 110 to 57.6K baud
Floating Point Data	Floating point data movement supported, including configurable support for Enron implementation
Modbus Server Protocol Specifications	The server driver supports connections to Modbus TCP/IP clients supporting Service Port 502 using the standard MBAP protocol, and clients supporting Modbus on Service Port 2000.

General

- Supports five independent server connections for Service Port 502
- Supports five independent server connections for Service Port 2000
- All data mapping begins at Modbus register 40001

Status Data

- Error codes, counters, and port status available

Modbus Function Codes

Code	Description
1:	Read Output Status
2:	Read Input Status
3:	Read Multiple Data Registers
4:	Read Input Registers
5:	Write Single Bit
6:	Write Single Data Register
15:	Write Multiple Bits
16:	Write Multiple Data Register

Modbus TCP/IP Client

- The client driver supports the active reading and writing of data with Modbus TCP/IP compatible devices
- One client connection available (connect up to 100 servers/devices with 100 commands)

CompactLogix Interfaces

Modbus TCP/IP Client Communication Module

MVI69-MNETC

The MVI69 Modbus TCP/IP Client Communication Module is designed to allow CompactLogix I/O compatible processors to interface easily with other Modbus TCP/IP protocol-compatible devices.

Compatible devices include not only Modicon processors (which support the Modbus TCP/IP protocol) but also a wide assortment of other server devices.

Features and Benefits

This module was created to improve the performance when obtaining data from multiple servers on a Modbus TCP/IP network. The module supports up to 30 client connections with up to 16 commands for each client, making it easy to enable/disable the commands from the ladder logic. The client command control word contains one bit for each command. This module does not support the conditional write command.

Some of the other features include:

- Support for the storage and transfer of up to 5000 registers to/from the CompactLogix processor's controller tags
- Module memory usage that is completely user definable
- 10/100 Mbps Ethernet compatible interface
- Configurable parameters for the client include:
  - Minimum Command Delay
  - User Defined Commands (Read/Write)

Applications

With the growing trend of Ethernet technology in the industrial marketplace, this product has a wide variety of application uses.

- Food processing
- Petrochemical
- Pulp and paper
- Automobile manufacturing
- Water and Wastewater
- Oil & Gas
- Power and Electric

Functional Specifications

- Support for up to 30 clients
- Support for the storage and transfer of up to 5000 registers to/from the processor's controller tags
- Module memory usage that is completely user definable
- 10/100 Mbps Ethernet compatible interface
- Configurable parameters for the client include:
  - Minimum Command Delay
  - User Defined Commands (Read/Write)

Client Specifications

- A client configured as a virtual Modbus master device on the MVI69-MNETC module will actively issue Modbus TCP/IP commands to other nodes on the Modbus TCP/IP network
- Sixteen commands are supported for each of the 30 clients with the module
- The processor can be programmed to control the activity on the client by actively selecting commands from the command list to execute or issue commands directly from the ladder logic

The MVI69 Johnson Controls N2 Communication Module allows Rockwell Automation CompactLogix I/O compatible processors to interface easily with other Johnson Controls N2 master devices.

Features and Benefits

The MVI69-N2 module acts as an input/output module between the Johnson Controls Metasys network and the CompactLogix backplane. The module acts as a slave receiving commands from a master device. The data transfer from the CompactLogix processor is asynchronous from the actions on the Johnson Controls Metasys network. An internal database in the module exchanges data between the processor and the Johnson Controls Metasys Master (NCM, N-30, NAE, NIE).

Applications

The MVI69-N2 module is ideal for Energy Management Applications.

Applications benefiting from the N2 module are prevalent in commercial building and energy management projects. Single or multiple processor applications will benefit through reduced installation costs and increased functionality.

Functional Specifications

- Support for the storage and transfer of internal database registers to/from the CompactLogix processor's controller tags
- Two ports to emulate a Johnson Controls N2 slave
- Supports the following N2 objects:
  - Binary Input: Up to 960 points / 60 words
  - Analog Input: Up to 300 points / 600 words
  - Binary Output: Up to 960 points / 60 words
  - Analog Output: Up to 256 points / 512 words
- Supported Commands/Sub-commands:
  - 0/4: Poll Message No Acknowledge
  - 0/5: Poll Message with Acknowledge
  - 0/9: Status Update
  - 1/1: Read Analog Input Attributes
  - 1/2: Read Binary Input Attributes
  - 1/3: Read Analog Output Attributes
  - 1/4: Read Binary Output Attributes
  - 2/1: Write Analog Input Attributes
  - 2/2: Write Binary Input Attributes
  - 2/3: Write Analog Output Attributes
  - 2/4: Write Binary Output Attributes
  - 7/2/3: Override Analog Output
  - 7/2/4: Override Binary Output
  - F: Identify Device Type
- The following commands are recognized, and acknowledged, but are not communicated in any way to the CompactLogix, and do not return any data:
  - 0/0: Time Update
  - 0/8: Warm Start
  - All other commands return a Bad Command Error Code
- Configurable through the configuration file for the following:
  - Slave Address (assignable individually for Port 1 and 2)
  - Analog Input Object Count
  - Binary Input Object Count
  - Analog Output Object Count
  - Binary Output Object Count
- Warning and Alarming functions performed on Analog Input and Binary Input data types
- Change of State Response buffering
- Communication status error codes and statistics returned per port
- Communication parameter: Baud rate 9600 bps.
- Memory mapping is pre-assigned to optimize data access and to ease implementation.

A port configured as a Johnson Controls N2 slave permits a remote master to interact with data contained in the module. This data is derived from the CompactLogix processor.

MVI69-WA-PWP

The In-Chassis High Speed Wireless Communication Module creates a powerful wireless connection between devices located remotely, and the CompactLogix processor. The efficient but powerful PWP protocol allows data exchange in one-to-one or one-to-many wireless scenarios.

Features and Benefits

ProSoft Wireless Protocol (PWP) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed. Wireless bandwidth utilization is optimized by using efficient communication methods. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the wireless network can produce these types of messages and each device determines which of these messages to consume.

Applications

The inRAx series of wireless products provides users more flexibility than ever before seen in wireless solutions. Use the MVI69-WA-PWP module to connect various field devices using different networks or protocols, and share data between these devices "over-the-air." This is accomplished by exchanging shared common database information wirelessly with ProSoft Technology's efficient but powerful wireless protocol, PWP.

Functional Specifications

Includes ProSoft Configuration Builder (PCB) configuration software (see PSW-PCB).

General Radio Specifications

Specification	Value
Frequency	2.4 GHz band (2400 to 2483.5 MHz)*
Wireless medium	DSSS - Direct Sequence Spread Spectrum (802.11b)
Output power	32 mW (15 dBm)
Channel data rates	11, 5.5, 2, 1 Mbps
Channels - user selectable	11 - North America 13 - Europe** 14 - Japan
Security	PWP + WEP 64/128 Encryption with WEP key rollover management
Antenna Ports	(2) RP-SMA connectors, automatic antenna diversity
Bit Error Rate (BER)	Better than 10^{-5}

Range / Transmit Rate	High Speed 11 Mbps	Medium Speed 5.5 Mbps	Standard Speed 2 Mbps	Low Speed 1 Mbps
Open Office Environment	160m (525 ft.)	270 m (885 ft.)	400 m (1300 ft.)	550 m (1750 ft)
Semi-Open Office Environment	50 m (165 ft.)	70 m (230 ft.)	90 m (300 ft.)	115 m (375 ft.)
Closed Office	25 m (80 ft.)	35 m (115 ft.)	40 m (130 ft.)	50 m (165 ft)
Receiver Sensitivity	–83 dBm	–87 dBm	–91 dBm	–94 dBm

General range guidelines (actual results may vary)
* Varies with country regulation
** Some European countries such as France allow fewer channels



inRAx®

FLEX I/O
Interfaces

FLEX I/O Interfaces

Specification	Description
Form Factor	Single Slot 1794 Backplane compatible Locate in any slot of Backplane
Backplane current load	20 mA @ 5 V
External power supply	12V to 24VDC 340 ma to 170 ma
Operating temperature	0 to 55°C (32 to 140°F)
Storage temperature	–40 to 85°C (–40 to 185°F)
Shock	30g operational 50g non-operational 5g from 10150 Hz
Relative humidity	5 to 95% (non-condensing)
LED indicators	Module status Backplane transfer status Application status Serial activity and error LED status
Configuration Serial port (PRT1)	Mini-DIN RS-232 Hardware handshaking
Application serial Port (PRT2)	Mini-DIN RS-232/422/485 jumper selectable 500V optical isolation from backplane
Dimensions (with Module installed in Base)	3.7H x 3.7W x 2.7D inches 94H x 94W x 69D mm

FLEX I/O Interfaces
INTERBUS Slave Adapter
3170-INTB

INTERBUS has been designed as fast sensor / actuator bus for transmitting process data in industrial environments. Due to its transmission procedure and its ring topology, INTERBUS offers excellent features like fast, cyclical and time-equidistant transmission of process data, optimal diagnostics to minimize stop periods, easy handling and installation (plug & play) as well as the optimal prerequisites for the use of optic fiber technology. The 3170-INTB module functions as an INTERBUS Slave.

Features and Benefits

The 3170-INTB INTERBUS communication adapter is a slave device to the INTERBUS Master, and a master controller of the FLEX I/O system where it is installed.

These INTERBUS systems can include INTERBUS processor hosted networks and any soft logic controller supporting INTERBUS PCP technology.

Applications

The adapter is easy to use requiring only the setting of the INTERBUS node address and the configuration of the host using standard INTERBUS configuration tools. The product includes four diagnostic status indicators easing the network trouble-shooting task. In addition, two INTERBUS network connectors are provided to support standard INTERBUS network cabling configurations.

Functional Specifications

3170-INTB/ INTB-4 FLEX I/O INTERBUS Adapter Specifications	
I/O Capacity	8 FLEX I/O modules (3170-INTB)
Input Voltage Rating	24V dc nominal
Input Voltage Range	19.2V to 31.2V dc (includes 5% ac ripple)
Communication Rate	0.5 Mbps
Indicators	STATUS LED - red/green INTERBUS BA - green INTERBUS RC - green INTERBUS ERR - red
Flexbus Output Current	640mA maximum @ 5V dc
Isolation Voltage	100% tested at 850V dc for 1s between user power and flexbus
Power Consumption	400mA maximum from external 24V dc supply
Power Dissipation	7.68W maximum @ 19.2V dc
INTERBUS-S Connectors	1 x 9-pin female D-shell 1 x 9-pin male D-shell
INTERBUS-S Drop Cable	Standard 6 wire with shield
Power Conductors	
Wire Size	12 gauge (4mm2) stranded maximum
Category	3/64 inch (1.2mm) insulation max. 21
Use this conductor category information for planning conductor routing. Refer to Rockwell Automation publication 1770-4.1, “Industrial Automation Wiring and Grounding Guidelines.”	

3170-MBS

The 3170-MBS Modbus Slave Communication Adapter can interface up to 8 Rockwell Automation FLEX and/or Integra I/O modules directly with any Modbus Master.

Features and Benefits

The 3170-MBS module is easy to use, requiring only the setting of several dip-switch options. The FLEX and Integra module data images are pre-mapped into Modbus addresses to simplify reading and writing using standard Modbus commands. Each product is shipped with a User Manual detailing its installation and operation.

Applications

The 3170-MBS module provides Slave capabilities to the Rockwell Automation FLEX and/or Integra platform. The product is used to place FELX and/or Integra I/O modules on a Modbus network to be controlled by a Modbus Master device.

Functional Specifications

- The 3170-MBS has read/write access to all FLEX and Integra modules. This allows a Host system to perform all functions necessary to get all I/O modules functioning. All register data values can be accessed using Function Codes 3, 4, 6 and 16. Bit level Function Codes 1, 2, and 5 are also supported
- Multi-drop on an RS-485 link with other Modbus compatible devices
- Interface analog and/or discrete I/O directly to a host Modbus Master

FLEX I/O Interfaces

PROFIBUS Communications Adapter

3170-PDP

The 3170-PDP PROFIBUS-DP Communication Adapter is a slave device that allows Rockwell Automation FLEX and/or Integra I/O modules to interface directly with a PROFIBUS-DP Master/Scanner.

Features and Benefits

The 3170-PDP module is easy to use, requiring only the setting of the node address and the connection of 24VDC power. The FLEX and Integra module data images are configured using standard PROFIBUS configuration tools. The 3170-PDP's GSD file, available in the download section on ProSoft's website (http://www.prosoft-technology.com/support), defines the available I/O modules and their data images for PROFIBUS configuration.

Features and Benefits

The 3170-PDP module is ideal for applications where FLEX or Integra I/O is to be used with a PROFIBUS master PLC. The module allows for a PROFIBUS master, PLC, SCADA, or HMI to control the outputs and read input data from FLEX I/O modules.

Functional Specifications

- I/O Capacity: 8 I/O modules (FLEX and/or Integra)
- RS-485 Communication port: 3 screw termination
- Status LEDs:
  - Power / Control Status
  - Serial TX, RX and ERROR Status

The MVI94 Application Development Module is a FLEX backplane compatible module that allows user-developed 'C' applications to operate on the FLEX platform. A great way to speed up custom ASCII data communications or to protect a proprietary algorithm, the ADM is a powerful tool for the FLEX platform.

Features and Benefits

Powerful platform for developing and running 'C' applications on Rockwell Automation's FLEX I/O processors. The MVI94-ADM module is a single slot, backplane compatible solution for the Rockwell Automation FLEX platforms. This module is a powerful and programmable solution supporting two fully isolated serial ports allowing serial field devices to be integrated into the FLEX platforms.

The MVI94-ADM module has two serial ports, both of which are isolated for field interfaces:

- PRT1 Application/Debug/Config RS-232
- PRT2 Application RS-232, RS-422 or RS-485

PRT2 is jumper configured for direct or multi-drop field communication. The application program can be written to control the two application ports independently, allowing maximum flexibility in the design.

Applications

The MVI94-ADM module is the ideal solution for many applications where serial connectivity must be added to a FLEX platform. Applications using the MVI94-ADM module include:

- Bar code scanner interface
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (Alarm/status printer)
- Customized protocol implementations

Functional Specifications

Development Environment

- Operating system: General software DOS 6-XL
- Compatible compiler (16-bit DOS target)
  - Digital Mars C++ V8.49 (included)
  - Borland C++ V5.02

Application Programming Interfaces (API)

- Serial Port API: serial port functions
- Backplane API: low level backplane functions
- ADM API debug port functions: debug port functions, database functions timer functions, high level backplane transfer functions, LED functions, flash read functions

FLEX I/O Interfaces

Bosch Communication I/O Module

MVI94-BSCH

The MVI94 Bosch Communication I/O Module is used to interface Bosch SVB/SVK compatible slave devices (Robert Bosch Corporation's line of packaging machinery) with the FLEX I/O system.

The module contains a database that is defined by the user. This database is used for the request and command messages sent from the Bosch master port to Bosch slave devices. Data areas in the database can be reserved for status and error information generated by the module under user control.

Features and Benefits

A Bosch master port is present on the communication module to continuously poll Bosch slave devices. Up to 100 user-defined commands can be defined for the port. Data read from Bosch slave devices are placed in the database. Any write requests for the Bosch slave devices are sourced with data from the database.

Commands can be activated in the module under processor control. This feature permits the processor to issue a command in the command list under program control. When a command is activated, it will be placed in the command queue for immediate execution. Normal command polling will begin after the command queue is completely processed.

The module provides a configuration/debug port for use with an external computer executing a terminal server program. The terminal server program provided with the module permits uploading and downloading of the configuration information required by the module. Additionally, the configuration/debug port provides a view into the database, communication statistics and the configuration.

Applications

The MVI94-BSCH Communication Module interfaces Bosch SVB/SVK compatible slave devices (Robert Bosch Corporation's line of packaging machinery) with the FLEX I/O system. Applications for the module are found in most industries, especially Manufacturing, Oil & Gas, Electrical Power and Food Processing.

Functional Specifications

Parameter	Description
General Parameters (Software Configurable)	
Internal Database	4000 registers (words) available
Communication parameters	Local Station ID: 0 to 255 Port 0 Baud Rate: 110 to 115.2K baud Port 1,2,3 Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Bosch Modes	Full-Duplex
Error Checking	BCC

Type	Specifications
Bosch Master Driver	
General	Full-Duplex Point to Point
Configurable Parameters per Master port	Min Command Delay Number of Commands Response Timeout Retry Count Slave List Error Pointer
Bosch Commands supported	0x00 Protected Write 0x01 Unprotected Read
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Status Data	Error codes available on an individual command basis. In addition, a slave status list is maintained per active master port.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

The MVI94 DF1 Master/Slave Communication Module is a FLEX backplane compatible module that allows Rockwell Automation FLEX I/O compatible processors to interface easily with DF1 protocol compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs and power monitoring equipment, as well as several other third party devices in the marketplace.

Features and Benefits

The ProSoft Technology MVI94-DFCM module is the fastest and easiest way to add DF1 Half/Full Duplex Master and Slave capability to the FLEX platform. The MVI94-DFCM module is a single I/O slot, backplane compatible solution for the FLEX platform. This module has one powerful and fully configurable DF1 Half/Full Duplex Master/Slave port allowing the many SCADA and field devices supporting the DF1 protocol to be integrated into the FLEX platform.

The module has one serial port supporting the DF1 protocol, user-configurable to act as a master or as a slave. Data transfer between the module and the FLEX processor is asynchronous to the DF1 network, with the module's internal database being used to exchange data between the processor and the DF1 network.

Applications

The MVI94-DFCM module is the ideal solution for many applications where DF1 protocol connectivity must be added to a FLEX platform. The MVI94-DFCM module can be found in many industrial sectors and in the following applications:

- Foreign device data concentrator
- SCADA system pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper

Functional Specifications

DF1 ports

- Full and half duplex modes supported
- CRC and BCC error checking
- Memory usage is completely user configurable, supporting the storage and transfer of up to 4000 registers to/from the control processor
- 125 word read and write command lengths supported
- Floating point data movement supported

DF1 Master Protocol Specifications

The port on the DF1 module can be configured as a Master port. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices, enabling the FLEX platform to act as a SCADA sub-master.

- Command List: Up to 100 commands, each fully-configurable for function, slave address, register to/from addressing and word/byte count
- Status Data: Error codes available on an individual command basis. In addition, a slave status list is maintained per active master port
- Polling of Command List: User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The module accepts DF1 commands from an attached DF1 master unit. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers. This data can be derived from other DF1 slave devices on the network through a master port or from the processor and is easily transferred to the processor's data registers.

Tested Hardware Connections

Several hardware connections have been tested by ProSoft or have been customer field tested. To our knowledge, the following physical connections have been successful:

- Rockwell Automation Panel view (Full Duplex point-point, DFCM as slave)
- Rockwell Automation Processors (Full/Half duplex, DFCM as either master or slave)
- Rockwell Automation Power Monitors (485 Half-Duplex, DFCM as Master)

FLEX I/O Interfaces

DNP 3.0 Master/Slave Communication Module

MVI94-DNP

The MVI94 DNP 3.0 Master/Slave Communication Module is a single slot, backplane compatible DNP 3.0 interface solution for the Rockwell Automation FLEX platform. This module provides highly configurable support of both DNP 3.0 Master and Slave implementations (level 2 minimum), allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the powerful FLEX platform.

Features and Benefits

The module supports DNP Subset Level 2 features and some of the Level 3 features allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the FLEX platform. The module acts as an input/output module between the DNP network and the FLEX backplane. The data transfer from the FLEX processor is asynchronous from the actions on the DNP network. Databases are user defined and stored in the module to hold the data required by the protocol.

Applications

The MVI94-DNP module is the ideal solution for many applications where DNP 3.0 master and/or slave protocol connectivity must be added to a FLEX system.

The DNP solution is designed to address the expanding interest in the DNP 3.0 protocol. The protocol was originally developed for the power utility industry and is recommended by the IEEE for RTU-IED communication applications. Additional industrial applications are quickly arising in the water/wastewater and oil & gas industries.

Functional Specifications

The module has two DNP protocol ports that can be user configured to operate in a Master/Slave or in a Slave/Slave redundant port configuration.

User defined internal register space is accessible to the protocol driver and to the FLEX processor memory.

DNP 3.0 Slave Protocol Specifications

The DNP Slave port(s) accepts DNP commands to control and monitor data stored in the module's DNP Slave databases. If a DNP Master port is also configured, a portion of these slave databases can be derived from or can control IED devices connected to the DNP master port.

- Report-by-Exception data is logged to the module's database
- Supports unsolicited messaging
- Each DNP point type is user configurable by point
- Class assignments are completely user-definable on a Type and point basis (BI, AI, FI, DI point types)
- Supports clock synchronization from a master or from the processor
- Up to 400 events are stored for Floats, Binary In, Analog In and Double Inputs
- Collision avoidance algorithm per DNP organization for redundant port switching (redundant slave mode)
- Special modem AT command string and timing support for dialing out on redundant port (redundant slave mode)

DNP 3.0 Master Protocol Specifications

The DNP 3.0 Master port can be configured as a virtual DNP Master device that actively issues user-defined DNP commands to nodes on the network.

- The Master port supports 300 user defined commands, each one containing its own set of data link and application layer characteristics
- Master port logically supports up to 40 slave devices
- Individual command configuration includes conditional or continuous polling and Poll Delay Time
- Slave status and Command status available for transfer to the processor
- Event data received from the slave devices updates the module database (Date and Time stamping is not stored or used by module)
- Special command handling for Digital Output CROB under processor control for pulse output control

DNP 3.0 ports (PRT1 & PRT2)

- Memory usage is user definable
- Full radio, modem and multi-drop support
- Support for the storage and transfer of all DNP data types across the backplane
- Communication parameters
  - Address: 0 to 65534 (slave mode)
  - Baud rate: 110 to 115K
  - Parity: none, data bits: 8, Stop bit: 1
  - RTS on delay: 0 to 65535 milliseconds
  - RTS off delay: 0 to 65535 milliseconds

The ProSoft Technology Generic ASCII Serial Single Port Interface Module is a fast and easy way to add a fully configurable ASCII communication port to the FLEX platform without consuming the front port of the processor.

Features and Benefits

The MVI94-GSC-E allows Rockwell Automation FLEX I/O compatible processors to interface easily with other serial communication devices. Compatible devices include bar code readers, scanners, scales, printers, terminals and any other serial communication devices.

Applications

The MVI94-GSC-E module is the ideal solution for the many applications where ASCII character communications must be added to the FLEX platform. Applications using the MVI94-GSC-E module can be found in many industrial sectors generally involving:

- Bar code scanner interfaces
- Weigh scale interfaces
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)

Functional Specifications

The MVI94-GSC-E module interfaces a serial communication device with the FLEX processor. One application port is present on the module to interface with devices such as bar code readers, scales, printers and terminals. The communication port permits both the reception and transmission of data between the FLEX processor and attached devices. The module is designed primarily to receive data (up to 4096 characters in consecutive blocks), but can also transmit up to 10 characters on a block transfer.

Some of the general specifications include:

- One port to receive and/or transmit data
- Receive up to 4096 characters
- Transmit up to 10 characters per block Configurable parameters include:

Parameter	Description
Termination type	Stream mode, termination character(s), message timeout, intercharacter timeout and packet size limit
Baud Rate	110 to 115,200
Parity	None, Odd and Even
Data Bits	5 to 8
Stop Bits	1 or 2
RTS On and Off Timing	0 to 65535 milliseconds
Minimum Response Delay	0 to 65535 milliseconds
Hardware or Software Handshaking	RTS/CTS, DTR/DSR or XON/XOFF
Byte Swapping	Swap bytes received or to transmit

FLEX I/O Interfaces

Modbus Master/Slave Communication Module

MVI94-MCM

The MVI94 Modbus Master/Slave Communication Module allows Rockwell Automation FLEX processors to interface easily with other Modbus protocol compatible devices.

Compatible devices include not only Modicon PLCs (which all support the Modbus protocol) but also a wide assortment of end devices. The module acts as an input/output module between the Modbus network and the FLEX I/O backplane. The data transfer from the processor is asynchronous from the actions on the Modbus network. A 5000-word register space in the module exchanges data between the processor and the Modbus network.

Features and Benefits

The MVI94 Modbus Master/Slave Communication Module is designed to allow FLEX processors to interface easily with Modbus protocol-compatible devices and hosts.

The MVI94-MCM module acts as an input/output module between the Modbus network and the FLEX/IO backplane. The data transfer from the FLEX processor is asynchronous from the actions on the Modbus network.

Many host SCADA packages support the Modbus protocol, while devices commonly supporting the protocol include several PLCs, as well as many other third party devices in the marketplace. (For a partial list of devices that speak Modbus, please visit the ProSoft Tested section of the ProSoft Technology web site).

Applications

Applications using the Modbus Communication Module can be found in many industrial sectors and include:

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper
- SCADA communications
- Supports Enron version of Modbus protocol for floating point data transactions.

Functional Specifications

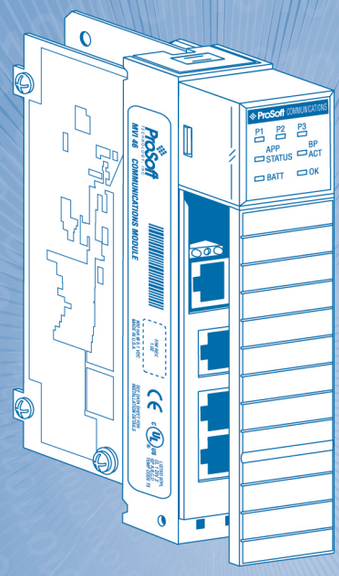
- Support for the storage and transfer of up to 5000 registers to/from the FLEX processor's data files
- Module memory usage that is completely user definable
- Two ports to emulate any combination of Modbus master or slave device
- Supports Enron version of Modbus protocol for floating point data transactions.

Slave Specifications

The MVI94-MCM module accepts Modbus function code commands of 1, 2, 3, 4, 5, 6, 15 and 16 from an attached Modbus master unit. A port configured as a Modbus slave permits a remote master to interact with all data contained in the module. This data can be derived from other Modbus slave devices on the network, through a master port, or from the FLEX processor.

Master Specifications

A port configured as a virtual Modbus master device on the MVI94-MCM module actively issues Modbus commands to other nodes on the Modbus network. One hundred (100) commands are supported on each port. Additionally, the master ports have an optimized polling characteristic that polls slaves with communication problems less frequently. The FLEX processor can be programmed to control the activity on the port by actively selecting commands from the command list to execute or issuing commands directly from the ladder logic.



inRAx®

SLC Interfaces

SLC Interfaces

Specification	Description
Backplane Current Load	800 ma @ 5V (from backplane)
Operating Temperature	0 to 60°C (32 to 140°F)
Storage Temperature	–40 to 85°C (–40 to 185°F)
Shock	30g operational, 50g non-operational
Relative Humidity	5 to 95% (non-condensing)
Vibration	5 g from 10150 Hz
LED indicators	Module status, Backplane transfer status, Application status, Serial activity, Ethernet link and activity, and error LED status
Debug/Configuration port (CFG)	
CFG Port (CFG)	RJ45 (DB-9M with supplied cable) RS-232 only
Configuration Connector	RJ45 RS-232 Connector (RJ45 to DB-9 cable shipped with unit)
Application Ports	
Application Serial port (PRT1, PRT2) (Serial Modules)	(2) RJ45 RS-232/422/485 Application ports
Ethernet Port (Ethernet Modules)	RJ45 Connector Link and activity LED indicators

SLC Interfaces

IEC 60870-5-101 Master Communication Module

MVI46-101M

The MVI46 IEC 60870-5-101 Master Communication Module allows Rockwell Automation SLC I/O compatible processors to interface easily with IEC 60870-5-101 slave (controlled unit) devices.

Features and Benefits

The MVI46-101M module interfaces up to 32 serial communication devices with the SLC processor. Two communication ports on the module act as controlling devices (masters) to interface with controlled devices on their own networks. Each port is individually configurable and can be set for balanced or unbalanced mode. Data is exchanged between the serial network and the SLC processor using the internal database contained in the module and direct control by the controller's ladder logic.

Applications

The MVI46-101M module is the ideal solution for many applications where IEC protocol connectivity must be added to an SLC system. The IEC solution is designed to address the expanding interest in the IEC protocol and the use of IEC compatible devices in industrial applications such as those in the water/wastewater, power and oil & gas industries.

Compatible devices include relays, breakers, substation communication modules and other serial communication devices.

Functional Specifications

- Built in accordance to the approved international specification
- Two independent master ports completely user configurable
- Support for balanced and unbalanced mode
- Up to 32 sessions
- Up to five sectors (separate databases) for each session
- Individual database definition for each sector
- 1000 commands to control stations
- SLC processor can issue control commands directly to the module or a controlled device (10 at each scan)
- Pass-through of event messages from controlled device to processor for logging of time-tagged events
- Operation via simple ladder logic
- Supports clock synchronization from/to the SLC
- Receives events from the slave and sends them to the SLC processor
- Supports monitored data
  - Single-point
  - Double-point
  - Step-point
  - Measured-point
  - Bitstring 32-bit
  - Integrated total point
- Class 1 and Class 2 delay parameter in the configuration file
- Complete set up and monitoring of module through RSLogix 500 software and user constructed configuration file (IEC101M.CFG)
- SLC backplane interface via M-File access
- All data related to the module is contained in user data files to ease in the monitoring and interfacing with the module

The MVI46 IEC 60870-5-101 Slave Communication Module allows Rockwell Automation SLC I/O compatible processors to interface easily with IEC 60870-5-101 protocol compatible hosts. The module's two powerful and highly configurable redundant ports allow the many SCADA host systems supporting the IEC protocol to be integrated into the SLC platform.

Features and Benefits

The MVI46-101S module is the fastest and easiest way to add IEC 60870-5-101 protocol interface support to the SLC platform. It is a single slot, backplane compatible solution for the SLC platform. This module has two powerful and highly configurable IEC 60870-5-101 Slave ports, allowing the many SCADA and field devices supporting the IEC protocol to be integrated into the SLC platform.

The MVI46-101S module acts as an input/output module between the IEC 60870-5-101 telecontrol network and the SLC processor. The data transfer from the processor is asynchronous from the actions on the network. A 5000-word register space in the module exchanges data between the processor and the telecontrol network.

Applications

The MVI46-101S Slave module is designed to address the application where a host systems using the IEC 60870-5-101 protocol must communicate with an SLC processor. As such, the IEC Slave module can be used as a gateway in many SCADA installations in industries such as:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- Oil & gas production

Functional Specifications

The MVI46-101S module accepts commands from an attached master unit. A port configured as a virtual slave permits a remote master to interact with all data contained in the module. This data can be derived from the SLC processor. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs. The module can operate in balanced or unbalanced mode.

- Supports time stamp events
- Supports time and data synchronization from a master or the processor
- Supports monitored data
- Event queue supports 99 points for each data type
- Reports events by configurable priority order
- Order monitored points by interrogation groups
- Configurable deadband for monitored measured points
- Supports Master Class 1 and Class 2 polls with configurable parameters
- Acknowledgement transmission is handled internally by the module
- Configurable data link address, Common ASDU address and Information Object Address
- Configurable pulse duration

SLC Interfaces

IEC 60870-5-103 Master Communication Module

MVI46-103M

The MVI46 IEC 60870-5-103 Master Communication Module allows Rockwell Automation SLC backplane I/O compatible processors to interface easily with IEC 60870-5-103 compatible devices. Devices commonly supporting the protocol include relays, breakers, substation communication modules and other serial communication devices used in power monitoring.

Features and Benefits

The MVI46-103M supports up to 32 total field devices between the module's two IEC 60870-5-103 Master ports. The module's communication ports can each be independently configured, allowing two separate field networks to be implemented. The field device data is exchanged between the MVI module and the SLC processor over the backplane.

Applications

The MVI46-103M module is the ideal solution for many applications where IEC protocol connectivity must be added to a SLC system. The IEC solution is designed to address the expanding interest in the IEC protocol and the use of IEC compatible devices in industrial applications such as those in the water/wastewater, power and oil & gas industries. Compatible devices include relays, breakers, substation communication modules and other serial communication devices.

Functional Specifications

The MV46-103M module supports the IEC 60870-5-103 protocol to the following specifications:

- The IEC 60870-5-103 communication driver is built in accordance to the approved IEC specification
- Support for the storage and transfer of up to 4000 registers to/from the SLC processor's M1 file
- Module memory usage that is completely user definable
- The module has two independent master ports, each configurable via a simple configuration file
- Supports up to 32 sessions (controlled devices) between the two ports
- Supports up to five sectors (separate databases) for each session, with individual database definition for each sector
- Total of 1000 user configurable commands to control data transfer to/from devices (controlled devices)
- Supports clock synchronization from/to the processor
- Event data received from the Control Devices updates the module database (Date and Time stamping is not stored or used by module)
- Class 1 and Class 2 delay parameter are configurable for each session
- An IEC Interoperability Document for the module is available from the web site, which fully documents data types supported by the module

The MVI46 IEC 60870-5-104 Server Communication Module allows Rockwell Automation SLC backplane I/O compatible processors to interface easily with IEC 60870-5-104 protocol-compatible hosts.

Features and Benefits

The MVI46-104S module acts as an input/output module between the IEC-870-5-104 Ethernet network and the SLC processor. Data transfer between the module and the processor is asynchronous from the actions on the network. Databases are defined by the user for the module to hold data as required by the protocol.

Applications

The MVI46-104S module has been designed to address the application where a device using the IEC 60870-5-104 protocol needs to communicate with a SLC processor. As such, the IEC server module can be used as a gateway in many SCADA installations in industries such as:

- Power
- Petrochemical
- Water treatment
- Oil & gas production

Functional Specifications

The MVI46-104S module accepts data read/write commands from a master/client on the network. In addition, the module can be configured to generate unsolicited messages in either a spontaneous or cyclic fashion.

The module has 4000 words of user defined internal register space that are accessible to the protocol driver and to the SLC processor memory. Any of the supported database types can be individually located (within the total database size limit of 4000 words) and each database point is mapped within the module and can be assigned to one or more Groups.

The supported database point types are:

Database Type	Description
M_SP_NA	Monitored single-point database
M_DP_NA	Monitored dual-point database
M_ST_NA	Monitored step-point database
M_ME_NA	Monitored normalized-point database
M_ME_NB	Monitored scaled-point database
M_ME_NC	Monitored short-float point database
M_IT_NA	Monitored integrated total database
C_SC_NA	Command single-point database
C_DC_NA	Command dual-point database
C_RC_NA	Command step-point database
C_SE_NA	Command normalized-point database
C_SE_NB	Command scaled-point database
C_SE_NC	Command short-float point database

IEC 60870-5-104 Server Specifications

Operating in the Server mode, the module accepts commands from a Client(s) to read/write data stored in the module's internal registers. This data is easily and continuously transferred between the module and the SLC processor's data registers.

The IEC 60870-5-104 Server functionality supported by the module includes:

- The IEC 60870-5-104 communication driver is built in accordance to the approved IEC specification
- The module functions as a Server on the network supporting data read/write commands from an IEC 60870-5-104 client on the network
- One TCP server socket
- Supports unsolicited messages, either cyclic or spontaneous (cyclic rate is configurable)
- Supports clock synchronization commands from client or from the SLC
- Supports Group interrogation (Global, General 1 to 16, Global Counters, Counters 1-4)
- Event timestamping configurable by type (None, 24 bit, 56 bit)
- Event queue supports 99 points for each data type
- Optional user defined list of acceptable client host IP addresses
- Configurable Common ASDU address (sector) and Information Object Address
- An IEC Interoperability Document for the MVI46 is available which fully documents data types supported by the module

SLC Interfaces

Siemens 3964R Protocol Communication Module

MVI46-3964R

The MVI46 3964R module from ProSoft Technology allows point-to-point communication between an SLC controller and a partner with 3964R (with or without RK512) communication capability.

Features and Benefits

The 3964R protocol was designed by Siemens for bi-directional data communication through a point-to-point connection. It is a master-slave protocol with read and write access. A BCC checksum ensures the integrity of the transfer.

Applications

The module is ideal in control configurations where there is a need for the SLC controller to exchange data with other non-Rockwell Automation control devices in low speed applications.

The MVI46-3964R can communicate with devices using two RS-232, RS-422 communication lines (ports). The ports operate independently from each other.

Functional Specifications

- The MVI46-3964R and the SLC processor communicate via M0 and M1 files
- Single-slot, SLC backplane compatible
- Multiple modules can be placed in a rack up to the chassis power supply limit
- While in 3964R with RK512 mode on PRT1 and PRT2, DB-SEND and DB-FETCH instructions can be initiated from the SLC processor or received by the communications partner
- While in 3964R without RK512 mode on PRT1 and PRT2, data can be sent from the SLC processor or be received from the communications partner
- The maximum transfer rate is 512 bytes in any mode
- Data byte swapping can be configured to adjust to a different word format
- While in 3964R with RK512 mode on PRT1 and PRT2, evaluation of the header information DB (data block), DW (data word) and coordination bytes 9 and 10 is possible
- Communication activity and diagnostics are available through LEDs and acknowledgment telegrams

Ladder Logic

Ladder logic programming in the SLC processor is required in order to enable and support the Siemens 3964R protocol functionality. The ladder program handles the encoding/decoding of data transferred from the module as well as the initiation of protocol-specific functionality in the module. Example ladder programs are provided with the module to ease the implementation of the module in the user application.

MVI46-ADM

The MVI46 Application Development Module is an SLC backplane compatible module that allows user-developed 'C' applications to operate on the SLC platform. A great way to speed up custom ASCII data communications or to protect a proprietary algorithm, the ADM is a powerful tool for the SLC platform.

Features and Benefits

Powerful platform for developing and running 'C' applications on SLC processors. The MVI46-ADM module is a single slot, backplane compatible solution for the Rockwell Automation SLC platform. This module is a powerful and programmable solution supporting two fully isolated serial ports allowing the many serial field devices to be integrated into the SLC platform.

The MVI46-ADM module has three serial ports, two of which are isolated for field interfaces:

- CFG: Debug/configuration RS-232
- PRT1: Application RS-232, RS-422 or RS-485
- PRT2: Application RS-232, RS-422 or RS-485

PRT1 and PRT2 are jumper configured for direct or multi-drop field communication. The application program can be written to control the two application ports independently, allowing maximum flexibility in the design.

Applications

The MVI46-ADM module is the ideal solution for many applications where serial connectivity must be added to a SLC platform. Applications using the MVI46-ADM module include:

- Bar code scanner interface
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)
- Customized protocol implementations

Functional Specifications

Development Environment

- Operating system: General software DOS 6-XL
- Compatible compiler (16-bit DOS target)
  - Digital Mars C++ V8.49 (included)
  - Borland C++ V5.02

Application Programming Interfaces (API)

- Serial Port API: serial port functions
- Backplane API: low level backplane functions
- ADM API debug port functions: debug port functions, database functions, timer functions, high level backplane transfer functions, LED functions, flash read functions

SLC Interfaces

'C' Programmable Application Development Module with Ethernet

MVI46-ADMNET

The MVI46 Application Development Ethernet Communication Module is an SLC backplane compatible module that allows Rockwell Automation SLC processors to interface easily with Ethernet protocol compatible devices and hosts.

Features and Benefits

The ADMNET module is a powerful solution that supports both Client and Server applications. This broad support enables the module to function as a data collection client, or as a server to another host. Applications for the module are found in most industries, especially manufacturing, oil & gas, electrical power and food processing.

The MVI46-ADMNET module is a single slot, backplane compatible solution for the SLC platform. This module is a powerful and programmable solution supporting two fully isolated serial ports and one Ethernet port allowing the many field devices to be integrated into the SLC platform with custom user written 'C' code and various APIs supplied for Ethernet, serial and backplane communication.

Applications

The MVI46-ADMNET module is the ideal solution for many applications where Ethernet and serial connectivity must be added to an SLC platform. Applications using the MVI46-ADMNET module include:

- Bar code scanner interface
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)
- Customized protocol implementations

Functional Specifications

The MVI46-ADM API Suite allows software developers access to the top layer of the SLC backplane and serial ports. The MVI46-ADMNET API suite accesses the Ethernet port and serial ports.

Both APIs can be easily used without having detailed knowledge of the module's hardware design. The Ethernet Port API provides access to the Ethernet network. Applications for the MVI46-ADMNET module may be developed using industry-standard DOS programming tools and the appropriate API components.

The MVI46-ADMNET module has three serial ports, two of which are isolated for field interfaces, and one Ethernet port.

- CFG – debug/configuration – RS-232
- PRT1 – Application – RS-232, RS-422 or RS-485
- PRT2 – Application – RS-232, RS-422 or RS-485
- Ethernet Port

PRT1 and PRT2 are jumper configured for direct or multi-drop field communication. The application program can be written to control the two application ports independently, allowing maximum flexibility in the design.

General Protocol Specifications

- Allows software developers to access SLC backplane and Serial/Ethernet ports to communicate with various field devices, without needing detailed knowledge of the module's hardware design
- API library functions are specified using the 'C' programming language syntax
- The following compiler versions are compatible with the MVI module API:
  - Digital Mars C++ 8.49
  - Borland C++ V5.02
- Operating System - General software DOS 6-XL
- Flash ROM program space: 896 KB
- RAM program and data space: 640 KB
- Compact Flash socket: Supports up to 16G Microdrive (not supplied)

ADM/ADMNET API Libraries

Each API provides a library of function calls. This library supports any programming language that is compatible with the Pascal calling convention.

- Initialization - Open and close the API
- Debug Port - Debug port user interface
- Database - Read and write data to database
- Timer - Start and check timers
- Backplane - Transfer data over the backplane
- LED - Set user LED indicators
- Flash - Parse configuration files
- Miscellaneous - Configure the console

MVI46-AFC

The MVI46 Liquid & Gas Flow Computer Module is an SLC backplane compatible module that allows SLC processors to easily support flow applications with 8 meter runs performing measurement of hydrocarbon gases or liquids using AGA 3, 7, 8 and API 2540 measurement standards.

Features and Benefits

The MVI46-AFC is an in-rack Liquid & Gas Flow Computer Module for the SLC platform. The MVI46-AFC Flow Computer module supports 8 meter channels for the measurement of hydrocarbon gases and liquids using currently accepted industry measurement standards.

The module calculates flow rates, accumulated volumes, accumulated mass and accumulated energy (heating value). The calculation results are transferred back to the processor memory for use in the application ladder program or for transfer back to a SCADA host.

Applications

The MVI46-AFC module is the ideal solution for the many applications where hydrocarbon flow and SCADA communication must be added to the SLC platform.

Applications using the MVI46-AFC module can be found mainly in the oil & gas industrial sectors.

Functional Specifications

The AFC module operates as a powerful flow computer module, augmenting the operation of the SLC processor by providing a dedicated and accurate set of flow calculations; the results of which are easily available to process monitoring and control applications developed in the SLC.

The module is highly-configurable, allowing each of the 8 meter runs to be individually setup to meet the specific requirement of an application.

- Gas analysis concentrations for any or all 21 components
- Physical data for all meter runs including orifice and pipe diameters, selection of type of taps and tap location
- Reference pressure, temperature and local atmospheric conditions
- Default process and operating parameters like DP threshold for flow cutoff
- Metric or imperial units
- User selectable units for totalizers and flow rates on a per channel basis
- Resettable and/or non-resettable totalizers for every meter channel
- Process I/O: analog inputs (pressure, temperature, diff pressure) from analog modules and pulse inputs from pulse/frequency input modules in SLC I/O rack
- Number of meter channels: 8 differential (AGA3) or linear (AGA7) Gas; MPMS 12.2 (Liquid)
- Calculation methods: AGA3-1992, AGA 7, AGA8-1992 (detailed characterization method), API MPMS Ch12.2 API 2540
- Meter scan time under 1 second for all 8 channels
- Product measurement: hydrocarbon gases and liquids
- Data archiving: Hourly for 2 days for each meter run (48 records per channel), Daily for 35 days (optional extended archives up to 1260 hourly and 350 daily). All archived data is available in the onboard Modbus memory map (archive size and contents are fully-configurable)
- Event log report for all security sensitive configuration data (for example, orifice diameter) are date and time stamped and mapped to the local Modbus memory map. This data can be imported into any spreadsheet program and saved to disk or printed as hard copy

Modbus interface

- The two Modbus slave ports allow the unit to be used as a SCADA interface and to broaden access to the AFC module's data table
- Either port may be configured for RTU or ASCII Modbus mode
- Both Modbus slave ports provide access to all configuration and measurement data mapped to the Modbus table
- Modbus table may be re-mapped for user assigned contiguous register polling from a SCADA master (up to 20,000 registers)
- Port 3 can be configured as a Modbus Master port to poll data from a remote chromatograph device

SLC Interfaces
Bardac Communication Module
MVI46-BDW

The MVI46 Bardac Drive Interface Module allows Rockwell Automation SLC I/O compatible processors to interface easily with Bardac drive.web devices.

Features and Benefits

The MVI46-BDW module acts as a client collecting and controlling data in a Bardac drive.web compatible device. Four independent clients are contained in the module to interface with Bardac drives simultaneously. The data is passed from the network to the SLC processor. The data transfer from the processor is asynchronous from the actions on the UDP/IP network. A 5000-word register space in the module exchanges data between the processor and the network.

Applications

The MVI46 Bardac Drive module incorporates a powerful library of drive control function blocks for a wide range of applications. The Bardac drive protocol uses UDP over Ethernet to provide robust connectivity between drives, PLCs, operator stations, remote I/O and SCADA systems.

Functional Specifications

A client configured as a Bardac master device on the MVI46-BDW module will actively issue Bardac-DW commands to other nodes on the Bardac-DW network. One hundred commands are supported for each client. The SLC processor can be programmed to control the activity on the client by actively selecting commands from the command list to execute, or issuing commands directly from the ladder logic.

Some of the general specifications include:

- Support for the storage and transfer of up to 5000 registers to/from the SLC processor's controller tags
- Module memory usage that is completely user-definable
- Ability for the user to define commands to set or get parameters from the Bardac device
- 10/100 Mbps Ethernet compatible interface
- Supports up to 100 user-defined read or write commands that can be sent to a Bardac device
- Configurable parameters for the client include
  - Error/Status Pointer
  - Command Error Pointer
  - Response Timeout
  - Retry Count

MVI46-BSAPS

The MVI46 Bristol Babcock Serial Slave Module allows Rockwell Automation SLC I/O compatible processors to interface easily with Bristol Babcock Serial communication devices.

Features and Benefits

The MVI46-BSAPS module acts as an input/output module between the BSAP network and the SLC processor. The module acts as a slave receiving commands from a BSAP master device. The data transfer from the SLC processor is asynchronous from the actions on the BSAP network. An internal database in the module exchanges data between the processor and the BSAP network.

BSAP operates in a polled environment. Each link in the network supports a different poll rate. The rate selected depends on a variety of application-dependent factors.

BSAP has been designed and implemented according to the functional layers of the International Standards Organization (ISO) model. Because each layer is independent of its adjacent layers, both synchronous and asynchronous transmission modes can be supported.

Applications

The Bristol Babcock Synchronous/Asynchronous Communication Protocol (BSAP) is used in process control applications in the energy, water, and wastewater industries.

Typical industrial sectors include:

- Security monitoring
- Pump and lift station control for water & wastewater market
- Flow measurement and metering station control for the natural gas market.

Functional Specifications

The Bristol Babcock Synchronous/Asynchronous Communication Protocol (BSAP) is the foundation for a proprietary network that has a tree structured topology. This open-ended topology supports a variety of configurations which may include one or more nodes at each of up to six levels. Messages can be sent between nodes (local message only). Each message is uniquely identified and has an error checking code associated with it.

Some of the general specifications include:

- Slave implementation
- Support for the storage and transfer of internal database registers to/from the SLC processor's M0 and M1 files
- Two ports to emulate a BSAP slave RTU
- Peer-to-Peer communication for Local BSAP formatted messages – slave to master only

Configurable parameters include:

Parameter	Value
Analog Input Count	0 to 255
Logical Input Count	0 to 255
String Count	0 to 30
Slave Address	1 to 255
Baud Rate	110 to 115,200
Parity	None, Odd, Even
Data Bits	5 to 8
Stop Bits	1 or 2
RTS On and Off Timing	0 to 65535 milliseconds
Minimum Response Delay	0 to 65535 milliseconds
Use of CTS Modem Line	Yes or No

SLC Interfaces

Teledyne CA Slave Communication Module

MVI46-CAS

The MVI46 Teledyne CA Module allows Rockwell Automation SLC I/O compatible processors to interface easily with TCA protocol compatible devices.

Features and Benefits

The MVI46-CAS module acts as an input/output module between the TCA network and the SLC processor. The data transfer from the processor is asynchronous from the actions on the TCA network. A 5000-word register space in the module exchanges data between the processor and the TCA network.

Applications

The MVI46-CAS module provides highly-configurable TCA slave capabilities to the SLC platform. The product is frequently used as a SCADA slave. In a SCADA slave application, the module could be used in remote controller racks as is often used in the oil & gas, or wastewater industries.

Functional Specifications

- Function codes
  - 1: Read output data
  - 2: Read analog data
  - 3: Read meter data
  - 10: Read frozen analog values
  - 11: Read frozen meter data
  - 16: Read all data
  - 20: Read tank data from RTU
  - 30: Control momentary select
  - 31: Control momentary operate
  - 32: Control continuous select
  - 33: Control continuous operate
  - 34: Setpoint select
  - 35: Setpoint operate
  - 43: Freeze meters
  - 44: Freeze analogs
  - 45: Freeze meters/analogs
  - 46/6: Special freeze
  - 50: Exception data request
- Supports broadcast commands from master
- Register addressing
  - Status: Up to 250 words
  - Analog: Up to 250 words
  - Meter: Up to 125 values (2 words per value)
  - Tank: Up to 250 words
- Supports write commands from host
- Operates in both direct or indirect modes
- Setpoint select and operate
  - Control point continuous and momentary

The MVI46 Command Language Module allows Rockwell Automation SLC I/O compatible processors to interface easily with SICK bar code scanner devices.

Features and Benefits

The MVI46-CLVM module acts as an input/output module between the scanners and the SLC processor. The data transfer from the processor is asynchronous from the actions on the scanners.

Applications

Compatible devices include not only Modicon PLCs (which all support the Command Language protocol) but also a wide assortment of end devices.

Functional Specifications

- Support for the storage and transfer of up to 5000 registers to/from the SLC processor's data files
- Module memory usage that is completely user definable
- Two ports to emulate any combination of master or slave device

Configurable parameters include:

Parameter	Value
Protocol	RTU or ASCII
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1
Minimum Command Delay	0 to 65535 milliseconds

SLC Interfaces

Honeywell DE Master Communication Module

MVI46-DEM

The MVI46 DE Master Communication Module allows Rockwell Automation SLC I/O compatible processors to interface easily with Honeywell DE instruments. Compatible devices include a large array of field devices including pressure, temperature, metering and many other instruments.

Features and Benefits

The module supports 8 DE channels, allowing both single and/or multivariable Honeywell transmitters operating in the DE mode to be directly integrated in the SLC platform.

Data exchange between the DEM module and the processor data table is performed using standard ladder logic.

Applications

Supported Honeywell instruments include:

- ST 3000 smart pressure transmitter
- STT 3000 smart temperature transmitter
- SMV 3000 smart multivariable transmitter
- MagneW 3000 smart magnetic flowmeter
- SCM 3000 smart coriolis mass flowmeter
- SGC 3000 smart gas chromatograph

Functional Specifications

- Backplane data transfer via input/output Imax files
- Interfaces with Honeywell smart transmitters operating in the DE mode
- Support multiple DE channels SLC—up to 8 Channels with single PV transmitter, multivariable transmitters
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA)
- Single cable connection from DEM module to FTA
- External 24 VDC source connection on front of DEM module for instrument loop power
- LEDs for visual module status
  - Module active
  - Module fault
- Operation via simple ladder logic

The MVI46 DF1 Master/Slave Communication Module is an SLC backplane compatible module that allows Rockwell Automation SLC I/O compatible processors to interface easily with DF1 protocol compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs and power monitoring equipment, as well as several other third party devices in the marketplace.

Features and Benefits

The MVI46-DFCM Master/Slave Communications module allows SLC I/O compatible processors to interface easily with other DF1 protocol compatible devices. Compatible devices include not only Rockwell Automation PLCs (which all support the DF1 protocol) but also a wide assortment of end devices.

The MVI46-DFCM module has three active serial ports supporting the DF1 protocol, with each port user-configurable to act as a master or as a slave. Data transfer between the module and the SLC processor is asynchronous to the DF1 network, with the module's internal database being used to exchange data between the processor and the DF1 network.

Applications

The MVI46-DFCM module is the ideal solution for many applications where DF1 protocol connectivity must be added to an SLC platform. Applications using the MVI46-DFCM module can be found in many industrial sectors and in the following applications:

- Foreign device data concentrator
- SCADA system pipelines and offshore
- Platforms food processing
- Mining
- Pulp and paper

Functional Specifications

DF1 ports

- Full and half duplex modes supported
- CRC and BCC error checking
- Full hardware handshaking control
- Memory usage is completely user configurable, supporting the storage and transfer of up to 5000 registers to/from the control processor
- Up to 125 word read and write command lengths supported
- Floating point data movement supported

DF1 Master Protocol Specifications

The ports on the DF1 module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices, enabling the SLC platform to act as a SCADA sub-master.

- Command List: Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/byte count
- Status Data: Error codes available on an individual command basis. In addition, a slave status list is maintained per active master port.
- Polling of Command List: User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The module accepts DF1 commands from an attached DF1 master unit. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers. This data can be derived from other DF1 slave devices on the network through a master port or from the processor and is easily transferred to the processor's data registers.

Tested Hardware Connections

Several hardware connections have been tested by ProSoft Technology or have been customer field tested. To our knowledge, the following physical connections have been successful:

- Rockwell Automation Panel view (Full Duplex point-point, DFCM as slave)
- Rockwell Automation Processors (Full/Half duplex, DFCM as either master or slave)
- Rockwell Automation Power Monitors (485 Half-Duplex, DFCM as Master)

SLC Interfaces

EtherNet/IP Client/Server Communication Module

MVI46-DFNT

The MVI46 EtherNet/IP (DF1 for Ethernet) Client/Server Communication Module is an SLC backplane compatible module that allows SLC processors to interface easily with EtherNet/IP protocol (Explicit Messaging) compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs, and host HMI systems.

Features and Benefits

The MVI46-DFNT module is a single slot solution that provides a powerful connection between Rockwell Automation's SLC processor and EtherNet/IP (DF1 for Ethernet) network applications.

The module can send read or write commands to remote devices on the EtherNet/IP network. The MVI46-DFNT also has 20 servers that allow the module to receive commands from remote devices. The MVI46-DFNT Pass-Through server allows the user to edit and transfer the SLC ladder logic using an Ethernet connection. Up to 100 commands can be configured by the user.

Applications

With the growing trend of EtherNet/IP technology in the industrial marketplace, this product has a wide variety of application uses. Industries that use this technology include:

- Food Processing
- Petrochemical
- Pulp and Paper
- Automobile Manufacturing

Functional Specifications

- Rockwell Automation 5/02/03/04 processors with DH-485 or DH+ network connections to co-exist with EtherNet/IP network
- SLC 5/05 in-chassis EtherNet/IP bridge to optimize data throughput while communicating with HMI or SCADA and other control platforms without losing valuable process control bandwidth
- Support of up to 4000 SLC registers user data files
- User-definable module memory usage
- 10/100 Mbps Ethernet compatible interface
- Functions as a server or a client
- Configurable parameters for the client include:
  - A minimum response delay of 0 to 65535 milliseconds
  - A response timeout of 1 to 65535 milliseconds
  - A retry count of 0 to 20
- Status data available in ladder logic

Server Specifications

- Supports EtherNet/IP explicit, connected, and unconnected class messaging
- Twenty independent server connections permit remote clients to interact with all data contained in the module
- Data can be derived from other clients on the network, through the client on the module, or from the SLC processor

Client Specifications

- Actively issues connected, explicit messages to other nodes on the network
- Supports 100 user-defined commands from a single client
- Allows command control from ladder logic
- Pass-through services
- Permits remote programming of the SLC processor on the Ethernet network via a pass-through TCP/IP service and a serial communication port (pass-through port) on the module
- A PC with RSLogix 500, RSLinx, and a TCP/IP service on the network can remotely program the SLC
- The third port on the module can emulate the Channel 0 port on the SLC, which allows a DF1 master device attached to the emulated (Channel 0) port to monitor and control data in the SLC

The MVI46 DNP 3.0 Master/Slave Communication Module is a single slot, backplane compatible DNP 3.0 interface solution for the Rockwell Automation SLC platform. This module provides highly configurable support of both DNP 3.0 Master and Slave implementations (level 2 minimum), allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the powerful SLC platform.

Features and Benefits

The module supports DNP Subset Level 2 features and some of the Level 3 features allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the SLC platform. The module acts as an input/output module between the DNP network and the SLC processor. The data transfer from the processor is asynchronous from the actions on the DNP network. Databases are user defined and stored in the module to hold the data required by the protocol.

Applications

The MVI46-DNP module is the ideal solution for many applications where DNP 3.0 master and/or slave connectivity must be added to a SLC system.

The DNP solution is designed to address the expanding interest in the DNP 3.0 protocol. The protocol was originally developed for the power utility industry and is recommended by the IEEE for RTU-IED communication applications. Additional industrial applications are quickly arising in water/wastewater and oil & gas applications.

Functional Specifications

The module has two DNP protocol ports that can be user configured to operate in a Master/Slave or in a Slave/Slave redundant port configuration.

User defined internal register space is accessible to the protocol driver and to the SLC processor memory using M0/M1 data files.

DNP 3.0 Slave Protocol Specifications

The DNP Slave port(s) accepts DNP commands to control and monitor data stored in the module's DNP Slave databases. If a DNP Master port is also configured, a portion of the attached slave's data can be transferred directly to the MVI46-DNP Slave database.

- Report-by-Exception data is logged to the module's database
- Supports unsolicited messaging
- Each DNP point type is user configurable by point
- Class assignments are completely user-definable on a Type and point basis (BI, AI, FI point types)
- Supports clock synchronization from a master or from the processor
- Up to 100 events are stored for Floats, Binary In and Analog In
- Collision avoidance algorithm per DNP organization for redundant port switching (redundant slave mode)
- Special modem AT command string and timing support for dialing out on redundant port (redundant slave mode)

DNP 3.0 Master Protocol Specifications

The DNP 3.0 Master port can be configured as a virtual DNP Master device that actively issues user-defined DNP commands to nodes on the network.

- The Master port supports 300 user defined commands, each one containing its own set of data link and application layer characteristics
- Master port logically supports up to 40 slave devices
- Individual command configuration includes conditional or continuous polling and Poll Delay Time
- Slave status and Command status available for transfer to the processor
- Event data received from the slave devices updates the module database (Date and Time stamping is passed only to the data files using special block handling in SLC processor ladder logic)
- Special command handling for Digital Output CROB under processor control for latch, pulse and trip/close output control

DNP 3.0 ports (PRT1 & PRT2)

- Memory usage is user definable
- Support for the storage and transfer of all DNP data types across the backplane
- Communication parameters:
  - Address: 0 to 65534 (slave mode)
  - Baud rate: 110 to 115K
  - Parity: none, data bits: 8, Stop bit: 1
  - RTS on delay: 0 to 65535 milliseconds
  - RTS off delay: 0 to 65535 milliseconds

SLC Interfaces

DNP 3.0 Server over Ethernet Communication Module

MVI46-DNPSNET

The MVI46 DNP 3.0 Server over Ethernet Communications Module supports the implementation of the DNP 3.0 (Distributed Network Protocol) over Ethernet, allowing SLC processors to easily communicate with host systems supporting the protocol. The module supports DNP Subset Level 2 features and some Level 3 features.

Features and Benefits

The MVI46-DNPSNET (Distributed Network Protocol Module over Ethernet) allows Rockwell Automation SLC processors to easily communicate with other DNP protocol-compatible devices.

The module supports DNP subset level 2 features and some Level 3 features. The MVI46-DNPSNET module acts as an input/output module between the DNP Ethernet network and the SLC processor. The data transfer from the processor is asynchronous from the actions on the DNP network. Databases are defined in the module to house the data required by the protocol and transferred using M0/M1 files.

Applications

With the growing usage of the DNP protocol over Ethernet technology in the industrial marketplace, this product has a wide variety of application uses. Industries that use this technology include:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- SCADA and DCS applications

Functional Specifications

The MVI46-DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. This data is passed between the module and the SLC processor over the backplane for use in user applications.

- DNP databases to house data for the slave port supporting the following maximum input counts
  - Binary input: 8000 points (500 words)
  - Binary output: 8000 points (500 words)
  - Counter: 250 (500 words)
  - Analog input: 500
  - Analog output: 500
- Module memory usage that is completely definable
- Data movement between module using M0/M1 data files
- Ethernet port supporting both TCP and UDP over Ethernet
- Supports DNP 3.0 in a level 2 implementation
- Supports sending of input event data from the ladder to the module
- Supports time synchronization from/to processor
- Configurable via text file
- Status and error information
- All data in the DNP slave is contained in user-defined files

The Ethernet Global Data (EGD) module can be used to interface many different protocols with EGD devices. The EGD driver supports both the producer/consumer service port (18246) and the command service port (7937) using the UDP protocol over an IP network. The user defines the data to be produced and consumed in a configuration file downloaded to the module.

Features and Benefits

Ethernet Global Data (EGD) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. High reliability means fewer communication failures and having the ability to detect failures upon occurrence. Particular emphasis is delivered for applications requiring periodic or frequent updates and time synchronization of devices. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the network can produce these types of messages and each device determines which of these messages to consume.

Applications

Use the MVI46-EGD module to connect various field devices using different networks or protocols, and share data between these devices over a wired connection. This is accomplished by exchanging shared common database information with the efficient but powerful Ethernet Global Data protocol.

Functional Specifications

The driver interfaces with a common internal database in the module. This permits the sharing of data across many different networks.

The module supports UDP of service port 7927 (0x1F01) to handle all requests made of the module. The module will only service the requests and generate response messages. It will not generate command requests. The module supports the following functions specified in the EGD protocol:

Code	Description
3	Retrieve Configuration Request
4	Retrieve Configuration Response
7	Summary Request
8	Summary Response
9	Capabilities Request
10	Capabilities Response
15	Statistics Request
16	Statistics Response
18	Command NAK
32	Read Request
33	Read Response
34	Write Request
35	Write Response
36	Masked Write Request
37	Masked Write Response

The producer functionality provided in the EGD protocol is used to transfer portions of the module's database to other EGD nodes on the network. The consumer functionality is used to transfer data from other nodes on the network into the module's database.

The EGD module generates produced data as defined in the user configuration exchange list, from the module's internal database, and is produced at the frequency defined in the exchange list. This data can be broadcast to all nodes or to a specific node on the network.

The EGD module consumes data as defined in the user configuration exchange list. This data is derived from other nodes on the network and is placed in the module's internal database. If a consumer exchange is not received at the specified timeout, the driver will update the status of the exchange. When the driver again receives the exchange, the status will be updated.

SLC Interfaces

Generic ASCII Ethernet Interface Module

MVI46-GEC

The MVI46 Generic ASCII Ethernet Interface module is designed to allow SLC processors to interface easily with ASCII devices using the TCP/IP protocol and the SLC processor. Compatible devices may be either ASCII instruments with Ethernet built-in or Ethernet connection via a thin server to the existing ASCII device.

Features and Benefits

Five servers and clients are present on the module permitting both the reception and transmission of data between the SLC processor and attached devices.

The MVI46-GEC module is a powerful communication interface for SLC platform processors. Developed under license from Rockwell Automation, the module incorporates proprietary backplane technology that enables powerful data access between the module and the SLC processor.

Applications

The use of the TCP/IP protocol with Ethernet at the device level on the plant floor is becoming widespread in many industry segments. Using the MVI46-GEC, the advantage of Ethernet speed is realized while allowing greater distances between networked devices. This module provides connectivity to many ASCII devices, including applications in:

- Bar code scanner interfaces
- Weigh scale interfaces
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)

Functional Specifications

- Five Servers and Clients to receive and/or transmit data
- 10/100 Mbps Ethernet-compatible interface
- Configurable parameters:
  - Service port number
  - Connection timeout
  - Close type
- Simple ladder logic operation
- Setup and monitoring through RS-Logix 500 software and user-constructed configuration file (GEC.CFG)
- SLC backplane interface via I/O access
- Each Server monitors:
  - State
  - IP and port number of connected Client
  - Error codes
- Each Client monitors:
  - State
  - IP and port number of connected Server
  - Message related parameters
- ASCII character strings up to 2048 characters in length supported
- Full hardware handshaking control
- Memory usage is completely user-configurable, supporting the storage and transfer of up to 4000 bytes to/from the control processor
- Module error and status conditions returned to processor for diagnostic purposes:
  - Module status
  - Port error status word (bit mapped)
  - Port receive state
  - Port receive character count
  - Port receive block count
  - Port transmit state
  - Port transmit character count
  - Port transmit block count
- Module configuration and communication configuration data is transferred to the MVI46-GEC via a pre-defined user data type in the processor

The MVI46 Generic ASCII Serial Interface Module is a fast and easy way to add two fully configurable ASCII communication ports to the SLC platform without consuming the front port of the processor, or using valuable processing time.

Features and Benefits

The MVI46-GSC module is a single slot, backplane compatible solution for the Rockwell Automation SLC platform. This module has two powerful and fully configurable ASCII communication ports, each supporting the sending and receiving of large ASCII character strings. With the implementation of some supporting ladder logic in the processor, the many different devices supporting ASCII communications can be integrated into the SLC platform.

Applications

The MVI46-GSC module is the ideal solution for the many applications where ASCII character communications must be added to the SLC platform. Applications using the MVI46-GSC module can be found in many industrial sectors generally involving the following applications:

- Bar code scanner interfaces
- Weigh scale interfaces
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)

Functional Specifications

- ASCII Communication ports 1 & 2 (PRT1, PRT2)
  - Both ports are capable of transmitting and/or receiving ASCII character strings. Each port is individually configurable:
- Termination types: Stream mode, Termination character(s), Message timeout, Intercharacter timeout and/or Packet size limit
- Baud rate: 110 to 115.2K baud
- Parity: none, even, odd
- Stop bits: 1 or 2
- Data bits: 5 to 8
- RTS on/off timing: 0 to 65535 milliseconds
- Minimum response delay: 0 to 65535 milliseconds
- Handshaking (optional)
  - Hardware: RTS/CTS, DTR/DSR
  - Software: XON/XOFF
- Receive ASCII character strings up to 4096 characters in length
- Full hardware handshaking control provides radio, modem and multi-drop support
- Module error and status conditions returned to processor for diagnostic purposes
  - Module status
  - Port error status word (bit mapped)
  - Port receive state
  - Port receive character count
  - Port receive block count
  - Port transmit state
  - Port transmit character count
  - Port transmit block count
- All data related to the module is contained in a single controller tag with defined objects to ease in the configuration, monitoring and interfacing with the module
- Module configuration and communication configuration data is transferred to the module via a predefined user data type in the processor

SLC Interfaces

GARECO Check Weigher Interface Module

MVI46-GRCM

The MVI46 GARECO Check Weigher Interface Module allows Rockwell Automation SLC I/O compatible processors to interface easily with GARECO Check Weigher using Remote Control Instruction. The driver supports one to four ports that provide accessibility from one to four independent serial networks.

Features and Benefits

The MVI46-GRCM module acts as an input/output module between the Check Weighers and theSLC processor. The data transfer from the processor is asynchronous from the actions on the check weigher.

Applications

Applications using the GARECO Checkweigher Module can be found in many industrial sectors, including:

- Packaging machinery
- Batch and process manufacturing
- Production lines or transport lines
- Weighing and sorting goods in motion
- Monitoring/automatic controlling of filling processes.

Functional Specifications

- Ports: One to four ports to receive and/or transmit data
- Receive buffer size: 255 bytes
- Receive termination: Termination character
- Receive database location: 0 to 7000
- Communication Configuration:
  - Baud Rate: 300 to 115,200
  - Parity: None, Odd, Even
  - Data Bits: 5 to 8
  - Stop Bits: 1 or 2
  - RTS On and Off Timing: 0 to 65535 milliseconds
  - Minimum Response Delay: 0 to 65535 milliseconds
  - Hardware Handshaking: RTS/CTS
- Supports device types of Topline VS/VO, “S” Series, and “E” Series

The MVI46 HART Multi-drop Master Communication Module is an SLC backplane-compatible module that allows SLC processors to interface easily with HART compatible devices. Devices commonly supporting the protocol include pressure, temperature, flow transmitters, as well as other similar instruments commonly found in the process (and other) industry.

HART® is a registered trademark of the HART Communication Foundation

Features and Benefits

The MVI46-HART Master Communication Module allows Rockwell Automation SLC I/O compatible processors to easily communicate with HART slave devices. The MVI46-HART module interfaces up to 15 devices on each HART channel with the SLC processor. Four channels on the module support master protocol commands to interface with slave devices on their own networks. Each port is individually configurable. Data is exchanged between the HART network and the SLC processor using the internal database contained in the module and direct control by the controller's ladder logic and pre-defined data objects (5000 registers maximum).

The MVI46-HART module is the perfect solution for industrial applications in chemical and refining operations, gas and liquid distribution systems, and remote offshore monitoring stations addressing virtually all aspects of control, data acquisition, and maintenance.

Applications

The HART protocol is supported by major instrument suppliers and the HART Communication Foundation (HCF).

Today, HART is the most widely used digital communications protocol for instruments in the process control industry. More than 105 manufacturers support HART with a choice of more than 170 different field instruments.

Functional Specifications

The MVI46-HART module supports the HART Multi-drop implementation of the protocol. Following are some general specifications for the module:

- Built in accordance to the HART Bell 202 Frequency Shift Keying (FSK) standard to superimpose digital signals at a low level on top of the 4 – 20mA
  - Four independent HART master ports that are completely user-configurable
  - Supports up to 15 devices per port
  - Point-to-point (slave address 0) or Multi-drop (slave address 1 to 15) modes supported
- Supports 99 universal and common practice commands per port to control and monitor devices with integer, IEEE754 floating-point and packed ASCII character string data blocks
- Burst mode can be used for faster update of data from a single slave
- Supports an auto polling feature that will automatically collect data from each HART instrument on the channel and store the data in the module database
- Communication ports can be configured as a secondary master (that is, handheld configuration device)

Protocol Supported: HART protocol uses the Bell 202 standard frequency shift-keying (FSK) digital signal to communicate at 1200 baud, superimposed at a low level on the 4 to 20mA analog measurement signal.

Supported Function Codes: HART Universal Commands Set supported are 00-03, 06-09, and 11-22. HART Common Practice Commands Set supported are 33-83 and 105–110.

HART Network Communications: Supports four master channels. Each channel on the module is configured independently to emulate a HART master. Burst mode can be used for faster update of data from a slave device.

Command polling is also user-configurable, including disabled, continuous, on change of data (write only), and dynamically user or automatic enabled.

Status: Error codes returned by the HART protocol available on an individual command basis. In addition, a slave status list is maintained per active channel.

Landis & Gyr Telegyr 8979F Slave Communication Module

MVI46-LNG

The MVI46 Landis & Gyr Telegyr Slave Communication Module is an SLC backplane compatible module that allows SLC processors to interface easily with Telegyr Master host devices. SCADA systems supporting this application are commonly found in the power utility industry.

Features and Benefits

The module acts as a communication gateway between the Telegyr 8979 Rev. F version of the protocol and the SLC processor. The module functions as a Telegyr slave, receiving commands from the host. Data transfer between the module and the processor is asynchronous to the Telegyr network, with the module's internal database being used to exchange data between the processor and the Telegyr network.

Applications

This module is the perfect solution for existing Landis & Gyr Telegyr 8979 Rev. F master devices requiring Rockwell Automation SLC platform integration. Industries and services that benefit from this integration include:

- Power and distribution applications
- Energy Management Systems
- Water and Gas Applications
- Substation Automation

Functional Specifications

This module supports the Landis & Gyr Telegyr 8979 Rev F slave protocol to the following specifications:

- Supports two serial ports emulating the protocol, each individually configurable for:
  - Slave Address
  - Communication parameters
  - Timing
- The module supports a database common to both serial ports. The supported point types and their maximum point counts are:
  - Binary Input: 800 points
  - Binary Output: 800 points
  - Analog Input: 300 points
  - Analog Output: 50 points
  - Accumulators: 50 points
  - Indication Points: 800 points

Supported Function Codes

Code	Description
0	Analog Change Report
1	Analog Force Report
2	Analog Group Change Report
3	Analog Group Force Report
5	ADC Reference Force Report
6	Indication Change Report
7	Indication Force Report
11	Digital Input Force Report
12	Accumulator Change Report
13	Accumulator Force Report
20	Analog Report
21	SBO Select
22	SBO Operate
23	Digital Output
24	Accumulator Freeze
25	Pulse Output
26	Pulse Train Output
30	Restart RTU
31	RTU Configuration
32	Time Synchronization
34	Analog Deadbands
35	Analog Group Define
36	Accumulator Preset
37	Continuation Request
38	Repeat Last Message
39	Firmware Configuration

The MVI46 Modbus Plus Communication Module allows Rockwell Automation SLC I/O compatible processors to interface easily with other Modbus Plus protocol compatible devices.

The Modbus Plus module is a powerful module designed with both Master and Slave support, enabling easy connection to other Modbus devices (Modicon processors and many others).

Features and Benefits

Compatible devices include not only Modicon PLCs (which all support the Modbus Plus protocol) but also a wide assortment of end devices licensed through the Collaborative Automation Partner Program. The MVI46-MBP module acts as an input/output module between the Modbus Plus network and the SLC processor. The data transfer from the processor is asynchronous from the actions on the Modbus Plus network. A 4000-word register space in the module exchanges data between the processor and the Modbus Plus network.

These modules allow SLC platforms to connect directly on Modbus Plus networks as a peer. In addition, the modules act as slaves to processors that must read/write data from the module's memory.

Crossing all industrial boundaries, potential applications include the connection of SLC processors to Modicon processors, and the connection of Modbus Plus speaking devices such as drives, relays, and power monitor hardware to the SLC backplane.

Applications

Applications using the Modbus Plus Communication Module can be found in many industrial sectors and include:

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper

Functional Specifications

- Communication parameters:
  - Baud: 57,600 (fixed)
  - Parity: none (fixed)
  - Stop: 1 (fixed)
- Modbus Plus ports:
  - Memory usage is user definable
  - Support for the storage and transfer of up to 4,000 registers across the backplane
  - 100 word reads and writes (max. allowed)
  - Supports all five levels of Modbus Plus routing
  - Software configurable parameters Node address: 1-64
  - Global out size: 0-32 words
  - Global in size: 0-32 words
  - Module data transfer: 0 to 4,000 words
  - Master command count.: 0 to 100 commands
- Function codes supported: 1, 2, 3, 4, 5, 6, 15, 16

Global Data Specifications

The MBP module actively exchanges global in (32 words max. per node) and global out (32 words max.) data on the Modbus Plus network. Priority is given to these data types to provide a high speed mechanism for the transfer of control data.

Modbus Slave Mode Specifications

- Supports broadcast commands from host
- Communication error codes returned to ladder logic

Modbus Master Mode Specifications

- Command list support of up to 100 commands
- Conditional and continuous command list polling
- Each command list entry is fully configurable for function register to/from addressing and word/bit count/word and byte swap
- Event driven bit and register write commands (ladder logic controlled)
- Supports sending of broadcast commands
- Communication status error codes returned to ladder logic on a per command basis

SLC Interfaces

Modbus Master/Slave Communication Module

MVI46-MCM

The MVI46 Modbus Master/Slave Communication Module allows Rockwell Automation SLC processors to interface easily with other Modbus protocol compatible devices.

Compatible devices include not only Modicon PLCs (which all support the Modbus protocol) but also a wide assortment of end devices. The module acts as an input/output module between the Modbus network and the SLC processor. The data transfer from the processor is asynchronous from the actions on the Modbus network.

Features and Benefits

The MVI46 Modbus Master/Slave Communications module is designed to allow SLC processors to interface easily with Modbus protocol-compatible devices and hosts.

The MVI46-MCM module acts as an input/output module between the Modbus network and the SLC processor. The data transfer from the processor is asynchronous from the actions on the Modbus network. A 5000-word register space in the module exchanges data between the processor and the Modbus network.

Many host SCADA packages support the Modbus protocol, while devices commonly supporting the protocol include several PLCs, as well as many other third party devices in the marketplace. (For a partial list of devices that speak Modbus, please visit the ProSoft Tested section of the ProSoft Technology web site).

Applications

Applications using the Modbus Master/Slave Communication Module can be found in many industrial sectors and include:

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper
- SCADA communications

Functional Specifications

- Support for the storage and transfer of up to 5000 registers to/from the SLC processor's data files
- Module memory usage that is completely user definable
- Two ports to emulate any combination of Modbus master or slave device
- Supports Enron version of Modbus protocol for floating point data transactions

Slave Specifications

The MVI46-MCM module accepts Modbus function code commands of 1, 2, 3, 4, 5, 6, 8, 15, 16, 17, 22 and 23 from an attached Modbus master unit. A port configured as a Modbus slave permits a remote master to interact with all data contained in the module. This data can be derived from other Modbus slave devices on the network, through a master port, or from the SLC processor.

Master Specifications

A port configured as a virtual Modbus master device on the MVI46-MCM module actively issues Modbus commands to other nodes on the Modbus network. One hundred (100) commands are supported on each port. Additionally, the master ports have an optimized polling characteristic that polls slaves with communication problems less frequently. The SLC processor can be programmed to control the activity on the port by actively selecting commands from the command list to execute or issuing commands directly from the ladder logic.

The MVI46 MDA Scientific System 16 Gas Analyzer Slave Module allows Rockwell Automation SLC processors to interface easily as a host with MDA Scientific CM4 gas monitoring hardware (See MVI46-MDA4 for a CM4 solution).

Features and Benefits

The MVI46-MDA16 module acts as an input/output module between the System 16 network and the SLC processor. The data transfer from the processor is asynchronous from the actions on the System 16 network. A 1600-word register space in the module is used to exchange data between the processor and the System 16 network.

Applications

This application is useful for any industry producing, using, or exposed to toxic or corrosive gases, where interfacing the System 16 Gas Analyzer with a SLC processor is required.

Functional Specifications

- Support for the storage and transfer of up to 1600 registers to/from the SLC processor's data files
- Two System 16 slave ports
- Configurable parameters include:
  - Baud Rate 110 to 115,200
  - Parity None, Odd and Even
  - Data Bits 5 to 8
  - Stop Bits 1 or 2
  - RTS On and Off Timing 0 to 65535 milliseconds
  - Use of CTS Modem Line Yes or No

Operating Specifications

The MDA-16 product includes the following standard features:

- Two fully configurable serial ports, each capable of supporting the System 16 Slave functionality
- Supports one System 16 unit per serial port, two total per module
- Memory mapping is pre-defined in the module to ease implementation in the ladder program
- RS-485 connection from each port directly to the System 16 unit
- Supported System 16 command codes:
  - Write Commands
  - 0x30 Sequential Sample Results
  - 0x50 System Configuration
  - 0x52 Point Enable Masks
  - 0x53 Current System State
  - 0x54 Point Configuration
  - 0x56 Gas Table Data
  - 0x61 Fault
  - 0x68 Fault and Alarm Reset
- Operating Mode returned to ladder processor
- Error Codes returned to the ladder processor

MVI46-MDA4

The MVI46 MDA Scientific CM4 Gas Analyzer Master Module allows Rockwell Automation SLC processors to interface easily as a host with MDA Scientific CM4 gas monitoring hardware (See MVI46-MDA16 for a System 16 solution).

Features and Benefits

The MVI46-MDA4 module acts as an input/output module between the CM4 network and the SLC processor. The data transfer from the processor is asynchronous from the actions on the CM4 network. A 5000-word register space in the module exchanges data between the processor and the CM4 network.

Applications

This application is useful for any industry producing, using, or exposed to toxic or corrosive gases, where interfacing the MDA4 Gas Analyzer with a SLC processor is required.

Functional Specifications

Some of the general specifications include:

- Support for the storage and transfer of up to 5000 registers to/from the SLC processor's data files
- Two CM4 master ports
- Configurable parameters include:
  - Baud Rate 110 to 115,200
  - Parity None, Odd and Even
  - Data Bits 5 to 8
  - Stop Bits 1 or 2
  - RTS On and Off Timing 0 to 65535 milliseconds
  - Use of CTS Modem Line Yes or No
  - Response Timeout 0 to 65535 milliseconds
  - Number of Slaves 1 to 10
  - Reduced Data Structure Y/N
  - Protocol Version 1 or 2
  - Polling Delay 0 to 65535 milliseconds.

A port configured as a virtual CM4 master device on the MVI46-MDA4 module will actively issue CM4 commands to other nodes on the CM4 network. Four read and five write commands are supported.

The MDA-4 product includes the following standard features:

- Two fully configurable serial ports, each capable of supporting the CM4 Master functionality
- Supports up to 10 CM4 units per serial port, 10 total per module
- Support movement of binary, integer, ASCII, and floating point data types
- Memory mapping will be pre-defined in the module to ease implementation in the ladder program
- RS-485 connection from each port directly to the CM4 units
- Software configuration (From processor ladder logic)
  - Slave Addr: 0 to 31
  - Command: Select command to be executed
- Supported CM4 command codes:
  - Read Commands
  - 0x30 Get System Information
  - 0x31 Get Unit Status
  - 0x36 Get Alarm History
  - 0x37 Get Current Point Status
  - Write Commands
  - 0x51 Reset Fault or Alarm
  - 0x52 Set Key-Code
  - 0x53 Lock Keyboard
  - 0x60 End Point Lock-On
  - 0x61 Start Point Lock-On
- Operating Mode returned to ladder processor
- Error Codes returned to the ladder processor

The MVI46 Modbus TCP/IP Communication Module is designed to allow SLC processors to interface easily with other Modbus TCP/IP protocol-compatible devices using client and server functionality.

Compatible devices include not only Modicon processors (which support the Modbus TCP/IP protocol) but also a wide assortment of other client and server devices.

Features and Benefits

The MVI46-MNET module is a single slot solution that provides a powerful connection between Rockwell Automation's SLC processor and Modbus TCP/IP network applications.

The TCP/IP Modbus network applications include those networks hosted by Modicon Quantum processors, networks controlled by operator interface software packages, and the growing number of manufactured devices that support this protocol. The module acts as an input/output module between the Modbus TCP/IP network and the SLC processor. The data transfer from the processor is asynchronous from the actions on the Modbus TCP/IP network. A 5000-word register space in the module exchanges data between the processor and the Modbus TCP/IP network.

- Support for the storage and transfer of up to 5000 registers to/from the SLC processor using M0/M1 data file transfer
- User-definable module memory usage
- 10/100 Mbps Ethernet compatible interface
- Configurable parameters for the client and server applications and floating point support

Applications

With the growing trend of Ethernet technology in the industrial marketplace, this product has a wide variety of application uses.

- Food processing
- Petrochemical
- Pulp and paper
- Automobile manufacturing
- Water and Wastewater
- Oil & Gas
- Power and Electric

Functional Specifications

General Protocol specifications

Type	Specifications
Floating Point Data	Floating point data movement supported, including configurable support for Enron implementation
Modbus Server Protocol Specifications	The server driver supports connections to Modbus TCP/IP clients supporting Service Port 502 using the standard MBAP protocol, and clients supporting Modbus on Service Port 2000

General

- Supports five independent server connections for Service Port 502
- Supports five independent server connections for Service Port 2000
- All data mapping begins at Modbus register 40001

Status Data

Error codes, counters, and port status available

Modbus Function Codes

Code	Description
1:	Read Output Status
2:	Read Input Status
3:	Read Multiple Data Registers
4:	Read Input Registers
5:	Write Single Bit
6:	Write Single Data Register
15:	Write Multiple Bits
16:	Write Multiple Data Register

Modbus TCP/IP Client

The client driver supports the active reading and writing of data with Modbus TCP/IP compatible devices.

One client connection available (connect up to 100 servers/devices using the available 100 master commands).

SLC Interfaces

Modbus TCP/IP Communication Module — Client Only

MVI46-MNETC

The MVI46 Modbus TCP/IP Client Communication Module is designed to allow SLC processors to interface easily with other Modbus TCP/IP protocol-compatible devices.

Compatible devices include not only Modicon processors (which support the Modbus TCP/IP protocol) but also a wide assortment of other server devices.

Features and Benefits

This module was created to improve the performance when servers are not needed on a Modbus TCP/IP network. The module supports up to 30 clients with up to 16 commands for each client, making it easy to enable/disable the commands from the ladder logic. The client command control word contains one bit for each command.

Some of the other features include:

- Support for the storage and transfer of up to 5000 registers to/from the SLC processor's controller tags
- Module memory usage that is completely user definable
- 10/100 Mbps Ethernet compatible interface
- Configurable parameters for the client include:
  - Minimum Command Delay
  - User Defined Commands (Read/Write)

Applications

With the growing trend of Ethernet technology in the industrial marketplace, this product has a wide variety of application uses.

- Food processing
- Petrochemical
- Pulp and paper
- Automobile manufacturing
- Water and Wastewater
- Oil & Gas
- Power and Electric

Functional Specifications

- Operation via simple ladder logic
- Complete set up and monitoring of module through software and user-constructed configuration file (MNET.CFG)
- Backplane interface via I/O access

General Protocol specifications

Type	Specifications
Floating Point Data	Floating point data movement supported, including configurable support for Enron implementation

Modbus TCP/IP Client

- The client driver supports the active reading and writing of data with Modbus TCP/IP compatible devices
- Up to 30 client connections available

The Johnson Controls N2 Communication Module allows Rockwell Automation SLC I/O compatible processors to interface easily with other Johnson Controls N2 master devices.

Features and Benefits

The MVI46-N2 module acts as an input/output module between the Johnson Controls Metasys network and the SLC processor. The module is capable of receiving commands from a master device. The data transfer from the SLC processor is asynchronous from the actions on the Johnson Controls Metasys network. An internal database in the module exchanges data between the processor and the Johnson Controls Metasys Master (NCM, N-30, NAE, NIE).

Applications

The MVI46-N2 module is ideal for Energy Management Applications

Applications benefiting from the MVI46-N2 module are prevalent in commercial building and energy management projects. Single or multiple processor applications will benefit through reduced installation costs and increased functionality.

Functional Specifications

Some of the general specifications include:

- Support for the storage and transfer of internal database registers to/from the SLC processor's controller tags
- Two ports to emulate a Johnson Controls N2 slave
- Supports the following N2 objects:
  - Binary Input: Up to 960 points
  - Analog Input: Up to 300 points
  - Binary Output: Up to 960 points
  - Analog Output: Up to 300 points
- Supported Commands/Sub-commands
  - 0/4: Poll Message No Acknowledge
  - 0/5: Poll Message with Acknowledge
  - 0/9: Status Update
  - 1/1: Read Analog Input Attributes
  - 1/2: Read Binary Input Attributes
  - 1/3: Read Analog Output Attributes
  - 1/4: Read Binary Output Attributes
  - 2/1: Write Analog Input Attributes
  - 2/2: Write Binary Input Attributes
  - 2/3: Write Analog Output Attributes
  - 2/4: Write Binary Output Attributes
  - 7/2/3: Override Analog Output
  - 7/2/4: Override Binary Output
  - F: Identify Device Type
- The following commands are recognized, and acknowledged, but are not communicated in any way to the PLC/SLC, and do not return any data:
  - 0/0: Time Update
  - 0/8: Warm Start
  - All other commands return a Bad Command Error Code
- Configurable through the configuration file for the following:
  - Slave Address (assignable individually for Port 1 and 2)
  - Analog Input Object Count
  - Binary Input Object Count
  - Analog Output Object Count
  - Binary Output Object Count
- Warning and Alarming functions performed on Analog Input and Binary Input data types
- Change of State Response buffering
- Communication status error codes and statistics returned per port
- Memory mapping is pre-assigned to optimize data access and to ease implementation

A port configured as a Johnson Controls N2 slave permits a remote master to interact with data contained in the module. This data is derived from the SLC processor.

In-Chassis High Speed Wireless Communication Module

MVI46-WA-PWP

The MVI46 In-Chassis Wireless Communication Module creates a powerful wireless connection between devices located remotely, and the SLC processor. The efficient but powerful PWP protocol allows data exchange in one-to-one or one-to-many wireless scenarios.

Features and Benefits

ProSoft Wireless Protocol (PWP) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed. Wireless bandwidth utilization is optimized by using efficient communication methods. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the "wireless" network can produce these types of messages and each device determines which of these messages to consume.

Applications

The inRAx series of wireless products provides users more flexibility than ever before seen in wireless solutions. Use the MVI46-WA-PWP module to connect various field devices using different networks or protocols, and share data between these devices "over-the-air." This is accomplished by exchanging shared common database information wirelessly with ProSoft Technology's efficient but powerful wireless protocol, PWP.

Functional Specifications

Includes ProSoft Configuration Builder (PCB) configuration software (see PSW-PCB).

General Radio Specifications

Specification	Value
Frequency	2.4 GHz band (2400 to 2483.5 MHz)*
Wireless medium	DSSS - Direct Sequence Spread Spectrum (802.11b)
Output power	32 mW (15 dBm)
Channel data rates	11, 5.5, 2, 1 Mbps
Channels - user selectable	11 - North America 13 - Europe** 14 - Japan
Security	PWP + WEP 64/128 Encryption with WEP key rollover management
Antenna Ports	(2) RP-SMA connectors, automatic antenna diversity
Bit Error Rate (BER)	Better than 10^{-5}

Range / Transmit Rate	High Speed 11 Mbps	Medium Speed 5.5 Mbps	Standard Speed 2 Mbps	Low Speed 1 Mbps
Open Office Environment	160m (525 ft.)	270 m (885 ft.)	400 m (1300 ft.)	550 m (1750 ft)
Semi-Open Office Environment	50 m (165 ft.)	70 m (230 ft.)	90 m (300 ft.)	115 m (375 ft.)
Closed Office	25 m (80 ft.)	35 m (115 ft.)	40 m (130 ft.)	50 m (165 ft)
Receiver Sensitivity	–83 dBm	–87 dBm	–91 dBm	–94 dBm

General range guidelines (actual results may vary)

* Varies with country regulation

** Some European countries such as France allow fewer channels

The Teledyne CA Slave Communication Module is a single slot solution for the Rockwell Automation 1746 platforms and provides configurable access to both ports. Since the module can be installed in any slot in a local or a remote rack, it provides previously unavailable functionality and versatility.

Features and Benefits

The 3150-CAS (SLC) module's setup and operating control is performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Hands Off Operation

After the CAS module has been setup for operation, the module provides transparent control and monitoring capabilities. The CAS module, integrated directly into the SLC rack, forms a tightly integrated and practical solution. After configuration, the module will perform all protocol related functions on a stand-alone basis.

Applications

Applications using the Teledyne CA Slave module can be found in many industrial sectors and include:

- Foreign device data concentrator
- Pipelines
- Offshore platforms
- Oil field lease

Functional Specifications

- Full radio, modem and Multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces
- Communication error codes and counters returned to ladder logic (slave port)
- Configuration via simple ladder logic function codes:

Code	Description
1	Read status data
2	Read analog data
3	Read meter data
10	Read frozen analog values
11	Read frozen meter data
16	Read all data
20	Read tank data from RTU
30	Control momentary select
31	Control momentary operate
32	Control continuous select
33	Control continuous operate
34	Setpoint select
35	Setpoint operate
43	Freeze meters
44	Freeze analogs
45	Freeze meters/analogs

- Supports broadcast commands from master register addressing

Command	Description
Status	Up to 250 words
Analog	Up to 250 words
Meter	Up to 250 values (2 words per value)
Tank	Up to 250 words

- Supports write commands from host in both direct or indirect modes:
- Setpoint select and operate
- Control point continuous and momentary
- Communication Parameters

Parameter	Value
Address	1 to 254 (255 is broadcast)
Parity	None, Odd, Even
Stop Bit	1 or 2
Baud rate	300 to 38.4K
RTS Delays	1 millisecond resolution on and off

SLC Interfaces
Honeywell 7800 Communication Module
3150-CBM

The Honeywell 7800 Series Master Module is designed to allow Rockwell Automation SLC platforms to interface with Honeywell 7800 Series Burner Management hardware devices.

Features and Benefits

Through simple ladder logic and data table configuration, the 3150-CBM SLC ladder application is able to access important operational data from the 7800 units for display in the data table. In addition, the ladder is able to write to points in the slave devices.

All module setup and operating control is performed over the backplane and the only software needed is a ladder-programming package.

Hands-Off Operation

After the CBM module has been setup for operation, the module is capable of accessing (read/write) the points in the burner management devices. The CBM module is integrated directly into the SLC rack, forming a tightly integrated and practical solution. After configuration, the module will perform all protocol related functions as commanded by the ladder logic program.

The ProSoft module installs in any slot in a local rack (or a remote rack in the case of the 3100 module).

Applications

The Honeywell 7800 Master module can be found in many industrial sectors, including manufacturing. The module acts as a polling master over the Honeywell 7800 Series of burner management products.

Functional Specifications

- Two fully configurable serial ports each capable of supporting the CBM Master functionality using the ASCII mode of communications
- RS-485 connection from each port directly to Honeywell QS7850A Interface Modules
- Supports up to 32 Honeywell nodes per serial port
- Supports polling of rpa command accessible data using the integer data type
- Floating point values are scaled x 10 by module
- ASCII text strings are not supported
- Supports one-shoted writes using to wpa/wpqa accessible data from ladder logic
- Up to 40 ‘device config files’ are available for user configuration
- Communication configuration (from processor ladder logic):
  - Node addr—8 to 255
  - Baud rate—300 TO 38,400
  - Parity none (fixed
  - Stop bit1 (fixed)
  - RTS to TxD—50 milliseconds (fixed)
  - Timeout—4 seconds (fixed)
  - Mode ASCII (fixed)
- Supported CBM command codes:
  - rparead point
  - pqaread point qualified
  - wpawrite point
  - wpqawrite point qualified
  - sn-set address
- Error codes returned to the ladder processor along with a poll execute toggle bit

The Emerson FX Drive Master module allows the user to easily configure one or both ports and communicate directly over the backplane with the respective Rockwell Automation processors.

The 3150-EMC module allows Rockwell Automation 1746 I/O compatible processors to interface easily as a host with up to eight Emerson FX series drives (4 per port). The 3150-EMC (SLC) Emerson FX drive master module is a single slot solution.

Features and Benefits

All module setup and operating control is performed over the backplane through simple ladder logic and data table configuration. The only software needed is a ladder-programming package.

Hands-Off Operation

After the EMC module has been setup for operation, the module is capable of accessing many of the drive's configuration and control parameters. The EMC module is integrated directly into the PLC/SLC rack, forming a tightly integrated and practical solution. After configuration, the module will perform all protocol related functions as commanded by the ladder logic program.

The ProSoft module installs in any slot in a local or extended rack (or a remote rack in the case of the 3100 module).

Applications

The Emerson FX master module can be found in many industrial sectors and in the following applications:

- Automated assembly
- Packaging
- Automotive manufacturing
- Converting
- Material handling
- Food processing

Functional Specifications

- Two fully configurable serial ports, each capable of supporting up to four Emerson FX Drives
- Support for the storage and transfer of up to 12 Commands (6 per port) to the SLC data tables
- RS-232C communications
- Software configuration (from processor ladder logic):
  - VFP and DDP power of 10 selectable per drive addr
  - Drive addr1 to 4 are valid
  - Baud rate300 TO 19,200
  - RTS to TxD0 to 65535 milliseconds, 1 millisecond resolution)
- Communication parameters default
  - 8 data bits, 1 stop bit, full duplex)

SLC Interfaces

Foxboro/Systronics Minimote RTU Slave Communication Module

3150-FOX

The inRAx Systronics slave module is a single slot solution for the Rockwell Automation 1746 platforms. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility. Support has been added to the product to support the report by exception capabilities associated with VSAT implementations of the protocol.

Features and Benefits

All module setup and operating controls are performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Hands-Off Operation

After the SYS module has been setup for operation, the module provides transparent control and monitoring capabilities. The SYS module, integrated directly into the PLC/SLC rack, forms a tightly integrated and practical solution. After configuration, the module will perform all protocol related functions on a stand-alone basis.

The ProSoft module installs in any slot in a local rack.

Applications

Applications using the Foxboro/Systronics slave module can be found in many industrial sectors and in the following applications:

- Foreign device data concentrator
- Pipelines
- Offshore platforms
- Oil field lease

Functional Specifications

- Foxboro / Systronics Minimote RTU Protocol, with VSAT reporting support
- Full radio, modem and Multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces
- Communication error codes and counters returned to ladder logic (Slave port)
- Configurable character delay to support VSAT packetizing delays
- Configuration via simple ladder logic
- Supports broadcast commands from Master
- Supports write commands from host in both direct or indirect modes
- Setpoint select and operate
- Control point continuous and momentary

Supported file numbers

File	Description
14h	Analog Data
19h	Status Data
37h	Accumulator Data32 bit
1Dh	Momentary Control Select
21h	Setpoint Select
23h	Execute Selected Control File
2Ch	Pulse Train Control File
30h	Multi-file Streaming Data Setup
3Fh	Multi-file Streaming Data
3Ch	VSAT Timer Setup
3Eh	20 milliseconds Timer
41h	Analog Deviation Limits
44h	Accumulator Reset Commands
47h	32 bit Accumulator Current End of Batch
4Bh	Tank Levels

Register addressing

Filetype	File #'s	Valid Addresses
16 bit registers	14h	0 to 61
16 bit binary	19h	0 to 123
32 bit acc EOBatch	47h	0 to 15
32 bit accumulator	37h	0 to 31
Tank Levels	4Bh	0 to 31
Momentary Control	1Dh	Bit:0 to 255 Card 0 to 15
Setpoint Select	21h	Reg:0 to 4095
Accumulator Reset	44h	1 to 2

Communication parameters

Parameter	Value
Address	1 to 254 (127 is broadcast)
Parity	None, Odd, Even
Stop Bit	1 or 2
Baud rate	300 to 38.4K
RTS Delays	1 millisecond resolution on and off

3150-HAR

The 3150-HAR (SLC) Harris Slave Module is a single slot solution for the Rockwell Automation 1746 platforms. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility.

Features and Benefits

All module setup and operating controls are performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Hands-Off Operation

After the HAR module has been setup for operation, the module provides transparent control and monitoring capabilities. The HAR module, integrated directly into the PLC/SLC rack, forms a tightly integrated and practical solution. After configuration, the module will perform all protocol related functions on a stand-alone basis.

The ProSoft module installs in any slot in a local rack. The product's capabilities are enabled and controlled with simple ladder logic and data table initialization.

Applications

The Harris 5000/5500/6000 Slave module can be found in the power industry in the following applications:

- Foreign device data concentrator
- Power equipment monitoring
- Dam operation

Functional Specifications

- Harris 5000/5500/6000 implementation of the protocol
- Full radio, modem and Multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces
- Communication error codes and counters returned to ladder logic (slave port)
- Configurable character delay to support VSAT packetizing delays
- Supports broadcast commands from master register addressing
- Configuration via simple ladder logic

Supported operation codes:

Code	Description
0	A/D and Accumulator Data Dump
3	Status Check
4	Status Change Dump
5	Status Dump
6	Trip/Close Control Arm
7	Trip/Close Control Operate
8	AGC Raise/Lower
9	Set Point Control Arm
10	Set Point Control Operate
11	Power Fail Reset
12	Port On-Line Status Scan
21	Time Synchronization (SOE)
23	Time Synchronization Adjustment
27	Time Synchronization (Non-SOE)
30	Set Freeze Interval

Up to 7 ports, each port

Parameter	Value
Status	Up to 63 words
Analog	Up to 63 words

Accumulator

Parameter	Value
12 bit	Up to 63 words
24 bit	Up to 34 values
32 bit	Up to 12 values

Communication parameters

Parameter	Value
Address	1 to 63
Parity	None, Odd, Even
Stop Bit	1 or 2
Baud rate	300 to 38.4K
RTS Delays	1 millisecond resolution on and off

SLC Interfaces

Limitorque Valve Actuator Master Communication Module

3150-LTQ

The Limitorque Valve Actuator Master Module easily implements a redundant loop network or a multi-drop network with up to 150 Limitorque valve actuators.

The 3150-LTQ allows Rockwell Automation 1746 I/O compatible processors to interface easily as a host with Limitorque valve actuators. The module supports the Limitorque redundant loop network mode of communications as well as a single multi-drop network (up to 28 actuators).

Features and Benefits

The 3150-LTQ (SLC) Limitorque Valve Actuator Master Module is a single slot solution, which communicates directly with the respective Rockwell Automation processors.

All module setup and write command initiation is performed over the backplane through simple ladder logic and data table configuration. Any standard ladder programming software can be used.

Hands-Off Operation

After the LTQ module has been setup for operation, all active valve actuators will automatically be polled for status data. This data is returned to the ladder data table for monitoring and control purposes. The LTQ module is integrated directly into the SLC rack, forming a tightly integrated and practical solution.

The ProSoft module installs in any slot in a local or extended rack.

Applications

The 3150-LTQ module supports all Limitorque devices which are DDC 100 compatible, including:

- Accutronix MX / DDC-100
- UEC-3-DDC Modbus
- DDC-100M field unit
- DDC-100M I/O module
- Valvcon IVO (multi-drop only)

Functional Specifications

- Implements Limitorque's Port A/B polling scheme using both ports on the LTQ module
- RS-232 or RS-485 communications (jumper selectable)
- Software configuration (from processor ladder logic):
  - Baud rate: 1,200 TO 38,400
  - Message response timeout
  - Number of active slaves: 1 to 150
  - Last state on comm fail
  - Network polling scheme (looped, port 1 only, port 2 only)
  - Active slave table: bit mapped up to 150 slaves)
- Supported commands:
  - Continuously poll: read registers 4000840013
  - Valve position
  - Status and fault registers
- Digital outputs and digital:
  - Inputs registers1 and 2
  - Communication error code and comm counter)
- Commands:
  - Open, stop, close, initiate network ESD, terminate network ESD, engage contactors 16, disengage contactors 16, valve position (0100%))

The 3150-MTS product allows the user to easily communicate with up to 64 MTS Level Plus gauges. The 3150-MTS (SLC) Module is a single slot solution for the A-B 1771 platforms (firmware solutions also available). These products allow MTS Level Plus digital gauges and Level Plus Monitors to be interfaced directly to the Allen-Bradley environment.

Features and Benefits

All module setup and operating control is performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Port Configuration

Configuring the two ports independently allows for optimum flexibility. Using both ports as RS-485 Masters to MTS gauges, or one port as a RS-485 Master to a set of MTS gauges and the other as a Modbus Slave connected via modem to a SCADA host is one example of this flexibility. Once configured through the processor data table, the module will perform all protocol related functions on a stand-alone basis, returning level and temperature information to the processor.

Easy Hardware Installation

The connection between the 3150-MTS and the MTS gauges is a direct one and needs no RS-232 to RS-485 converter. In order to connect the 3100-MTS product to the MTS digital gauges, plug the module into the Allen-Bradley rack and connect the RS-485 line from the MTS gauges to the module's port.

Installation, Set Up and Operation

The ProSoft module installs in any slot in a local or a remote rack. The product's capabilities are enabled and controlled with simple ladder logic and data table initialization.

Applications

The 3150-MTS module setup and operating control is performed through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Functional Specifications

- Continuous polling sequence of up to 64 gauges, each fully configurable for port, gauge address, level resolution, and temperature resolution
- RS-485 interface in module (No converters needed)
- Communication and instrument error codes returned to ladder logic on a per command/slave basis
- Supported commands:
  - 16: output level 1 and 2 at 0.1 inch resolution
  - 17: output level 1 and 2 at 0.01 inch resolution
  - 18: output level 1 and 2 at 0.001 inch resolution
  - 31: ave & indiv RTD temp at 1°F resolution
  - 32: ave & indiv RTD temp at 0.2°F resolution
  - 33: ave & indiv RTD temp at 0.02°F resolution
- RTU mode (binary) with CRC-16
- ASCII mode with LRC error checking
- Broadcast commands
- 125 word reads and writes
- Function codes supported:
  - 1: read output status
  - 2: read input status
  - 3: read multiple data registers
  - 4: read input registers
  - 5: force single coil (write single bit)
  - 6: preset (write) single data register
  - 15: force multiple coils (write multiple bits)
  - 16: preset (write) multiple data register
- User configurable: address, parity, stop bits, baud rate
- Full radio, modem and Multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces
- Communication statistics returned to ladder logic, including error codes and communication counters

SLC Interfaces

Fisher ROC Communication Module

3150-ROC

The 3150 Fisher ROC communication module is a single slot solution for the Rockwell Automation SLC platform. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility. All module setup and operating controls are performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Features and Benefits

- Single slot in-rack SLC
- Full backplane support
- M0/M1 in SLC
- Uses standard A-B pgm software

Applications

The 3150-ROC (SLC) Fisher ROC Communication Module is a single slot solution for the Rockwell Automation 1746 platforms. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility.

Functional Specifications

- Simple data table configuration
- RS-232, 422, 485
- Full modem/radio support
- Flash ROM upgradable (SLC)

3150-SEA

The 3150 SEA module is a single slot solution for the Rockwell Automation 1746 platforms. By providing configurable access to both ports, this product is able to communicate directly with multiple Siemens power meter devices.

Features and Benefits

All module setup and operating control is performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Hands-Off Operation

After the SEA module has been setup for operation, the module provides transparent control and monitoring capabilities. The SEA module, integrated directly into the SLC rack, forms a tightly integrated and practical solution. After configuration, the module will perform all protocol related functions on a stand-alone basis.

The ProSoft module installs in any slot in a local or a remote rack.

Applications

The 3150 SEABUS module can be found in the power industry in the following applications:

- Power meters
- Power protection
- Lightning control systems

Functional Specifications

- Siemens SEABUS Plus Master protocol
- Full Multi-drop support with up to 32 slave devices per port
- Supports RS-485 interface directly to Multi-drop link of Siemens meters
- Slave polling controlled by user configuration of slave poll list
- Data objects for each of the device types are pre-defined
- Configuration via simple ladder logic
- Simple configuration of slave types

Type	Description
1	4700 Meter long data read
2	4700 Meter short data read
3	4300 Meter
4	Static Trip III short data read
5	Static Trip III long data read

- Communication Parameters

Parameter	Value
Parity	None, odd, even
Stop Bit	1 or 2
Baud rate	300 to 38.4K
RTS Delays	1 millisecond resolution on and off

SLC Interfaces

YORK Chiller Master Communication Module

3150-YRK

The 3150 YORK Chiller Master Communication Module is a single slot solution for the Rockwell Automation SLC platforms. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility.

Features and Benefits

- Full backplane support
- M0/M1 in SLC
- Uses standard Rockwell Automation programming software
- Simple data table configuration
- RS-232, 422, 485
- Full modem/radio support
- Flash ROM upgradable (PLC)
- Many protocols available

Applications

The YORK Chiller Master Communication module's setup and operating controls are performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Functional Specifications

- Support for up to 14 York chillers per port
- RS-232 or RS-485 communications (jumper selectable)
- Software configuration (From processor ladder logic):
  - Baud Rate 1,200 TO 38,400
  - Message Response Timeout
  - Number of active slaves 1 to 15 per port
  - Prioritized Page Polling List Up to 90 entries
  - Active Slave Table
- Response time
  The protocol drivers are written in Assembly and in a compiled higher level language. As such, the interrupt capabilities of the hardware are fully utilized to minimize delays, and to optimize the product's performance

The Johnson Controls N2 Communication Module allows Rockwell Automation SLC I/O compatible processors to interface easily with other Johnson Controls N2 master devices.

Features and Benefits

The inRAx-N2 module acts as an input/output module between the Johnson Controls Metasys network and the Rockwell Automation backplane. The module is capable of receiving commands from a master device. The data transfer from the SLC processor is asynchronous from the actions on the Johnson Controls Metasys network. An internal database in the module exchanges data between the processor and the Johnson Controls Metasys Master (NCM, N-30, NAE, NIE).

Applications

Ideal for Energy Management Applications

Applications benefiting from the inRAx N2 module are prevalent in commercial building and energy management projects. Single or multiple processor applications will benefit through reduced installation costs and increased functionality.

Functional Specifications

Some of the general specifications include:

- Support for the storage and transfer of internal database registers to/from the SLC processor's controller tags
- Two ports to emulate a Johnson Controls N2 slave
- Supports the following N2 objects:
  - Binary Input: Up to 960 points
  - Analog Input: Up to 300 points
  - Binary Output: Up to 960 points
  - Analog Output: Up to 300 points
- Supported Commands/Sub-commands:
  - 0/4: Poll Message No Acknowledge
  - 0/5: Poll Message with Acknowledge
  - 0/9: Status Update
  - 1/1: Read Analog Input Attributes
  - 1/2: Read Binary Input Attributes
  - 1/3: Read Analog Output Attributes
  - 1/4: Read Binary Output Attributes
  - 2/1: Write Analog Input Attributes
  - 2/2: Write Binary Input Attributes
  - 2/3: Write Analog Output Attributes
  - 2/4: Write Binary Output Attributes
  - 7/2/3: Override Analog Output
  - 7/2/4: Override Binary Output
  - F: Identify Device Type
- The following commands are recognized, and acknowledged, but are not communicated in any way to the PLC/SLC, and do not return any data:
  - 0/0: Time Update
  - 0/8: Warm Start
  - All other commands return a Bad Command Error Code
- Configurable through the configuration file for the following:
  - Slave Address (assignable individually for Port 1 and 2)
  - Analog Input Object Count
  - Binary Input Object Count
  - Analog Output Object Count
  - Binary Output Object Count
- Warning and Alarming functions performed on Analog Input and Binary Input data types
- Change of State Response buffering
- Communication status error codes and statistics returned per port

Memory mapping is pre-assigned to optimize data access and to ease implementation

A port configured as a Johnson Controls N2 slave permits a remote master to interact with data contained in the module. This data is derived from the SLC processor.

SLC Interfaces

MDA Scientific CM4 and System 16 Gas Analyzer Interface Module

3150-MDA

The MDA (SLC) Scientific Gas Analyzer Communication Module is a perfect solution for the Rockwell Automation 1746 platforms because it provides previously unavailable functionality and versatility.

Features and Benefits

- All module setup and operating controls are performed through simple ladder logic and data table configuration
- The only software necessary is a standard ladder-programming package

Applications

The 3150-MDA module acts as an input/output module between the CM4 or System 16 network and the SLC processor. The data transfer from the processor is asynchronous from the actions on the CM4 or System 16 network. A 1600-word register space in the module exchanges data between the processor and the System 16 network.

Functional Specifications

- Single slot in-rack SLC
- Full backplane support
- M0/M1 in SLC
- Uses standard Rockwell Automation pgm software
- Simple data table configuration
- RS-232, 422, 485
- Full modem/radio support

3150-DEM

The inRAx DE Master Communication Module allows Rockwell Automation SLC I/O compatible processors to interface easily with Honeywell DE instruments. Compatible devices include a large array of field devices including pressure, temperature, metering and many other instruments.

Features and Benefits

The module supports 16 DE channels, allowing both single and/or multivariable Honeywell transmitters operating in the DE mode to be directly integrated in the Rockwell Automation environment.

Data exchange between the DEM module and the processor data table is performed using standard ladder logic.

Applications

Supported Honeywell instruments include:

- ST 3000 smart pressure transmitter
- STT 3000 smart temperature transmitter
- SMV 3000 smart multivariable transmitter
- MagneW 3000 smart magnetic flowmeter
- SCM 3000 smart coriolis mass flowmeter
- SGC 3000 smart gas chromatograph

Functional Specifications

- Backplane data transfer via input/output Imax files
- Interfaces with Honeywell smart transmitters operating in the DE mode.
- Support multiple DE channels CLX - up to 16 Channels with single PV transmitter, multivariable transmitters
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA)
- Single cable connection from DEM module to FTA
- External 24 VDC source connection on front of DEM module for instrument loop power
- LEDs for visual module status:
  - Module active
  - Module fault
- Operation via simple ladder logic

SLC Interfaces

Modbus Master/Slave Communication Module

3150-MCM

The inRAx Modbus Master/Slave Communication Module allows Rockwell Automation SLC processors to interface easily with other Modbus protocol compatible devices.

Compatible devices include not only Modicon PLCs (which all support the Modbus protocol) but also a wide assortment of end devices. The module acts as an input/output module between the Modbus network and the Rockwell Automation backplane. The data transfer from the processor is asynchronous from the actions on the Modbus network. A 5000-word register space in the module exchanges data between the processor and the Modbus network.

Features and Benefits

The inRAx Modbus Master/Slave Communication Module is designed to allow SLC processors to interface easily with Modbus protocol-compatible devices and hosts.

The inRAx module acts as an input/output module between the Modbus network and the backplane. The data transfer from the SLC processor is asynchronous from the actions on the Modbus network. A 5000-word register space in the module exchanges data between the processor and the Modbus network.

Many host SCADA packages support the Modbus protocol, while devices commonly supporting the protocol include several PLCs, as well as many other third party devices in the marketplace. (For a partial list of devices that speak Modbus, please visit the ProSoft Tested section of the ProSoft Technology web site).

Applications

Applications using the Modbus Master/Slave Communication Module can be found in many industrial sectors and in the following applications

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper
- SCADA communications

Functional Specifications

This product supports the following general capabilities:

- Up to 100 entries in the command list, each fully configurable for function, slave address, register to/from addressing and word/bit count(Master port)
- Continuous polling of command list(Master port)
- Support for the storage and transfer of up to 4000 registers to/from the PLC
- Event driven bit and register write commands (Master port)
- Full radio, modem and multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces
- Communication error codes and counters returned to ladder logic(Slave port)
- Communication error codes returned to ladder logic on a per command basis (Master Port)

The following Modbus features have been implemented in both configurations:

- RTU mode (binary) with CRC-16
- ASCII mode with LRC error checking
- Broadcast commands
- 125 word reads and writes
- Floating Point data movement supported
- Function codes supported:
  - 1 : Read output status
  - 2 : Read input status
  - 3 : Read multiple data registers
  - 4 : Read input registers
  - 5 : Force single coil (Write single bit)
  - 6 : Preset (Write) single data register
  - 15 : Force multiple coils (Write multiple bits)
  - 16 : Preset (Write) multiple data register
- Configuration via simple ladder logic (Example provided with each product)

The inRAx Landis & Gyr Telegyr Slave Communication Module is an SLC backplane compatible module that allows SLC processors to interface easily with Telegyr Master host devices. SCADA systems supporting this application are commonly found in the power utility industry.

Features and Benefits

The module acts as a communication gateway between the Telegyr 8979 Rev. F version of the protocol and the SLC backplane. The module functions as a Telegyr slave, receiving commands from the host. Data transfer between the module and the processor is asynchronous to the Telegyr network, with the module's internal database being used to exchange data between the processor and the Telegyr network.

Applications

This module is the perfect solution for existing Landis and Gyr Telegyr (8979 Rev. F) master devices requiring Rockwell Automation SLC platform integration. Industries and services that benefit from this integration include:

- Power and distribution applications
- Energy Management Systems
- Water and Gas Applications
- Substation Automation

Functional Specifications

This module supports the Landis & Gyr Telegyr 8979 Rev F slave protocol to the following specifications:

- Supports two serial ports emulating the protocol, each individually configurable for:
  - Slave Address
  - Communication parameters
  - Timing
- The module supports a database common to both serial ports. The supported point types and their maximum point counts are:
  - Binary Input: 800 points
  - Binary Output: 800 points
  - Analog Input: 300 points
  - Analog Output: 50 points
  - Accumulators: 50 points
  - Indication Points: 800 points

Supported Function Codes

Code	Description
0	Analog Change Report
1	Analog Force Report
2	Analog Group Change Report
3	Analog Group Force Report
5	ADC Reference Force Report
6	Indication Change Report
7	Indication Force Report
11	Digital Input Force Report
12	Accumulator Change Report
13	Accumulator Force Report
20	Analog Report
21	SBO Select
22	SBO Operate
23	Digital Output
24	Accumulator Freeze
25	Pulse Output
26	Pulse Train Output
30	Restart RTU
31	RTU Configuration
32	Time Synchronization
34	Analog Deadbands
35	Analog Group Define
36	Accumulator Preset
37	Continuation Request
38	Repeat Last Message
39	Firmware Configuration

SLC Interfaces

Solar Turbine Modbus Master/Slave Communication Module

3150-GDF

The inRAx Modbus Master/Slave Communication Module allows Rockwell Automation SLC processors to interface easily with other Modbus protocol compatible devices.

Compatible devices include not only Modicon PLCs (which all support the Modbus protocol) but also a wide assortment of end devices. The module acts as an input/output module between the Modbus network and the Rockwell Automation backplane. The data transfer from the processor is asynchronous from the actions on the Modbus network. A 5000-word register space in the module exchanges data between the processor and the Modbus network.

Features and Benefits

The inRAx Modbus Master/Slave Communication Module is designed to allow SLC processors to interface easily with Modbus protocol-compatible devices and hosts.

The inRAx module acts as an input/output module between the Modbus network and the backplane. The data transfer from the SLC processor is asynchronous from the actions on the Modbus network. A 5000-word register space in the module exchanges data between the processor and the Modbus network.

Many host SCADA packages support the Modbus protocol, while devices commonly supporting the protocol include several PLCs, as well as many other third party devices in the marketplace. (For a partial list of devices that speak Modbus, please visit the ProSoft Tested section of the ProSoft Technology web site).

Applications

Applications using the Modbus Master/Slave Communication Module can be found in many industrial sectors and in the following applications

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper
- SCADA communications

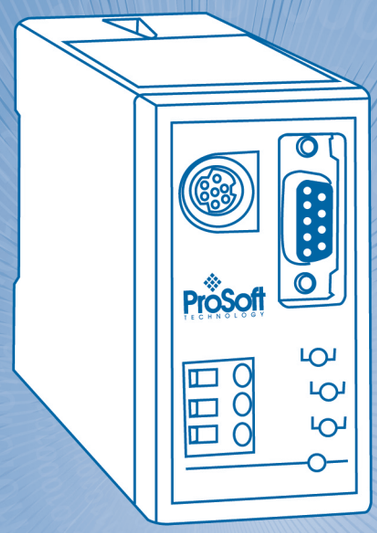
Functional Specifications

This product supports the following general capabilities:

- Up to 100 entries in the command list, each fully configurable for function, slave address, register to/from addressing and word/bit count(Master port)
- Continuous polling of command list(Master port)
- Support for the storage and transfer of up to 4000 registers to/from the PLC
- Event driven bit and register write commands (Master port)
- Full radio, modem and multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces
- Communication error codes and counters returned to ladder logic(Slave port)
- Communication error codes returned to ladder logic on a per command basis (Master Port)

The following Modbus features have been implemented in both configurations:

- RTU mode (binary) with CRC-16
- ASCII mode with LRC error checking
- Broadcast commands
- 125 word reads and writes
- Floating Point data movement supported
- Function codes supported:
  - 1 : Read output status
  - 2 : Read input status
  - 3 : Read multiple data registers
  - 4 : Read input registers
  - 5 : Force single coil (Write single bit)
  - 6 : Preset (Write) single data register
  - 15 : Force multiple coils (Write multiple bits)
  - 16 : Preset (Write) multiple data register
- Configuration via simple ladder logic (Example provided with each product)



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SCANport Interfaces

SCANPort Interfaces

Specification	Description
Configuration via dip switches	Slave Address: 1 to 63
Baud Rate	300 to 19200 baud
Parity	None, Odd and Even
Stop Bits	1 or 2
Physical Link	RS-232, RS-422 or RS-485 Female 9-pin D shell connectors
SCANport Messaging	Type 4 Enable Type 5 Enable Type 6 Enable Type 7 Enable
Supplied in two forms:	Open Style Power supplied by drive, mounted directly to drive Enclosed Power supplied externally (120 VAC)
Status LED	SCANport Status (bi-color) Serial Port Status (bi-color) Tx/Tx Activity Status (amber)
Current Consumption	60 ma DC
Input Voltage	Open Supplied by drive Enclosed 85 to 264 VAC, 1 Phase 45 to 63 Hz
Operating Temp	0° to 50°C
Storage Temp	–40° to 85°C

SCANport Interfaces

Modbus Plus SCANport Adapter

1560-MBP

The ProSoft 1560-MBP Modbus Plus Module is designed to allow Modbus Plus based PLCs to interface directly to the Rockwell Automation family of SCANport based devices.

Features and Benefits

The 1560-MBP connects directly to Rockwell Automation SCANport devices, allowing high speed access to the operating status and control parameters, as well as the entire parameter table. Similar devices include the Rockwell Automation Variable Speed Drives (1305 Micro, 1336 Plus, Vector, Force, etc.), the SMC Dialogue Plus and the SMP3.

Applications

The 1560-MBP module is simple to use, requiring only the setting of several dip-switch options. The parameters from the Rockwell Automation devices are pre-mapped to simplify reading and writing using standard MSTR commands. Use of Global Data has been optimized to enhance control and status monitoring performance.

Accessible Parameters

The 1560-MBP has read/write access to the entire parameter table in a SCANport device. Programmers can access all parameters using the MSTR Type 1 and 2 instructions. In addition, high speed parameter updating can be configured through Global Data in SCANport devices which support Datalinks.

Functional Specifications

- Protocol mode: Modbus Plus using Schneider Automation technology
- Supported Modbus Plus operations:
  - MSTR Type 1Write Data
  - MSTR Type 2Read Data
  - MSTR Type 5Write Global Data
  - MSTR Type 6Read Global Data
- Supports Control from Host Global Data. In this mode, the 1560-MBP will look for Control and Reference from the selected Host Global Out Data
- Pre-assigned Modbus memory map:
  - Read/Write: Command Control and Reference, Datalinks Out: A to D, Up to 2000 parameter values
  - Read Only: Status/Feedback, Datalinks In: A to D
- Configuration via dip switches:
  - Slave Address: 1 to 64
  - Host Address: 1 to 64
  - Global Database Control Enable
  - Fault on Loss of Comm. Enable
  - SCANport Messaging Options: No Datalinks, Datalinks A only, Datalinks A and B only, Datalinks A, B, C, D
  - Available packages:
  - 120 VAC Enclosed
  - 24 VDC Enclosed
  - Communication port connections- Modbus Plus Female 9-pin DB
  - SCANport connector

The ProSoft 1550-MBS Modbus Module is designed to allow Modbus based PLCs and Host systems to interface directly to the Rockwell Automation family of SCANport based devices.

Features and Benefits

Included in this family are the Rockwell Automation Variable Speed Drives (1305 Micro, 1336 Plus, Vector, Force, etc.), the SMC Dialogue Plus and the SMP3. The following functionality is available in the 1550-MBS unit: Multi-drop on an RS-485 link with other Modbus compatible devices Interface via R-232 in a point-to-point mode Be applied in existing or retrofit applications where other manufacturer's devices are in use.

Simple to Use

The 1550-MBS module is simple to use, requiring only the setting of several dip-switch options. The parameters from the Rockwell Automation devices are pre-mapped to simplify reading and writing using standard Modbus commands.

Accessible Parameters

The 1550-MBS has read/write access to the entire parameter table in a SCANport device. All parameters can be accessed using Function Codes 3, 6 and 16. In addition high speed parameter updating can be configured through Datalinks.

Installation, Set Up and Operation

The ProSoft 1550-MBS is a SCANport gateway allowing all Rockwell Automation SCANport compatible devices to interface to a Modbus host. The product's functional characteristics are enabled and controlled with the setting of several dip switches. Each product is shipped with a User Manual detailing its installation and operation.

Applications

Applications using the 1550-MBS modules include many industrial sectors

- Food processing
- Mining
- Pulp and paper
- HVAC

Functional Specifications

Modbus Specifications

- RTU mode (binary) with CRC-16 error checking
- Accepts broadcast commands from the Master
- Function codes:
  - 3: Read multiple output registers
  - 6: Preset (Write) single data register
  - 16: Preset (Write) multiple data registers
- Pre-assigned Modbus memory map:
  - Read/write: Command Control and Reference, Datalinks Out: A to D, Up to 575 parameter values
  - Read Only: Status/Feedback, Datalinks In: A to D
- Configuration via dip switches:
  - Slave Address: 1 to 247
  - Fault on Loss of Comm. Enable
  - SCANport Messaging Options: Datalinks A, B, C, D Enable
- Communication Parameters:
  - Address: 1 to 247
  - Parity: None, Odd or Even
  - Stop Bits: 1 or 2
  - Baud Rate: 300 to 19.2 k
- Communication port connections:
  - Modbus Female 9-pin DB: Supports RS-232 and RS-485
  - SCANport connector

SCANport Interfaces

Johnson Controls Metasys Slave SCANport Adapter

1550-N2

The N2 module allows Rockwell Automation Variable Speed Drives to interface directly with Johnson Controls building and energy management controllers.

The N2 module functions as a communications gateway providing the interface necessary to allow a drive to be monitored and controlled over the Johnson Controls N2 link.

Features and Benefits

Hands Off Operation

After the N2 module has been set up for operation, the module provides transparent control and monitoring capabilities. The N2 module and Rockwell Automation Drive combination form a tightly integrated solution.

Installation, Set Up and Operation

The 1550-N2 is available as an external DIN rail mounted module. The products functional characteristics are enabled and controlled with the setting of several dip switches. Each product is shipped with a User Manual detailing the installation and operation.

Applications

Applications benefiting from the N2 module are prevalent in commercial building and energy management projects. Single or multiple drive applications will benefit through reduced installation costs and increased functionality. Application Notes are available for these products.

Functional Specifications

- General capabilities:
  - Binary Input/Output
  - Analog Input and Analog Output data type commands supported for primary control/ monitoring drive parameters
- Supported Command/Subcommands:
  - 0/9: Status Update
  - 1/1: Read Analog Input Attributes
  - 1/2: Read Binary Input Attributes
  - 1/3: Read Analog Output Attributes
  - 1/4: Read Binary Output Attributes
  - 2/1: Write Analog Input Attributes
  - 2/2: Write Binary Input Attributes
  - 2/3: Write Analog Output Attributes
  - 2/4: Write Binary Output Attributes
  - 7/2/3: Override Analog Output (Set drive frequency)
  - 7/2/4: Override Binary Output (Set drive control bits)
  - F: Identify Device Type
- The following commands are recognized and acknowledged by the 1550-N2, but do not impact the operation or return any data:
  - 0/0: Time Update
  - 0/4: Poll Message No Acknowledge
  - 0/5: Poll Message with Acknowledge
  - 0/8: Warm Start
- All other commands return a Bad Command Error Code
- Warning and Alarming functions performed on Analog Input and Binary Input data types
- Change of State Response buffering:
  - Available packages 120 VAC Enclosed24 VDC Enclosed
- Communication port connections:
  - N2Female 9-pin DB Supports RS-232 and RS-485
  - SCANport connector
  - Status LED
  - SCANport Status (bi-color)
  - N2 Status (green): Serial Tx, Rx Status
  - Current Consumption: 60 ma at 24 VDC
  - Input Voltage: 85 to 264 VAC,1 Phase,45 to 63 Hz, 24 VDC
  - Operating Temp: 0 to 50 °C
  - Storage Temp: –40 to 85 °C

1560-PDP

The ProSoft 1560-PDP PROFIBUS DP Module is designed to allow PROFIBUS DP based PLCs to interface directly to the Rockwell Automation family of SCANport compatible devices allowing high speed access to the operating status and control parameters, as well as the parameter table.

Features and Benefits

The 1560-PDP module is simple to use, requiring only the setting of several dip-switch options. The parameters from the Rockwell Automation devices are pre-mapped to simplify reading and writing using standard commands. Use of Input and Output Data has been optimized to enhance Control and Status monitoring performance as well as access to the SCANport Datalinks.

- Protocol mode: PROFIBUS DP Slave Mode using SPC3 chipset
- Baud Rate: up to 12 M Baud max.
- Input and Output Data Types
- Supports the high speed transfer of Control/Reference
- Status/Feedback and up to 8 Datalinks In and Out
- Up to 126 nodes max (with 3 repeaters)
- Pre-assigned map
- Command Control and Reference
- Status/Feedback
- Datalinks In and Out: A to D
- Up to 32 parameter values
- GSD File: PSFT087C.GSD

Applications

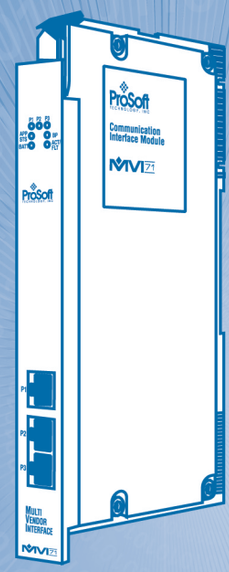
The 1560-PDP has been designed specifically to allow Rockwell Automation SCANport devices to interface with Siemens PLC and/or any host that supports the PROFIBUS DP protocol. As such, possible applications of the 1560-PDP product exist in nearly every sector of industry.

Functional Specifications

- Configuration via dip switches
- Node Address: 1 to 126
- Fault on Loss of Comm. Enable
- SCANport Messaging Options
- No Datalinks, Datalinks A only, Datalinks A and B only, Datalinks A, B, C, D
- Communication port connections:
  - PROFIBUS Female 9-pin DB (PROFIBUS Std.)
  - SCANport connector
- Status LED:
  - SCANport Status (bi-color Red/Green)
  - PROFIBUS Status (bi-color Red/Green)
- Current Consumption: 65 ma at 24 VDC:
  - Input Voltage: 85 to 264 VAC,1 Phase,45 to 63 Hz
  - 24 VDC

PLC Interfaces—MVI71

Specification	Description
Form Factor	Single Slot 1771 chassis compatible BTR/BTW data transfer Local or remote rack
Backplane current load	800 mA @ 5 V
Operating temperature	0 to 60°C (32 to 140°F)
Storage temperature	–40 to 85°C (–40 to 185°F)
Shock	30g operational 50g non-operational
Vibration	5 g from 10150 Hz
Relative humidity	5 to 95% (non-condensing)
LED Indicators	Module status Backplane transfer status Application status Serial activity and error LED status
Debug/Configuration port (CFG)	
CFG Port (P1)	RJ45 (DB-9M with supplied cable) RS-232 only
Configuration Connector	RJ45 RS-232 Connector (RJ45 to DB-9 cable shipped with unit)
Application Ports	
Application Serial port (P2, P3) (Serial Modules)	(2) RJ45 RS-232/422/485 Application ports
Ethernet Port (Ethernet modules)	RJ45 Connector Link and activity LED indicators



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PLC Interfaces
MVI71

The MVI71 IEC 60870-5-101 Master Communication Module allows Rockwell Automation PLC processors to interface easily with IEC 60870-5-101 slave (controlled unit) devices.

Features and Benefits

The MVI71-101M module interfaces up to 32 serial communication devices with the Rockwell Automation PLC processor. Two communication ports on the module act as controlling devices (masters) to interface with controlled devices on their own networks. Each port is individually configurable and can be set for balanced or unbalanced mode. Data is exchanged between the serial network and the Rockwell Automation processor using the internal database contained in the module and direct control by the controller's ladder logic.

Applications

The MVI71-101M module is the ideal solution for many applications where IEC protocol connectivity must be added to a PLC system. The IEC solution is designed to address the expanding interest in the IEC protocol and the use of IEC compatible devices in industrial applications such as those in the water/wastewater, power and oil & gas industries.

Compatible devices include relays, breakers, substation communication modules and other serial communication devices.

Functional Specifications

- Built in accordance to the approved international specification
- Two independent master ports completely user configurable
- Support for balanced and unbalanced mode
- Up to 32 sessions
- Up to five sectors (separate databases) for each session
- Individual database definition for each sector
- 1000 commands to control stations
- PLC processor can issue control commands directly to the module or a controlled device (10 at each scan)
- Pass-through of event messages from controlled device to processor for logging of time-tagged events
- Operation via simple ladder logic
- PLC processor can synchronize the module clock
- Supports clock synchronization from/to the PLC
- Receives events from the slave and sends them to the PLC processor
- Supports monitored data:
  - Single-point
  - Double-point
  - Step-point
  - Measured-point
  - Bitstring 32-bit
  - Integrated total point
- Class 1 and Class 2 delay parameter in the configuration file
- Complete set up and monitoring of module through RSLogix 5 software and user constructed configuration file (IEC101M.CFG)
- All data related to the module is contained in user data files to ease in the monitoring and interfacing with the module

PLC Interfaces

IEC 60870-5-101 Slave Communication Module

MVI71-101S

The MVI71 IEC 60870-5-101 Slave Communication Module allows Rockwell Automation PLC I/O compatible processors to interface easily with IEC 60870-5-101 protocol compatible hosts. The module's two powerful and highly configurable ports allow the many SCADA host systems supporting the IEC protocol to be integrated into the PLC platform.

Features and Benefits

The MVI71-101S module is the fastest and easiest way to add IEC 60870-5-101 protocol interface support to the PLC platform. It is a single slot, backplane compatible solution for the Rockwell Automation PLC platform. This module has two powerful and highly configurable IEC 60870-5-101 Slave ports, allowing the many SCADA and field devices supporting the IEC protocol to be integrated into the PLC platform.

The MVI71-101S module acts as an input/output module between the IEC 60870-5-101 telecontrol network and the Rockwell Automation PLC backplane. The data transfer from the PLC processor is asynchronous from the actions on the network. A 5000-word register space in the module exchanges data between the processor and the telecontrol network.

Applications

The MVI71-101S Slave module is designed to address the application where a host system using the IEC 60870-5-101 protocol must communicate with a PLC processor. As such, the IEC Slave module can be used as a gateway in many SCADA installations in industries such as:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- Oil & gas production

Functional Specifications

The MVI71-101S module accepts commands from an attached master unit. A port configured as a virtual slave permits a remote master to interact with all data contained in the module. This data can be derived from the PLC processor. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs. The module can operate in balanced or unbalanced mode.

- Supports time stamp events
- Supports time and data synchronization from a master or the processor
- Supports monitored data
- Event queue supports 99 points for each data type
- Reports events by configurable priority order
- Order monitored points by interrogation groups
- Configurable deadband for monitored measured points
- Supports Master Class 1 and Class 2 polls with configurable parameters
- Acknowledgement transmission is handled internally by the module
- Configurable data link address, Common ASDU address and Information Object Address
- Configurable pulse duration.

The MVI71 IEC 60870-5-103 Master Communication Module allows Rockwell Automation PLC backplane I/O compatible processors to interface easily with IEC 60870-5-103 compatible devices. Devices commonly supporting the protocol include relays, breakers, substation communication modules and other serial communication devices used in power monitoring.

Features and Benefits

The MVI71-103M supports up to 32 total field devices between the module's two IEC 60870-5-103 Master ports. The module's communication ports can each be independently configured, allowing two separate field networks to be implemented. The field device data is exchanged between the MVI module and the PLC processor over the backplane.

The MVI71-103M module is a powerful communication interface for Rockwell Automation PLC platform processors. Developed under license from Rockwell Automation, the module incorporates proprietary backplane technology that enables powerful data access to the PLC processor.

Applications

The MVI71-103M module is the ideal solution for many applications where IEC protocol connectivity must be added to a PLC system. The IEC solution is designed to address the expanding interest in the IEC protocol and the use of IEC compatible devices in industrial applications such as those in the water/wastewater, power and oil & gas industries.

Compatible devices include relays, breakers, substation communication modules and other serial communication devices.

Functional Specifications

The MV71-103M module supports the IEC 60870-5-103 protocol to the following specifications:

- The IEC 60870-5-103 communication driver is built in accordance to the approved IEC specification
- Module memory usage that is completely user definable
- The module has two independent master ports, each configurable via a simple configuration file
- Supports up to 32 sessions (controlled devices) between the two ports
- Supports up to five sectors (separate databases) for each session, with individual database definition for each sector
- Total of 1000 user configurable commands to control data transfer to/from devices (controlled devices)
- Supports clock synchronization from/to the processor
- Event data received from the Control Devices updates the module database (Date and Time stamping is not stored or used by module)
- Class 1 and Class 2 delay parameter are configurable for each session
- An IEC Interoperability Document for the module is available from the web site, which fully documents data types supported by the module

PLC Interfaces

IEC 60870-5-104 Server Communication Module

MVI71-104S

The MVI71 IEC 60870-5-104 Server Communication Module allows PLC backplane I/O compatible processors to interface easily with IEC 60870-5-104 protocol-compatible hosts.

Features and Benefits

The MVI71-104S module acts as an input/output module between the IEC 60870-5-104 Ethernet network and the Rockwell Automation backplane. The data transfer from the PLC processor is asynchronous from the actions on the network. A 4000-word register space in the module exchanges data between the processor and the Ethernet network.

Applications

The MVI71-104S module is designed to address the application where a device using the IEC 60870-5-104 protocol needs to communication with the Rockwell Automation processor. As such, the IEC server module can be used as a gateway in many SCADA installations in industries such as:

- Power
- Petrochemical
- Water treatment
- Oil & gas production

Functional Specifications

The MVI71-104S module accepts data read/write commands from a master/client on the network. In addition, the module can be configured to generate unsolicited messages in either a spontaneous or cyclic fashion.

The module has 4000 words of user defined internal register space that are accessible to the protocol driver and to the PLC processor memory. Any of the supported database types can be individually located (within the total database size limit of 4000 words) and each database point is mapped within the module and can be assigned to one or more Groups. The supported database point types are:

Database Type	Description
M_SP_NA	Monitored single-point database
M_DP_NA	Monitored dual-point database
M_ST_NA	Monitored step-point database
M_ME_NA	Monitored normalized-point database
M_ME_NB	Monitored scaled-point database
M_ME_NC	Monitored short-float point database
M_IT_NA	Monitored integrated total database
C_SC_NA	Command single-point database
C_DC_NA	Command dual-point database
C_RC_NA	Command step-point database
C_SE_NA	Command normalized-point database
C_SE_NB	Command scaled-point database
C_SE_NC	Command short-float point database

IEC 60870-5-104 Server Specifications

Operating in the Server mode, the module accepts commands from a Client(s) to read/write data stored in the module's internal registers. This data is easily and continuously transferred between the MVI module and the PLC processor's data registers.

The IEC 60870-5-104 Server functionality supported by the module includes:

- The IEC 60870-5-104 communication driver is built in accordance to the approved IEC specification
- The module functions as a Server on the network supporting data read/write commands from an IEC 60870-5-104 client on the network
- One TCP server socket
- Supports unsolicited messages, either cyclic or spontaneous (cyclic rate is configurable)
- Supports clock synchronization commands from client or from the PLC
- Supports Group interrogation (Global, General 1 to 16, Global Counters, Counters 1-4)
- Event time stamping configurable by type (None, 24 bit, 56 bit)
- Event queue supports 99 points for each data type
- Optional user defined list of acceptable client host IP addresses
- Configurable Common ASDU address (sector) and Information Object Address
- An IEC Interoperability Document for the MVI71 is available which fully documents data types supported by the module.

The MVI71 3964R module from ProSoft Technology allows point-to-point communication between a PLC controller and a partner with 3964R (with or without RK512) communication capability.

Features and Benefits

The 3964R protocol (with or without RK512) was designed by Siemens for bi-directional data communication through a point-to-point connection. It is a master-slave protocol with read and write access. A BCC checksum ensures the safety of the transfer.

Applications

The module is ideal in control configurations where there is a need for the PLC controller to exchange data with other non-Rockwell Automation control devices in low speed applications.

The MVI71-3964R can communicate with or without RK512 devices using two RS-232, RS-422 communication lines (ports). The ports operate independently from each other.

Functional Specifications

- Single-slot, PLC backplane compatible
- Multiple modules can be placed in a rack up to the chassis power supply limit
- While in 3964R with RK512 mode on PRT1 and PRT2, DB-SEND and DB-FETCH instructions can be initiated from the SLC processor or received by the communications partner
- While in 3964R without RK512 mode on PRT1 and PRT2, data can be sent from the SLC processor or be received from the communications partner
- The maximum transfer rate is 512 bytes in any mode
- Data byte swapping can be configured to adjust to a different word format
- While in 3964R with RK512 mode on PRT1 and PRT2, evaluation of the header information DB (data block), DW (data word) and coordination bytes 9 and 10 is possible
  - Communication activity and diagnostics are available through LEDs and acknowledgment telegrams
- Example programs are provided for using the 3964R protocol with a Siemens ASM 420 / ASM 424 MOBY-I/E communication interface

Ladder Logic

Ladder logic programming in the SLC processor is required in order to enable and support the Siemens 3964R protocol functionality. The ladder program handles the encoding/decoding of data transferred from the module as well as the initiation of protocol-specific functionality in the module. Example ladder programs are provided with the module to ease the implementation of the module in the user application.

PLC Interfaces

'C' Programmable Application Development Module

MVI71-ADM

The MVI71 Application Development Module is a PLC backplane compatible module that allows user-developed 'C' applications to operate on the PLC platform. A great way to speed up custom ASCII data communications or to protect a proprietary algorithm, the ADM is a powerful tool for the PLC platform.

Features and Benefits

Powerful platform for developing and running 'C' applications on Rockwell Automation's PLC processors. The MVI71-ADM module is a single slot, backplane compatible solution for the Rockwell Automation PLC platform. This module is a powerful and programmable solution supporting two fully isolated serial ports allowing the many serial field devices to be integrated into the PLC platform.

- The MVI71-ADM module has three serial ports, two of which are isolated for field interfaces:
  - P1 – Debug/configuration RS-232
  - P2 – Application RS-232, RS-422 or RS-485
  - P3 – Application RS-232, RS-422 or RS-485

P2 and P3 are jumper configured for direct or Multi-drop field communication. The application program can be written to control the two application ports independently, allowing maximum flexibility in the design.

Applications

The MVI71-ADM module is the ideal solution for many applications where serial connectivity must be added to a PLC platform. Applications using the MVI71-ADM module include:

- Bar code scanner interface
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)
- Customized protocol implementations

Functional Specifications

Development Environment

- Operating system: General software DOS 6-XL
- Compatible compiler (16-bit DOS target):
  - Digital Mars C++ V8.49 (included)
  - Borland C++ V5.02

Application Programming Interfaces (API)

- Serial Port API: serial port functions
- Backplane API: low level backplane functions
- ADM API debug port functions: debug port functions, database functions timer functions, high level backplane transfer functions, LED functions, flash read functions

MVI71-ADMNET

The MVI71 Application Development Module with Ethernet is a PLC backplane compatible module that allows Rockwell Automation PLC processors to interface easily with Ethernet protocol (Explicit Messaging) compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs, and host HMI systems.

Features and Benefits

The ADMNET module is a powerful solution that supports both Client and Server applications. This broad support enables the module to function as a data collection sub-master, or to be a powerful slave as a remote off an HMI host. Applications for the module are found in most industries, especially Manufacturing, Oil & Gas, Electrical Power and Food processing.

The MVI71-ADMNET module is a single slot, backplane compatible solution for the Rockwell Automation PLC platform. This module is a powerful and programmable solution supporting two fully isolated serial ports and one Ethernet port allowing the many field devices to be integrated into the PLC platform.

The MVI71-ADM module has three serial and one Ethernet port, two of the serial ports are isolated for field interfaces

Applications

The MVI71-ADMNET module is the ideal solution for many applications where Ethernet and serial connectivity must be added to a PLC platform. Applications using the MVI71-ADMNET module include:

- Bar Code Scanner interface
- Legacy ASCII protocol connections
- Terminal Port Emulation
- Printer Driver (Alarm/Status printer)
- Customized protocol implementations

Functional Specifications

The MVI71-ADM API Suite allows software developers access to the top layer of the PLC backplane and serial ports. The MVI71-ADMNET API suite accesses the Ethernet port.

Both APIs can be easily used without having detailed knowledge of the module's hardware design. The MVI71-ADMNET API Suite consists the Ethernet Port API. The Ethernet Port API provides access to the Ethernet network. Applications for the MVI71-ADMNET module may be developed using industry-standard DOS programming tools and the appropriate API components.

The MVI71-ADMNET module has three serial ports, two of which are isolated for field interfaces, and one Ethernet port.

- CFG – debug/configuration – RS-232
- PRT1 – Application – RS-232, RS-422 or RS-485
- PRT2 – Application – RS-232, RS-422 or RS-485
- Ethernet Port

PRT1 and PRT2 are jumper configured for direct or Multi-drop field communication. The application program can be written to control the two application ports independently, allowing maximum flexibility in the design.

General Protocol Specifications

- Allows software developers to access Rockwell Automation backplane and Serial/Ethernet ports without needing detailed knowledge of the module's hardware design
- API library functions are specified using the C programming language syntax
- Supports multi-threaded applications
- The following compiler version is compatible with the MVI module API:
  - Digital Mars C++ 8.49
  - Borland C++ V5.02
- Operating System - General software DOS 6-XL
- Flash ROM program space: 896 KB
- RAM program and data space: 640 KB
- Compact Flash socket: Up to 64 MB

ADM/ADMNET API Libraries

Each API provides a library of function calls. This library supports any programming language that is compatible with the Pascal calling convention.

- Initialization - Open and close the API
- Debug Port - Debug port user interface
- Database - Read and write data to database
- Timer - Start and check timers
- Backplane - Transfer data over the backplane
- LED - Set user LED indicators
- Flash - Parse configuration files
- Miscellaneous - Configure the console

MVI71-AFC

The MVI71 Liquid & Gas Flow Computer Module is a PLC backplane compatible module that allows PLC processors to easily support flow applications with 8 meter runs performing measurement of hydrocarbon gases or liquids using AGA 3, 7, 8 and API 2540 measurement standards.

Features and Benefits

The module calculates flow rates, accumulated volumes, accumulated mass and accumulated energy (heating value). The calculation results are transferred back to the Processor memory for use in the application ladder program or for transfer back to a SCADA host.

Applications

The MVI71-AFC module is the ideal solution for the many applications where hydrocarbon flow and SCADA communication must be added to the PLC platform. Applications using the MVI71-AFC module can be found mainly in the oil & gas industrial sectors.

Functional Specifications

The AFC module operates as a powerful flow computer module, augmenting the operation of the PLC processor by providing a dedicated and accurate set of flow calculations; the results of which are easily available to process monitoring and control applications developed in the PLC.

The module is highly-configurable, allowing each of the 8 meter runs to be individually setup to meet the specific requirement of an application. Some of the configurable parameters include:

- Gas analysis concentrations for any or all 21 components
- Physical data for all meter runs including, orifice and pipe diameters, selection of type of taps and tap location etc.
- Reference pressure, temperature and local atmospheric conditions
- Default process and operating parameters such as DP threshold for flow cutoff etc.
- Metric or imperial units
- User selectable units for totalizers and flow rates on a per channel basis
- Resettable and/or non-resettable totalizers for every meter channel
- Process I/O: analog inputs (pressure, temperature, diff pressure) from analog modules and pulse inputs from pulse/frequency input modules in PLC I/O rack
- Number of meter channels: 8 differential (AGA3) or linear (AGA7) Gas; MPMS 12.2 Liquid
- Calculation methods: AGA3-1992, AGA 7, AGA8-1992 (detailed characterization method), API MPMS Ch12.2 API 2540
- Meter scan time under 1 second for all 8 channels
- Product measurement: hydrocarbon gases and liquids
- Data archiving: Hourly for 2 days for each meter run (48 records per channel), Daily for 35 days (optional extended archives up to 1260 hourly and 350 daily). All archived data is available in the onboard Modbus memory map (archive size and contents are fully-configurable)
- Event log report for all security sensitive configuration data (for example, orifice diameter) are date and time stamped and mapped to the local Modbus memory map. This data can be imported into any spreadsheet program and saved to disk or printed as hard copy

Modbus interface

- The two Modbus slave ports allow the unit to be used as a SCADA interface and to broaden access to the AFC module's data table
- Either port may be configured for RTU or ASCII Modbus mode
- Modbus table may be re-mapped for user assigned contiguous register polling from a SCADA master (up to 20,000 registers)
- Port 3 can be configured as a Modbus Master port to poll data from a remote chromatograph device

The MVI71 Bardac Drive Interface Module allows Rockwell Automation PLC I/O compatible processors to interface easily with Bardac drive.web devices.

Features and Benefits

The MVI71-BDW module acts as a client collecting and controlling data in a Bardac drive.web compatible device. Four independent clients are contained in the module to interface with Bardac drives simultaneously. The data is passed from the network to the Rockwell Automation backplane. The data transfer from the PLC processor is asynchronous from the actions on the UDP/IP network. A 5000-word register space in the module exchanges data between the processor and the network.

Applications

The MVI71 Bardac Drive module incorporates a powerful library of drive control function blocks for a wide range of applications. The Bardac drive protocol uses UDP over Ethernet to provide robust connectivity between drives, PLCs, operator stations, remote I/O and SCADA systems.

Functional Specifications

A client configured as a Bardac master device on the MVI71-BDW module will actively issue Bardac-DW commands to other nodes on the Bardac-DW network. One hundred commands are supported for each client. The PLC processor can be programmed to control the activity on the client by actively selecting commands from the command list to execute, or issuing commands directly from the ladder logic.

Some of the general specifications include:

- Support for the storage and transfer of up to 5000 registers to/from the PLC processor's controller tags
- Module memory usage that is completely user-definable
- Ability for the user to define commands to set or get parameters from the Bardac device
- 10/100 Mbps Ethernet compatible interface
- Supports up to 100 user-defined read or write commands that can be sent to a Bardac device
- Configurable parameters for the client include:
  - Error/Status Pointer
  - Command Error Pointer
  - Response Timeout
  - Retry Count

PLC Interfaces

DF1 Half/Full Duplex Master/Slave Communication Module

MVI71-DFCM

The MVI71 DF1 Master/Slave Communication Module is a PLC backplane compatible module that allows Rockwell Automation PLC I/O compatible processors to interface easily with DF1 protocol compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs and power monitoring equipment, as well as several other third party devices in the marketplace.

Features and Benefits

The module has two serial ports supporting the DF1 protocol, with each port user-configurable to act as a master or as a slave. Data transfer between the module and the PLC processor is asynchronous to the DF1 network, with the module's internal database being used to exchange data between the processor and the DF1 network.

Applications

The MVI71-DFCM module is the ideal solution for many applications where DF1 protocol connectivity must be added to a PLC platform. The MVI71-DFCM module can be found in many industrial sectors and in the following applications:

- Foreign device data concentrator
- SCADA system pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper

Functional Specifications

DF1 ports

- Full and half duplex modes supported
- CRC and BCC error checking
- Full hardware handshaking control provides radio, modem and Multi-drop support
- Memory usage is completely user configurable, supporting the storage and transfer of up to 5000 registers to/from the control processor
- Up to 125 word read and write command lengths supported
- Floating point data movement supported

DF1 Master Protocol Specifications

The ports on the DF1 module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices, enabling the PLC platform to act as a SCADA sub-master.

- Command List: Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word count
- Status Data: Error codes available on an individual command basis
- Polling of Command List: User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The module accepts DF1 commands from an attached DF1 master unit to read/write data stored in the module's internal registers. This data can be derived from other DF1 slave devices on the network through a master port or from the processor and are easily transferred to the processor's data registers.

Tested Hardware Connections

Several hardware connections have been tested by ProSoft Technology or have been customer field tested. To our knowledge, the following physical connections have been successful:

- Rockwell Automation Panel view (Full Duplex point-point, DFCM as slave)
- Rockwell Automation Processors (Full/Half duplex, DFCM as either master or slave)
- Rockwell Automation Power Monitors (485 Half-Duplex, DFCM as Master)

MVI71-DFNT

The MVI71 EtherNet/IP (DF1 for Ethernet) Client/Server Communication Module is a PLC backplane compatible module that allows PLC processors to interface easily with EtherNet/IP protocol (Explicit Messaging) compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs, and host HMI systems.

Features and Benefits

The MVI71-DFNT module is a single slot solution that provides a powerful connection between Rockwell Automation's PLC processor and EtherNet/IP (DF1 for Ethernet) network applications.

The module can send read or write commands to remote devices on the EtherNet/IP network. The MVI71-DFNT also has 20 servers that allows the module to receive commands from remote devices. The MVI71-DFNT Pass-Through server allows the user to edit and transfer the PLC ladder logic using an Ethernet connection. Up to 100 commands can be configured by the user.

Applications

With the growing trend of Ethernet technology in the industrial marketplace, this product has a wide variety of application uses. Industries that use this technology include:

- Food Processing
- Petrochemical
- Pulp and Paper
- Automobile Manufacturing

Functional Specifications

- PLC processor in-chassis EtherNet/IP solution optimizes data throughput while communicating with HMI or SCADA and other control platforms without losing valuable process control bandwidth
- Support of up to 4000 PLC registers user data files
- User-definable module memory usage
- 10/100 Mbps Ethernet compatible interface
- Functions as a server or a client
- Configurable parameters for the client include:
  - A minimum command delay of 0 to 65535 milliseconds
  - A response timeout of 1 to 65535 milliseconds
  - A retry count of 0 to 20
- Status data available in ladder logic

Support for PLC processor programming over Ethernet using a TCP/IP service and a serial port on the module connected to channel 0 of the processor. The module's third port emulates Channel 0 of the processor to pass through messages from the port to the processor

Server Specifications

- Supports EtherNet/IP explicit, connected, and unconnected class messaging
- Twenty independent server connections permit remote clients to interact with all data contained in the module
- Data can be derived from other clients on the network, through the client on the module, or from the PLC processor

Client Specifications

- Actively issues connected, explicit messages to other nodes on the network
- Supports 100 user-defined commands
- Allows command control from ladder logic
- Pass-through services
- Permits remote programming of the PLC processor on the Ethernet network via a pass-through
- TCP/IP service and a serial communication port (pass-through port) on the module
- The third port on the module can emulate the Channel 0 port on the PLC, This allows a DF1 master device attached to the emulated (Channel 0) port to monitor and control data in the PLC

PLC Interfaces

DNP 3.0 Master/Slave Communication Module

MVI71-DNP

The MVI71 DNP 3.0 Master/Slave Communication Module is a single slot, backplane compatible DNP 3.0 interface solution for the Rockwell Automation PLC platform. This module provides highly configurable support of both DNP 3.0 Master and Slave implementations (level 2 minimum), allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the powerful PLC platform.

Features and Benefits

The module supports DNP Subset Level 2 features and some of the Level 3 features allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the PLC platform. The module acts as an input/output module between the DNP network and the PLC backplane. The data transfer from the PLC processor is asynchronous from the actions on the DNP network. Databases are user defined and stored in the module to hold the data required by the protocol.

Applications

The MVI71-DNP module is the ideal solution for many applications where DNP 3.0 Master and/or Slave protocol connectivity must be added to a PLC system.

The DNP solution is designed to address the expanding interest in the DNP 3.0 protocol. The protocol was originally developed for the power utility industry and is recommended by the IEEE for RTU-IED communication applications. Additional industrial applications are quickly arising in the water/wastewater and oil & gas industries.

Functional Specifications

The module has two DNP protocol ports that can be user configured to operate in a Master/Slave or in a Slave/Slave redundant port configuration.

User defined internal register space is accessible to the protocol driver and to the PLC processor memory.

DNP 3.0 Slave Protocol Specifications

The DNP Slave port(s) accepts DNP commands to control and monitor data stored in the module's DNP Slave databases. If a DNP Master port is also configured, a portion of these slave databases can be derived from or can control IED devices connected to the DNP master port.

- Report-by-Exception data is logged to the module's database
- Supports unsolicited messaging
- Each DNP point type is user configurable by point
- Class assignments are completely user-definable on a Type and point basis (BI, AI, FI point types)
- Supports clock synchronization from a master or from the processor
- Up to 400 events are stored for Floats, Binary In and Analog In Inputs
- Collision avoidance algorithm per DNP organization for redundant port switching (redundant slave mode)
- Special modem AT command string and timing support for dialing out on redundant port (redundant slave mode)

DNP 3.0 Master Protocol Specifications

The DNP 3.0 Master port can be configured as a virtual DNP Master device that actively issues user-defined DNP commands to nodes on the network.

- The Master port supports 300 user defined commands, each one containing its own set of data link and application layer characteristics
- Master port logically supports up to 40 slave devices
- Individual command configuration includes conditional or continuous polling and Poll Delay Time
- Slave status and Command status available for transfer to the processor
- Event data received from the slave devices updates the module database (Date and Time stamping is not stored or used by module)
- Special command handling for Digital Output CROB under processor control for pulse output control

DNP 3.0 ports (PRT1 & PRT2)

- Memory usage is user definable
- Full radio, modem and multi-drop support
- Support for the storage and transfer of all DNP data types across the backplane
- Communication parameters:
  - Address: 0 to 65534 (slave mode)
  - Baud rate: 110 to 115K
  - Parity: none, data bits: 8, Stop bit: 1
  - RTS on delay: 0 to 65535 milliseconds
  - RTS off delay: 0 to 65535 milliseconds

The MVI71 DNP 3.0 Server over Ethernet Communications Module supports the implementation of the DNP 3.0 (Distributed Network Protocol) over Ethernet, allowing PLC processors to easily communicate with host systems supporting the protocol. The module supports DNP Subset Level 2 features and some Level 3 features.

Features and Benefits

The MVI71-DNPSNET (Distributed Network Protocol Module over Ethernet) allows Rockwell Automation PLC processors to easily communicate with other DNP protocol-compatible devices.

The module supports DNP subset level 2 features and some Level 3 features. The MVI71-DNPSNET module acts as an input/output module between the DNP Ethernet network and the Rockwell Automation backplane. The data transfer from the PLC processor is asynchronous from the actions on the DNP network. Databases are defined in the module to house the data required by the protocol.

Applications

With the growing usage of the DNP protocol over Ethernet technology in the industrial marketplace, this product has a wide variety of application uses. Industries that use this technology include:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- SCADA and DCS applications

Functional Specifications

The MVI71-DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. This data is passed between the module and the PLC processor over the backplane for use in user applications.

- DNP databases to house data for the slave port supporting the following maximum input counts:
  - Binary input: 8000 points (500 words)
  - Binary output: 8000 points (500 words)
  - Counter: 250 (500 words)
  - Analog input: 500
  - Analog output: 500
- Module memory usage that is completely definable
- Data movement between module using block-transfer or side-connect interface
- Ethernet port supporting both TCP and UDP over Ethernet
- Supports DNP 3.0 in a level 2 implementation
- Supports sending of input event data from the ladder to the module
- Supports time synchronization from host
- Network configurable via text file
- Status and error information

PLC Interfaces

Generic ASCII Ethernet Interface Module

MVI71-GEC

The MVI71 Generic ASCII Ethernet Interface module is designed to allow PLC processors to interface easily with ASCII devices using the TCP/IP protocol and the PLC processor. Compatible devices may be either ASCII instruments with Ethernet built-in or Ethernet connection via a thin server to the existing ASCII device.

Features and Benefits

Five servers and clients are present on the module permitting both the reception and transmission of data between the Rockwell Automation processor and attached devices.

The MVI71-GEC module is a powerful communication interface for PLC platform processors. Developed under license from Rockwell Automation, the module incorporates proprietary backplane technology that enables powerful data access between the module and the PLC processor.

Applications

The use of the ASCII protocols with Ethernet at the device level on the plant floor is becoming widespread in many industry segments. Using the MVI71-GEC the advantage of Ethernet speed is realized while allowing greater distances between networked devices, including:

- Bar code scanner interfaces
- Weigh scale interfaces
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)

Functional Specifications

- Five Servers and Clients to receive and/or transmit data
- 10/100 Mbps Ethernet-compatible interface
- Configurable parameters:
  - Service port number
  - Connection timeout
  - Close type
- Simple ladder logic operation
- Setup and monitoring through RS-Logix 5 software and user-constructed configuration file (GEC.CFG)
- PLC backplane interface via I/O access
- Each Server monitors:
  - State
  - IP and port number of connected Client
  - Error codes
- Each Client monitors:
  - State
  - IP and port number of connected Server
  - Message related parameters
- ASCII character strings up to 2048 characters in length supported
- Full hardware handshaking control, providing radio, modem, and Multi-drop support
- Memory usage is completely user-configurable, supporting the storage and transfer of up to 4000 bytes to/from the control processor
- Module error and status conditions returned to processor for diagnostic purposes:
  - Module status
  - Port error status word (bit mapped)
  - Port receive state
  - Port receive character count
  - Port receive block count
  - Port transmit state
  - Port transmit character count
  - Port transmit block count

MVI71-GSC

The MVI71 Generic ASCII Serial Interface Module is a fast and easy way to add two fully configurable ASCII communication ports to the PLC platform without consuming the front port of the processor.

Features and Benefits

The MVI71-GSC module is a single slot, backplane compatible solution for the Rockwell Automation PLC platform. This module has two powerful and fully configurable ASCII communication ports, each supporting the sending and receiving of large ASCII character strings. With the implementation of some supporting ladder logic in the processor, the many different devices supporting ASCII communications can be integrated into the PLC platform.

Applications

The MVI71-GSC module is the ideal solution for the many applications where ASCII character communications must be added to the PLC platform. The MVI71-GSC module can be found in many industrial sectors generally involving the following applications:

- Bar code scanner interfaces
- Weigh scale interfaces
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)

Functional Specifications

- ASCII Communication ports 1 & 2 (PRT1, PRT2)
  - Both ports are capable of transmitting and/or receiving ASCII character strings. Each port is individually configurable:
- Termination types: Stream mode, Termination character(s), Message timeout, Intercharacter timeout and/or Packet size limit:
  - Baud rate: 110 to 115.2K baud
  - Parity: none, even, odd
  - Stop bits: 1 or 2
  - Data bits: 5 to 8
  - RTS on/off timing: 0 to 65535 milliseconds
  - Minimum response delay: 0 to 65535 milliseconds
- Handshaking (optional):
  - Hardware: RTS/CTS, DTR/DSR
  - Software: XON/XOFF
- Receive ASCII character strings up to 4096 characters in length
- Full hardware handshaking control provides radio, modem and Multi-drop support
- Module error and status conditions returned to processor for diagnostic purposes:
  - Module status
  - Port error status word (bit mapped)
  - Port receive state
  - Port receive character count
  - Port receive block count
  - Port transmit state
  - Port transmit character count
  - Port transmit block count

PLC Interfaces

HART Multi-drop Master Communication Module

MVI71-HART

The MVI71 HART Multi-drop Master Communication Module is a PLC backplane-compatible module that allows PLC processors to interface easily with HART compatible devices. Devices commonly supporting the protocol include pressure, temperature, flow transmitters, as well as other similar instruments commonly found in the process (and other) industry.

HART® is a registered trademark of the HART Communication Foundation

Features and Benefits

The MVI71-HART Master Communication Module allows Rockwell Automation PLC I/O compatible processors to easily communicate with HART slave devices. The MVI71-HART module interfaces up to 15 devices on each HART channel with the Rockwell Automation PLC processor. Four channels on the module support master protocol commands to interface with slave devices on their own networks. Each port is individually configurable. Data is exchanged between the HART network and the Rockwell Automation PLC processor backplane using the internal database contained in the module and direct control by the controller's ladder logic and pre-defined data objects (5000 registers maximum).

The MVI71-HART module is the perfect solution for industrial applications in chemical and refining operations, to gas and liquid distribution systems, and remote offshore monitoring stations are addressing virtually all aspects of data acquisition and maintenance.

Applications

The HART protocol is supported by major instrument suppliers and the HART Communication Foundation (HCF).

Today, HART is the most widely used digital communications protocol for instruments in the process control industry. More than 105 manufacturers support HART with a choice of more than 170 different field instruments.

Functional Specifications

The MVI71-HART module supports the HART Multi-drop implementation of the protocol. Following are some general specifications for the module:

- Built in accordance to the HART Bell 202 Frequency Shift Keying (FSK) standard to superimpose digital signals at a low level on top of the 4 – 20mA
  - Four independent HART master ports that are completely user-configurable
  - Supports up to 15 devices per port in multi-drop mode
  - Point-to-point (slave address 0) or Multi-drop (slave address 1 to 15) modes supported
- Supports 99 universal and common practice commands per port to control and monitor devices with integer, IEEE754 floating-point and packed ASCII character string data blocks
- Burst mode can be used for faster update of data from a single slave
- Supports an auto polling feature that will automatically collect data from each HART instrument on the channel and store the data in the module database
- Communication ports can be configured as a secondary master (that is, handheld configuration device)

Protocol Supported: HART protocol uses the Bell 202 standard frequency shift-keying (FSK) digital signal to communicate at 1200 baud, superimposed at a low level on the 4 to 20mA analog measurement signal.

Supported Function Codes: HART Universal Commands Set supported are 00-03, 06-09, and 11-22. HART Common Practice Commands Set supported are 33-83 and 105–110.

HART Network Communications: Supports four master channels. Each channel on the module is configured independently to emulate a HART master. Burst mode can be used for faster update of data from a slave device.

Command polling is also user-configurable, including disabled, continuous, on change of data (write only), and dynamically user or automatic enabled.

Status: Error codes returned by the HART protocol available on an individual command basis. In addition, a slave status list is maintained per active channel.

The MV71 Modbus Master/Slave Communication Module allows Rockwell Automation PLC processors to interface easily with other Modbus protocol compatible devices.

Compatible devices include not only Modicon PLCs (which all support the Modbus protocol) but also a wide assortment of end devices. The module acts as an input/output module between the Modbus network and the Rockwell Automation backplane. The data transfer from the processor is asynchronous from the actions on the Modbus network. A 5000-word register space in the module exchanges data between the processor and the Modbus network.

Features and Benefits

The inRAx Modbus Master/Slave Communication Module is designed to allow PLC processors to interface easily with Modbus protocol-compatible devices and hosts.

The MVI71-MCM module acts as an input/output module between the Modbus network and the Rockwell Automation backplane. The data transfer from the PLC processor is asynchronous from the actions on the Modbus network. A 5000-word register space in the module exchanges data between the processor and the Modbus network.

Many host SCADA packages support the Modbus protocol, while devices commonly supporting the protocol include several PLCs, as well as many other third party devices in the marketplace. (For a partial list of devices that speak Modbus, please visit the ProSoft Tested section of the ProSoft Technology web site).

Applications

Applications using the Modbus Master/Slave Communication Module can be found in many industrial sectors and in the following applications

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper
- SCADA communications

Functional Specifications

Some of the general specifications include:

- Support for the storage and transfer of up to 5000 registers to/from the PLC processor's data files
- Module memory usage that is completely user definable
- Two ports to emulate any combination of Modbus master or slave device
- Supports Enron version of Modbus protocol for floating point data transactions.

Slave Specifications

The MVI71-MCM module accepts Modbus function code commands of 1, 2, 3, 4, 5, 6, 8, 15, 16, 17, 22 and 23 from an attached Modbus master unit. A port configured as a Modbus slave permits a remote master to interact with all data contained in the module. This data can be derived from other Modbus slave devices on the network, through a master port, or from the PLC processor.

Master Specifications

A port configured as a virtual Modbus master device on the MVI71-MCM module actively issues Modbus commands to other nodes on the Modbus network. One hundred commands are supported on each port. Additionally, the master ports have an optimized polling characteristic that polls slaves with communication problems less frequently. The PLC processor can be programmed to control the activity on the port by actively selecting commands from the command list to execute or issuing commands directly from the ladder logic.

PLC Interfaces
Modbus TCP/IP Communication Module

MVI71-MNET

The MVI71 Modbus TCP/IP Communication Module is designed to allow PLC processors to interface easily with other Modbus TCP/IP protocol-compatible devices.

Compatible devices include not only Modicon processors (which support the Modbus TCP/IP protocol) but also a wide assortment of other clients and server devices.

Features and Benefits

The MVI71-MNET module is a single slot solution that provides a powerful connection between Rockwell Automation's PLC processor and Modbus TCP/IP network applications.

The TCP/IP Modbus network applications include those networks hosted by Modicon Quantum processors, networks controlled by operator interface software packages, and the growing number of manufactured devices that support this protocol. The module acts as an input/output module between the Modbus TCP/IP network and the Rockwell Automation backplane. The data transfer from the processor is asynchronous from the actions on the Modbus TCP/IP network. A 5000-word register space in the module exchanges data between the processor and the Modbus TCP/IP network.

- Support for the storage and transfer of up to 5000 registers to/from the PLC processor using the block transfer or side-connect interface
- User-definable module memory usage
- 10/100 Mbps Ethernet compatible interface
- Configurable parameters for the client including a minimum response delay of 0 to 65535 milliseconds and floating point support

Applications

With the growing trend of Ethernet technology in the industrial marketplace, this product has a wide variety of application uses.

- Food processing
- Petrochemical
- Pulp and paper
- Automobile manufacturing
- Water and Wastewater
- Oil & Gas
- Power and Electric

Functional Specifications

General Protocol specifications

Type	Specifications
Floating Point Data	Floating point data movement supported, including configurable support for Enron implementation

Modbus Server Protocol Specifications

The server driver supports connections to Modbus TCP/IP clients supporting Service Port 502 using the standard MBAP protocol, and clients supporting Modbus on Service Port 2000.

General

- Supports five independent server connections for Service Port 502
- Supports five independent server connections for Service Port 2000

Status Data

Error codes, counters, and port status available

Modbus Function Codes

Code	Description
1:	Read Output Status
2:	Read Input Status
3:	Read Multiple Data Registers
4:	Read Input Registers
5:	Write Single Bit
6:	Write Single Data Register
15:	Write Multiple Bits
16:	Write Multiple Data Register

Modbus TCP/IP Client

The client driver supports the active reading and writing of data with Modbus TCP/IP compatible devices.

One client connection available (connect up to 100 servers/devices with up to 100 total commands).

The inRAx Johnson Controls N2 Communication Module allows Rockwell Automation PLC I/O compatible processors to interface easily with other Johnson Controls N2 master devices.

Features and Benefits

The inRAx module acts as an input/output module between the Johnson Controls N2 network and the Rockwell Automation backplane. The module acts as a slave receiving commands from a master device. The data transfer from the processor is asynchronous from the actions on the Johnson Controls Metasys network. An internal database in the module exchanges data between the processor and the Johnson Controls Metasys Master (NCM, N-30, NAE, NIE).

Applications

Ideal for Energy Management Applications

Applications benefiting from the N2 module are prevalent in commercial building and energy management projects. Single or multiple processor applications will benefit through reduced installation costs and increased functionality.

Functional Specifications

Some of the general specifications include:

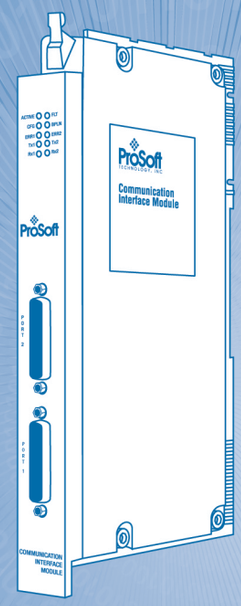
- Support for the storage and transfer of internal database registers to/from the processor's N files
- Two ports to emulate a Johnson Controls N2 slave
- Supports the following N2 objects:
  - Binary Input: Up to 960 points
  - Analog Output: Up to 300 points
  - Binary Output: Up to 960 points
  - Analog Output: Up to 300 points
- Supported Commands/Sub-commands:
  - 0/4: Poll Message No Acknowledge
  - 0/5: Poll Message with Acknowledge
  - 0/9: Status Update
  - 1/1: Read Analog Input Attributes
  - 1/2: Read Binary Input Attributes
  - 1/3: Read Analog Output Attributes
  - 1/4: Read Binary Output Attributes
  - 2/1: Write Analog Input Attributes
  - 2/2: Write Binary Input Attributes
  - 2/3: Write Analog Output Attributes
  - 2/4: Write Binary Output Attributes
  - 7/2/3: Override Analog Output
  - 7/2/4: Override Binary Output
  - F: Identify Device Type
- The following commands are recognized, and acknowledged, but are not communicated in any way to the processor, and do not return any data:
  - 0/0: Time Update
  - 0/8: Warm Start
  - All other commands return a Bad Command Error Code
- Configurable through the configuration file for the following:
  - Slave Address (assignable individually for Port 1 and 2)
  - Analog Input Object Count
  - Binary Input Object Count
  - Analog Output Object Count
  - Binary Output Object Count
- Warning and Alarming functions performed on Analog Input and Binary Input data types
- Change of State Response buffering
- Communication status error codes and statistics returned per port

Memory mapping is pre-assigned to optimize data access and to ease implementation

A port configured as a Johnson Controls N2 slave permits a remote master to interact with data contained in the module. This data is derived from the processor.

PLC Interfaces—3100

Specification	Description
Backplane current load	3100 module for PLC 0.65 A
Operating temperature	0 to 60°C (32 to 140°F)
Storage temperature	–40 to 85°C (–40 to 185°F)
Relative humidity	5 to 95% (non-condensing)
LED Indicators	Module status Backplane transfer status Serial port TX/RX activity LED Serial port error LED status
Application serial ports	DB-25F3100 module RS-232/422/485 jumper selectable RS-422/485 screw termination included (two per module) RS-232 hardware handshaking (RTS/CTS, DTR) 500V optical isolation from backplane



inRAx®

PLC Interfaces
3100

The ProSoft Teledyne CA Slave Module allows the user to easily configure one or both ports to be Slaves to a Teledyne CA host. The 3100-CAS (PLC) Teledyne CA Slave Communication Module is a single slot solution for the Rockwell Automation 1771 platforms. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility.

Features and Benefits

Simple to Use

All module setup and operating control is performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Hands Off Operation

After the CAS module has been setup for operation, the module provides transparent control and monitoring capabilities. The CAS module, integrated directly into the PLC rack, forms a tightly integrated and practical solution. After configuration, the module will perform all protocol related functions on a stand-alone basis.

Installation, Set Up and Operation

The ProSoft module installs in any slot in a local or a remote rack. The product's capabilities are enabled and controlled with simple ladder logic and data table initialization.

Applications

The Teledyne CA Slave module can be found in many industrial sectors and in the following applications:

- Foreign device data concentrator
- Pipelines
- Offshore platforms
- Oil field lease

Functional Specifications

- Full radio, modem and Multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces
- Communication error codes and counters returned to ladder logic (slave port)
- Configuration via simple ladder logic function codes:

Code	Description
1	Read status data
2	Read analog data
3	Read meter data
10	Read frozen analog values
11	Read frozen meter data
16	Read all data
20	Read tank data from RTU
30	Control momentary select
31	Control momentary operate
32	Control continuous select
33	Control continuous operate
34	Setpoint select
35	Setpoint operate
43	Freeze meters
44	Freeze analogs
45	Freeze meters/analogs

- Supports broadcast commands from master
- Register addressing

Parameter	Value
Status:	Up to 250 words
Analog :	Up to 250 words
Meter :	Up to 250 values (2 words per value)
Tank :	Up to 250 words

- Supports write commands from host in both direct or indirect modes:
  - Setpoint select and operate
  - Control Point continuous and momentary
- Communication parameters:

Parameter	Value
Address:	1 to 254 (255 is broadcast)
Parity:	None, Odd, Even
Stop Bit:	1 or 2
Baud rate:	300 to 38.4K
RTS Delays:	1 millisecond resolution on and off

PLC Interfaces
Honeywell 7800 Communication Module
3100-CBM

The ProSoft 3100-CBM Honeywell 7800 Series Master Module is designed to allow Rockwell Automation PLC platforms to interface with certain Honeywell 7800 Series Burner Management hardware devices.

The 3100-CBM module acts as a polling master for some Honeywell 7800 Series of burner management products. Through simple ladder logic and data table configuration, a PLC ladder application is able to access important operational data from supported 7800 units for display in the data table. In addition, the ladder is able to write to points in the slave devices.

Features and Benefits

Simple to Use

All module setup and operating control is performed over the backplane through simple ladder logic and data table configuration. The only software needed is a ladder-programming package.

Hands-Off Operation

After the CBM module has been setup for operation, the module is capable of accessing (read/write) the points in the burner management devices. The CBM module is integrated directly into the PLC rack, forming a tightly integrated and practical solution. After configuration, the module will perform all protocol related functions as commanded by the ladder logic program.

Installation, Set Up and Operation

The ProSoft module installs in any slot in a local rack (or a remote rack in the case of the 3100 module). The product's capabilities are enabled and controlled with simple ladder logic and data table initialization.

Applications

The Honeywell 7800 Master module can be found in many industrial sectors, especially in manufacturing. Up to five systems can be interfaced with one Honeywell communication interface and a QS7850 GPI module. Each system must reside on its own control bus.

Up to 32 QS7850 GPI modules can reside on a single RS-485 bus, with each module having its own unique slave address. Both ports on the 3100/3150-CBM module can actively poll a network of QS7850 modules.

Functional Specifications

- Two fully configurable serial ports, each capable of supporting the CBM Master functionality using the ASCII mode of communications
- RS-485 connection from each port directly to Honeywell QS7850A Interface Modules
- Supports up to 32 Honeywell nodes per serial port
- Supports polling of rpa command accessible data using the integer data type
- Floating point values are scaled x 10 by module
- ASCII text strings are not supported
- Supports one-shoted writes using to wpa/wpqa accessible data from ladder logic
- Up to 40 'device config files' are available for user configuration:
  - Communication configuration (from processor ladder logic)
  - Node addr8 to 255
  - Baud rate300 TO 38,400
  - Parity None (fixed)
  - Stop bit1 (fixed)
  - RTS to TxD50 milliseconds (fixed)
  - Timeout4 seconds (fixed)
  - Mode ASCII (fixed)
- Supported CBM command codes:
  - rpa Read point
  - rpqa Read point qualified
  - wpa Write point
  - wpqa Write point qualified
- sn-Set address
- Error codes returned to the ladder processor along with a poll execute toggle bit

The ProSoft 3100-EMC Master Module allows the user to easily configure one or both ports to actively exchange data with up to eight Emerson FX Drives.

The 3100-EMC (Emerson FX Drive Master Module) allows Rockwell Automation 1771 compatible processors to interface easily as a host with up to eight Emerson FX Series Drives (4 per port). The 3100-EMC (PLC) Emerson FX Drive Master Module is a single slot solution, which communicates directly over the backplane with the respective Rockwell Automation processors.

Features and Benefits

Simple to Use

All module setup and operating control is performed through simple ladder logic and data table configuration. The only software needed is a ladder-programming package.

Hands Off Operation

After the EMC module has been setup for operation, the module is capable of accessing many of the drive's configuration and control parameters. The EMC module is integrated directly into the PLC rack, forming a tightly integrated and practical solution. After configuration, the module will perform all protocol related functions as commanded by the ladder logic program.

Installation, Set Up and Operation

The ProSoft module installs in any slot in a local or extended rack (or a remote rack in the case of the 3100 module). The product's capabilities are enabled and controlled with simple ladder logic and data table initialization.

Applications

Applications using the Emerson FX Master module can be found in many industrial sectors and in the following applications:

- Automated assembly
- Packaging
- Automotive manufacturing
- Converting
- Material handling
- Food processing

Functional Specifications

- Two fully configurable serial ports, each capable of supporting up to four Emerson FX Drives
- Support for the storage and transfer of up to 12 Commands 6 per port) to the PLC data tables
- RS-232C communications
- Software configuration(From processor ladder logic)
- VFP and DDP Power of 10 selectable per drive addr
- Drive addr1 to 4 are valid
- Baud rate300 TO 19,200 RTS to TxD0 to 65535 milliseconds, 1 millisecond resolution Communication parameters default to:
- 8 Data bits, 1 stop bit, full duplex
- A full listing of the supported EMC function codes is available upon request
- Error codes returned to the ladder processor per drive addr

PLC Interfaces

Harris 5000/5500/6000 RTU Slave Communication Module

3100-HAR

The ProSoft Harris Slave Communication Module allows the user to easily configure one or both ports to be slaves to a Harris M9000 Host based system.

The 3100-HAR (PLC) Harris Slave Module is a single slot solution for the Rockwell Automation 1771 and platforms. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility.

Features and Benefits

Simple to Use

All module setup and operating controls are performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Hands Off Operation

After the HAR module has been setup for operation, the module provides transparent control and monitoring capabilities. The HAR module, integrated directly into the PLC/SLC rack, forms a tightly integrated and practical solution. After configuration, the module will perform all protocol related functions on a stand-alone basis.

Installation, Set Up and Operation

The ProSoft module installs in any slot in a local rack. The product's capabilities are enabled and controlled with simple ladder logic and data table initialization.

Applications

The Harris 5000/5500/6000 Slave Module can be found in mainly in the power industry in the following applications:

- Foreign device data concentrator
- Power equipment monitoring
- Dam operation

Functional Specifications

- Harris 5000/5500/6000 implementation of the protocol
- Full radio, modem and Multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces
- Communication error codes and counters returned to ladder logic(Slave port)
- Configurable character delay to support VSAT packetizing delays
- Configuration via simple ladder logic supported operational codes:

Code	Description
0	A/D and accumulator data dump
3	Status check
4	Status change dump
5	Status dump
6	Trip/close control arm
7	Trip/close control operate
8	AGC raise/lower
9	Set point control arm
10	Set point control operate
11	Power fail reset
12	Port on-line status scan
21	Time synchronization (SOE)
23	Time synchronization adjustment
27	Time synchronization (Non-SOE)
30	Set freeze interval

- Supports broadcast commands from master register addressing
- Up to 7 ports, each port with:

Parameter	Value
Status	Up to 63 words
Analog	Up to 63 words

- Accumulator

Parameter	Value
12 bit	Up to 63 words
24 bit	Up to 34 values
32 bit	Up to 12 values

- Communication parameters:

Parameter	Value
Address	1 to 63
Parity	None, odd, even
Stop bit	1 or 2
Baud rate	300 to 38.4K
RTS delays	1 millisecond resolution on and off

The ProSoft Landis & Gyr Telegyr Slave Communication Module is a PLC backplane compatible module that allows ControlLogix processors to interface easily with Telegyr Master host devices. SCADA systems supporting this application are commonly found in the power utility industry.

Features and Benefits

The ProSoft Landis & Gyr Telegyr 8979F Slave Module allows the user to easily configure one or both ports to be Slaves to Landis & Gyr Host based systems.

The 3100-LNG (PLC) Landis & Gyr Slave Module is a single slot solution for the Rockwell Automation 1771 platforms. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility.

Applications

The 3100-LNG can be found in many industrial sectors and in the following applications:

- Foreign device data concentrator
- Power equipment monitoring
- Dam operation
- Station monitoring

Functional Specifications

- Landis & Gyr 8979F implementation of the protocol
- Full radio, modem and Multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces
- Communication error codes and counters returned to ladder logic Slave port)
- Configurable character delay to support VSAT packetizing delays
- Configuration via simple ladder logic

Communication parameters

Parameter	Value
Parity	None, odd, even
Stop bit	1 or 2
Baud rate	300 to 38.4K
RTS delays	1 millisecond resolution on and off

Supported Function Codes:

Code	Description
0	Analog change report
1	Analog force report
2	Analog group change report
3	Analog group force report
5	ADC reference force report
6	Indication change report
7	Indication force report
11	Digital input force report
12	Accumulator change report
13	Accumulator force report
20	Analog output
21	SBO select
22	SBO operate
23	Digital output
24	Accumulator freeze
25	Pulse output
26	Pulse train output (hold)
30	Restart RTU
31	RTU configuration
34	Analog deadbands
35	Analog group define
36	Accumulator preset
37	Continuation request
38	Repeat last message
39	Firmware configuration
63	Exception report

Supports broadcast commands from master register

Parameter	Value
Analog inputs/outputs	50 words each
Digital inputs/ outputs	50 words each
Accumulators/ presets	50 words each
Indicator points	50 words
Pulse commands	10 per time period
SBO commands	Limited by processor indirect addressing

PLC Interfaces

Limitorque Valve Actuator Master Communication Module

3100-LTQ

The ProSoft Limitorque Valve Actuator Master Communication Module allows Rockwell Automation PLC I/O compatible processors to interface easily with Limitorque Valve Actuators and other Limitorque protocol compatible devices.

Features and Benefits

The ProSoft 3100-LTQ Master Module allows the user to easily implement a redundant loop network or a multi-drop network with up to 150 Limitorque valve actuators.

Applications

The Limitorque Valve Actuator Master Module allows Rockwell Automation 1771 compatible processors to interface easily as a host with Limitorque valve actuators. The module supports the Limitorque redundant loop network mode of communications as well as a single multi-drop network (up to 28 actuators). The 3100-LTQ (PLC) Limitorque Valve Actuator Master Module is a single slot solution, which communicates directly over the backplane with the respective Rockwell Automation processors.

Functional Specifications

- Implements Limitorque's Port A/B polling scheme using both ports on the LTQ module
- RS-232 or RS-485 communications (jumper selectable)
- Software configuration (from processor ladder logic):
  - Baud rate: 1,200 TO 38,400
  - Message response timeout
  - Number of active slaves: 1 to 150
  - Last state on comm fail
  - Network polling scheme (looped, port 1 only, port 2 only)
  - Active slave table: bit mapped up to 150 slaves)
- Supported commands:
  - Continuously poll: read registers 4000840013
  - Valve position
  - Status and fault registers
- Digital outputs and digital:
  - Inputs registers1 and 2
  - Communication error code and comm counter)
- Commands:
  - Open, stop, close, initiate network ESD, terminate network ESD, engage contactors 16, disengage contactors 16, valve position (0100%))

3100-MDA16

The 3100 MDA Scientific System 16 Gas Analyzer Communication Module is a single slot solution for the Rockwell Automation 1771 platforms. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility.

Features and Benefits

- Single slot in-rack PLC
- Full backplane support
- BTR/BTW in PLC
- Uses standard Rockwell Automation pgm software
- Simple data table configuration
- RS-232, 422, 485
- Full modem/radio support
- Flash ROM upgradable (PLC).
- Many protocols available
- Simple to Use

All module setup and operating controls are performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Applications

This application is useful for any industry producing, using, or exposed to toxic or corrosive gases, where interfacing the System 16 Gas Analyzer with a PLC processor is required.

Functional Specifications

The MDA-16 product includes the following standard features:

- Two fully configurable serial ports, each capable of supporting one SYSTEM 16 unit
- Supports one SYSTEM 16 unit per serial port
- Memory mapping will be pre-defined in the module to ease implementation in the ladder program
- RS-422 connection from each port directly to the SYSTEM 16 units
- Software configuration (From processor ladder logic)
  - Char Size: 8 bits (fixed)
  - Parity: None (fixed)
  - Stop Bit: 1 (fixed)
  - Baud Rate: 2,400 TO 9,600
  - RTS to TxD: 50 milliseconds (fixed)
  - Timeout: 0 to 65 seconds
- Response time
  The protocol drivers are written in Assembly and in a compiled higher level language. As such, the interrupt capabilities of the hardware are fully utilized to minimize delays, and to optimize the product's performance
- Supported SYSTEM 16 command codes:
  - Read Commands
  - 0x30 Sequential Sample Results
  - 0x53 Current System State
  - 0x56 Gas Table Data
  - 0x61 Fault
- Error Codes returned to the ladder processor

PLC Interfaces

MDA Scientific CM4 Gas Analyzer Interface Module

3100-MDA4

The 3100 MDA Scientific CM4 Gas Analyzer Communication Module is a single slot solution for the Rockwell Automation PLC platforms. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility.

Features and Benefits

- Single slot in-rack PLC
- Full backplane support
- BTR/BTW in PLC
- Uses standard Rockwell Automation pgm software
- Simple data table configuration
- RS-232, 422, 485
- Full modem/radio support
- Flash ROM upgradable (PLC).
- Many protocols available
- Simple to Use

All module setup and operating controls are performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Applications

The 3100-MDA4 module acts as an input/output module between the CM4 network and the Rockwell Automation backplane. The data transfer from the PLC processor is asynchronous from the actions on the CM4 network. A 5000-word register space in the module exchanges data between the processor and the CM4 network.

Functional Specifications

Some of the general specifications include:

- Support for the storage and transfer of up to 5000 registers to/from the PLC processor's data files
- Two CM4 master ports.
- Configurable parameters include:
  - Baud Rate 110 to 115,200
  - Parity None, Odd and Even
  - Data Bits 5 to 8
  - Stop Bits 1 or 2
  - RTS On and Off Timing 0 to 65535 milliseconds
  - Use of CTS Modem Line Yes or No
  - Response Timeout 0 to 65535 milliseconds
  - Number of Slaves 1 to 10
  - Reduced Data Structure Y/N
  - Protocol Version 1 or 2
  - Polling Delay 0 to 65535 milliseconds.

A port configured as a virtual CM4 master device on the 3100-MDA4 module will actively issue CM4 commands to other nodes on the CM4 network. Four read and five write commands are supported.

The MDA-4 product includes the following standard features:

- Two fully configurable serial ports, each capable of supporting the CM4 Master functionality
- Supports up to 10 CM4 units per serial port, 10 total per module
- Support movement of binary, integer, ASCII, and floating point data types
- Memory mapping will be pre-defined in the module to ease implementation in the ladder program
- RS-485 connection from each port directly to the CM4 units
- Software configuration (From processor ladder logic)
  - Slave Addr—0 to 31
  - Command—Select command to be executed
- Supported CM4 command codes:
  - Read Commands
  - 0x30 Get System Information
  - 0x31 Get Unit Status
  - 0x36 Get Alarm History
  - 0x37 Get Current Point Status
  - Write Commands
  - 0x51 Reset Fault or Alarm
  - 0x52 Set Key-Code
  - 0x53 Lock Keyboard
  - 0x60 End Point Lock-On
  - 0x61 Start Point Lock-On
- Operating Mode returned to ladder processor
- Error Codes returned to the ladder processor

The 3100 MTS Level Plus Interface Communication Module allows the user to easily communicate with up to 64 MTS Level Plus gauges. The module is a single slot solution for the Rockwell Automation PLC platforms (firmware solutions also available).

Features and Benefits

Port Configuration

Configuring the two ports independently allows for optimum flexibility. Using both ports as RS-485 Masters to MTS gauges, or one port as a RS-485 Master to a set of MTS gauges and the other as a Modbus Slave connected via modem to a SCADA host is one example of this flexibility. After configuration through the processor data table, the module will perform all protocol related functions on a stand-alone basis, returning level and temperature information to the processor.

Easy Hardware Installation

The connection between the 3150-MTS and the MTS gauges is a direct one and needs no RS-232 to RS-485 converter. In order to connect the 3150-MTS product to the MTS digital gauges, plug the module into the Rockwell Automation rack and connect the RS-485 line from the MTS gauges to the module's port.

Installation, Set Up and Operation

The ProSoft module installs in any slot in a local or a remote rack. The product's capabilities are enabled and controlled with simple ladder logic and data table initialization. The module operates in any one of the following configurations

Mode	Port 1	Port 2
Master/Master	MTS Master	MTS Master
MTS Master	MTS Master	Modbus Slave

Applications

These products allow MTS Level Plus digital gauges and Level Plus Monitors to be interfaced directly to the Rockwell Automation environment.

Functional Specifications

- Continuous polling sequence of up to 64 gauges, each fully configurable for port, gauge address, level resolution, and temperature resolution
- Support for the storage and transfer of up to 4000 registers to/from the PLC
- RS-485 interface in module (No converters needed)
- Communication and instrument error codes returned to ladder logic on a per command/slave basis
  - Supported commands:
  - 16: Output Level 1 and 2 at 0.1 inch resolution
  - 17: Output Level 1 and 2 at 0.01 inch resolution
  - 18: Output Level 1 and 2 at 0.001 inch resolution
  - 31: Ave & Indiv RTD Temp at 1°F resolution
  - 32: Ave & Indiv RTD Temp at 0.2°F resolution
  - 33: Ave & Indiv RTD Temp at 0.02°F resolution
- The following Modbus features have been implemented:
  - RTU mode (binary) with CRC-16
  - ASCII mode with LRC error checking
  - Broadcast commands
  - 125 word reads and writes
- Function Codes Supported
  - 1: Read output status
  - 2: Read input status
  - 3: Read multiple data registers
  - 4: Read input registers
  - 5: Force single coil (Write single bit)
  - 6: Preset (Write) single data register
  - 15: Force multiple coils (Write multiple bits)
  - 16: Preset (Write) multiple data register
- User Configurable
  - Address
  - parity
  - stop bits
  - baud rate
- Full radio, modem and Multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces

PLC Interfaces

MetOne PCX Water Master Communication Module

3100-PCX

The MetOne PCX Water Quality Meter Master Communication Module is a single slot solution for the Rockwell Automation PLC platforms.

Features and Benefits

All module setup and operating controls are performed over the back plane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Applications

The 3100-PCX allows Rockwell Automation PLC I/O compatible processors to interface easily as a host with MetOne Particle Counting Sensors.

Functional Specifications

- Full back plane support
- BTR/BTW in PLC
- Uses standard Rockwell Automation pgm software
- Simple data table configuration
- RS-232, 422, 485
- Full modem/radio support
- Flash ROM upgradable (PLC)

The 3100 Fisher ROC communication module is a single slot solution for the Rockwell Automation PLC platform. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility. All module setup and operating controls are performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Features and Benefits

- Single slot in-rack SLC
- Full backplane support
- M0/M1 in SLC
- Uses standard A-B pgm software

Applications

The 3100-ROC (SLC) Fisher ROC Communication Module is a single slot solution for the Rockwell Automation 1746 platforms. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility.

- Two fully configurable serial ports, each capable of supporting Fisher ROC Master. Available configurations include:

Port Configurations	Port 1	Port 2
Master-Master	Master	Master

- Support for the storage and transfer of up to 4000 registers to the PLC /SLC data tables
- Support movement of binary, integer, ASCII, and floating point data types
- Memory mapping is completely user definable through data table configuration
- RS-232C handshaking for SCADA radio/modem applications
- RS-422/RS-485 compatible for Multi-drop applications with up to 32 slaves per port
- Satellite and Packet Radio support with a configurable Inter-character Timeout available per port
- Software configuration (From processor ladder logic)
  - Slave Addr: 0 to 255
  - Parity: None, odd, or even,
  - Stop Bit: 1 or 2
  - Baud Rate: 300 TO 38,400
  - RTS to TxD: 0-65535 milliseconds, 1 millisecond resolution
  - RTS Off: 0-65535 milliseconds, 1 millisecond resolution
  - Timeout: 0-65535 milliseconds, 1 millisecond resolution
- Response time
- The Fisher ROC Master protocol driver is written in Assembly and in a compiled higher level language. As such, the interrupt capabilities of the hardware are fully utilized to minimize delays, and to optimize the product's performance

Fisher ROC Master Specifications

- Protocol modes:
  - RTU mode with CRC-16 error checking
- Supported Fisher ROC Function codes:
  - 8 Set New Time and Date
  - 10 Send Data From Configurable Opcode Tables
  - 24 Store and Forward
  - 120 Send Pointers for Alarm, Event, and History Logs
  - 128 Send Archived Daily and Hourly Data for the Currently Selected Day
  - and Month
  - 130 Send Archived Hourly and Daily Data for Specified History Point
  - Starting at Specified History Pointer
  - 180 Send Specified Parameters
  - 181 Set Specified Parameters
- Supports up to 100 Command List entries, each individually configurable with the following parameters:
  - Port/Mode Selection
  - Slave Unit
  - Slave Group
  - Opcode
  - Number of values to transfer
  - Source data address
  - Destination data address
  - Swap type
  - Polling Time
- Command Control Mode
- Allows individual command execution control to be done in ladder logic enabling a list of commands to be executed based on events in the PLC/SLC
- Individual command 'Done' and 'Error' bits available
- Individual Command Error Statue codes returned to the ladder processor

PLC Interfaces

Siemens SEABus Plus Master Communication Module

3100-SEA

The 3100 SEA module is a single slot solution for the Rockwell Automation PLC platforms. By providing configurable access to both ports, this product is able to communicate directly with multiple Siemens power meter devices.

Features and Benefits

The Siemens SEABus Plus Master Module allows the user to easily configure one or both ports to collect data from Siemens 4300, 4700 and Static Trip III devices. By providing configurable access to both ports, this product is able to communicate directly with multiple Siemens Power Meter devices.

ProSoft's ladder-programming package allows for simple module setup and operating control.

Hands-Off Operation

After the SEA module has been setup for operation, the module provides transparent control and monitoring capabilities. The SEA module, integrated directly into the PLC/SLC rack, forms a tightly integrated and practical solution. After configuration, the module will perform all protocol related functions on a stand-alone basis.

Applications

The 3100 SEABUS module can be found in the power industry in the following applications:

- Power meters
- Power protection
- Lightning control systems

Functional Specifications

- Siemens SEABUS Plus Master protocol
- Full Multi-drop support with up to 32 slave devices per port
- Supports RS-485 interface directly to Multi-drop link of Siemens meters
- Slave polling controlled by user configuration of slave poll list
- Data objects for each of the device types are pre-defined, making implementation very easy
- Configuration via simple ladder logic
- Simple configuration of slave types:

Type	Description
1	4700 Meter Long data read
2	4700 Meter Short data read
3	4300 Meter
4	Static Trip III Short data read
5	Static Trip III Long data read

- Communication parameters:

Parameter	Value
Parity	None, odd, even
Stop Bit	1 or 2
Baud rate	300 to 38.4K
RTS Delays	1 millisecond resolution on and off

The 3100 YORK Chiller Master Communication Module is a single slot solution for the Rockwell Automation PLC platforms. By providing configurable access to both ports, this product provides previously unavailable functionality and versatility.

Features and Benefits

- Full backplane support
- BTR/BTW in PLC
- Uses standard Rockwell Automation pgm software
- Simple data table configuration
- RS-232, 422, 485
- Full modem/radio support
- Flash ROM upgradable (PLC)
- Many protocols available

Applications

The YORK Chiller Master Communication module's setup and operating controls are performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Functional Specifications

- Support for up to 14 York chillers per port
- RS-232 or RS-485 communications (jumper selectable)
- Software configuration (From processor ladder logic):
  - Baud Rate: 1,200 to 38,400
  - Message Response Timeout
  - Number of active slaves: 1 to 15 per port
  - Prioritized Page Polling List: Up to 90 entries
  - Active Slave Table
- Response time
- The protocol drivers are written in Assembly and in a compiled higher level language. As such, the interrupt capabilities of the hardware are fully utilized to minimize delays, and to optimize the product's performance

PLC Interfaces

Foxboro/Systronics Minimote RTU Slave Communication Module

3100-SYS

The inRAx Systronics Slave Module is a single slot solution for the Rockwell Automation PLC platforms.

By providing configurable access to both ports, this product provides previously unavailable functionality and versatility. Foxboro/Systronics Minimote RTU Slave Module for Rockwell Automation PLC Platform.

The ProSoft Systronics Slave Module allows the user to easily configure one or both ports to be Slaves to a Foxboro/Systronics Host. Also, VSAT Report by Exception is supported. Support has been added to the product to support the Report By Exception capabilities associated with VSAT implementations of the protocol.

Features and Benefits

Simple to Use

All module setup and operating controls are performed over the backplane through simple ladder logic and data table configuration. The only software necessary is a standard ladder-programming package.

Hands Off Operation

After the FOX module has been setup for operation, the module provides transparent control and monitoring capabilities. The FOX module, integrated directly into the PLC rack, forms a tightly integrated and practical solution. After configuration, the module will perform all protocol related functions on a stand-alone basis.

Installation, Set Up and Operation

The ProSoft module installs in any slot in a local rack. The product's capabilities are enabled and controlled with simple ladder logic and data table initialization.

Applications

The Foxboro/Systronics Slave module can be found in many industrial sectors and in the following applications:

- Foreign device data concentrator
- Pipelines
- Offshore platforms
- Oil field lease

Functional Specifications

- Foxboro / Systronics Minimote RTU Protocol, with VSAT reporting support
- Full radio, modem and Multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces
- Communication error codes and counters returned to ladder logic (Slave port)
- Configurable character delay to support VSAT packetizing delays
- Configuration via simple ladder logic
- Supported File Numbers:

Parameter	Value
14h	Analog Data
19h	Status Data
37h	Accumulator Data32 bit
1Dh	Momentary Control Select
21h	Setpoint Select
23h	Execute Selected Control File
2Ch	Pulse Train Control File
30h	Multi-file Streaming Data Setup
3Fh	Multi-file Streaming Data
3Ch	VSAT Timer Setup
3Eh	20 milliseconds Timer
41h	Analog Deviation Limits
44h	Accumulator Reset Commands
47h	32 bit Accumulator Current End of Batch
4Bh	Tank Levels

- Supports broadcast commands from Master
- Register addressing

Filetype	File #'s	Valid Addresses
16 bit registers	14h	0 to 61
16 bit binary	19h	0 to 123
32 bit acc EOBatch	47h	0 to 15
32 bit accumulator	37h	0 to 31
Tank Levels	4Bh	0 to 31
Momentary Control	1Dh	Bit:0 to 255 Card 0 to 15
Setpoint Select	21h	Reg:0 to 4095
Accumulator Reset	44h	1 to 2

- Supports Write Commands from Host in both Direct or Indirect Modes
- Setpoint Select and Operate
  - Control Point Continuous and Momentary
- Communication Parameters:

Parameter	Value
Address	1 to 254 (127 is broadcast)
Parity	None, Odd, Even
Stop Bit	1 or 2
Baud rate	300 to 38.4K
RTS Delays	1 millisecond resolution on and off

The inRAx Modbus Master/Slave Communication Module allows Rockwell Automation PLC processors to interface easily with other Modbus protocol compatible devices.

Compatible devices include not only Modicon PLCs (which all support the Modbus protocol) but also a wide assortment of end devices. The module acts as an input/output module between the Modbus network and the Rockwell Automation backplane. The data transfer from the processor is asynchronous from the actions on the Modbus network.

Features and Benefits

The inRAx Modbus Master/Slave Communication Module is designed to allow PLC processors to interface easily with Modbus protocol-compatible devices and hosts.

The inRAx module acts as an input/output module between the Modbus network and the Rockwell Automation backplane. The data transfer from the PLC processor is asynchronous from the actions on the Modbus network.

Many host SCADA packages support the Modbus protocol, while devices commonly supporting the protocol include several PLCs, as well as many other third party devices in the marketplace. (For a partial list of devices that speak Modbus, please visit the ProSoft Tested section of the ProSoft Technology web site).

Applications

Applications using the Modbus Master/Slave Communication Module can be found in many industrial sectors and in the following applications

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper
- SCADA communications

Functional Specifications

This product supports the following general capabilities:

- Up to 100 entries in the command list, each fully configurable for function, slave address, register to/from addressing and word/bit count(Master port)
- Continuous polling of command list(Master port)
- Support for the storage and transfer of up to 4000 registers to/from the PLC
- Event driven bit and register write commands (Master port)
- Full radio, modem and multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces
- Communication error codes and counters returned to ladder logic(Slave port)
- Communication error codes returned to ladder logic on a per command basis (Master Port)

The following Modbus features have been implemented in both configurations:

- RTU mode (binary) with CRC-16
- ASCII mode with LRC error checking
- Broadcast commands
- 125 word reads and writes
- Floating Point data movement supported
- Function codes supported:
  - 1 : Read output status 2 : Read input status
  - 3 : Read multiple data registers
  - 4 : Read input registers
  - 5 : Force single coil (Write single bit)
  - 6 : Preset (Write) single data register
  - 15 : Force multiple coils (Write multiple bits)
  - 16 : Preset (Write) multiple data register
- Configuration via simple ladder logic (Example provided with each product)

PLC Interfaces

Modbus Master/Slave Communication Module

3100-GDF

The inRAx Modbus Master/Slave Communication Module allows Rockwell Automation PLC processors to interface easily with other Modbus protocol compatible devices.

Compatible devices include not only Modicon PLCs (which all support the Modbus protocol) but also a wide assortment of end devices. The module acts as an input/output module between the Modbus network and the Rockwell Automation backplane. The data transfer from the processor is asynchronous from the actions on the Modbus network.

Features and Benefits

The inRAx Modbus Master/Slave Communication Module is designed to allow PLC processors to interface easily with Modbus protocol-compatible devices and hosts.

The inRAx module acts as an input/output module between the Modbus network and the Rockwell Automation backplane. The data transfer from the PLC processor is asynchronous from the actions on the Modbus network.

Many host SCADA packages support the Modbus protocol, while devices commonly supporting the protocol include several PLCs, as well as many other third party devices in the marketplace. (For a partial list of devices that speak Modbus, please visit the ProSoft Tested section of the ProSoft Technology web site).

Applications

Applications using the Modbus Master/Slave Communication Module can be found in many industrial sectors and in the following applications

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper
- SCADA communications

Functional Specifications

This product supports the following general capabilities:

- Up to 100 entries in the command list, each fully configurable for function, slave address, register to/from addressing and word/bit count(Master port)
- Continuous polling of command list(Master port)
- Support for the storage and transfer of up to 4000 registers to/from the PLC
- Event driven bit and register write commands (Master port)
- Full radio, modem and multi-drop support
- Supports RS-232C, RS-422 and RS-485 interfaces
- Communication error codes and counters returned to ladder logic (Slave port)
- Communication error codes returned to ladder logic on a per command basis (Master Port)

The following Modbus features have been implemented in both configurations:

- RTU mode (binary) with CRC-16
- ASCII mode with LRC error checking
- Broadcast commands
- 125 word reads and writes
- Floating Point data movement supported
- Function codes supported:
  - 1 : Read output status 2 : Read input status
  - 3 : Read multiple data registers
  - 4 : Read input registers
  - 5 : Force single coil (Write single bit)
  - 6 : Preset (Write) single data register
  - 15 : Force multiple coils (Write multiple bits)
  - 16 : Preset (Write) multiple data register
- Configuration via simple ladder logic (Example provided with each product)

Features and Benefits

The MDA Scientific Gas Analyzer Communication Module is a perfect solution for the Rockwell Automation 1771 platforms because it provides previously unavailable functionality and versatility.

- All module setup and operating controls are performed through simple ladder logic and data table configuration
- The only software necessary is a standard ladder-programming package

Applications

The 3100-MDA module acts as an input/output module between the CM4 or System 16 network and the SLC processor. The data transfer from the processor is asynchronous from the actions on the CM4 or System 16 network. A 1600-word register space in the module exchanges data between the processor and the System 16 network.

Functional Specifications

- Single slot in-rack Port
- Uses standard Rockwell Automation pgm software
- Simple data table configuration
- RS-232, 422, 485
- Full modem/radio support

PLC Interfaces

Johnson Controls Metasys Slave Interface Module

3100-N2

The inRAx Johnson Controls N2 Communication Module allows Rockwell Automation SLC I/O compatible processors to interface easily with other Johnson Controls N2 master devices.

Features and Benefits

The inRAx module acts as an input/output module between the Johnson Controls N2 network and the Rockwell Automation backplane. The module acts as a slave receiving commands from a master device. The data transfer from the processor is asynchronous from the actions on the Johnson Controls Metasys network. An internal database in the module exchanges data between the processor and the Johnson Controls Metasys Master (NCM, N-30, NAE, NIE).

Applications

Ideal for Energy Management Applications

Applications benefiting from the N2 module are prevalent in commercial building and energy management projects. Single or multiple processor applications will benefit through reduced installation costs and increased functionality.

Functional Specifications

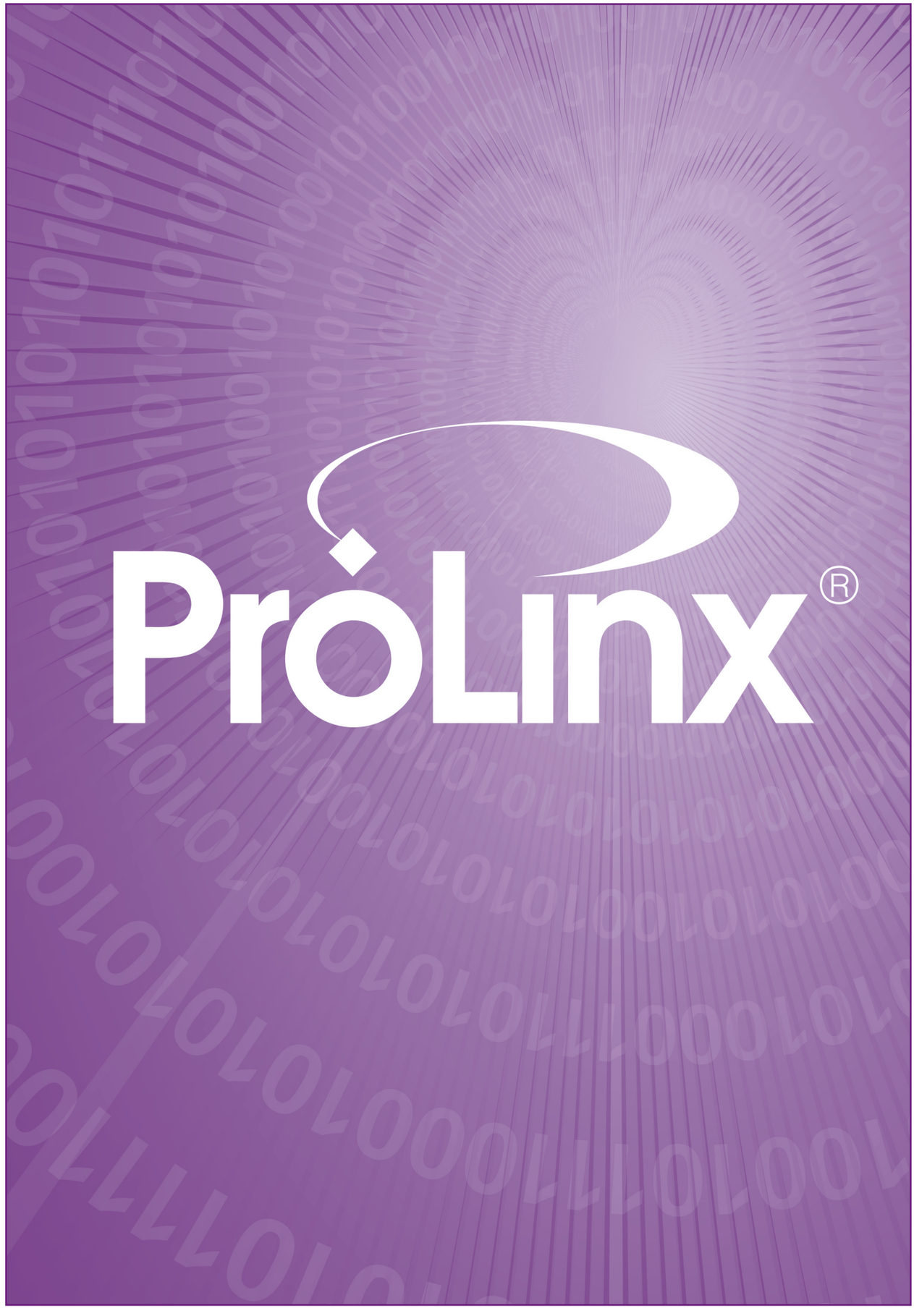
Some of the general specifications include:

- Support for the storage and transfer of internal database registers to/from the processor's N files.
- Two ports to emulate a Johnson Controls N2 slave
- Supports the following N2 objects:
  - Binary Input: Up to 960 points
  - Analog Output: Up to 300 points
  - Binary Output: Up to 960 points
  - Analog Output: Up to 300 points
- Supported Commands/Sub-commands
  - 0/4: Poll Message No Acknowledge
  - 0/5: Poll Message with Acknowledge
  - 0/9: Status Update
  - 1/1: Read Analog Input Attributes
  - 1/2: Read Binary Input Attributes
  - 1/3: Read Analog Output Attributes
  - 1/4: Read Binary Output Attributes
  - 2/1: Write Analog Input Attributes
  - 2/2: Write Binary Input Attributes
  - 2/3: Write Analog Output Attributes
  - 2/4: Write Binary Output Attributes
  - 7/2/3: Override Analog Output
  - 7/2/4: Override Binary Output
  - F: Identify Device Type
- The following commands are recognized, and acknowledged, but are not communicated in any way to the processor, and do not return any data:
  - 0/0: Time Update
  - 0/8: Warm Start
  - All other commands return a Bad Command Error Code
- Configurable through the configuration file for the following:
  - Slave Address (assignable individually for Port 1 and 2)
  - Analog Input Object Count
  - Binary Input Object Count
  - Analog Output Object Count
  - Binary Output Object Count
- Warning and Alarming functions performed on Analog Input and Binary Input data types
- Change of State Response buffering
- Communication status error codes and statistics returned per port
- Memory mapping is pre-assigned to optimize data access and to ease implementation
- A port configured as a Johnson Controls N2 slave permits a remote master to interact with data contained in the module. This data is derived from the processor

Product Notes

Product Notes

Product Notes


ProLinx®

General Specifications

The ProLinx Communication Modules provide connectivity for two or more dissimilar network types. The modules, encased in sturdy extruded aluminum, are stand-alone DIN-rail mounted protocol gateways, providing communication between many of the most widely used protocols in industrial automation today.

Specification	Description
Power Supply	24 VDC nominal 18 to 36 VDC allowed Positive, Negative, GND Terminals 2.5 mm screwdriver blade
Current Load	500 mA max@ 24 VDC
Operating Temperature	0 to 50°C (32 to 122°F)
Storage Temperature	–40 to 85°C (–40 to 185°F)
Relative Humidity	5 to 95% (non-condensing)
Dimensions	Standard: 5.20H x 2.07W x 4.52D in. (13.2cmH x 5.25cmW x 11.48cmD) Extended: 5.20H x 2.73W x 4.52D in. (13.2cmH x 6.934cmW x 11.48cmD)
LED Indicators	Power and Module Status Application Status Serial Port Activity LED Serial Activity and Error LED Status
Configuration Serial Port	DB-9M RS-232 only No hardware handshaking
Ethernet Port (Ethernet modules only)	RJ45 Connector Link and Activity LED indicators
Application Serial Ports	RS-232/422/485 RS-232 handshaking configurable RS-422/485 screw termination included
Port Isolation	2500V Opto-Isolators 500V Power Supply Isolation
Shipped with Each Unit	Mini-DIN to DB-9M serial cables 4 ft RS-232 configuration cable 2.5mm screwdriver CD (docs and Configuration utility) RS-422/485 DB-9 to Screw Terminal Adaptor (1 or 4, depending on ports)

Internal Database

The ProLinx module contains an internal database that consists of areas for application data, status information, and configuration information. The internal database is shared between all ports on the module and is used as a conduit to pass information from a device on one network to one or more devices on another network.

Application Data Area

The data area stores and retrieve data by the protocol drivers and for data exchange between protocols. The database is used as a source for write commands to remote devices and holds data collected from the remote devices. Commands defined in the configuration file (stored in the configuration data area) control how the data is to be handled in the database.

Status Data Area

This area stores error codes, counters, and port status information for each port.

Configuration File

This file contains module configuration information such as port configuration, network information, and command configuration. This configuration file is transferred to or from the module.

General Specifications - Radio Modules

These modules utilize a full function wireless network card, supporting RF data rates up to 11 Mbps. The modules function as a client and server, providing an ultra-fast wireless solution for the most demanding industrial applications.

These modules allow you to connect various field devices using different networks or protocols and share data between these devices "over-the-air." This is accomplished by exchanging shared common database information over-the-air with ProSoft Technology's efficient but powerful wireless protocol.

General Radio Specifications

Specification	Value
Frequency	2.4 GHz band (2400 to 2483.5 MHz)*
Wireless medium	DSSS - Direct Sequence Spread Spectrum (802.11b)
Output power	32 mW (15 dBm)
Channel data rates	11, 5.5, 2, 1 Mbps
Channels - user selectable	11 - North America 13 - Europe** 14 - Japan
Security	PWP + WEP 64/128 Encryption with WEP key rollover management
Antenna Ports	(2) RP-SMA connectors, automatic antenna diversity
Bit Error Rate (BER)	Better than 10^{-5}

* Varies with country regulation
** Some European countries such as France allow fewer channels

Range / Transmit Rate	High Speed 11 Mb/s	Medium Speed 5.5 Mb/s	Standard Speed 2 Mb/s	Low Speed 1 Mb/s
Open Office Environment	160m (525 ft.)	270 m (885 ft.)	400 m (1300 ft.)	550 m (1750 ft)
Semi-Open Office Environment	50 m (165 ft.)	70 m (230 ft.)	90 m (300 ft.)	115 m (375 ft.)
Closed Office	25 m (80 ft.)	35 m (115 ft.)	40 m (130 ft.)	50 m (165 ft)
Receiver Sensitivity	–83 dBm	–87 dBm	–91 dBm	–94 dBm

All measurements above are dependent on antenna configuration.

ProSoft Configuration Builder

ProSoft Configuration Builder (PCB) provides a quick and easy way to manage module configuration files customized to meet your application needs. PCB is not only a powerful solution for new configuration files, but also allows you to import information from previously installed (known working) configurations to new projects.

Serial Application Chart

	'C' Programmable	DF1 Master/Slave	Modbus Master/ Slave	DNP 3.0 Slave	DNP 3.0 Master
DF1 Master/Slave		DFS3-DFM	MCM4-DFCM4	DNPS-DFCM3	DNPM-DFCM3
Modbus Master/ Slave		MCM-DFCM MCM4-DFCM4	MBS3-MBM	DNPS-MCM DNPS-MCM3	DNPM-MCM DNPM-MCM3
DNP 3.0 Slave		DNPS-DFCM DNPS-DFCM3	DNPS-MCM DNPS-MCM3		
DNP 3.0 Master		DNPM-DFCM DNPM-DFCM3	DNPM-MCM DNPM-MCM3		
IEC 60870-5-101 Slave		DFCM3-101S	MCM3-101S		
IEC 60870-5-103 Master		DFCM-103M	MCM-103M MCM3-103M		
ASCII		DFCM-ASCII3	MCM-ASCII3		
DH-485		DH485-DFCM3	DH485-MCM3	DH485-DNPS	DH485-DNPM
'C' Programmable	ADM4		MCM4-ADM4		

	IEC 60870-5-101 Slave	IEC 60870-5-103 Master	ASCII	DH-485
DF1 Master/Slave	DFCM3-101S	DFCM-103M	DFCM-ASCII3	DH485-DFCM3
Modbus Master/Slave	MCM3-101S	103M-MCM3	MCM-ASCII MCM-ASCII3	DH485-MCM3
DNP 3.0 Slave				DH485-DNPS
DNP 3.0 Master				DH485-DNPM
IEC 60870-5-101 Slave				DH485-101S
IEC 60870-5-103 Master				DH485-103M
ASCII				DH485-ASCII3
DH-485	DH485-101S	DH485-103M	DH485-ASCII3	

ProLinx 7000 Series AppSrvCE

The ProLinx 7000 functions as a stand-alone gateway. It supports up to 6 serial ports with a library of protocols, and 2 Ethernet ports/protocols. Standard protocols include Master and Slave Modbus RTU and Modbus TCP/IP. As needed, ProSoft Technology's CompactLogix modules can "side-connect" to deliver other protocols such as PROFIBUS, Modbus Plus and HART Multi-drop.

PROLINX

Ethernet Application Chart

	'C' Programmable	EtherNet/IP	Modbus TCP/IP	IEC 60870-5-104 Server	DNP 3.0 over Ethernet
DF1 Master/Slave		DFNT-DFCM DFNT-DFCM4	MNET-DFCM MNET-DFCM4		DNPSNET-DFCM DNPSNET-DFCM4
Modbus Master/ Slave	ADMNET-MCM ADMNET4-MCM4	DFNT-MCM DFNT-MCM4	MNET-MCM MNET-MCM4	104S-MCM 104S-MCM4	DNPSNET-MCM DNPSNET-MCM4
DNP 3.0 Slave		DFNT-DNPS	MNET-DNPS		
DNP 3.0 Master		DFNT-DNPM	MNET-DNPM	104S-DNPM	
IEC 60870-5-101 Slave		DFNT-101S	MNET-101S		
IEC 60870-5-103 Master		DFNT-103M	MNET-103M	104S-103M	DNPSNET-103M
ASCII		DFNT-ASCII			
DFNT-ASCII4	MNET-ASCII MNET-ASCII4				
DH-485		DFNT-DH485	DH485-MNET	104S-DH485	DH485-DNPSNET
Modbus Plus		MBP-DFNT	MBP-MNET	MBP-104S	MBP-DNPSNET
PROFIBUS DP Master		DFNT-PDPM	MNET-PDPM	104S-PDPM	DNPSNET-PDPM
PROFIBUS DP Slave		DFNT-PDPS	MNET-PDPS	104S-PDPS	DNPSNET-PDPS
Remote I/O		DFNT-RIO	MNET-RIO	104S-RIO	DNPSNET-RIO
EtherNet/IP			MNET-DFNT	DFNT-104S	DFNT-DNPSNET
Modbus TCP/IP				MNET-104S	MNET-DNPSNET
IEC 60870-5-104 Server		DFNT-104S	MNET-104S		
DNP 3.0 over Ethernet		DFNT-DNPSNET	MNET-DNPSNET	104S-DNPSNET	
HART Multi-drop		DFNT-HART	MNET-HART		
Honeywell DE Master		DFNT-DEM	MNET-DEM		
Bosch		DFNT-BSCH			
DFNT-BSCH4	MNET-BSCH MNET-BSCH4				
CLV Master		DFNT-CLVM DFNT-CLVM4			
GARECO		DFNT-GRCM DFNT-GRCM4			
'C' Programmable	ADMNET ADMNET4				
GE Ethernet Global Data			MNET-EGD		
DF1				104S-DFCM 104S-DFCM4	

Field Instrumentation Application Chart

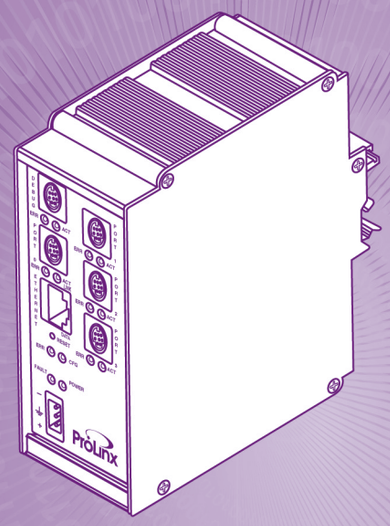
	HART Multi-drop	Honeywell DE Master
DF1 Master/Slave	DFCM-HART DFCM-HART2	DFCM-DEM DFCM-DEM2
Modbus Master/Slave	MCM-HART MCM-HART2	MCM-DEM MCM-DEM2
DH-485	DH485-HART DH485-HART2	DH485-DEM DH485-DEM2
Modbus Plus	MBP-HART	MBP-DEM
PROFIBUS DP Slave	PDPS-HART	PDPS-DEM
Remote I/O	RIO-HART	RIO-DEM
IEC 60870-5-103 Master	103M-HART	103M-DEM

	Modbus Plus	PROFIBUS DP Master	PROFIBUS DP Slave	Remote I/O
DF1 Master/Slave	MBP-DFCM MBP-DFCM4	DFCM-PDPM	DFCM-PDPS	RIO-DFCM RIO-DFCM4
Modbus Master/Slave	MBP-MCM MBP-MCM4	MCM-PDPM	MCM-PDPS	RIO-MCM RIO-MCM4
DNP 3.0 Slave	MBP-DNPS	DNPS-PDPM	DNPS-PDPS	RIO-DNPS
DNP 3.0 Master	MBP-DNPM		DNPM-PDPS	RIO-DNPM
IEC 60870-5-101 Slave	MBP-101S	101S-PDPM	101S-PDPS	RIO-101S
IEC 60870-5-103 Master	MBP-103M	103M-PDPM	103M-PDPS	RIO-103M
ASCII	MBP-ASCII MBP-ASCII4		ASCII-PDPS	RIO-ASCII RIO-ASCII4
DH-485	MBP-DH485	DH485-PDPM	DH485-PDPS	RIO-DH485
Modbus Plus		MBP-PDPM	MBP-PDPS	MBP-RIO
PROFIBUS DP Master	MBP-PDPM			RIO-PDPM
PROFIBUS DP Slave	MBP-PDPS			RIO-PDPS
Remote I/O	MBP-RIO	RIO-PDPM	RIO-PDPS	

	DF1 Master/Slave	ProSoft Wireless Protocol
PROFIBUS		WA-PDPM WA-PDPMV1 WA-PDPS
HART		WA-HART WA-HART2
Modbus Master/Slave		WA-MCM
Modbus Plus		WA-MBP
IEC 60870-5-104 Server		WA-104S
ASCII		WA-ASCII
DF1 3.0 Master/Slave	WA-DFCM	
Ethernet/IP	WA-DFNT-DFCM3	WA-DFNT
Modbus/TCP		WA-MNET
Honeywell DE		WA-DEM
Remote I/O		WA-RIO

Application Server Chart

	AppSrvCE
Historian	7000/7005-HST
'C' Programmable	7000/7005-ADM



ProLinx®

Serial Gateways

5102-ADM4

The ProLinx 'C' Programmable Application Development Module provides a powerful platform for bridging communications between your custom serial protocols. This stand-alone DIN-rail mounted protocol gateway provides four fully programmable serial ports.

ADM

The ADM API Suite allows software developers to access the serial ports without needing detailed knowledge of the module's hardware design. The ADM API Suite consists of two distinct components: the Serial Port API and the ADM API.

Applications for the ADM module may be developed using industry-standard DOS programming tools and the appropriate API components.

The ADM functionality allows the module to be programmed to accommodate devices with unique serial protocols. The module includes General Software Embedded DOS 6-XL. This operating system provides DOS compatibility along with real-time multitasking functionality. DOS compatibility allows user applications to be developed using standard DOS tools, such as DigitalMars and Borland compilers.

Development Environment

- Operating system: General software DOS 6-XL
- Compatible compiler (16-bit DOS target)
  - Digital Mars C++ V8.49 (included)
  - Borland C++ V5.02

Application Programming Interfaces (API)

- Serial Port API: serial port functions
- Backplane API: low level backplane functions
- ADM API debug port functions: debug port functions, database functions timer functions, high level backplane transfer functions, LED functions, flash read functions

The ProLinx DF1 to ASCII Gateway creates a powerful connection between devices on a DF1 network and ASCII devices. This stand-alone DIN-rail mounted protocol gateway provides one DF1 configurable serial port and three ASCII configurable serial ports.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

The ASCII protocol driver permits the module to interface to many ASCII devices. Each ASCII port on the module is configurable to send and/or receive ASCII strings, each supporting its own individual serial network.

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 255 Port: 1 Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

ASCII

The ASCII driver provides a powerful connection between the internal application database in the ProLinx unit and devices supporting serial ASCII communications (bar code scanners, line printers, legacy terminal based computer systems, etc).

The serial port on the gateway is user-configurable to support ASCII communications (Baud rate, Data Bits, Stop Bits, etc). The ASCII port can act as a Master (Send ASCII strings) or as a Slave (Receive ASCII strings), or both.

ASCII Specifications	
Ports	Available in up to three port configurations to receive and/or transmit data.
Transmit and Receive buffer size	255 bytes each
Transmit character with pacing	0 to 65535 millisecond delay between each transmitted character

PROLINX

5102-DFCM3-101S

The ProLinx DF1 Master/Slave to IEC60870-5-101 Slave Gateway creates a powerful connection between devices on an IEC 101 network and DF1 devices. The module is a stand-alone DIN-rail mounted protocol gateway that provides one IEC 101 Slave configurable serial port and three DF1 Master or Slave configurable serial ports.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

The IEC 60870-5-101 Slave protocol driver supports Slave implementations of the protocol. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 255 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 5, 6, 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

IEC 60870-5-101 Slave

The 101S module acts as an input/output module between the IEC 60870-5-101 and other protocols and networks, as well as several proprietary interfaces.

General specifications include:

- User-definable module memory usage
- Storage of IEC time used in module is available in the database
- Protocol implementation conforms to the IEC 60870-5-101 specification with fully configurable parameters
- Priority Queues
- Invalid Bit Monitoring
- Supports Balanced and Unbalanced Mode
- Supports CP24 and CP56 time formats for events
- Event generation configurable per point or data type

General Parameters	
Communication parameters	Baud Rate: 300 to 38400 baud Parity: None, Even, Odd, Mark, Space RTS Timing Delays: 0 to 65535 milliseconds
IEC 60870-5-101 Slave	
Configurable Parameters	Data link address length Common Address of ASDU length Inform. Object Address length Select/Operate Timeout Event Scan delay Use Balanced Mode Short Pulse Time Long Pulse Time Time DB Offset

The ProLinx DF1 Serial Port Expander Gateway allows you to attach up to three separate DF1 master devices to a single DF1 slave.

The module is designed to act as a multiplexer, allowing simultaneous connections from multiple DF1 masters to a single DF1 slave. A common use for the module is to have an HMI panel, SCADA package, and Programming software all communicating to the same DF1 channel 0 port of the Rockwell Automation processor.

The module provides a single DF1 Master port and three DF1 Slave ports.

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 255 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 5, 6, 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

PROLINX

5102-DH485-DFCM3

The ProLinx DH-485 to DF1 Master/Slave Gateway creates a powerful connection between devices on a DH-485 network and DF1 devices. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 configurable serial port and three DF1 Master or Slave configurable serial ports.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 1200 to 19200 baud RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 255 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 5, 6, 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

The ProLinx DH-485 to DNP 3.0 Master Gateway creates a powerful connection between a DH-485 device and a DNP slave device. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 Master or Slave configurable serial port and one DNP 3.0 Master configurable serial port.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The DNP 3.0 Master protocol driver supports Master implementations of the protocol on one port. This port is fully configurable.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 1200 to 19200 baud RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

DNP 3.0 Master

The DNP 3.0 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Master, Baud Rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0-500 word count Analog Inputs: 0-500 points Counters: 0-250 points Binary Outputs: 0-500 word count Analog Outputs: 0-500 points
DNP Mode	DNP 3.0 Master – Level 2
DNP Object Support	DNPM Driver Manual contains full Object Definition documentation

DNP Master	
Node address	0 to 65534 – software selectable
Slave count	Up to 40 slave devices
Command count	Up to 300 user defined commands to interface with remote slave devices

PROLINX

5102-DNPM-MCM3

The ProLinx DNP 3.0 Master to Modbus Master/Slave Gateway creates a powerful connection between devices on a DNP network and Modbus devices. This stand-alone DIN-rail mounted protocol gateway provides up to four serial ports.

The DNP 3.0 Master protocol driver supports Master implementations of the protocol on one port. This port is fully configurable.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

DNP 3.0 Master

The DNP 3.0 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Master, Baud Rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0-500 word count Analog Inputs: 0-500 points Counters: 0-250 points Binary Outputs: 0-500 word count Analog Outputs: 0-500 points
DNP Mode	DNP 3.0 Master – Level 2
DNP Object Support	DNPM Driver Manual contains full Object Definition documentation

DNP Master	
Node address	0 to 65534 – software selectable
Slave count	Up to 40 slave devices
Command count	Up to 300 user defined commands to interface with remote slave devices

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

The ProLinx DNP 3.0 Slave to Modbus Master/Slave Gateway creates a powerful connection between devices on a Modbus network and a DNP master device. This stand-alone DIN-rail mounted protocol gateway provides one DNP 3.0 Slave configurable serial port, and three Modbus Master or Slave configurable serial ports.

The DNP 3.0 Slave protocol driver supports Slave implementations of the protocol on one port. This port is fully configurable.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

DNP 3.0 Slave

The DNP 3.0 Slave driver provides extensive support for Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Slave, Error Checking, Baud rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0–500 word count Analog Inputs: 0–500 points Counters: 0-250 points Binary Outputs: 0–200 word count Analog Outputs: 0–500 points Binary Input Events: 0–100 event buffer Analog Input Events: 0–100 event buffer
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None RTS Timing delays: 0 to 65535 milliseconds
DNP Mode	DNP 3.0 Slave – Level 2

DNP Slave	
Node address	0 to 65534 (software selectable)

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

PROLINX

5102-MBS3-MBM

The ProLinx Modbus Serial Port Expander module allows you to attach up to three separate Modbus master devices to a single Modbus slave.

The module is designed to act as a multiplexer, allowing simultaneous connections from multiple Modbus masters to a single Modbus slave. A common use for the module is to have an HMI panel and a SCADA package all communicating to the same Modbus channel 0 port of an Allen Bradley processor.

This stand-alone DIN-rail mounted protocol gateway provides a single Modbus Master port and three Modbus Slave ports.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

The ProLinx IEC60870-5-103 Master to Modbus Master/Slave Gateway creates a powerful connection between devices on a Modbus network and an IEC 103 slave device. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Master or Slave configurable serial port and one IEC 103 Master configurable serial port.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 9600 or 19200 baud Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

PROLINX

Serial Gateways

Modbus Master/Slave to ASCII Generic Serial Gateway

5102-MCM-ASCII3

The ProLinx Modbus Master/Slave to ASCII Generic Serial Gateway creates a powerful connection between devices on a Modbus network and ASCII devices. This stand-alone DIN-rail mounted protocol gateway provides one Modbus configurable serial port and three ASCII configurable serial ports.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

The ASCII protocol driver permits the module to interface to many ASCII devices. Each ASCII port on the module is configurable to send and/or receive ASCII strings, each supporting its own individual serial network.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

ASCII

The ASCII driver provides a powerful connection between the internal application database in the ProLinx unit and devices supporting serial ASCII communications (bar code scanners, line printers, legacy terminal based computer systems, etc).

The serial port on the gateway is user-configurable to support ASCII communications (Baud rate, Data Bits, Stop Bits, etc). The ASCII port can act as a Master (Send ASCII strings) or as a Slave (Receive ASCII strings), or both.

ASCII Specifications	
Ports	Available in up to three port configurations to receive and/or transmit data.
Transmit and Receive buffer size	255 bytes each
Transmit character with pacing	0 to 65535 millisecond delay between each transmitted character.

5102-MCM3-101S

The ProLinx Modbus Master/Slave to IEC60870-5-101 Slave Gateway creates a powerful connection between devices on a Modbus network and an IEC 101 master device. This stand-alone DIN-rail mounted protocol gateway provides one IEC 101 Slave configurable serial port and three Modbus Master or Slave configurable serial ports.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

The IEC 60870-5-101 Slave protocol driver supports Slave implementations of the protocol. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

IEC 60870-5-101 Slave

The 101S module acts as an input/output module between the IEC 60870-5-101 and other protocols and networks, as well as several proprietary interfaces.

General specifications include:

- User-definable module memory usage
- Storage of IEC time used in module is available in the database
- Protocol implementation conforms to the IEC 60870-5-101 specification with fully configurable parameters
- Priority Queues
- Invalid Bit Monitoring
- Supports Balanced and Unbalanced Mode
- Supports CP24 and CP56 time formats for events
- Event generation configurable per point or data type

General Parameters	
Communication parameters	Baud Rate: 300 to 38400 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd, Mark, Space RTS Timing Delays: 0 to 65535 milliseconds
IEC 60870-5-101 Slave	
Configurable Parameters	Data link address length Common Address of ASDU length Inform. Object Address length Select/Operate Timeout Event Scan delay Use Balanced Mode Short Pulse Time Long Pulse Time Time DB Offset

PROLINX

Serial Gateways

Modbus Master/Slave to 'C' Programmable Application Development Module

5102-MCM4-ADM4

The ProLinx 'C' Programmable Application Development Module provides a powerful platform for bridging communications between your custom serial protocols. This stand-alone DIN-rail mounted protocol gateway provides four fully programmable serial ports.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

The ADM functionality allows the module to be programmed to accommodate devices with unique serial protocols. The module includes General Software Embedded DOS 6-XL. This operating system provides DOS compatibility along with real-time multitasking functionality. DOS compatibility allows user applications to be developed using standard DOS tools, such as DigitalMars and Borland compilers.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

ADM

The ADM API Suite allows software developers to access the serial ports without needing detailed knowledge of the module's hardware design. The ADM API Suite consists of two distinct components: the Serial Port API and the ADM API.

Applications for the ADM module may be developed using industry-standard DOS programming tools and the appropriate API components.

The ADM functionality allows the module to be programmed to accommodate devices with unique serial protocols. The module includes General Software Embedded DOS 6-XL. This operating system provides DOS compatibility along with real-time multitasking functionality. DOS compatibility allows user applications to be developed using standard DOS tools, such as DigitalMars and Borland compilers.

Development Environment

- Operating system: General software DOS 6-XL
- Compatible compiler (16-bit DOS target)
  - Digital Mars C++ V8.49 (included)
  - Borland C++ V5.02

Application Programming Interfaces (API)

- Serial Port API: serial port functions
- Backplane API: low level backplane functions
- ADM API debug port functions: debug port functions, database functions timer functions, high level backplane transfer functions, LED functions, flash read functions

The ProLinx Modbus Master/Slave to DF1 Master/Slave Gateway creates a powerful connection between Modbus Master/Slave and DF1 Master/Slave networks and devices. This stand-alone DIN-rail mounted protocol gateway provides four serial ports, each individually configurable as a Modbus or DF1 Master or Slave.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

The DEM protocol driver is designed to provide a tightly integrated communications interface between other protocols of the ProLinx platform and the Honeywell DE instruments. Compatible DE devices include a large array of field devices including pressure, temperature, metering, and many other instruments.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 255 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 5, 6, 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

PROLINX

5102-DFCM-103M

The ProLinx DF1 Master/Slave to IEC60870-5-103 Master Gateway creates a powerful connection between devices on a DF1 network and IEC 103 slave devices. This stand-alone DIN-rail mounted protocol gateway provides two configurable serial ports.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 255 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 9600 or 19200 baud Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

The ProLinx DH-485 to IEC60870-5-101 Slave Gateway creates a powerful connection between devices on a DH-485 network and an IEC 101 master device. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 configurable serial port and one IEC 101 Slave configurable serial port.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The IEC 60870-5-101 Slave protocol driver supports Slave implementations of the protocol. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 1200 to 19200 baud RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

IEC 60870-5-101 Slave

The 101S module acts as an input/output module between the IEC 60870-5-101 and other protocols and networks, as well as several proprietary interfaces.

General specifications include:

- User-definable module memory usage
- Storage of IEC time used in module is available in the database
- Protocol implementation conforms to the IEC 60870-5-101 specification with fully configurable parameters
- Priority Queues
- Invalid Bit Monitoring
- Supports Balanced and Unbalanced Mode
- Supports CP24 and CP56 time formats for events
- Event generation configurable per point or data type

General Parameters	
Communication parameters	Baud Rate: 300 to 38900 baud Parity: None, Even, Odd, Mark, Space RTS Timing Delays: 0 to 65535 milliseconds
IEC 60870-5-101 Slave	
Configurable Parameters	Data link address length Common Address of ASDU length Inform. Object Address length Select/Operate Timeout Event Scan delay Use Balanced Mode Short Pulse Time Long Pulse Time Time DB Offset

PROLINX

5102-DH485-103M

The ProLinx DH-485 to IEC60870-5-103 Master Gateway creates a powerful connection between devices on a DH-485 network and an IEC 103 slave device. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 configurable serial port and one IEC 103 Master configurable serial port.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 1200 to 19200 baud RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 9600 to 19200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

The ProLinx DH-485 to ASCII Generic Serial Gateway creates a powerful connection between devices on a DH-485 network and ASCII input devices. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 configurable serial port and three ASCII configurable serial ports.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The ASCII protocol driver permits the module to interface to many ASCII devices. Each ASCII port on the module is configurable to send and/or receive ASCII strings, each supporting its own individual serial network.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 1200 to 19200 baud RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

ASCII

The ASCII driver provides a powerful connection between the internal application database in the ProLinx unit and devices supporting serial ASCII communications (bar code scanners, line printers, legacy terminal based computer systems, etc).

The serial port on the gateway is user-configurable to support ASCII communications (Baud rate, Data Bits, Stop Bits, etc). The ASCII port can act as a Master (Send ASCII strings) or as a Slave (Receive ASCII strings), or both.

ASCII Specifications	
Ports	Available in up to three port configurations to receive and/or transmit data.
Transmit and Receive buffer size	255 bytes each
Transmit character with pacing	0 to 65535 millisecond delay between each transmitted character.

PROLINX

5102-DH485-DNPS

The ProLinx DH-485 to DNP 3.0 Slave Gateway creates a powerful connection between a DH-485 device and a DNP 3.0 master device. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 Master or Slave configurable serial port and one DNP 3.0 slave configurable serial port.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The DNP 3.0 Slave protocol driver supports Slave implementations of the protocol on one port. This port is fully configurable.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 1200 to 19200 baud RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

DNP 3.0 Slave

The DNP 3.0 Slave driver provides extensive support for Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Slave, Error Checking, Baud rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0–500 word count Analog Inputs: 0–500 points Counters: 0-250 points Binary Outputs: 0–200 word count Analog Outputs: 0–500 points Binary Input Events: 0–100 event buffer Analog Input Events: 0–100 event buffer
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None RTS Timing delays: 0 to 65535 milliseconds
DNP Mode	DNP 3.0 Slave – Level 2

DNP Slave	
Node address	0 to 65534 (software selectable)

The ProLinx DH-485 to Modbus Master/Slave Gateway creates a powerful connection between devices on a Modbus network and a DH-485 master or slave device. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 Master or Slave configurable serial port and three Modbus Master or Slave configurable serial ports.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. The DH-485 port is individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 1200 to 19200 baud RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

PROLINX

5102-DNPM-DFCM3

PROLINX

The ProLinx DNP 3.0 Master to DF1 Master/Slave Gateway creates a powerful connection between devices on a DF1 network and multiple DNP Slave devices. This stand-alone DIN-rail mounted protocol gateway provides one DNP configurable serial port and three DF1 Master/Slave configurable serial ports.

The DNP 3.0 Master protocol driver supports Master implementations of the protocol on one port. This port is fully configurable.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

DNP 3.0 Master

The DNP 3.0 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Master, Baud Rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0-500 word count Analog Inputs: 0-500 points Counters: 0-250 points Binary Outputs: 0-500 word count Analog Outputs: 0-500 points
DNP Mode	DNP 3.0 Master – Level 2
DNP Object Support	DNPM Driver Manual contains full Object Definition documentation

DNP Master	
Node address	0 to 65534 – software selectable
Slave count	Up to 40 slave devices
Command count	Up to 300 user defined commands to interface with remote slave devices

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 255 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

The ProLinx DNP 3.0 Slave to DF1 Master/Slave Gateway creates a powerful connection between devices on a DNP network and DF1 devices. This stand-alone DIN-rail mounted protocol gateway provides one DNP Slave serial port and three DF1 serial ports individually configurable as either Master or Slave.

The DNP 3.0 Slave protocol driver supports Slave implementations of the protocol on one port. This port is fully configurable.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

DNP 3.0 Slave

The DNP 3.0 Slave driver provides extensive support for Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Slave, Error Checking, Baud rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0–500 word count Analog Inputs: 0–500 points Counters: 0-250 points Binary Outputs: 0–200 word count Analog Outputs: 0–500 points Binary Input Events: 0–100 event buffer Analog Input Events: 0–100 event buffer
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None RTS Timing delays: 0 to 65535 milliseconds
DNP Mode	DNP 3.0 Slave – Level 2

DNP Slave	
Node address	0 to 65534 (software selectable)

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 255 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 5, 6, 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

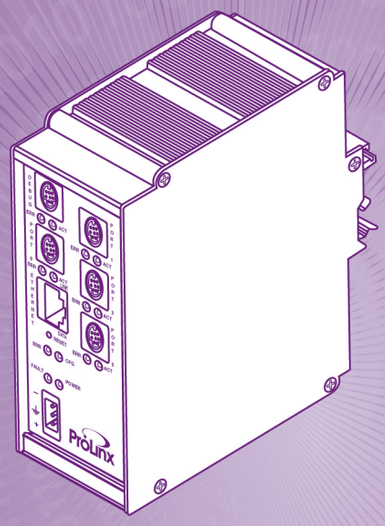
The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)



ProLinx®

Ethernet Gateways

The ProLinx IEC60870-5-104 Server to IEC60870-5-103 Master Gateway creates a powerful connection between devices on an IEC 104 network and multiple IEC 103 slave devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one IEC 103 Master configurable serial port.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 9600 or 19200 baud Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

PROLINX

5201/5202-104S-DFCM(4)

The ProLinx IEC60870-5-104 Server to DF1 Master/Slave Gateway creates a powerful connection between devices on an IEC 104 network and DF1 devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and up to four serial ports.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 255 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

The ProLinx IEC60870-5-104 Server to DH-485 Gateway creates a powerful connection between devices on an IEC 104 Server network and a DH-485 device. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 configurable serial port and one Ethernet port.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 1200 to 19200 baud RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

5201-104S-DNPS

The ProLinx IEC60870-5-104 Server to DNP 3.0 Slave Gateway creates a powerful connection between devices on an IEC 104 Server network and a DNP master device. This stand-alone DIN-rail mounted protocol gateway provides one DNP 3.0 configurable serial port and one Ethernet port.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

The DNP 3.0 Slave protocol driver supports Slave implementations of the protocol on one port. This port is fully configurable.

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

DNP 3.0 Slave

The DNP 3.0 Slave driver provides extensive support for Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Slave, Error Checking, Baud rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0–500 word count Analog Inputs: 0–500 points Counters: 0-250 points Binary Outputs: 0–200 word count Analog Outputs: 0–500 points Binary Input Events: 0–100 event buffer Analog Input Events: 0–100 event buffer
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None RTS Timing delays: 0 to 65535 milliseconds
DNP Mode	DNP 3.0 Slave – Level

DNP Slave	
Node address	0 to 65534 (software selectable)

The ProLinx IEC60870-5-104 Server to DNP 3.0 Master Gateway creates a powerful connection between devices on an IEC 104 Master network and a DNP slave device. This stand-alone DIN-rail mounted protocol gateway provides one DNP 3.0 configurable serial port and one Ethernet port.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

The DNP 3.0 Master protocol driver supports Master implementations of the protocol on one port. This port is fully configurable.

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

DNP 3.0 Master

The DNP 3.0 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Master, Baud Rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0-500 word count Analog Inputs: 0-500 points Counters: 0-250 points Binary Outputs: 0-500 word count Analog Outputs: 0-500 points
DNP Mode	DNP 3.0 Master – Level 2
DNP Object Support	DNPM Driver Manual contains full Object Definition documentation

DNP Master	
Node address	0 to 65534 – software selectable
Slave count	Up to 40 slave devices
Command count	Up to 300 user defined commands to interface with remote slave devices

PROLINX

5201-104S-DNPSNET

The ProLinx IEC60870-5-104 Server to DNP 3.0 over Ethernet creates a powerful connection between devices on an IEC 104 Server network and a DNP device. The module is a stand-alone DIN rail-mounted protocol gateway that provides one Ethernet port.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

The ProLinx module supports the DNP 3.0 protocol as a server using the TCP and UDP protocols using service port 20000. This port is fully configurable.

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

DNP 3.0 TCP/IP Server

The DNPSNET protocol driver exists as a single service port (DNPSNET port 20000) implementation that supports a single TCP port connection and multiple UDP ports on a TCP/IP Ethernet network. The DNPSNET port operates as a server, supporting the DNP 3.0 protocol in a Level 2 implementation using the DNP User Group recommended extension for use on LAN/WAN.

General Parameters	
Internal Database	Binary Inputs: 8000 points (500 words) Analog Inputs: 500 points Counters: 250 (500 words) Binary Outputs: 2000 points (125 words) Analog Outputs: 500 points
DNP Mode	DNP 3.0 Slave – Level 2

DNP Server	
Service Port	20000
Protocols	TCP (1 connection) and UDP
Node address	0 to 65534 (software selectable)

The DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. These data are passed between the module and the other protocol on the ProLinx module.

The ProLinx IEC60870-5-104 Server to Modbus Master/Slave Gateway creates a powerful connection between devices on a Modbus network and an IEC 104 client device. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and up to four serial ports.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

PROLINX

5201-ADMNET

The ProLinx 'C' Programmable Gateway with Ethernet provides a powerful platform for bridging communications between your custom serial and Ethernet protocols. This stand-alone DIN-rail mounted protocol gateway provides serial ports and one Ethernet port.

ADMNET

The ADM API Suite is provided to allow software developers access to the top layer of the serial ports. The ADMNET API suite accesses the Ethernet port.

Both APIs can be easily used without having detailed knowledge of the module's hardware design. The ADMNET API Suite consists the Ethernet Port API. The Ethernet Port API provides access to the Ethernet network. Applications for the ADMNET module may be developed using industry-standard DOS programming tools and the appropriate API components.

General Protocol Specifications

- Allows software developers to access Serial/Ethernet ports without needing detailed knowledge of the module's hardware design
- API library functions are specified using the C programming language syntax
- Supports multi-threaded applications
- The following compiler versions are compatible with the MVI module API:
  - DigitalMars C++ V8.49 (included)
  - Borland C++ V5.02
- Operating System - General software DOS 6-XL
- Flash ROM program space: 896 KB
- RAM program and data space: 640 KB
- Compact Flash socket: Up to 64 MB

ADM/ADMNET API Libraries

Each API provides a library of function calls. This library supports any programming language that is compatible with the Pascal calling convention.

- Initialization - Open and close the API
- Debug Port - Debug port user interface
- Database - Read and write data to database
- Timer - Start and check timers
- Backplane - Transfer data over the backplane
- LED - Set user LED indicators
- Flash - Parse configuration files
- Miscellaneous - Configure the console

The ProLinx 'C' Programmable Application Development Module with Ethernet to Modbus Master/Slave creates a powerful platform for developing and running 'C' applications to communicate with Modbus Master/Slave networks and devices. The module provides up to four serial ports, each individually configurable as a Modbus or custom Master or Slave.

ADMNET

The ADM API Suite is provided to allow software developers access to the top layer of the serial ports. The ADMNET API suite accesses the Ethernet port.

Both APIs can be easily used without having detailed knowledge of the module's hardware design. The ADMNET API Suite consists the Ethernet Port API. The Ethernet Port API provides access to the Ethernet network. Applications for the ADMNET module may be developed using industry-standard DOS programming tools and the appropriate API components.

General Protocol Specifications

- Allows software developers to access Serial/Ethernet ports without needing detailed knowledge of the module's hardware design
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ADM/ADMNET API Libraries

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- Timer - Start and check timers
- Backplane - Transfer data over the backplane
- LED - Set user LED indicators
- Flash - Parse configuration files
- Miscellaneous - Configure the console

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

PROLINX

EtherNet/IP to IEC 60870-5-101 Slave Gateway

5201-DFNT-101S

The ProLinx EtherNet/IP to IEC60870-5-101S Gateway creates a powerful connection between devices on an EtherNet/IP network and an IEC 101 master device. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one IEC 101 Slave configurable serial port.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The IEC 60870-5-101 Slave protocol driver supports Slave implementations of the protocol. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications

General One client
Command List Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list User configurable polling of commands, including disabled, continuous and on change of data (write only).

IEC 60870-5-101 Slave

The 101S module acts as an input/output module between the IEC 60870-5-101 and other protocols and networks, as well as several proprietary interfaces.

General specifications include:

- User-definable module memory usage
- Storage of IEC time used in module is available in the database
- Protocol implementation conforms to the IEC 60870-5-101 specification with fully configurable parameters
- Priority Queues
- Invalid Bit Monitoring
- Supports Balanced and Unbalanced Mode
- Supports CP24 and CP56 time formats for events
- Event generation configurable per point or data type

General Parameters	
Communication parameters	Baud Rate: 300 to 38400 baud Parity: None, Even, Odd RTS Timing Delays: 0 to 65535 milliseconds
IEC 60870-5-101 Slave	
Configurable Parameters	Data link address length Common Address of ASDU length Inform. Object Address length Select/Operate Timeout Event Scan delay Use Balanced Mode Short Pulse Time Long Pulse Time Time DB Offset

The ProLinx EtherNet/IP to IEC60870-5-103 Master Gateway creates a powerful connection between devices on an EtherNet/IP network and an IEC 103 slave device. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one IEC 103 Master configurable serial port.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 9600 or 19200 baud Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

PROLINX

5201-DFNT-104S

The ProLinx EtherNet/IP to IEC60870-5-104 Server Gateway creates a powerful connection between an EtherNet/IP network and IEC 104 client devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the

IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

The ProLinx EtherNet/IP to ASCII Generic Serial Gateway creates a powerful connection between devices on an EtherNet/IP network and ASCII devices. This stand-alone DIN-rail mounted protocol gateway provides a single Ethernet port and up to four ASCII configurable serial ports.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The ASCII protocol driver permits the module to interface to many ASCII devices. Each ASCII port on the module is configurable to send and/or receive ASCII strings, each supporting its own individual serial network.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

ASCII

The ASCII driver provides a powerful connection between the internal application database in the ProLinx unit and devices supporting serial ASCII communications (bar code scanners, line printers, legacy terminal based computer systems, etc).

The serial port on the gateway is user-configurable to support ASCII communications (Baud rate, Data Bits, Stop Bits, etc). The ASCII port can act as a Master (Send ASCII strings) or as a Slave (Receive ASCII strings), or both.

ASCII Specifications	
Ports	Available in up to four port configurations to receive and/or transmit data.
Transmit and Receive buffer size	255 bytes each
Transmit character with pacing	0 to 65535 millisecond delay between each transmitted character.

PROLINX

5201/5202-DFNT-BSCH(4)

The ProLinx EtherNet/IP to Bosch Packaging Machinery Gateway creates a powerful connection between devices on an EtherNet/IP network and Bosch packaging machinery. The module provides a single Ethernet port and up to four Bosch configurable serial ports.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The Bosch Master protocol driver supports Master implementations of the protocol on up to four ports. Each of the ports is individually configurable.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

Bosch Packaging Machinery

The Bosch Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the Bosch protocol (Master, Error Checking, Baud rate, etc).

General Parameters

Type	Specifications
Internal Database	4000 registers (words) available
Bosch Modes	Full-Duplex
Error Checking	BCC

Bosch Master Driver

Type	Specifications
General	Full-Duplex, Point to Point
Configurable Parameters per Master port	Min Command Delay, Number of Commands, Response Timeout, Retry Count, Slave List Error Pointer
Bosch Commands supported	0x00 Protected Write 0x01 Unprotected Read
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Status Data	Error codes available on an individual command basis. In addition, a slave status list is maintained per active master port.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

5201/5202-DFNT-CLVM(4)

The ProLinx EtherNet/IP to Command Language Master Gateway creates a powerful connection between devices on an EtherNet/IP network and SICK barcode scanners. The module provides a single Ethernet port and up to four CLV Master configurable serial ports.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

CLV Master

The CLV Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the CLV protocol (Master, Error Checking, Baud rate, etc).

General Specifications	
Ports	One to four ports to receive and/or transmit data
Receive buffer size	255 bytes
Receive termination	Termination character
Receive database location	1 to 3896
Communication Configuration	
Baud Rates	110 to 115,200
Parity	None, Odd, Even
Data Bits	5 to 8
Stop Bits	1 or 2
RTS On and Off Timing	0 to 65535 milliseconds
Minimum Response Delay	0 to 65535 milliseconds
Hardware Handshaking	RTS/CTS

Supports device type of CLV 41X, V1.10 H757 to V1.30 I415

PROLINX

5201/5202-DFNT-DFCM(4)

The ProLinx EtherNet/IP to DF1 Master/Slave Gateway creates a powerful connection between devices on an EtherNet/IP network and DF1 devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and up to four serial ports.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 255 Ports 1-3 Baud Rate: 110 to 38400 baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

The ProLinx EtherNet/IP to DH-485 Gateway creates a powerful connection between devices on EtherNet/IP and DH-485 networks. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one DH-485 configurable serial port.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 1200 to 19200 baud RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

5201-DFNT-DNPM

The ProLinx EtherNet/IP to DNP 3.0 Master Gateway creates a powerful connection between devices on an EtherNet/IP network and DNP Slave devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one serial port.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The DNP 3.0 Master protocol driver supports Master implementations of the protocol on one port. This port is fully configurable.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

DNP 3.0 Master

The DNP 3.0 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Master, Baud Rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0-500 word count Analog Inputs: 0-500 points Counters: 0-250 points Binary Outputs: 0-500 word count Analog Outputs: 0-500 points
DNP Mode	DNP 3.0 Master – Level 2
DNP Object Support	DNPM Driver Manual contains full Object Definition documentation

DNP Master	
Node address	0 to 65534 – software selectable
Slave count	Up to 40 slave devices
Command count	Up to 300 user defined commands to interface with remote slave devices

The ProLinx EtherNet/IP to DNP 3.0 Slave Gateway creates a powerful connection between devices on an EtherNet/IP network and DNP master devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one serial port.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The DNP 3.0 Slave protocol driver supports Slave implementations of the protocol on one port. This port is fully configurable.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

DNP 3.0 Slave

The DNP 3.0 Slave driver provides extensive support for Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Slave, Error Checking, Baud rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0–500 word count Analog Inputs: 0–500 points Counters: 0-250 points Binary Outputs: 0–100 word count Analog Outputs: 0–500 points Binary Input Events: 0–100 event buffer Analog Input Events: 0–100 event buffer
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None RTS Timing delays: 0 to 65535 milliseconds
DNP Mode	DNP 3.0 Slave – Level 2

DNP Slave	
Node address	0 to 65534 (software selectable)

PROLINX

5201-DFNT-DNPSNET

The ProLinx EtherNet/IP to DNP over Ethernet Gateway creates a powerful connection between devices on EtherNet/IP and DNP over Ethernet networks. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The ProLinx module supports the DNP 3.0 protocol as a server using the TCP and UDP protocols using service port 20000. This port is fully configurable.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

DNP 3.0 TCP/IP Server

The DNPSNET protocol driver exists as a single service port (DNPSNET port 20000) implementation that supports a single TCP port connection and multiple UDP ports on a TCP/IP Ethernet network. The DNPSNET port operates as a server, supporting the DNP 3.0 protocol in a Level 2 implementation using the DNP User Group recommended extension for use on LAN/WAN.

General Parameters	
Internal Database	Binary Inputs: 8000 points (500 words) Analog Inputs: 500 points Counters: 250 (500 words) Binary Outputs: 2000 points (125 words) Analog Outputs: 500 points
DNP Mode	DNP 3.0 Slave – Level 2

DNP Server	
Service Port	20000
Protocols	TCP (1 connection) and UDP
Node address	0 to 65534 (software selectable)

The DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. These data are passed between the module and the other protocol on the ProLinx module.

The ProLinx EtherNet/IP to GARECO Protocol for Hi-Speed Checkweigher Gateway creates a powerful connection between devices on an EtherNet/IP network and GARVEN high speed checkweighers. The module provides a single Ethernet port and up to four configurable serial ports.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

GARECO Protocol for Hi-Speed Checkweigher

The GRCM driver permits the module to interface Garven Checkweighers using Remote Control Instruction to the many protocols and networks available. The driver supports one to four ports that provide accessibility from one to four independent serial networks.

General Specifications	
Ports	One to four ports to receive and/or transmit data
Receive Buffer Size	255 bytes
Receive Termination	Termination character
Receive Database Location	0 to 7000

Supports device types of Topline VS/VO, "S" Series, and "E" Series

PROLINX

5201/5202-DFNT-MCM(4)

The ProLinx EtherNet/IP to Modbus Master/Slave Gateway creates a powerful connection between devices on an EtherNet/IP network and Modbus devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and up to four serial ports.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

The ProLinx DH-485 to DNP over Ethernet Gateway creates a powerful connection between devices on a DNP over Ethernet network and a DH-485 device. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 configurable serial port and one Ethernet port.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The ProLinx module supports the DNP 3.0 protocol as a server using the TCP and UDP protocols using service port 20000. This port is fully configurable.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 110 to 38.4K baud Port 1 Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

DNP 3.0 TCP/IP Server

The DNPSNET protocol driver exists as a single service port (DNPSNET port 20000) implementation that supports a single TCP port connection and multiple UDP ports on a TCP/IP Ethernet network. The DNPSNET port operates as a server, supporting the DNP 3.0 protocol in a Level 2 implementation using the DNP User Group recommended extension for use on LAN/WAN.

General Parameters	
Internal Database	Binary Inputs: 8000 points (500 words) Analog Inputs: 500 points Counters: 250 (500 words) Binary Outputs: 2000 points (125 words) Analog Outputs: 500 points
DNP Mode	DNP 3.0 Slave – Level 2

DNP Server	
Service Port	20000
Protocols	TCP (1 connection) and UDP
Node address	0 to 65534 (software selectable)

The DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. These data are passed between the module and the other protocol on the ProLinx module.

PROLINX

5201-DH485-MNET

The ProLinx DH-485 to Modbus TCP/IP Gateway creates a powerful connection between devices on a Modbus TCP/IP network and a DH-485 device. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 configurable serial port and one Ethernet port.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 110 to 38.4K baud Port 1 Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

The ProLinx DNP over Ethernet to IEC60870-5-103 Master Gateway creates a powerful connection between devices on a DNP over Ethernet network and multiple IEC 103 slave devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one IEC 103 Master configurable serial port.

The ProLinx module supports the DNP 3.0 protocol as a server using the TCP and UDP protocols using service port 20000. This port is fully configurable.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

DNP 3.0 TCP/IP Server

The DNPSNET protocol driver exists as a single service port (DNPSNET port 20000) implementation that supports a single TCP port connection and multiple UDP ports on a TCP/IP Ethernet network. The DNPSNET port operates as a server, supporting the DNP 3.0 protocol in a Level 2 implementation using the DNP User Group recommended extension for use on LAN/WAN.

General Parameters	
Internal Database	Binary Inputs: 8000 points (500 words) Analog Inputs: 500 points Counters: 250 (500 words) Binary Outputs: 2000 points (125 words) Analog Outputs: 500 points
DNP Mode	DNP 3.0 Slave – Level 2

DNP Server	
Service Port	20000
Protocols	TCP (1 connection) and UDP
Node address	0 to 65534 (software selectable)

The DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. These data are passed between the module and the other protocol on the ProLinx module.

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

5201/5202-DNPSNET-DFCM(4)

The ProLinx DNP over Ethernet to DF1 Master/Slave Gateway creates a powerful connection between devices on a DNP over Ethernet network and DF1 Master/Slave devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and up to four serial ports.

The ProLinx module supports the DNP 3.0 protocol as a server using the TCP and UDP protocols using service port 20000. This port is fully configurable.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

DNP 3.0 TCP/IP Server

The DNPSNET protocol driver exists as a single service port (DNPSNET port 20000) implementation that supports a single TCP port connection and multiple UDP ports on a TCP/IP Ethernet network. The DNPSNET port operates as a server, supporting the DNP 3.0 protocol in a Level 2 implementation using the DNP User Group recommended extension for use on LAN/WAN.

General Parameters	
Internal Database	Binary Inputs: 8000 points (500 words) Analog Inputs: 500 points Counters: 250 (500 words) Binary Outputs: 2000 points (125 words) Analog Outputs: 500 points
DNP Mode	DNP 3.0 Slave – Level 2

DNP Server	
Service Port	20000
Protocols	TCP (1 connection) and UDP
Node address	0 to 65534 (software selectable)

The DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. These data are passed between the module and the other protocol on the ProLinx module.

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 254 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

5201/5202-DNPSNET-MCM(4)

The ProLinx DNPSNET to Modbus Master/Slave Gateway creates a powerful connection between devices on a DNP Ethernet network and Modbus devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and up to four serial ports.

The ProLinx module supports the DNP 3.0 protocol as a server using the TCP and UDP protocols using service port 20000. This port is fully configurable.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

DNP 3.0 TCP/IP Server

The DNPSNET protocol driver exists as a single service port (DNPSNET port 20000) implementation that supports a single TCP port connection and multiple UDP ports on a TCP/IP Ethernet network. The DNPSNET port operates as a server, supporting the DNP 3.0 protocol in a Level 2 implementation using the DNP User Group recommended extension for use on LAN/WAN.

General Parameters	
Internal Database	Binary Inputs: 8000 points (500 words) Analog Inputs: 500 points Counters: 250 (500 words) Binary Outputs: 2000 points (125 words) Analog Outputs: 500 points
DNP Mode	DNP 3.0 Slave – Level 2

DNP Server	
Service Port	20000
Protocols	TCP (1 connection) and UDP
Node address	0 to 65534 (software selectable)

The DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. These data are passed between the module and the other protocol on the ProLinx module.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

5201-MNET-101S

The ProLinx Modbus TCP/IP to IEC60870-5-101 Slave Gateway creates a powerful connection between devices on a Modbus TCP/IP network and an IEC 101 master device. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one IEC 101 Slave configurable serial port.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The IEC 60870-5-101 Slave protocol driver supports Slave implementations of the protocol. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

IEC 60870-5-101 Slave

The 101S module acts as an input/output module between the IEC 60870-5-101 and other protocols and networks, as well as several proprietary interfaces.

General specifications include:

- User-definable module memory usage
- Storage of IEC time used in module is available in the database
- Protocol implementation conforms to the IEC 60870-5-101 specification with fully configurable parameters
- Priority Queues
- Invalid Bit Monitoring
- Supports Balanced and Unbalanced Mode
- Supports CP24 and CP56 time formats for events
- Event generation configurable per point or data type

General Parameters	
Communication parameters	Baud Rate: 110 to 19,200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing Delays: 0 to 65535 milliseconds
IEC 60870-5-101 Slave	
Configurable Parameters	Data link address length Common Address of ASDU length Inform. Object Address length Select/Operate Timeout Event Scan delay Use Balanced Mode Short Pulse Time Long Pulse Time Time DB Offset

The ProLinx Modbus TCP/IP to IEC60870-5-103 Master Gateway creates a powerful connection between devices on a Modbus TCP/IP network and an IEC 103 slave device. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one IEC 103 Master configurable serial port.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

PROLINX

5201-MNET-104S

The ProLinx Modbus TCP/IP to IEC60870-5-104 Server Gateway creates a powerful connection between devices on a Modbus TCP/IP network and IEC 104 client devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the

IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

The ProLinx Modbus TCP/IP to ASCII Generic Serial Gateway creates a powerful connection between devices on a Modbus TCP/IP network and ASCII input devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and up to four ASCII configurable serial ports.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The ASCII protocol driver permits the module to interface to many ASCII devices. Each ASCII port on the module is configurable to send and/or receive ASCII strings, each supporting its own individual serial network.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

ASCII

The ASCII driver provides a powerful connection between the internal application database in the ProLinx unit and devices supporting serial ASCII communications (bar code scanners, line printers, legacy terminal based computer systems, etc).

The serial port on the gateway is user-configurable to support ASCII communications (Baud rate, Data Bits, Stop Bits, etc). The ASCII port can act as a Master (Send ASCII strings) or as a Slave (Receive ASCII strings), or both.

ASCII Specifications	
Ports	Available in up to four port configurations to receive and/or transmit data.
Transmit and Receive buffer size	255 bytes each
Transmit character with pacing	0 to 65535 millisecond delay between each transmitted character.

PROLINX

5201/5202-MNET-BSCH(4)

The ProLinx Modbus TCP/IP to Bosch Packaging Machinery Gateway creates a powerful connection between devices on an EtherNet/IP network and Bosch packaging machinery. The module provides a single Ethernet port and up to four Bosch configurable serial ports.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The Bosch Master protocol driver supports Master implementations of the protocol on up to four ports. Each of the ports is individually configurable.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

Bosch Packaging Machinery

The Bosch Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the Bosch protocol (Master, Error Checking, Baud rate, etc).

General Parameters

Type	Specifications
Internal Database	4000 registers (words) available
Bosch Modes	Full-Duplex
Error Checking	BCC

Bosch Master Driver

Type	Specifications
General	Full-Duplex, Point to Point
Configurable Parameters per Master port	Min Command Delay, Number of Commands, Response Timeout, Retry Count, Slave List Error Pointer
Bosch Commands supported	0x00 Protected Write 0x01 Unprotected Read
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Status Data	Error codes available on an individual command basis. In addition, a slave status list is maintained per active master port.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

The ProLinx Modbus TCP/IP to DF1 Master/Slave Gateway creates a powerful connection between devices on a Modbus TCP/IP network and DF1 devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and up to four serial ports.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 254 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

PROLINX

5201-MNET-DFNT

The ProLinx Modbus EtherNet/IP to TCP/IP Gateway creates a powerful connection between Modbus TCP/IP and EtherNet/IP networks. The module provides one Ethernet port.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

The ProLinx Modbus TCP/IP to DNP 3.0 Master Gateway creates a powerful connection between devices on a Modbus TCP/IP network and DNP slave devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one serial port.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The DNP 3.0 Master protocol driver supports Master implementations of the protocol on one port. This port is fully configurable.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

DNP 3.0 Master

The DNP 3.0 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Master, Baud Rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0-500 word count Analog Inputs: 0-500 points Counters: 0-250 points Binary Outputs: 0-500 word count Analog Outputs: 0-500 points
DNP Mode	DNP 3.0 Master – Level 2
DNP Object Support	DNPM Driver Manual contains full Object Definition documentation

DNP Master	
Node address	0 to 65534 – software selectable
Slave count	Up to 40 slave devices
Command count	Up to 300 user defined commands to interface with remote slave devices

PROLINX

5201-MNET-DNPS

The ProLinx Modbus TCP/IP to DNP 3.0 Slave Gateway creates a powerful connection between devices on a Modbus network and DNP master devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one serial port.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The DNP 3.0 Slave protocol driver supports Slave implementations of the protocol on one port. This port is fully configurable.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

DNP 3.0 Slave

The DNP 3.0 Slave driver provides extensive support for Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Slave, Error Checking, Baud rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0–500 word count Analog Inputs: 0–500 points Counters: 0-250 points Binary Outputs: 0–100 word count Analog Outputs: 0–500 points Binary Input Events: 0–100 event buffer Analog Input Events: 0–100 event buffer
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None RTS Timing delays: 0 to 65535 milliseconds
DNP Mode	DNP 3.0 Slave – Level 2

DNP Slave	
Node address	0 to 65534 (software selectable)

The ProLinx Modbus TCP/IP to DNP over Ethernet Gateway creates a powerful connection between devices on Modbus TCP/IP and DNP over Ethernet networks. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The ProLinx module supports the DNP 3.0 protocol as a server using the TCP and UDP protocols using service port 20000. This port is fully configurable.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

DNP 3.0 Slave

The DNP 3.0 Slave driver provides extensive support for Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Slave, Error Checking, Baud rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0–500 word count Analog Inputs: 0–500 points Counters: 0-250 points Binary Outputs: 125 word count Analog Outputs: 0–500 points Binary Input Events: 0–100 event buffer Analog Input Events: 0–100 event buffer
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None RTS Timing delays: 0 to 65535 milliseconds
DNP Mode	DNP 3.0 Slave – Level 2

DNP Slave	
Node address	0 to 65534 (software selectable)

PROLINX

5201 MNET-EGD

The ProLinx Modbus TCP/IP to Ethernet Global Data (EGD) Gateway creates a powerful connection between devices on Modbus TCP/IP and Ethernet Global Data networks.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

EGD

GE Ethernet Global Data (EGD) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. Bandwidth utilization is optimized by using efficient communication methods. High reliability means fewer communication failures and having the ability to detect failures upon occurrence. Particular emphasis is delivered for applications requiring periodic or frequent updates and time synchronization of devices. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the network can produce these types of messages and each device determines which of these messages to consume.

The ProLinx Modbus TCP/IP to Modbus Master/Slave Gateway creates a powerful connection between devices on a Modbus TCP/IP network and Modbus serial devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and up to four serial ports.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

PROLINX

5204-104S-PDPM

The IEC 60870-5-104 Server to PROFIBUS DP Master Gateway creates a powerful connection between devices on an IEC 104 network and a PROFIBUS DP slave. This stand-alone DIN-rail mounted protocol gateway provides one PROFIBUS DP Master configurable DB9F port and one IEC 104 Server Ethernet port.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

The PROFIBUS DP Master protocol driver supports Master implementations of the protocol on either a Mono-Master or Multi-Master network.

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the

IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

The ProLinx EtherNet/IP to PROFIBUS DP Master Gateway creates a powerful connection between devices on an EtherNet/IP network and a PROFIBUS slave device. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and PROFIBUS DP Master configurable DB9F port.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The PROFIBUS DP Master protocol driver supports Master implementations of the protocol on either a Mono-Master or Multi-Master network.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

PROLINX

DNP 3.0 over Ethernet to PROFIBUS DP Master Gateway

5204-DNPSNET-PDPM

The ProLinx DNP over Ethernet to PROFIBUS DP Master Gateway creates a powerful connection between devices on an EtherNet/IP network and a PROFIBUS slave device. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one PROFIBUS DP Master configurable DB9F port.

The ProLinx module supports the DNP 3.0 protocol as a server using the TCP and UDP protocols using service port 20000. This port is fully configurable.

The PROFIBUS DP Master protocol driver supports Master implementations of the protocol on either a Mono-Master or Multi-Master network.

DNP 3.0 TCP/IP Server

The DNPSNET protocol driver exists as a single service port (DNPSNET port 20000) implementation that supports a single TCP port connection and multiple UDP ports on a TCP/IP Ethernet network. The DNPSNET port operates as a server, supporting the DNP 3.0 protocol in a Level 2 implementation using the DNP User Group recommended extension for use on LAN/WAN.

General Parameters	
Internal Database	Binary Inputs: 8000 points (500 words) Analog Inputs: 500 points Counters: 250 (500 words) Binary Outputs: 2000 points (125 words) Analog Outputs: 500 points
DNP Mode	DNP 3.0 Slave – Level 2

DNP Server	
Service Port	20000
Protocols	TCP (1 connection) and UDP
Node address	0 to 65534 (software selectable)

The DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. These data are passed between the module and the other protocol on the ProLinx module.

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

The ProLinx Modbus TCP/IP to PROFIBUS DP Master Gateway creates a powerful connection between devices on a Modbus TCP/IP network and a PROFIBUS slave device. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and PROFIBUS DP Master configurable DB-9F port.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The PROFIBUS DP Master protocol driver supports Master implementations of the protocol on either a Mono-Master or Multi-Master network.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

PROLINX

5205-104S-PDPS

The IEC 60870-5-104 Server to PROFIBUS DP Slave Gateway creates a powerful connection between devices on an IEC 104 network and PROFIBUS DP master devices. This stand-alone DIN-rail mounted protocol gateway provides one PROFIBUS DP Slave configurable DB9F port and one IEC 104 Server Ethernet port.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the

IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

The ProLinx EtherNet/IP to PROFIBUS DP Slave Gateway creates a powerful connection between devices on an EtherNet/IP network and a PROFIBUS master device. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one PROFIBUS DP Slave configurable DB9F port.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

5205-DNPSNET-PDPS

The ProLinx DNP over Ethernet to PROFIBUS DP Slave Gateway creates a powerful connection between devices on a DNP over Ethernet network and a PROFIBUS master device. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one PROFIBUS DP Slave configurable DB9F port.

The ProLinx module supports the DNP 3.0 protocol as a server using the TCP and UDP protocols using service port 20000. This port is fully configurable.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

DNP 3.0 TCP/IP Server

The DNPSNET protocol driver exists as a single service port (DNPSNET port 20000) implementation that supports a single TCP port connection and multiple UDP ports on a TCP/IP Ethernet network. The DNPSNET port operates as a server, supporting the DNP 3.0 protocol in a Level 2 implementation using the DNP User Group recommended extension for use on LAN/WAN.

General Parameters	
Internal Database	Binary Inputs: 8000 points (500 words) Analog Inputs: 500 points Counters: 250 (500 words) Binary Outputs: 2000 points (125 words) Analog Outputs: 500 points
DNP Mode	DNP 3.0 Slave – Level 2

DNP Server	
Service Port	20000
Protocols	TCP (1 connection) and UDP
Node address	0 to 65534 (software selectable)

The DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. These data are passed between the module and the other protocol on the ProLinx module.

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

5205-MNET-PDPS

The ProLinx Modbus TCP/IP to PROFIBUS DP Slave Gateway creates a powerful connection between devices on a Modbus TCP/IP network and a PROFIBUS DP Master device. This stand-alone DIN-rail mounted protocol gateway provides a single Ethernet port and a single DB9F PROFIBUS port.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

PROLINX

5206-DFNT-DEM

The ProLinx EtherNet/IP to Honeywell DE Master Gateway creates a powerful connection between devices on an EtherNet/IP network and Honeywell DE slave devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and eight Honeywell DE Master channels.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The DEM protocol driver is designed to provide a tightly integrated communications interface between other protocols of the ProLinx platform and the Honeywell DE instruments. Compatible DE devices include a large array of field devices including pressure, temperature, metering, and many other instruments.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

Honeywell DE Master

The ProLinx DEM Protocol Driver is designed to interface with up to 8 DE devices. Data is exchanged between the DE instruments and the driver using the internal database contained in the DEM module.

DE Communications

- Built in accordance with the Honeywell DE specification
- Supports up to 8 single PV transmitters, 2 multivariable transmitters with 4 PVs each, or a mix of single and multivariable equaling 8 input channels
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA) with ProSoft-supplied cable
- Supports redundant and non-redundant FTA implementations
- Single cable connection from DEM module to FTA

Physical Specifications	
Power Source	External 24 VDC source connection on the front of the DEM module provides instrument loop power
LEDs for Visual Module Status	DE Active DE Error

The ProLinx Modbus TCP/IP to Honeywell DE Master Gateway creates a powerful connection between devices on a Modbus TCP/IP network and Honeywell DE slave devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and eight Honeywell DE Master configurable channels.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The DEM protocol driver is designed to provide a tightly integrated communications interface between other protocols of the ProLinx platform and the Honeywell DE instruments. Compatible DE devices include a large array of field devices including pressure, temperature, metering, and many other instruments.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

Honeywell DE Master

The ProLinx DEM Protocol Driver is designed to interface with up to 8 DE devices. Data is exchanged between the DE instruments and the driver using the internal database contained in the DEM module.

DE Communications

- Built in accordance with the Honeywell DE specification
- Supports up to 8 single PV transmitters, 2 multivariable transmitters with 4 PVs each, or a mix of single and multivariable equaling 8 input channels
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA) with ProSoft-supplied cable
- Supports redundant and non-redundant FTA implementations
- Single cable connection from DEM module to FTA

Physical Specifications	
Power Source	External 24 VDC source connection on the front of the DEM module provides instrument loop power
LEDs for Visual Module Status	DE Active DE Error

PROLINX

5207-DFNT-HART

The ProLinx EtherNet/IP to HART Multi-drop gateways create a powerful connection between devices on an EtherNet/IP network and HART Multi-drop devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and four HART Multi-drop channels.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The HART protocol driver works as a Master on four (HART) or eight channels (HART2 - not available on certain configurations) per interface card, depending on implementation. Each channel is individually configurable.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

HART

The HART Master Protocol exists in 4 channel implementations with HART2 allowing 8 channels. This driver can be configured on an individual channel basis to operate as a HART Master Station and supports all the available HART commands including Universal, Common Practice and Device Specific Commands. Each HART channel is independently configured to interface with the internal database in the module.

The auto-poll mode allows the module to automatically collect data from each HART instrument on the channel and store the data in the module's database without the use of user commands. The module automatically generates HART commands 0, 3, 13, 14 and 15.

General Parameters	
Communication parameters	Number of HART Preambles: 2 to 50 Enable Handheld: Y or N Primary Master: Y or N
Configurable Parameters per Channel	Auto-Poll Enable, Short / Long Address Retries, Retries After Error Poll Time After Error, Number of Commands, Slave List Error Pointer

HART Driver	
Command List	Up to 100 fully configurable commands per channel
Polling of command list	User configurable polling of commands, including disabled, continuous, on change of data (write only) and dynamically user or automatic enabled.

HART® is a registered trademark of the HART Communication Foundation

The ProLinx Modbus TCP/IP to HART Multi-drop Gateway creates a powerful connection between devices on an EtherNet/IP network and HART Multi-drop devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and four configurable HART channels.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The HART protocol driver works as a Master on four (HART) or eight channels (HART2 - not available on certain configurations) per interface card, depending on implementation. Each channel is individually configurable.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

HART

The HART Master Protocol exists in 4 channel implementations with HART2 allowing 8 channels. This driver can be configured on an individual channel basis to operate as a HART Master Station and supports all the available HART commands including Universal, Common Practice and Device Specific Commands. Each HART channel is independently configured to interface with the internal database in the module.

The auto-poll mode allows the module to automatically collect data from each HART instrument on the channel and store the data in the module's database without the use of user commands. The module automatically generates HART commands 0, 3, 13, 14 and 15.

General Parameters	
Communication parameters	Number of HART Preambles: 2 to 50 Enable Handheld: Y or N Primary Master: Y or N
Configurable Parameters per Channel	Auto-Poll Enable, Short / Long Address Retries, Retries After Error Poll Time After Error, Number of Commands, Slave List Error Pointer

HART Driver	
Command List	Up to 100 fully configurable commands per channel
Polling of command list	User configurable polling of commands, including disabled, continuous, on change of data (write only) and dynamically user or automatic enabled.

HART® is a registered trademark of the HART Communication Foundation

PROLINX

5210-104S-RIO

The ProLinx IEC60870-5-104 Server to A-B Remote I/O Gateway creates a powerful connection between devices on an IEC 104 network and Remote I/O devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one Remote I/O port.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the

IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

The ProLinx EtherNet/IP to Rockwell Automation Remote I/O Adapter Gateway creates a powerful connection between devices on an EtherNet/IP network and Remote I/O devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one Remote I/O port.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

PROLINX

DNP 3.0 over Ethernet to Rockwell Automation Remote I/O Gateway

5210-DNPSNET-RIO

The ProLinx DNP over Ethernet to Remote I/O Gateway creates a powerful connection between devices on a DNP over Ethernet network and Remote I/O devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one Remote I/O port.

The ProLinx module supports the DNP 3.0 protocol as a server using the TCP and UDP protocols using service port 20000. This port is fully configurable.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

DNP 3.0 TCP/IP Server

The DNPSNET protocol driver exists as a single service port (DNPSNET port 20000) implementation that supports a single TCP port connection and multiple UDP ports on a TCP/IP Ethernet network. The DNPSNET port operates as a server, supporting the DNP 3.0 protocol in a Level 2 implementation using the DNP User Group recommended extension for use on LAN/WAN.

General Parameters	
Internal Database	Binary Inputs: 8000 points (500 words) Analog Inputs: 500 points Counters: 250 (500 words) Binary Outputs: 2000 points (125 words) Analog Outputs: 500 points
DNP Mode	DNP 3.0 Slave – Level 2

DNP Server	
Service Port	20000
Protocols	TCP (1 connection) and UDP
Node address	0 to 65534 (software selectable)

The DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. These data are passed between the module and the other protocol on the ProLinx module.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

The ProLinx Modbus TCP/IP to Rockwell Automation Remote I/O Adapter Gateway creates a powerful connection between devices on a Modbus TCP/IP network and Remote I/O devices. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one Remote I/O port.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	$\frac{1}{4}$-rack, $\frac{1}{2}$-rack, $\frac{3}{4}$-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

PROLINX

5303-MBP-104S

The ProLinx Modbus Plus to IEC60870-5-104 Server Gateway creates a powerful connection between devices on an IEC 104 network and a Modbus Plus device. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB9F port and one Ethernet port.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

IEC 60870-5-104 Server

Operating in the Server mode, the protocol driver accepts commands from one or more clients to read/write data stored in the module's internal registers.

The 104S module acts as a gateway between the

IEC 60870-5-104 Ethernet network and IEC 60870-5-103 Slave devices.

General specifications include:

- User-definable module memory usage
- Protocol implementation conforms to the IEC 60870-5-104 specification with fully configurable parameters
- SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions.

The 104S module accepts commands from an attached master unit on the network and generates unsolicited messages. These last sets of messages are either spontaneous or cyclic. Data transferred to the host is derived from the module's internal database. The remote master device can control data in the database and hence the devices connected using the other protocol in the module using standard control messages supported in the protocol. The remote master device uses the fully-configured databases in the module to control outputs and monitor inputs.

IEC 60870-5-104 Server	
Configurable Parameters	Override StartDT Clear queue on close t1 timeout set value t2 timeout set value t3 timeout set value k (maximum queue) w (latest ack threshold) Time DB Offset

The ProLinx Modbus Plus to EtherNet/IP Gateway creates a powerful connection between devices on an EtherNet/IP network and a Modbus Plus device. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB9F port and one Ethernet port.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

PROLINX

5303-MBP-DNPSNET

The ProLinx Modbus Plus to DNP over Ethernet Gateway creates a powerful connection between devices on a DNP over Ethernet network and a Modbus Plus device. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB9F port and one Ethernet port.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The ProLinx module supports the DNP 3.0 protocol as a server using the TCP and UDP protocols using service port 20000. This port is fully configurable.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

DNP 3.0 TCP/IP Server

The DNPSNET protocol driver exists as a single service port (DNPSNET port 20000) implementation that supports a single TCP port connection and multiple UDP ports on a TCP/IP Ethernet network. The DNPSNET port operates as a server, supporting the DNP 3.0 protocol in a Level 2 implementation using the DNP User Group recommended extension for use on LAN/WAN.

General Parameters	
Internal Database	Binary Inputs: 8000 points (500 words) Analog Inputs: 500 points Counters: 250 (500 words) Binary Outputs: 2000 points (125 words) Analog Outputs: 500 points
DNP Mode	DNP 3.0 Slave – Level 2

DNP Server	
Service Port	20000
Protocols	TCP (1 connection) and UDP
Node address	0 to 65534 (software selectable)

The DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. These data are passed between the module and the other protocol on the ProLinx module.

The ProLinx Modbus Plus to Modbus TCP/IP Gateway creates a powerful connection between devices on a Modbus TCP/IP network and a Modbus Plus device. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB9F port and one Ethernet port.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

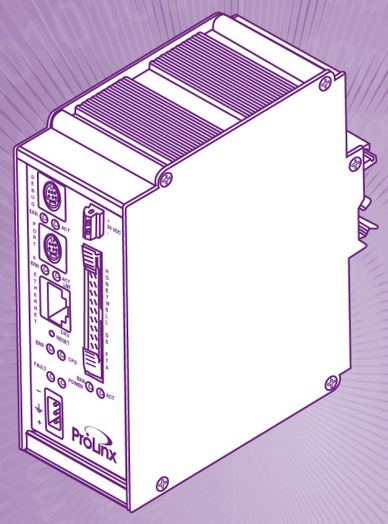
Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

PROLINX



ProLinx®

Field Instrumentation Gateways

The ProLinx IEC60870-5-103 Master to HART Multi-drop Gateway creates a powerful connection between devices on an IEC68070-5-103 network and HART devices. This stand-alone DIN-rail mounted protocol gateway provides one serial port and up to eight HART channels.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

The HART protocol driver works as a Master on four (HART) or eight channels (HART2 - not available on certain configurations) per interface card, depending on implementation. Each channel is individually configurable.

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

HART

The HART Master Protocol exists in 4 channel implementations with HART2 allowing 8 channels. This driver can be configured on an individual channel basis to operate as a HART Master Station and supports all the available HART commands including Universal, Common Practice and Device Specific Commands. Each HART channel is independently configured to interface with the internal database in the module.

The auto-poll mode allows the module to automatically collect data from each HART instrument on the channel and store the data in the module's database without the use of user commands. The module automatically generates HART commands 0, 3, 13, 14 and 15.

General Parameters	
Communication parameters	Number of HART Preambles: 2 to 50 Enable Handheld: Y or N Primary Master: Y or N
Configurable Parameters per Channel	Auto-Poll Enable, Short / Long Address Retries, Retries After Error Poll Time After Error, Number of Commands, Slave List Error Pointer

HART Driver	
Command List	Up to 100 fully configurable commands per channel
Polling of command list	User configurable polling of commands, including disabled, continuous, on change of data (write only) and dynamically user or automatic enabled.

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5106-103M-DEM

The ProLinx IEC60870-5-103 Master to Honeywell DE Master Gateway creates a powerful connection between devices on an IEC68070-5-103 network and Honeywell DE devices. This stand-alone DIN-rail mounted protocol gateway provides one serial port and eight Honeywell DE channels.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

The DEM protocol driver is designed to provide a tightly integrated communications interface between other protocols of the ProLinx platform and the Honeywell DE instruments. Compatible DE devices include a large array of field devices including pressure, temperature, metering, and many other instruments.

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

Honeywell DE Master

The ProLinx DEM Protocol Driver is designed to interface with up to 8 DE devices. Data is exchanged between the DE instruments and the driver using the internal database contained in the DEM module.

DE Communications

- Built in accordance with the Honeywell DE specification
- Supports up to 8 single PV transmitters, 2 multivariable transmitters with 4 PVs each, or a mix of single and multivariable equaling 8 input channels
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA) with ProSoft-supplied cable
- Supports redundant and non-redundant FTA implementations
- Single cable connection from DEM module to FTA

Physical Specifications	
Power Source	External 24 VDC source connection on the front of the DEM module provides instrument loop power
LEDs for Visual Module Status	DE Active DE Error

The ProLinx DF1 Master/Slave to Honeywell DE Master Gateway creates a powerful connection between devices on a DF1 network and Honeywell DE devices. This stand-alone DIN-rail mounted protocol gateway provides one serial port and eight Honeywell DE channels.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

The DEM protocol driver is designed to provide a tightly integrated communications interface between other protocols of the ProLinx platform and the Honeywell DE instruments. Compatible DE devices include a large array of field devices including pressure, temperature, metering, and many other instruments.

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 254 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

Honeywell DE Master

The ProLinx DEM Protocol Driver is designed to interface with up to 8 DE devices. Data is exchanged between the DE instruments and the driver using the internal database contained in the DEM module.

DE Communications

- Built in accordance with the Honeywell DE specification
- Supports up to 8 single PV transmitters, 2 multivariable transmitters with 4 PVs each, or a mix of single and multivariable equaling 8 input channels
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA) with ProSoft-supplied cable
- Supports redundant and non-redundant FTA implementations
- Single cable connection from DEM module to FTA

Physical Specifications	
Power Source	External 24 VDC source connection on the front of the DEM module provides instrument loop power
LEDs for Visual Module Status	DE Active DE Error

PROLINX

Field Instrumentation Gateways
DH-485 to Honeywell DE Master Gateway
5106/5126-DH485-DEM(2)

The ProLinx DH-485 to Honeywell DE Master Gateway creates a powerful connection between devices on a DH-485 network and Honeywell DE devices. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 configurable serial port and up to eight configurable Honeywell DE Master channels.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The DEM protocol driver is designed to provide a tightly integrated communications interface between other protocols of the ProLinx platform and the Honeywell DE instruments. Compatible DE devices include a large array of field devices including pressure, temperature, metering, and many other instruments.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 110 to 38.4K baud Port 1 Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

Honeywell DE Master

The ProLinx DEM Protocol Driver is designed to interface with up to 8 DE devices. Data is exchanged between the DE instruments and the driver using the internal database contained in the DEM module.

DE Communications

- Built in accordance with the Honeywell DE specification
- Supports up to 8 single PV transmitters, 2 multivariable transmitters with 4 PVs each, or a mix of single and multivariable equaling 8 input channels
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA) with ProSoft-supplied cable
- Supports redundant and non-redundant FTA implementations
- Single cable connection from DEM module to FTA

Physical Specifications	
Power Source	External 24 VDC source connection on the front of the DEM module provides instrument loop power
LEDs for Visual Module Status	DE Active DE Error

The ProLinx Modbus Master/Slave to Honeywell DE Master Gateway creates a powerful connection between devices on a Honeywell DE network and Modbus devices. This stand-alone DIN-rail mounted protocol gateway provides one configurable serial port and one 8 channel DEM block.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

The DEM protocol driver is designed to provide a tightly integrated communications interface between other protocols of the ProLinx platform and the Honeywell DE instruments. Compatible DE devices include a large array of field devices including pressure, temperature, metering, and many other instruments.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

Honeywell DE Master

The ProLinx DEM Protocol Driver is designed to interface with up to 8 DE devices. Data is exchanged between the DE instruments and the driver using the internal database contained in the DEM module.

DE Communications

- Built in accordance with the Honeywell DE specification
- Supports up to 8 single PV transmitters, 2 multivariable transmitters with 4 PVs each, or a mix of single and multivariable equaling 8 input channels
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA) with ProSoft-supplied cable
- Supports redundant and non-redundant FTA implementations
- Single cable connection from DEM module to FTA

Physical Specifications	
Power Source	External 24 VDC source connection on the front of the DEM module provides instrument loop power
LEDs for Visual Module Status	DE Active DE Error

PROLINX

Field Instrumentation Gateways

Modbus Plus to Honeywell DE Master Gateway

5306-MBP-DEM

The ProLinx Modbus Plus to Honeywell DE Master Gateway creates a powerful connection between devices on a Modbus Plus network and Honeywell slave devices. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB9F port and eight Honeywell DE Master channels.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The DEM protocol driver is designed to provide a tightly integrated communications interface between other protocols of the ProLinx platform and the Honeywell DE instruments. Compatible DE devices include a large array of field devices including pressure, temperature, metering, and many other instruments.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

Honeywell DE Master

The ProLinx DEM Protocol Driver is designed to interface with up to 8 DE devices. Data is exchanged between the DE instruments and the driver using the internal database contained in the DEM module.

DE Communications

- Built in accordance with the Honeywell DE specification
- Supports up to 8 single PV transmitters, 2 multivariable transmitters with 4 PVs each, or a mix of single and multivariable equaling 8 input channels
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA) with ProSoft-supplied cable
- Supports redundant and non-redundant FTA implementations
- Single cable connection from DEM module to FTA

Physical Specifications	
Power Source	External 24 VDC source connection on the front of the DEM module provides instrument loop power
LEDs for Visual Module Status	DE Active DE Error

The ProLinx DF1 Master/Slave to HART Multi-drop Gateway creates a powerful connection between devices on a DF1 network and HART devices. This stand-alone DIN-rail mounted protocol gateway provides one serial port and up to eight HART channels.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

The HART protocol driver works as a Master on four (HART) or eight channels (HART2 - not available on certain configurations) per interface card, depending on implementation. Each channel is individually configurable.

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 254 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

HART

The HART Master Protocol exists in 4 channel implementations with HART2 allowing 8 channels. This driver can be configured on an individual channel basis to operate as a HART Master Station and supports all the available HART commands including Universal, Common Practice and Device Specific Commands. Each HART channel is independently configured to interface with the internal database in the module.

The auto-poll mode allows the module to automatically collect data from each HART instrument on the channel and store the data in the module's database without the use of user commands. The module automatically generates HART commands 0, 3, 13, 14 and 15.

General Parameters	
Communication parameters	Number of HART Preambles: 2 to 50 Enable Handheld: Y or N Primary Master: Y or N
Configurable Parameters per Channel	Auto-Poll Enable, Short / Long Address Retries, Retries After Error Poll Time After Error, Number of Commands, Slave List Error Pointer

HART Driver	
Command List	Up to 100 fully configurable commands per channel
Polling of command list	User configurable polling of commands, including disabled, continuous, on change of data (write only) and dynamically user or automatic enabled.

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PROLINX

Field Instrumentation Gateways
DH-485 to HART Multi-drop Gateway

5107/5127-DH485-HART(2)

The ProLinx DH-485 to HART Multi-drop Gateway creates a powerful connection between devices on a DH-485 network and HART devices. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 configurable serial port and up to eight configurable HART Multi-drop channels.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The HART protocol driver works as a Master on four (HART) or eight channels (HART2 - not available on certain configurations) per interface card, depending on implementation. Each channel is individually configurable.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 110 to 38.4K baud Port 1 Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

HART

The HART Master Protocol exists in 4 channel implementations with HART2 allowing 8 channels. This driver can be configured on an individual channel basis to operate as a HART Master Station and supports all the available HART commands including Universal, Common Practice and Device Specific Commands. Each HART channel is independently configured to interface with the internal database in the module.

The auto-poll mode allows the module to automatically collect data from each HART instrument on the channel and store the data in the module's database without the use of user commands. The module automatically generates HART commands 0, 3, 13, 14 and 15.

General Parameters	
Communication parameters	Number of HART Preambles: 2 to 50 Enable Handheld: Y or N Primary Master: Y or N
Configurable Parameters per Channel	Auto-Poll Enable, Short / Long Address Retries, Retries After Error Poll Time After Error, Number of Commands, Slave List Error Pointer

HART Driver	
Command List	Up to 100 fully configurable commands per channel
Polling of command list	User configurable polling of commands, including disabled, continuous, on change of data (write only) and dynamically user or automatic enabled.

HART® is a registered trademark of the HART Communication Foundation

The ProLinx Modbus Master/Slave to HART Multi-Drop Gateway creates a powerful connection between devices on a Modbus network and HART devices. This stand-alone DIN-rail mounted protocol gateway provides one serial port and up to eight configurable HART channels.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

The HART protocol driver works as a Master on four (HART) or eight channels (HART2 - not available on certain configurations) per interface card, depending on implementation. Each channel is individually configurable.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

HART

The HART Master Protocol exists in 4 channel implementations with HART2 allowing 8 channels. This driver can be configured on an individual channel basis to operate as a HART Master Station and supports all the available HART commands including Universal, Common Practice and Device Specific Commands. Each HART channel is independently configured to interface with the internal database in the module.

The auto-poll mode allows the module to automatically collect data from each HART instrument on the channel and store the data in the module's database without the use of user commands. The module automatically generates HART commands 0, 3, 13, 14 and 15.

General Parameters	
Communication parameters	Number of HART Preambles: 2 to 50 Enable Handheld: Y or N Primary Master: Y or N
Configurable Parameters per Channel	Auto-Poll Enable, Short / Long Address Retries, Retries After Error Poll Time After Error, Number of Commands, Slave List Error Pointer

HART Driver	
Command List	Up to 100 fully configurable commands per channel
Polling of command list	User configurable polling of commands, including disabled, continuous, on change of data (write only) and dynamically user or automatic enabled.

HART® is a registered trademark of the HART Communication Foundation

PROLINX

5506-PDPS-DEM

The ProLinx PROFIBUS DP Slave to Honeywell DEM Gateway creates a powerful connection between devices on a PROFIBUS DP network and Honeywell DE slave device. This stand-alone DIN-rail mounted protocol gateway provides one PROFIBUS DP Slave configurable DB9F port and eight configurable Honeywell DE channels.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

The DEM protocol driver is designed to provide a tightly integrated communications interface between other protocols of the ProLinx platform and the Honeywell DE instruments. Compatible DE devices include a large array of field devices including pressure, temperature, metering, and many other instruments.

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

Honeywell DE Master

The ProLinx DEM Protocol Driver is designed to interface with up to 8 DE devices. Data is exchanged between the DE instruments and the driver using the internal database contained in the DEM module.

DE Communications

- Built in accordance with the Honeywell DE specification
- Supports up to 8 single PV transmitters, 2 multivariable transmitters with 4 PVs each, or a mix of single and multivariable equaling 8 input channels
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA) with ProSoft-supplied cable
- Supports redundant and non-redundant FTA implementations
- Single cable connection from DEM module to FTA

Physical Specifications	
Power Source	External 24 VDC source connection on the front of the DEM module provides instrument loop power
LEDs for Visual Module Status	DE Active DE Error

The ProLinx Rockwell Automation Remote I/O Adapter to Honeywell DE Master Gateway creates a powerful connection between devices on a Remote I/O network and Honeywell DE slave devices. This stand-alone DIN-rail mounted protocol gateway provides one Remote I/O port and eight Honeywell DE Master channels.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

The DEM protocol driver is designed to provide a tightly integrated communications interface between other protocols of the ProLinx platform and the Honeywell DE instruments. Compatible DE devices include a large array of field devices including pressure, temperature, metering, and many other instruments.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

Honeywell DE Master

The ProLinx DEM Protocol Driver is designed to interface with up to 8 DE devices. Data is exchanged between the DE instruments and the driver using the internal database contained in the DEM module.

DE Communications

- Built in accordance with the Honeywell DE specification
- Supports up to 8 single PV transmitters, 2 multivariable transmitters with 4 PVs each, or a mix of single and multivariable equaling 8 input channels
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA) with ProSoft-supplied cable
- Supports redundant and non-redundant FTA implementations
- Single cable connection from DEM module to FTA

Physical Specifications	
Power Source	External 24 VDC source connection on the front of the DEM module provides instrument loop power
LEDs for Visual Module Status	DE Active DE Error

PROLINX

Field Instrumentation Gateways

Modbus Plus to HART Multi-drop Gateway

5306-MBP-HART

The ProLinx Modbus Plus to HART Multi-drop Gateway creates a powerful connection between devices on a Modbus Plus network and HART devices. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB9F port and four HART Multi-drop channels.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The HART protocol driver works as a Master on four (HART) or eight channels (HART2 - not available on certain configurations) per interface card, depending on implementation. Each channel is individually configurable.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

HART

The HART Master Protocol exists in 4 channel implementations with HART2 allowing 8 channels. This driver can be configured on an individual channel basis to operate as a HART Master Station and supports all the available HART commands including Universal, Common Practice and Device Specific Commands. Each HART channel is independently configured to interface with the internal database in the module.

The auto-poll mode allows the module to automatically collect data from each HART instrument on the channel and store the data in the module's database without the use of user commands. The module automatically generates HART commands 0, 3, 13, 14 and 15.

General Parameters	
Communication parameters	Number of HART Preambles: 2 to 50 Enable Handheld: Y or N Primary Master: Y or N
Configurable Parameters per Channel	Auto-Poll Enable, Short / Long Address Retries, Retries After Error Poll Time After Error, Number of Commands, Slave List Error Pointer

HART Driver	
Command List	Up to 100 fully configurable commands per channel
Polling of command list	User configurable polling of commands, including disabled, continuous, on change of data (write only) and dynamically user or automatic enabled.

HART® is a registered trademark of the HART Communication Foundation

The ProLinx PROFIBUS DP Slave to HART Multi-drop Gateway creates a powerful connection between devices on a PROFIBUS DP network and HART field devices. This stand-alone DIN-rail mounted protocol gateway provides one PROFIBUS DP Slave configurable DB9F port and 4 configurable HART Multi-drop channels.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

The HART protocol driver works as a Master on four (HART) or eight channels (HART2 - not available on certain configurations) per interface card, depending on implementation. Each channel is individually configurable.

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

HART

The HART Master Protocol exists in 4 channel implementations with HART2 allowing 8 channels. This driver can be configured on an individual channel basis to operate as a HART Master Station and supports all the available HART commands including Universal, Common Practice and Device Specific Commands. Each HART channel is independently configured to interface with the internal database in the module.

The auto-poll mode allows the module to automatically collect data from each HART instrument on the channel and store the data in the module's database without the use of user commands. The module automatically generates HART commands 0, 3, 13, 14 and 15.

General Parameters	
Communication parameters	Number of HART Preambles: 2 to 50 Enable Handheld: Y or N Primary Master: Y or N
Configurable Parameters per Channel	Auto-Poll Enable, Short / Long Address Retries, Retries After Error Poll Time After Error, Number of Commands, Slave List Error Pointer

HART Driver	
Command List	Up to 100 fully configurable commands per channel
Polling of command list	User configurable polling of commands, including disabled, continuous, on change of data (write only) and dynamically user or automatic enabled.

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PROLINX

Field Instrumentation Gateways

Rockwell Automation Remote I/O to HART Multi-drop Gateway

5607-RIO-HART

PROLINX

The ProLinx Rockwell Automation Remote I/O Adapter to HART Multi-drop Gateway creates a powerful connection between devices on a Remote I/O network and HART devices. This stand-alone DIN-rail mounted protocol gateway provides one Remote I/O port and four configurable HART Multi-drop channels.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

The HART protocol driver works as a Master on four (HART) or eight channels (HART2 - not available on certain configurations) per interface card, depending on implementation. Each channel is individually configurable.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

HART

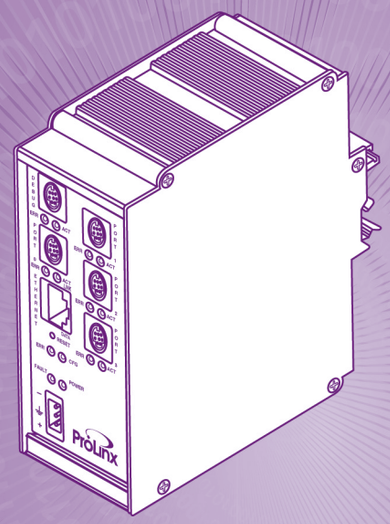
The HART Master Protocol exists in 4 channel implementations with HART2 allowing 8 channels. This driver can be configured on an individual channel basis to operate as a HART Master Station and supports all the available HART commands including Universal, Common Practice and Device Specific Commands. Each HART channel is independently configured to interface with the internal database in the module.

The auto-poll mode allows the module to automatically collect data from each HART instrument on the channel and store the data in the module's database without the use of user commands. The module automatically generates HART commands 0, 3, 13, 14 and 15.

General Parameters	
Communication parameters	Number of HART Preambles: 2 to 50 Enable Handheld: Y or N Primary Master: Y or N
Configurable Parameters per Channel	Auto-Poll Enable, Short / Long Address Retries, Retries After Error Poll Time After Error, Number of Commands, Slave List Error Pointer

HART Driver	
Command List	Up to 100 fully configurable commands per channel
Polling of command list	User configurable polling of commands, including disabled, continuous, on change of data (write only) and dynamically user or automatic enabled.

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ProLinx®

Specialty Gateways

Specialty Gateways

IEC 60870-5-101 Slave to PROFIBUS DP Master Gateway

5104-101S-PDPM

The ProLinx IEC60870-5-101 Slave to PROFIBUS DP Master Gateway creates a powerful connection between devices on an IEC 101 network and a PROFIBUS slave device. This stand-alone DIN-rail mounted protocol gateway provides one PROFIBUS DP Master configurable DB9F port and one IEC 101 Slave configurable serial port.

The IEC 60870-5-101 Slave protocol driver supports Slave implementations of the protocol. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

The PROFIBUS DP Master protocol driver supports Master implementations of the protocol on either a Mono-Master or Multi-Master network.

IEC 60870-5-101 Slave

The 101S module acts as an input/output module between the IEC 60870-5-101 and other protocols and networks, as well as several proprietary interfaces.

General specifications include:

- User-definable module memory usage
- Storage of IEC time used in module is available in the database
- Protocol implementation conforms to the IEC 60870-5-101 specification with fully configurable parameters
- Priority Queues
- Invalid Bit Monitoring
- Supports Balanced and Unbalanced Mode
- Supports CP24 and CP56 time formats for events
- Event generation configurable per point or data type

General Parameters	
Communication parameters	Baud Rate: 110 to 19,200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing Delays: 0 to 65535 milliseconds
IEC 60870-5-101 Slave	
Configurable Parameters	Data link address length Common Address of ASDU length Inform. Object Address length Select/Operate Timeout Event Scan delay Use Balanced Mode Short Pulse Time Long Pulse Time Time DB Offset

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

The ProLinx DH-485 to PROFIBUS DP Master Gateway creates a powerful connection between devices on a DH-485 network and a PROFIBUS slave device. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 configurable serial port and PROFIBUS DP Master port.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The PROFIBUS DP Master protocol driver supports Master implementations of the protocol on either a Mono-Master or Multi-Master network.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 110 to 38.4K baud Port 1 Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

PROLINX

Specialty Gateways

DNP 3.0 Slave to PROFIBUS DP Master Gateway

5104-DNPS-PDPM

The ProLinx DNP 3.0 Slave to PROFIBUS DP Master Gateway creates a powerful connection between devices on a PROFIBUS network and DNP devices. This stand-alone DIN-rail mounted protocol gateway provides one serial port and one DB9F port configurable for PDPM.

The DNP 3.0 Slave protocol driver supports Slave implementations of the protocol on one port. This port is fully configurable.

The PROFIBUS DP Master protocol driver supports Master implementations of the protocol on either a Mono-Master or Multi-Master network.

DNP 3.0 Slave

The DNP 3.0 Slave driver provides extensive support for Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Slave, Error Checking, Baud rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0–500 word count Analog Inputs: 0–500 points Counters: 0-250 points Binary Outputs: 0–200 word count Analog Outputs: 0–500 points Binary Input Events: 0–100 event buffer Analog Input Events: 0–100 event buffer
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None RTS Timing delays: 0 to 65535 milliseconds
DNP Mode	DNP 3.0 Slave – Level 2

DNP Slave	
Node address	0 to 65534 (software selectable)

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

The ProLinx Modbus Master/Slave to PROFIBUS Master Gateway creates a powerful connection between devices on a Modbus network and a PROFIBUS DP Slave device. This stand-alone DIN-rail mounted protocol gateway provides one serial port and one PROFIBUS Master DB9F port.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

The PROFIBUS DP Master protocol driver supports Master implementations of the protocol on either a Mono-Master or Multi-Master network.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

PROLINX

5104-DFCM-PDPM

The ProLinx DF1 Master Slave to PROFIBUS DP Master Gateway creates a powerful connection between devices on a DF1 network and PROFIBUS DP slave devices. This stand-alone DIN-rail mounted protocol gateway provides one serial port and PROFIBUS DP Master port.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

The PROFIBUS DP Master protocol driver supports Master implementations of the protocol on either a Mono-Master or Multi-Master network.

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 254 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

The ProLinx IEC60870-5-103 Master to PROFIBUS DP Master Gateway creates a powerful connection between devices on an IEC 103 network and a PROFIBUS DP slave device. This stand-alone DIN-rail mounted protocol gateway provides one PROFIBUS DP Master configurable DB9F port and one IEC 103 Master configurable serial port.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

The PROFIBUS DP Master protocol driver supports Master implementations of the protocol on either a Mono-Master or Multi-Master network.

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

PROLINX

5105-101S-PDPS

The ProLinx IEC60870-5-101 Slave to PROFIBUS DP Slave Gateway creates a powerful connection between devices on an IEC 101 network and a PROFIBUS DP master device. This stand-alone DIN-rail mounted protocol gateway provides one PROFIBUS DP Slave configurable DB9F port and one IEC 101 Slave configurable serial port.

The IEC 60870-5-101 Slave protocol driver supports Slave implementations of the protocol. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

IEC 60870-5-101 Slave

The 101S module acts as an input/output module between the IEC 60870-5-101 and other protocols and networks, as well as several proprietary interfaces.

General specifications include:

- User-definable module memory usage
- Storage of IEC time used in module is available in the database
- Protocol implementation conforms to the IEC 60870-5-101 specification with fully configurable parameters
- Priority Queues
- Invalid Bit Monitoring
- Supports Balanced and Unbalanced Mode
- Supports CP24 and CP56 time formats for events
- Event generation configurable per point or data type

General Parameters	
Communication parameters	Baud Rate: 110 to 19,200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing Delays: 0 to 65535 milliseconds
IEC 60870-5-101 Slave	
Configurable Parameters	Data link address length Common Address of ASDU length Inform. Object Address length Select/Operate Timeout Event Scan delay Use Balanced Mode Short Pulse Time Long Pulse Time Time DB Offset

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

The ProLinx IEC60870-5-103 Master to PROFIBUS DP Slave Gateway creates a powerful connection between devices on an IEC 103 network and PROFIBUS DP master devices. This stand-alone DIN-rail mounted protocol gateway provides one PROFIBUS DP Slave configurable DB9F port and one IEC 103 Master configurable serial port.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

PROLINX

5105-ASCII-PDPS

The ProLinx ASCII Generic Serial to PROFIBUS DP Slave Gateway creates a powerful connection between a PROFIBUS DP master device and an ASCII input device. The module provides one PROFIBUS DP Slave port and one ASCII configurable serial port.

The ASCII protocol driver permits the module to interface to many ASCII devices. Each ASCII port on the module is configurable to send and/or receive ASCII strings, each supporting its own individual serial network.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

ASCII

The ASCII driver provides a powerful connection between the internal application database in the ProLinx unit and devices supporting serial ASCII communications (bar code scanners, line printers, legacy terminal based computer systems, etc).

The serial port on the gateway is user-configurable to support ASCII communications (Baud rate, Data Bits, Stop Bits, etc). The ASCII port can act as a Master (Send ASCII strings) or as a Slave (Receive ASCII strings), or both.

ASCII Specifications	
Ports	Available in up to four port configurations to receive and/or transmit data.
Transmit and Receive buffer size	255 bytes each
Transmit character with pacing	0 to 65535 millisecond delay between each transmitted character.

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

The ProLinx DF1 Master/Slave to PROFIBUS DP Slave Gateway creates a powerful connection between devices on a PROFIBUS DP network and DF1 devices. This stand-alone DIN-rail mounted protocol gateway provides one serial port and one PROFIBUS DP Slave.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 254 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

5105-DH485-PDPS

The ProLinx DH-485 to PROFIBUS DP Slave Gateway creates a powerful connection between devices on a DH-485 network and a PROFIBUS DP master device. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 configurable serial port and PROFIBUS DP Slave port.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 110 to 38.4K baud Port 1 Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

The ProLinx DNP 3.0 Master to PROFIBUS DP Slave Gateway creates a powerful connection between devices on a DNP 3.0 Master network and PROFIBUS DP master devices. This stand-alone DIN-rail mounted protocol gateway provides one serial port and PROFIBUS DB Slave port.

The DNP 3.0 Master protocol driver supports Master implementations of the protocol on one port. This port is fully configurable.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

DNP 3.0 Master

The DNP 3.0 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Master, Baud Rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0-500 word count Analog Inputs: 0-500 points Counters: 0-250 points Binary Outputs: 0-500 word count Analog Outputs: 0-500 points
DNP Mode	DNP 3.0 Master – Level 2
DNP Object Support	DNPM Driver Manual contains full Object Definition documentation

DNP Master	
Node address	0 to 65534 – software selectable
Slave count	Up to 40 slave devices
Command count	Up to 300 user defined commands to interface with remote slave devices

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

PROLINX

Specialty Gateways

DNP 3.0 Slave to PROFIBUS DP Slave Gateway

5105-DNPS-PDPS

The ProLinx DNP Slave to PROFIBUS DP Slave Gateway creates a powerful connection between DNP and PROFIBUS master devices. This stand-alone DIN-rail mounted protocol gateway provides one serial port and one PROFIBUS Slave port.

The DNP 3.0 Slave protocol driver supports Slave implementations of the protocol on one port. This port is fully configurable.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

DNP 3.0 Slave

The DNP 3.0 Slave driver provides extensive support for Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Slave, Error Checking, Baud rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0–500 word count Analog Inputs: 0–500 points Counters: 0-250 points Binary Outputs: 0–200 word count Analog Outputs: 0–500 points Binary Input Events: 0–100 event buffer Analog Input Events: 0–100 event buffer
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None RTS Timing delays: 0 to 65535 milliseconds
DNP Mode	DNP 3.0 Slave – Level 2

DNP Slave	
Node address	0 to 65534 (software selectable)

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

The ProLinx Modbus Master/Slave to PROFIBUS DP Slave Gateway creates a powerful connection between devices on a Modbus network and PROFIBUS DP master devices. This stand-alone DIN-rail mounted protocol gateway provides one configurable serial port and one DB9F PDPS port.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

PROLINX

5301-MBP-101S

The ProLinx Modbus Plus to IEC 60870-5-101 Slave Gateway creates a powerful connection between devices on a Modbus Plus network and an IEC 101 master device. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB9F port and one IEC 101 Slave configurable serial port.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The IEC 60870-5-101 Slave protocol driver supports Slave implementations of the protocol. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

IEC 60870-5-101 Slave

The 101S module acts as an input/output module between the IEC 60870-5-101 and other protocols and networks, as well as several proprietary interfaces.

General specifications include:

- User-definable module memory usage
- Storage of IEC time used in module is available in the database
- Protocol implementation conforms to the IEC 60870-5-101 specification with fully configurable parameters
- Priority Queues
- Invalid Bit Monitoring
- Supports Balanced and Unbalanced Mode
- Supports CP24 and CP56 time formats for events
- Event generation configurable per point or data type

General Parameters	
Communication parameters	Baud Rate: 110 to 19,200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing Delays: 0 to 65535 milliseconds
IEC 60870-5-101 Slave	
Configurable Parameters	Data link address length Common Address of ASDU length Inform. Object Address length Select/Operate Timeout Event Scan delay Use Balanced Mode Short Pulse Time Long Pulse Time Time DB Offset

The ProLinx Modbus Plus to IEC60870-5-103 Master Gateway creates a powerful connection between devices on a Modbus Plus network and an IEC 103 slave device. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB9F port and one IEC 103 Master configurable serial port.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

5301/5302-MBP-ASCII(4)

The ProLinx Modbus Plus to ASCII Generic Serial Gateway creates a powerful connection between devices on a Modbus Plus network and ASCII input devices. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB9F port and up to four ASCII configurable serial ports.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The ASCII protocol driver permits the module to interface to many ASCII devices. Each ASCII port on the module is configurable to send and/or receive ASCII strings, each supporting its own individual serial network.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

ASCII

The ASCII driver provides a powerful connection between the internal application database in the ProLinx unit and devices supporting serial ASCII communications (bar code scanners, line printers, legacy terminal based computer systems, etc).

The serial port on the gateway is user-configurable to support ASCII communications (Baud rate, Data Bits, Stop Bits, etc). The ASCII port can act as a Master (Send ASCII strings) or as a Slave (Receive ASCII strings), or both.

ASCII Specifications	
Ports	Available in up to four port configurations to receive and/or transmit data.
Transmit and Receive buffer size	255 bytes each
Transmit character with pacing	0 to 65535 millisecond delay between each transmitted character.

The ProLinx Modbus Plus to DF1 Master/Slave Gateway creates a powerful connection between devices on a Modbus Plus network and DF1 Slave devices. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB-9F port and up to four configurable serial ports.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 254 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

5301-MBP-DH485

The ProLinx Modbus Plus to DH-485 Gateway creates a powerful connection between devices on a Modbus Plus network and DH-485 devices. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus DB9F port and one DH-485 configurable serial port.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 110 to 38.4K baud Port 1 Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

The ProLinx Modbus Plus to DNP Master Gateway creates a powerful connection between devices on a Modbus Plus network and DNP slave devices. This stand-alone DIN-rail mounted protocol gateway provides one DNP 3.0 Master configurable serial port and one Modbus Plus DB9F port.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The DNP 3.0 Master protocol driver supports Master implementations of the protocol on one port. This port is fully configurable.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

DNP 3.0 Master

The DNP 3.0 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Master, Baud Rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0-500 word count Analog Inputs: 0-500 points Counters: 0-250 points Binary Outputs: 0-500 word count Analog Outputs: 0-500 points
DNP Mode	DNP 3.0 Master – Level 2
DNP Object Support	DNPM Driver Manual contains full Object Definition documentation

DNP Master	
Node address	0 to 65534 – software selectable
Slave count	Up to 40 slave devices
Command count	Up to 300 user defined commands to interface with remote slave devices

PROLINX

5301-MBP-DNPS

The ProLinx Modbus Plus to DNP 3.0 Slave Gateway creates a powerful connection between devices on a Modbus Plus network and DNP master devices. This stand-alone DIN-rail mounted protocol gateway provides one configurable DB9F port and one serial port.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The DNP 3.0 Slave protocol driver supports Slave implementations of the protocol on one port. This port is fully configurable.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

DNP 3.0 Slave

The DNP 3.0 Slave driver provides extensive support for Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Slave, Error Checking, Baud rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0–500 word count Analog Inputs: 0–500 points Counters: 0-250 points Binary Outputs: 0–200 word count Analog Outputs: 0–500 points Binary Input Events: 0–100 event buffer Analog Input Events: 0–100 event buffer
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None RTS Timing delays: 0 to 65535 milliseconds
DNP Mode	DNP 3.0 Slave – Level 2

DNP Slave	
Node address	0 to 65534 (software selectable)

The ProLinx Modbus Plus to Modbus Master/Slave Gateway creates a powerful connection between devices on a Modbus Plus network and Modbus devices. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus port and up to four Modbus enabled serial ports.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

PROLINX

Specialty Gateways

Modbus Plus to PROFIBUS DP Master Gateway

5304-MBP-PDPM

The ProLinx Modbus Plus to PROFIBUS DP Master Gateway creates a powerful connection between devices on a Modbus Plus network and a PROFIBUS slave device. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB9F port and one PROFIBUS DP Master configurable DB9F port.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The PROFIBUS DP Master protocol driver supports Master implementations of the protocol on either a Mono-Master or Multi-Master network.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

The ProLinx Modbus Plus to PROFIBUS DP Slave Gateway creates a powerful connection between devices on a Modbus Plus network and a PROFIBUS master device. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB9F port and PROFIBUS DP Slave configurable DB9F port.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

PROLINX

5306-MBP-RIO

The ProLinx Modbus Plus to Rockwell Automation Remote I/O Adapter Gateway creates a powerful connection between devices on a Modbus Plus network and a Remote I/O device. This stand-alone DIN-rail mounted protocol gateway provides one Modbus Plus configurable DB9F port and Remote I/O port.

The Modbus Plus protocol driver supports both Master and Slave implementations of the protocol on the DB9 Female Modbus Plus port. The Modbus Plus port is fully configurable.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

Modbus Plus

The Modbus Plus protocol driver exists in a single Modbus Plus Port (MBP). The driver can be configured on an individual port basis as either a master or a slave to interface with other Modbus Plus devices.

General Parameters	
Modbus Function Codes	3: Read Multiple Data Registers (MSTR 2) 16: Write Multiple Data Register (MSTR 1) Global data read (32 words max.) Global data write (32 words max.)
Address Scope	1-64

Modbus Plus Functioning as a Master	
Command List	Up to 200 commands on the master port, fully configurable for function, slave address, register to/from addressing and word count
Polling of command list	Configurable polling of command list, including continuous and on change of data

Modbus Plus Functioning as a Slave	
Node address	1 to 64 – software selectable

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

The ProLinx Rockwell Automation Remote I/O Adapter to IEC60870-5-101 Slave Gateway creates a powerful connection between devices on an IEC 101 network and a Remote I/O network. This stand-alone DIN-rail mounted protocol gateway provides one Remote I/O port and one IEC 101 Slave configurable serial port.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

The IEC 60870-5-101 Slave protocol driver supports Slave implementations of the protocol. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

IEC 60870-5-101 Slave

The 101S module acts as an input/output module between the IEC 60870-5-101 and other protocols and networks, as well as several proprietary interfaces.

General specifications include:

- User-definable module memory usage
- Storage of IEC time used in module is available in the database
- Protocol implementation conforms to the IEC 60870-5-101 specification with fully configurable parameters
- Priority Queues
- Invalid Bit Monitoring
- Supports Balanced and Unbalanced Mode
- Supports CP24 and CP56 time formats for events
- Event generation configurable per point or data type

General Parameters	
Communication parameters	Baud Rate: 110 to 19,200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing Delays: 0 to 65535 milliseconds
IEC 60870-5-101 Slave	
Configurable Parameters	Data link address length Common Address of ASDU length Inform. Object Address length Select/Operate Timeout Event Scan delay Use Balanced Mode Short Pulse Time Long Pulse Time Time DB Offset

PROLINX

5601-RIO-103M

The ProLinx Rockwell Automation Remote I/O Adapter to IEC60870-5-103 Master Gateway creates a powerful connection between devices on an IEC 103 network and a Remote I/O network. This stand-alone DIN-rail mounted protocol gateway provides one Remote I/O port and one IEC 103 Master configurable serial port.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

The IEC 60870-5-103 Master protocol driver works as a master to monitor and control up to 16 slaves. The serial port is user-configurable, providing a very powerful and flexible host or device interface solution.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

IEC 60870-5-103 Master

The IEC 60870-5-103 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, etc).

The module supports:

- 16 slaves (sessions with distinct Data Link Addresses)
- Each slave (session) supports up to 3 sectors (with distinct Common ASDU Addresses)
- Configurable Time Sync and General Interrogation messages during initialization
- Supports General Interrogation, General Command and Time Synchronization Commands.

General Parameters	
Communication parameters	Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
IEC 60870-5-103 Master	
Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address

The ProLinx Rockwell Automation Remote I/O to ASCII Generic Serial Gateway creates a powerful connection between devices on a Remote I/O network and ASCII input devices. The module provides one Remote I/O port and up to four ASCII configurable serial ports.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

The ASCII protocol driver permits the module to interface to many ASCII devices. Each ASCII port on the module is configurable to send and/or receive ASCII strings, each supporting its own individual serial network.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

ASCII

The ASCII driver provides a powerful connection between the internal application database in the ProLinx unit and devices supporting serial ASCII communications (bar code scanners, line printers, legacy terminal based computer systems, etc).

The serial port on the gateway is user-configurable to support ASCII communications (Baud rate, Data Bits, Stop Bits, etc). The ASCII port can act as a Master (Send ASCII strings) or as a Slave (Receive ASCII strings), or both.

ASCII Specifications	
Ports	Available in up to four port configurations to receive and/or transmit data.
Transmit and Receive buffer size	255 bytes each
Transmit character with pacing	0 to 65535 millisecond delay between each transmitted character.

PROLINX

Specialty Gateways

Rockwell Automation Remote I/O to DF1 Master/Slave Gateway

5601/5602-RIO-DFCM(4)

The ProLinx Rockwell Automation Remote I/O Adapter to DF1 Master/Slave Gateway creates a powerful connection between devices on a Remote I/O network and DF1 devices. This stand-alone DIN-rail mounted protocol gateway provides one Remote I/O port and up to four serial ports.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 254 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

The ProLinx Rockwell Automation Remote I/O Adapter to DH-485 Gateway creates a powerful connection between devices on DH-485 and Remote I/O networks. This stand-alone DIN-rail mounted protocol gateway provides one DH-485 configurable serial port and Remote I/O port.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

The DH-485 protocol driver supports the Master and the Slave modes of the protocol on each port, providing powerful data transfer capability with Rockwell Automation PLCs and HMIs. All DH-485 ports are individually configurable. User configurable data mapping make the interface an easy to use and powerful data transfer tool.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

DH-485

The DH-485 protocol in its native form is a peer to peer token passing network. The ProLinx DH-485 driver accesses the network functioning either as a Master or as a Slave.

General Protocol Information	
Error Checking	BCC and CRC
Communication Parameters	Local Station ID: 0 to 31 Port 0 Baud Rate: 110 to 38.4K baud Port 1 Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds

DH-485 Slave Mode

In Slave mode, the module accepts commands from one or more Masters to read/write data stored in the module's internal data memory. In this mode, the ProLinx unit is answering DH-485 commands and has the appearance of an SLC processor to the network.

DH-485 Master Mode

In Master mode, the ProLinx DH-485 driver will actively gather data from other devices on the network, controlling the read/write data transfer between the gateway and other DH-485 devices, such as SLC processors. Data transfer can be initiated and executed with the other devices without any ladder logic being required in the Rockwell Automation slave hardware.

DH485 Functioning as a Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

PROLINX

5601-RIO-DNPM

The ProLinx Rockwell Automation Remote I/O Adapter to DNP 3.0 Master Gateway creates a powerful connection between devices on a DNP 3.0 network and a Remote I/O network. This stand-alone DIN-rail mounted protocol gateway provides one serial port and one RIO port.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

The DNP 3.0 Master protocol driver supports Master implementations of the protocol on one port. This port is fully configurable.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

DNP 3.0 Master

The DNP 3.0 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Master, Baud Rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0-500 word count Analog Inputs: 0-500 points Counters: 0-250 points Binary Outputs: 0-500 word count Analog Outputs: 0-500 points
DNP Mode	DNP 3.0 Master – Level 2
DNP Object Support	DNPM Driver Manual contains full Object Definition documentation

DNP Master	
Node address	0 to 65534 – software selectable
Slave count	Up to 40 slave devices
Command count	Up to 300 user defined commands to interface with remote slave devices

The ProLinx Rockwell Automation Remote I/O Adapter to DNP 3.0 Slave Gateway creates a powerful connection between devices on a Remote I/O network and DNP devices. This stand-alone DIN-rail mounted protocol gateway provides one configurable serial port and one RIO port.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

The DNP 3.0 Slave protocol driver supports Slave implementations of the protocol on one port. This port is fully configurable.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

DNP 3.0 Slave

The DNP 3.0 Slave driver provides extensive support for Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DNP 3.0 protocol (Slave, Error Checking, Baud rate, etc).

General Parameters	
Internal Database	Binary Inputs: 0–500 word count Analog Inputs: 0–500 points Counters: 0-250 points Binary Outputs: 0–200 word count Analog Outputs: 0–500 points Binary Input Events: 0–100 event buffer Analog Input Events: 0–100 event buffer
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None RTS Timing delays: 0 to 65535 milliseconds
DNP Mode	DNP 3.0 Slave – Level 2

DNP Slave	
Node address	0 to 65534 (software selectable)

PROLINX

Specialty Gateways

Rockwell Automation Remote I/O to Modbus Master/Slave Gateway

5601/5602-RIO-MCM(4)

The ProLinx Rockwell Automation Remote I/O Adapter to Modbus Master/Slave Gateway creates a powerful connection between devices on a Remote I/O network and Modbus devices. This stand-alone DIN-rail mounted protocol gateway provides one Remote I/O port and up to four serial ports.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

The ProLinx Rockwell Automation Remote I/O Adapter to PROFIBUS DP Master Gateway creates a powerful connection between devices on a Remote I/O network and a PROFIBUS slave device. This stand-alone DIN-rail mounted protocol gateway provides one Remote I/O port and PROFIBUS DP Master configurable DB9F port.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

The PROFIBUS DP Master protocol driver supports Master implementations of the protocol on either a Mono-Master or Multi-Master network.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

PROLINX

5605-RIO-PDPS

The ProLinx Rockwell Automation Remote I/O Adapter to PROFIBUS DP Slave Gateway creates a powerful connection between devices on a Remote I/O network and a PROFIBUS master device. This stand-alone DIN-rail mounted protocol gateway provides one Remote I/O port and one PROFIBUS DP Slave configurable DB9F port.

The RIO interface is an adapter (slave) which can be connected to a scanner (master) that controls the data transfer. The module also supports limited high speed data transfer via the Input and Output images.

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the ProLinx module and Siemens PLCs or other hosts. User configurable data mapping and DP port operation make the interface an easy to use and powerful data transfer tool.

Rockwell Automation Remote I/O

The RIO interface is an adapter (slave) and is connected to a scanner (master) that controls the data transfer.

For example, the master/slave relationship can be accomplished using the RIO module (adapter/slave unit) with a Rockwell Automation PLC5 (scanner/master unit). Ladder logic must be programmed into a PLC to perform BTR/BTW commands to receive and transmit data between the module and the PLC. The module also supports limited high speed data transfer via the Input and Output images.

Software Configurable Parameters	
Rack Number Addressing	0 to 63
Rack Size	1/4-rack, 1/2-rack, 3/4-rack and full rack
Starting Group	0,2,4,6
Last Rack	Yes or No
Baud Rate	57.6K, 115K, 230K

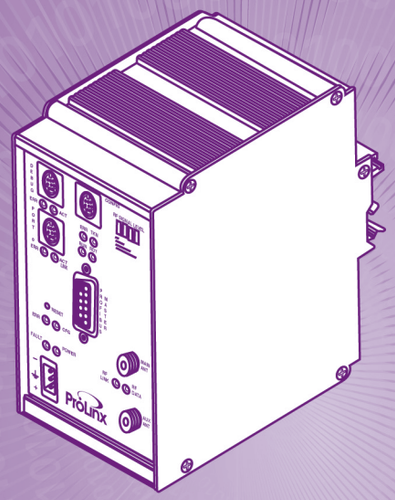
Functional Specifications
Supports block-transfers of data with scanner
Supports I/O data movement. Amount determined by rack size configuration
BTW Command – up to 64 words
BTR Command – up to 63 words

Physical Connection	
Remote I/O connector	Standard 3-screw termination connector.

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database



ProLinx®

Wireless Gateways

6104-WA-PDPM 6105-WA-PDPS

The modules offer one-to-one or one-to-many PROFIBUS interconnect scenarios. Data is exchanged between devices and/or networks using a shared common database and an efficient but powerful wireless protocol. This common database provides the "backbone" communications for various field devices using different networks.

PROFIBUS DP Master

The PROFIBUS Master protocol driver exists as a single port implementation. The driver can be configured as a Class 1 PROFIBUS Master to continuously interface with other PROFIBUS slave devices. The unit is also used for configuration of the nodes on the PROFIBUS network. It provides access to both standard as well as extended diagnostic information.

General Parameters	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
PROFIBUS Master	
Command List	Read Diag Global Cmd Read Cntrs Reset Cntrs
Node address	0 - 125 – software selectable.
Status Data	Error codes, counters and port status available per configured slave on the network.

PROFIBUS DP Slave

The PROFIBUS DP Slave driver gives access to the ProLinx unit's internal database via 244 bytes of Input data and 244 bytes of Output data (maximum 400 bytes total). These Input and Output data blocks are mapped by the user within the ProLinx module's data memory allowing the user maximum flexibility and data transfer with other protocols.

General Parameters	
GSD File	PRLX05A5.GSD Downloadable from ProSoft Technology web site
PROFIBUS Specifications	
Communication parameters	Baud Rate: 9.6 kbit/s – 12 Mbit/s
Supported I/O length	244 bytes Input data 244 bytes Output data 400 bytes total
Supported PROFIBUS DP features	PROFIBUS V0 Slave using Siemens SPC3 chipset Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	PROFIBUS Node Address: 1 to 125 Data byte swapping Action on loss of PROFIBUS connection Comm Fail Timeout Multiplier Status Data location in Internal Database

ProSoft Wireless Protocol

ProSoft Wireless Protocol (PWP) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. Wireless bandwidth utilization is optimized by using efficient communication methods. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the "wireless" network can produce these types of messages and each device determines which of these messages to consume.

6104-WA-PDPMV1

The ProLinx Wireless PDPMV1 Gateway creates a powerful connection between devices on a wireless network and PROFIBUS DP V0 or V1 devices.

The PWP modules offer one-to-one or one-to-many interconnect scenarios. Data is exchanged between devices and/or networks using a shared common database and an efficient but powerful wireless protocol. This common database provides the "backbone" communications for various field devices using different networks.

The PROFIBUS DP Master protocol driver supports complete Master specifications according to IEC 61158 on either a Mono-Master or Multi-Master network. The module supports the DPV1 specification.

ProSoft Wireless Protocol

ProSoft Wireless Protocol (PWP) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. Wireless bandwidth utilization is optimized by using efficient communication methods. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the "wireless" network can produce these types of messages and each device determines which of these messages to consume.

PROFIBUS DP Master V1

The module supports complete Master specifications according to IEC 61158. Acyclic parameter data can be transferred with Class 1 or Class 2 DPV1 services, allowing processors to easily communicate with slave devices supporting PROFIBUS DPV0/V1 protocol.

The ProLinx PDPMV1 PROFIBUS Master module acts as a PROFIBUS network scanner, transferring Input and Output data between PROFIBUS devices and the network.

- Master Busview configuration interface via included ProSoft Configuration Builder software (see PSW-PCB)
- Project-unique GSD file import library
- Monitoring and Modification of process data and DPV1 acyclic data
- Multi-drop on a PROFIBUS DPV1 network drop with other compatible devices
- Ability to be used with a repeater as a PROFIBUS Master with PROFIBUS PA slaves on the network
- Automatic project documentation
- Automatic Bus Parameter calculation
- Online slave diagnostics
- Supports all standardized baud rates, up to 12Mbps
- Supports extended diagnostic data (DPV1)
- Auto baud detection at all valid PROFIBUS DPV1 rates
- Multiple modules can be placed in a single rack
- CRC checksum determination of slave configuration consistency to processor
- Master Status LED Indicators for Operations, Network Drop Communication, Master Token-Hold.

PROFIBUS Master Specifications

- Up to 125 Slaves can be connected with a repeater
- Up to 1536 cyclic bytes input and 1536 bytes output data
- Supports Extended Diagnostic Data
- RS-485 optically isolated PROFIBUS Interface with on board DC-DC converter
- Acyclic communications (DPV1), Read and Write
- Alarm Handling (DPV1)
- Supports Sync and Freeze commands
- Supports PROFIdrive 3.1 compliant parameter read and write operations
- Supports Multicast and Broadcast telegrams (DPV1)

PROFIBUS Master Port

- DB-9F Optically Isolated RS-485
- Ready, Run, Error and Token LED Indicators
- PROFIBUS DPV1 RS-485 interface with a 9-pin D shell female connector and isolated Opto-Couplers

6207/6227-WA-HART(2)

The ProLinx Wireless HART Multi-drop Gateway creates a powerful connection between devices on a wireless network and HART devices.

The PWP modules offer one-to-one or one-to-many interconnect scenarios. Data is exchanged between devices and/or networks using a shared common database and an efficient but powerful wireless protocol. This common database provides the "backbone" communications for various field devices using different networks.

The HART protocol driver works as a Master on four (HART) or eight channels (HART2 - not available on certain configurations) per interface card, depending on implementation. Each channel is individually configurable.

ProSoft Wireless Protocol

ProSoft Wireless Protocol (PWP) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. Wireless bandwidth utilization is optimized by using efficient communication methods. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the "wireless" network can produce these types of messages and each device determines which of these messages to consume.

HART

The HART Master Protocol exists in 4 channel implementations with HART2 allowing 8 channels. This driver can be configured on an individual channel basis to operate as a HART Master Station and supports all the available HART commands including Universal, Common Practice and Device Specific Commands. Each HART channel is independently configured to interface with the internal database in the module.

The auto-poll mode allows the module to automatically collect data from each HART instrument on the channel and store the data in the module's database without the use of user commands. The module automatically generates HART commands 0, 3, 13, 14 and 15.

General Parameters	
Communication parameters	Number of HART Preambles: 2 to 50 Enable Handheld: Y or N Primary Master: Y or N
Configurable Parameters per Channel	Auto-Poll Enable, Short / Long Address Retries, Retries After Error Poll Time After Error, Number of Commands, Slave List Error Pointer

HART Driver	
Command List	Up to 100 fully configurable commands per channel
Polling of command list	User configurable polling of commands, including disabled, continuous, on change of data (write only) and dynamically user or automatic enabled.

HART® is a registered trademark of the HART Communication Foundation

The ProLinx Wireless Modbus Master/Slave Gateway creates a powerful connection between devices on a wireless network and Modbus devices.

The PWP modules offer one-to-one or one-to-many interconnect scenarios. Data is exchanged between devices and/or networks using a shared common database and an efficient but powerful wireless protocol. This common database provides the "backbone" communications for various field devices using different networks.

The Modbus protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

ProSoft Wireless Protocol

ProSoft Wireless Protocol (PWP) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. Wireless bandwidth utilization is optimized by using efficient communication methods. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the "wireless" network can produce these types of messages and each device determines which of these messages to consume.

Modbus Master/Slave

The Modbus driver provides extensive support for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud rate, etc).

General Parameters – Modbus Protocol	
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1: Read Output Status 2: Read Input Status 3: Read Multiple Data Registers 4: Read Input Registers 5: Write Single Bit 6: Write Single Data Register 15: Write Multiple Bits 16: Write Multiple Data Register
Modbus Master	
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.
Modbus Slave	
Node address	1 to 247 – software selectable

PROLINX

6201-WA-DFCM

The ProLinx Wireless DFCM Gateway creates a powerful connection between devices on a wireless network and DF1 Master or Slave devices.

The PWP modules offer one-to-one or one-to-many interconnect scenarios. Data is exchanged between devices and/or networks using a shared common database and an efficient but powerful wireless protocol. This common database provides the "backbone" communications for various field devices using different networks.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

ProSoft Wireless Protocol

ProSoft Wireless Protocol (PWP) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. Wireless bandwidth utilization is optimized by using efficient communication methods. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the "wireless" network can produce these types of messages and each device determines which of these messages to consume.

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 254 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)

The ProLinx Wireless DFNT Gateway creates a powerful connection between devices on a wireless network and Ethernet/IP devices.

The PWP modules offer one-to-one or one-to-many interconnect scenarios. Data is exchanged between devices and/or networks using a shared common database and an efficient but powerful wireless protocol. This common database provides the "backbone" communications for various field devices using different networks.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

ProSoft Wireless Protocol

ProSoft Wireless Protocol (PWP) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. Wireless bandwidth utilization is optimized by using efficient communication methods. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the "wireless" network can produce these types of messages and each device determines which of these messages to consume.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

PROLINX

6201-WA-MNET

The ProLinx Wireless MNET Gateway creates a powerful connection between devices on a wireless network and Modbus TCP/IP devices.

The PWP modules offer one-to-one or one-to-many interconnect scenarios. Data is exchanged between devices and/or networks using a shared common database and an efficient but powerful wireless protocol. This common database provides the "backbone" communications for various field devices using different networks.

The Modbus TCP/IP protocol driver can interface many different protocols into Schneider Electric Quantum processors as well other solutions supporting the protocol. The MNET driver supports Client and Server connections, and when coupled with the Web option provides a web/ftp interface as well.

ProSoft Wireless Protocol

ProSoft Wireless Protocol (PWP) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. Wireless bandwidth utilization is optimized by using efficient communication methods. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the "wireless" network can produce these types of messages and each device determines which of these messages to consume.

Modbus TCP/IP

The Modbus TCP/IP driver interfaces with a common internal database in the module. This permits the sharing of data between the Modbus TCP/IP and other networks and devices.

Server

Modbus TCP/IP Server	
General	Server supports up to 5 independent connections each to Modbus TCP/IP clients on Service Port 502 using the standard MBAP protocol, and Service Port 2000.
Configurable Parameters	Module IP Address Modbus address offsetting

Client

Modbus TCP/IP Client	
General	Actively reads and writes data with Modbus TCP/IP compatible devices. One client connection (up to 100 servers/devices with 100 commands)
Configurable parameters	Number of active commands, Min Command Delay, Response Timeout Retry Count, Command Error Pointer
Command List	Up to 100 fully configurable commands on the Client port

The ProLinx Wireless EtherNet/IP to DF1 Master/Slave Gateway creates a powerful connection between devices on a wireless network and DF1 and EtherNet/IP devices.

The PWP modules offer one-to-one or one-to-many interconnect scenarios. Data is exchanged between devices and/or networks using a shared common database and an efficient but powerful wireless protocol. This common database provides the "backbone" communications for various field devices using different networks.

The Ethernet/IP protocol driver supports the Explicit Messaging implementation of the protocol. User-configurable as both a Client and a Server, the EtherNet/IP port is a very powerful data transfer tool.

The DF1 protocol driver supports Master or Slave implementations of the protocol on each DF1 port. All DF1 ports are individually configurable.

ProSoft Wireless Protocol

ProSoft Wireless Protocol (PWP) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. Wireless bandwidth utilization is optimized by using efficient communication methods. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the "wireless" network can produce these types of messages and each device determines which of these messages to consume.

EtherNet/IP

The EtherNet/IP protocol is one of the primary connectivity tools to the different Rockwell Automation platforms. The Explicit Messaging aspect of the protocol (only) has been implemented in the ProLinx units to provide the data transfer link between the ProLinx units and the Rockwell Automation hardware.

General Protocol Information	
Messaging	PCCC or CIP Explicit Messaging supported
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

In Server mode, the module accepts commands from one or more clients to read/write data stored in the module's internal registers.

EtherNet/IP Server Specifications	
Connections	Five independent TCP server sockets permit remote clients to interact with all data contained in the module.
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words
CIP Services Supported	0x4C - CIP Data Table Read 0x4D - CIP Data Table Write

EtherNet/IP Client Specifications

In Client mode, the module controls the read/write data transfer between the gateway and other EtherNet/IP devices. Data transfer can be initiated and executed without any ladder programming being required in the Rockwell Automation hardware.

EtherNet/IP Client Specifications	
General	One client
Command List	Support for 100 commands, each configurable for command, IP address, register to/from addressing and word/bit count.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only).

DF1 Master/Slave

The DF1 Master/Slave Protocol driver provides extensive support for both Master and Slave implementations of the protocol. The serial port on the gateway is user-configurable to support the DF1 protocol (Master or Slave, Error Checking, Baud rate, etc).

General Parameters	
Communication parameters	Local Station ID: 0 to 254 Ports 1-3 Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, smart modem and Multi-drop support Floating point data supported

DF1 Master Protocol Specifications

The ports on the module can be individually configured as Master ports. When configured in master mode, the DFCM module is capable of reading and writing data to remote DF1 devices.

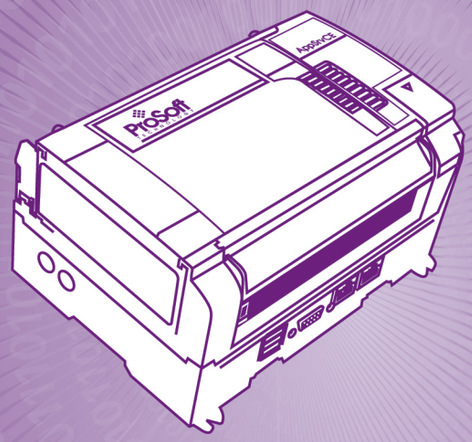
DF1 Master Driver	
DF1 Modes	Full-Duplex - Master (Module generates commands) Half-Duplex - Polling
Command List	Up to 100 commands per Master port, each fully-configurable for function, slave address, register to/from addressing and word/bit count
Polling of Command List	User-configurable polling of commands, including disabled, continuous, and on change of data (write only)

6202-WA-DFNT-DFCM3 continued

DF1 Slave Protocol Specifications

The ports on the module can be individually configured to support the Slave mode of the DF1 protocol. When in slave mode, the module can accept DF1 commands from a master to read/write data stored in the module's internal registers.

DF1 Slave Driver	
DF1 Modes	Full Duplex – Slave (not peer mode) Half Duplex – Polled
Configurable parameters per slave port	Data Table File Start (File N[x] 0 to 999) Data Table File Size (1 – 1000 words) Data Table location in database (0 to 3999)



ProLinx®

Application Server

Application Server

Hardware Specifications	
Temperature	Operating: 0 to 60°C Storage: –40 to 85°C
Mounting	DIN-rail or panel mounting
Humidity	5% to 95% non-condensing
Vibration	10 to 500 Hz 2.0 G max. peak acceleration. 0.012 in (peak-to-peak) displacement
Shock	Operating: 30 G peak for 11ms Storage: 50 G peak for 11ms
Weight	1.7 lbs. (771.107 g)
Power	10 to 24 VDC @ 0.25A 27 VDC max. User supplied.
Battery	Lithium. Maintains a 30 day charge

Application Server

AppSrvCE with 1769 connector, 'C' Programmable, 500 OSISoft PI-only Tags, 512 Meg Compact Flash **7000-ADM-512**

PROLINX

Features

AppSrvCE is available with the following standard features. Additional and modified features are available.

- Supports all five IEC programming languages: Relay Ladder Logic, Sequential Function Chart, Function Block Diagram, Structured Text, and Instruction List.
- 'C' for integration of custom code
- Drag-and-drop/menu driven editors enable rapid program development, reduce typing and syntax errors
- Object libraries make code reuse simple and efficient
- Easy debugging – Simulates code execution on the development station
- On-line monitoring with code selecting and real-time variable update
- Watch, Force I/O values and memory tags
- Supports complex data structures:
  - Three dimensional arrays
  - User defined structures
- Configuration tools for I/O drivers and communication protocols are managed from within EZ Design Studio. The multi-tasking execution engine allows for multiple tasks and priority levels including:
  - Cyclic tasks
  - Continuous task, background priority
  - I/O Sync task, execution sync. with I/O scan
  - Fault task, runs when a fault condition occurs
  - Start-up task, runs once prior to setting outputs to initialize machine state
- AppSrvCE is an industrial platform with no rotating media.
- Standard TCP/IP networking between the node and workstation enables:
  - Remote program downloading
  - Remote monitoring
  - Remote node Start/Stop
  - Multi-node management

I/O Compatibility	
	1769 Compact I/O
Custom Application Modules (CAMs)	Base model ships with a blank CAM. Other CAMs available at request.
Embedded	High-performance I/O (optional)

Module Features	
Operating System	Microsoft Windows CE .NET.
Processor	300 MHz x 86 processor
Storage	32 Mbytes "Disk-on-a-Chip"
SDRAM	32 to 256 Mbytes

Module Features	
SRAM	Battery-backed (512 Kbytes)
Timers	(3) general purpose 16-bit , (1) Watchdog timer
IDE Interface	Type I/II compact flash socket. Supports compact flash. IBM micro-drive, rotating media. Only Industrial Grade Compact Flash should be used.
Clock	Battery-powered, real time
Software	EZ Design Studio automation software for IEC 61131-3 programming
Protection	DataSafe™ enabled, restores realtime data after a power failure
Status LEDs	(9), 4 user defined, 5 system status

Standard PC Connections	
USB	(2) USB 1.1 host interface ports. 1.5 and 12 Mbit/sec. data rates
Ethernet	(2) Ethernet ports, both are 10/100 Base-T. IEEE 802.3 compliant, Category 5, RJ45 connectors
Serial Communication	1- RS-232 port standard Add up to 5 additional RS-232, RS-422, RS-485 ports
Video	Standard 15-pin VGA connector up to 1280x1024 (24-bit) display resolution
Protocols	Serial and Ethernet protocols include Generic Serial, EtherNet/IP, Modbus RTU, Modbus ASCII and Modbus TCP/IP. Other protocols are available upon request

Applications

The ProLinx 7000 series AppSrvCE Application Development Module is a highly flexible product that delivers programmability, communication protocols, and a powerful embedded historian. The module functionality is fully customizable and programmable using the EZ Design Studio software. Additionally, real-time data can easily be stored on the device using the integrated data historian. The AppSrvCE is the ideal solution for applications requiring custom 'C' programming, emissions monitoring and pharmaceutical manufacturing, or remote applications like utility RTUs, compressor monitoring and facilities monitoring.

AppSrvCE with 1769 connector, 'C' Programmable, 500 Historian Tags, 512 Meg Compact Flash

7000-HST5-512

Historian

The AppSrvCE module uses licensed software technology from OSIsoft to deliver an integrated data historian. The module can log real-time data at sub-second speed accessible using OSIsoft's PI product. Additionally, data can be accessed via an OPC HDA server. This historical data is ideal for sequence-of-event recording, process optimization and compliance reporting (FDA, EPA, etc.)

Historian Configurator

This application provides a Graphical User Interface (GUI) to map tags defined in a local or remote processor to a data historian file. The Configurator defines the data type, scan rate, and throw-away limit for a particular data stream. Use the Configurator to create new data files and define the "Fill-up Strategy" for the file.

Historian Scheduler/Server

The Historian Scheduler/Server reads a configuration file and performs real-time scanning of the Logix controller tags, then sends the tag values to the mapped ECHO data streams.

Embedded Component Historian Object (ECHO)

The Embedded Historian object provides actual data storage functionality. The ECHO database has several open interfaces:

- OPC
- OLE DB
- ADO
- ECHO API

Features

AppSrvCE is available with the following standard features. Additional and modified features are available.

- Supports all five IEC programming languages: Relay Ladder Logic, Sequential Function Chart, Function Block Diagram, Structured Text, and Instruction List.
- 'C' for integration of custom code
- Drag-and-drop/menu driven editors enable rapid program development, reduce typing and syntax errors
- Object libraries make code reuse simple and efficient
- Easy debugging – Simulates code execution on the development station
- On-line monitoring with code selecting and real-time variable update
- Watch, Force I/O values and memory tags
- Supports complex data structures:
  - Three dimensional arrays
  - User defined structures
- Configuration tools for I/O drivers and communication protocols are managed from within EZ Design Studio. The multi-tasking execution engine allows for multiple tasks and priority levels including:
  - Cyclic tasks
  - Continuous task, background priority
  - I/O Sync task, execution sync. with I/O scan
  - Fault task, runs when a fault condition occurs
  - Start-up task, runs once prior to setting outputs to initialize machine state
- AppSrvCE is an industrial platform with no rotating media.
- Standard TCP/IP networking between the node and workstation enables:
  - Remote program downloading
  - Remote monitoring
  - Remote node Start/Stop
  - Multi-node management

Module Features	
Operating System	Microsoft Windows CE .NET.
Processor	300 MHz x 86 processor
Storage	32 Mbytes "Disk-on-a-Chip"
SDRAM	32 to 256 Mbytes
SRAM	Battery-backed (512 Kbytes)
Timers	(3) general purpose 16-bit , (1) Watchdog timer
IDE Interface	Type I/II compact flash socket. Supports compact flash. IBM micro-drive, rotating media. Only Industrial Grade Compact Flash should be used.
Clock	Battery-powered, real time
Software	EZ Design Studio automation software for IEC 61131-3 programming
Protection	DataSafe™ enabled, restores realtime data after a power failure
Status LEDs	(9), 4 user defined, 5 system status

Application Server

AppSrvCE with 1769 connector, 'C' Programmable, 500 Historian Tags, 512 Meg Compact Flash

7000-HST5-512 continued

Standard PC Connections	
USB	(2) USB 1.1 host interface ports. 1.5 and 12 Mbit/sec. data rates
Ethernet	(2) Ethernet ports, both are 10/100 Base-T. IEEE 802.3 compliant, Category 5, RJ45 connectors
Serial Communication	1- RS-232 port standard Add up to 5 additional RS-232, RS-422, RS-485 ports
Video	Standard 15-pin VGA connector up to 1280x1024 (24-bit) display resolution
Protocols	Serial and Ethernet protocols include Generic Serial, EtherNet/IP, Modbus RTU, Modbus ASCII and Modbus TCP/IP. Other protocols are available upon request

I/O Compatibility	
	1769 Compact I/O
Custom Application Modules (CAMs)	Base model ships with a blank CAM. Other CAMs available at request.
Embedded	High-performance I/O (optional)

Applications

The ProLinx 7000 series AppSrvCE Application Development Module is a highly flexible product that delivers programmability, communication protocols, and a powerful embedded historian. The module functionality is fully customizable and programmable using the EZ Design Studio software. Additionally, real-time data can easily be stored on the device using the integrated data historian. The AppSrvCE is the ideal solution for applications requiring custom 'C' programming, emissions monitoring and pharmaceutical manufacturing, or remote applications like utility RTUs, compressor monitoring and facilities monitoring.

AppSrvCE with 1769 connector and Serial CAM (5 port), 'C' Programmable, 500 OSISoft PI-only Tags, 512 Meg Compact Flash **7005-ADM-512**

Historian

The AppSrvCE uses licensed software technology from OSIsoft to deliver an integrated data historian. The AppSrvCE can log real-time data at sub-second speed accessible using OSIsoft's PI product. This historical data is ideal for sequence-of-event recording, process optimization and compliance reporting (FDA, EPA, etc.)

Features

AppSrvCE is available with the following standard features. Additional and modified features are available.

- Supports all five IEC programming languages: Relay Ladder Logic, Sequential Function Chart, Function Block Diagram, Structured Text, and Instruction List.
- 'C' for integration of custom code
- Drag-and-drop/menu driven editors enable rapid program development, reduce typing and syntax errors
- Object libraries make code reuse simple and efficient
- Easy debugging – Simulates code execution on the development station
- On-line monitoring with code selecting and real-time variable update
- Watch, Force I/O values and memory tags
- Supports complex data structures:
  - Three dimensional arrays
  - User defined structures
- Configuration tools for I/O drivers and communication protocols are managed from within EZ Design Studio. The multi-tasking execution engine allows for multiple tasks and priority levels including:
  - Cyclic tasks
  - Continuous task, background priority
  - I/O Sync task, execution sync. with I/O scan
  - Fault task, runs when a fault condition occurs
  - Start-up task, runs once prior to setting outputs to initialize machine state
- AppSrvCE is an industrial platform with no rotating media.
- Standard TCP/IP networking between the node and workstation enables:
  - Remote program downloading
  - Remote monitoring
  - Remote node Start/Stop
  - Multi-node management

I/O Compatibility	
	1769 Compact I/O
Custom Application Modules (CAMs)	Base model ships with a five-port serial CAM. Other CAMs available at request.
Embedded	High-performance I/O (optional)

Module Features	
Operating System	Microsoft Windows CE .NET.
Processor	300 MHz x 86 processor
Storage	32 Mbytes "Disk-on-a-Chip"
SDRAM	32 to 256 Mbytes
SRAM	Battery-backed (512 Kbytes)
Timers	(3) general purpose 16-bit , (1) Watchdog timer
IDE Interface	Type I/II compact flash socket. Supports compact flash. IBM micro-drive, rotating media. Only Industrial Grade Compact Flash should be used.
Clock	Battery-powered, real time
Software	EZ Design Studio automation software for IEC 61131-3 programming
Protection	DataSafe™ enabled, restores realtime data after a power failure
Status LEDs	(9), 4 user defined, 5 system status

Standard PC Connections	
USB	(2) USB 1.1 host interface ports. 1.5 and 12 Mbit/sec. data rates
Ethernet	(2) Ethernet ports, both are 10/100 Base-T. IEEE 802.3 compliant, Category 5, RJ45 connectors
Serial Communication	1- RS-232 port standard Add up to 5 additional RS-232, RS-422, RS-485 ports
Video	Standard 15-pin VGA connector up to 1280x1024 (24-bit) display resolution
Protocols	Serial and Ethernet protocols include Generic Serial, EtherNet/IP, Modbus RTU, Modbus ASCII and Modbus TCP/IP. Other protocols are available upon request

This version of the module includes a 5 serial port CAM (Custom Application Module).

Applications

The ProLinx 7000 series AppSrvCE Application Development Module is a highly flexible product that delivers programmability, communication protocols, and a powerful embedded historian. The module functionality is fully customizable and programmable using the EZ Design Studio software. Additionally, real-time data can easily be stored on the device using the integrated data historian. The AppSrvCE is the ideal solution for applications requiring custom 'C' programming, emissions monitoring and pharmaceutical manufacturing, or remote applications like utility RTUs, compressor monitoring and facilities monitoring.

Application Server

AppSrvCE with 1769 connector and Serial CAM (5 port), 'C' Programmable, 500 Historian Tags, 512 Meg Compact Flash **7005-HST5-512**

PROLINX

Historian

The AppSrvCE module uses licensed software technology from OSIsoft to deliver an integrated data historian. The module can log real-time data at sub-second speed accessible using OSIsoft's PI product. Additionally, data can be accessed via an OPC HDA server. This historical data is ideal for sequence-of-event recording, process optimization and compliance reporting (FDA, EPA, etc.)

Historian Configurator

This application provides a Graphical User Interface (GUI) to map tags defined in a local or remote processor to a data historian file. The Configurator defines the data type, scan rate, and throw-away limit for a particular data stream. Use the Configurator to create new data files and define the "Fill-up Strategy" for the file.

Historian Scheduler/Server

The Historian Scheduler/Server reads a configuration file and performs real-time scanning of the Logix controller tags, then sends the tag values to the mapped ECHO data streams.

Embedded Component Historian Object (ECHO)

The Embedded Historian object provides actual data storage functionality. The ECHO database has several open interfaces:

- OPC
- OLE DB
- ADO
- ECHO API

Features

AppSrvCE is available with the following standard features. Additional and modified features are available.

- Supports all five IEC programming languages: Relay Ladder Logic, Sequential Function Chart, Function Block Diagram, Structured Text, and Instruction List.
- 'C' for integration of custom code
- Drag-and-drop/menu driven editors enable rapid program development, reduce typing and syntax errors
- Object libraries make code reuse simple and efficient
- Easy debugging – Simulates code execution on the development station
- On-line monitoring with code selecting and real-time variable update
- Watch, Force I/O values and memory tags
- Supports complex data structures:
  - Three dimensional arrays
  - User defined structures
- Configuration tools for I/O drivers and communication protocols are managed from within EZ Design Studio. The multi-tasking execution engine allows for multiple tasks and priority levels including:
  - Cyclic tasks
  - Continuous task, background priority
  - I/O Sync task, execution sync. with I/O scan
  - Fault task, runs when a fault condition occurs
  - Start-up task, runs once prior to setting outputs to initialize machine state
- AppSrvCE is an industrial platform with no rotating media.
- Standard TCP/IP networking between the node and workstation enables:
  - Remote program downloading
  - Remote monitoring
  - Remote node Start/Stop
  - Multi-node management

Module Features	
Operating System	Microsoft Windows CE .NET.
Processor	300 MHz x 86 processor
Storage	32 Mbytes "Disk-on-a-Chip"
SDRAM	32 to 256 Mbytes
SRAM	Battery-backed (512 Kbytes)
Timers	(3) general purpose 16-bit , (1) Watchdog timer
IDE Interface	Type I/II compact flash socket. Supports compact flash. IBM micro-drive, rotating media. Only Industrial Grade Compact Flash should be used.
Clock	Battery-powered, real time
Software	EZ Design Studio automation software for IEC 61131-3 programming
Protection	DataSafe™ enabled, restores realtime data after a power failure
Status LEDs	(9), 4 user defined, 5 system status

Standard PC Connections	
USB	(2) USB 1.1 host interface ports. 1.5 and 12 Mbit/sec. data rates
Ethernet	(2) Ethernet ports, both are 10/100 Base-T. IEEE 802.3 compliant, Category 5, RJ45 connectors
Serial Communication	1- RS-232 port standard Add up to 5 additional RS-232, RS-422, RS-485 ports
Video	Standard 15-pin VGA connector up to 1280x1024 (24-bit) display resolution
Protocols	Serial and Ethernet protocols include Generic Serial, EtherNet/IP, Modbus RTU, Modbus ASCII and Modbus TCP/IP. Other protocols are available upon request

I/O Compatibility	
	1769 Compact I/O 1794 Flex or 1795 Integra I/O
Custom Application Modules (CAMs)	Base model ships with a five-port serial CAM. Other CAMs available at request.
Embedded	High-performance I/O (optional)

This version of the module includes a 5 serial port CAM (Custom Application Module).

Applications

The ProLinx 7000 series AppSrvCE Application Development Module is a highly flexible product that delivers programmability, communication protocols, and a powerful embedded historian. The module functionality is fully customizable and programmable using the EZ Design Studio software. Additionally, real-time data can easily be stored on the device using the integrated data historian. The AppSrvCE is the ideal solution for applications requiring custom 'C' programming, emissions monitoring and pharmaceutical manufacturing, or remote applications like utility RTUs, compressor monitoring and facilities monitoring.

Application Server

Bristol Babcock Serial Slave Module

7000-BSAPS

The AppSrvCE Bristol Babcock Serial Slave Module allows easy interface with Bristol Babcock Serial communication devices.

Features and Benefits

The 7000-BSAPS module acts as a slave receiving commands from a BSAP master device. The data transfer from the processor is asynchronous from the actions on the BSAP network. An internal database in the module exchanges data between the processor and the BSAP network.

BSAP operates in a polled environment. Each link in the network supports a different poll rate. The rate selected depends on a variety of application-dependent factors.

BSAP has been designed and implemented according to the functional layers of the International Standards Organization (ISO) model. Because each layer is independent of its adjacent layers, both synchronous and asynchronous transmission modes can be supported.

Applications

The Bristol Babcock Synchronous/Asynchronous Communication Protocol (BSAP) is used for process control applications in the energy, water and wastewater industries.

Typical industrial sectors include:

- Security monitoring
- Pump and lift station control for water & wastewater market
- Flow measurement and metering station control for the natural gas market.

Functional Specifications

The Bristol Babcock Synchronous/Asynchronous Communication Protocol (BSAP) is the foundation for a proprietary network that has a tree structured topology. This open-ended topology supports a variety of configurations which may include one or more nodes at each of up to six levels. Messages can be sent between nodes on the same level or on different levels. Messages can be sent between nodes (local message only). Each message is uniquely identified and has an error checking code associated with it.

Some of the general specifications include:

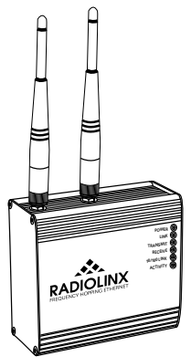
- Slave implementation
- Support for the storage and transfer of internal database registers to/from the ControlLogix processor's controller tags
- Two ports to emulate a BSAP slave RTU
- Peer-to-Peer communication for Local BSAP formatted messages – slave to master only.

Configurable parameters include:

Parameter	Value
Analog Input Count	0 to 255
Logical Input Count	0 to 255
String Count	0 to 30
Slave Address	1 to 255
Baud Rate	110 to 115,200
Parity	None, Odd, Even
Data Bits	5 to 8
Stop Bits	1 or 2
RTS On and Off Timing	0 to 65535 milliseconds
Minimum Response Delay	0 to 65535 milliseconds
Use of CTS Modem Line	Yes or No


RADIOLINX®


RADIOLINX®
Radios



The RadioLinx Frequency Hopping Ethernet radio is designed to operate in high-interference environments by combining advanced frequency hopping and digital signal processing technology with outstanding receiver sensitivity and antenna diversity. This combination results in exceptional noise and interference rejection.

The RLX-FHE is compatible with all protocols that run over standard IEEE 802.3 Ethernet including TCP/IP, UDP, IPX, NetBEUI, BootP, EtherNet/IP, and Modbus/TCP. The RLX-FHE simultaneously supports multiple 802.3 compliant protocols.

Features and Benefits

- Supports up to 1000 addressed devices with 2000 radios and 78 repeaters per network
- 64 user-selectable data channels for multiple network operation
- Active antenna diversity
- 2.4 GHz frequency hopping spread spectrum (FHSS) technology
- Secure wireless communications with data encryption, proprietary radio protocol, and 2.4 GHz FHSS physical layer
- Industrial temperature range
- 15 (24 km) mile range with high-gain antennas (longer with repeaters)
- Remote diagnostics without interrupting data communications
- Over air user programmability (after initial configuration) using Windows-based software
- Three year standard warranty
- OPC server included

Specifications

Radio	
Frequency	2400 to 2483.5 MHz (varies by country)
Protocols	All standard IEEE 802.3 protocols
Encryption	ARC4 (40 or 128 bit)
Network Topology	Peer-to-Peer, store and forward repeater
Hop Patterns	64 independent, non-overlapping networks
Error Detection	32-bit CRC and ARQ (Automatic Re-Send Query)
Radio Type	Frequency Hopping Spread Spectrum
Output power	1mW to 250mW, programmable (varies by country)
Channel data rate	250 Kbps
Receiver sensitivity	–96 dBm @ 10^{-6} BER
Typical indoor range	500 to 1500 ft (150 to 450 meters)

Radio	
Outdoor range	15 miles line of sight with high-gain antennas (varies by country)
Security	ARC4 (40 or 128 bit)

Physical	
Enclosure	Extruded aluminum with DIN and panel mount
Size	4.10" x 3.71" x 2.05" (104.1 mm x 94.23 mm x 52.07 mm)
Vibration Shock	IEC 60068-2-6 IEC 60068-2-27
Ethernet port	10/100 Base-T connector, shielded RJ45 IEEE 802.3, 802.3u, 802.3x
Weight	1 lbs /454g

Environmental	
Operating temperature	–40°C to +70°C (–40° F to 158° F)
Humidity	To 90% RH, non-condensing
External power	10 to 24 VDC
Average power	<4W

Regulatory Approvals

Wireless Approvals
Visit our website at www.prosoft-technology.com for current wireless approval information.

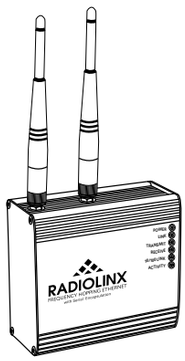
Hazardous Locations	
UL	UL 1604 Class 1 Division 2, Groups A, B, C, D Temp Code T4A
CSA/cUL	C22.2 No. 213-1987
ATEX Zone 2	ATEX II 3 G EEx nC IIC

Visit our web site for the latest certification information.

Radios

RadioLinx Frequency Hopping Ethernet with Serial Device Server

RLX-FHES



The RadioLinx Frequency Hopping Ethernet with Serial Device Server contains an embedded serial device server that enables a transparent connection between an Ethernet host and a serial only device connected to the RLX-FHES RS-232 serial port. Virtually any serial protocol is supported including DF1, ASCII, DNP3, and Modbus RTU.

Encapsulated serial or Modbus/TCP Ethernet packets are delivered to the RLX-FHES socket where the serial server extracts the serial data stream from the Ethernet packets and outputs it to the RS-232 port. Bi-directional serial communication is supported by encapsulating the RS-232 port input stream into Ethernet packets, then sending them to the host client via the established socket interface.

Features and Benefits

- Supports up to 1000 addressed devices with 2000 radios and 78 repeaters per network
- 64 user-selectable data channels for multiple network operation
- Full-Duplex asynchronous communication rates to 100 Kbps
- Active antenna diversity
- 2.4 GHz frequency hopping spread spectrum (FHSS) technology
- Secure wireless communications with data encryption, proprietary radio protocol, and 2.4 GHz FHSS physical layer
- Industrial temperature range
- 15 mile (24 km) range with high-gain antennas (longer with repeaters)
- Remote diagnostics without interrupting data communications
- Over air user programmability (after initial configuration) using Windows-based software
- Three year standard warranty
- OPC server included

Specifications

Radio	
Frequency	2400 to 2483.5 MHz (varies by country)
Protocols	All standard IEEE 802.3 protocols
Encryption	ARC4 (40 or 128 bit)
Network Topology	Peer-to-Peer, store and forward repeater
Hop Patterns	64 independent, non-overlapping networks
Error Detection	32-bit CRC and ARQ (Automatic Re-Send Query)
Radio Type	Frequency Hopping Spread Spectrum
Output power	1mW to 250mW, programmable (varies by country)
Channel data rate	250 Kbps

Radio	
Receiver sensitivity	–96 dBm @ 10^{-6} BER
Typical indoor range	500 to 1500 ft (150 to 450 meters)
Outdoor range	15 miles line of sight with high-gain antennas (varies by country)
Security	ARC4 (40 or 128 bit)

Physical	
Enclosure	Extruded aluminum with DIN and panel mount
Size	4.10" x 3.71" x 2.05" (104.1 mm x 94.23 mm x 52.07 mm)
Vibration Shock	IEC 60068-2-6 IEC 60068-2-27
Serial Data Port	RS-232, DB-9 Asynchronous half-duplex/full-duplex 2400 bps to 115.2 Kbps full duplex
Ethernet port	10/100 Base-T connector, shielded RJ45 IEEE 802.3, 802.3u, 802.3x
Antenna ports	(2) RP-SMA connectors, automatic antenna diversity
Weight	1 lbs /454g

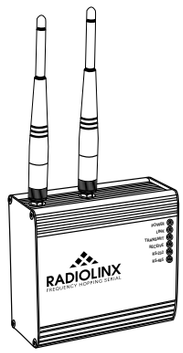
Environmental	
Operating temperature	–40°C to +70°C (–40° F to 158° F)
Humidity	To 90% RH, non-condensing
External power	10 to 24 VDC
Average power	<4W

Regulatory Approvals

Wireless Approvals
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Hazardous Locations	
UL	UL 1604 Class 1 Division 2, Groups A, B, C, D Temp Code T4A
CSA/cUL	C22.2 No. 213-1987
ATEX Zone 2	ATEX II 3 G EEx nC IIC

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The RadioLinx Frequency Hopping Serial radio allows you to design multiple device networks to share the same RF network (channel) allowing different protocols to share a common repeater. A remote RLX-FHS can be programmed to operate as store and forward repeater to extend network range.

The RLX-FHS operates in point-to-point, point-multipoint, or peer-to-peer modes. Addressable Multi-drop RS-485 operation is built into the module. The RF output levels are user-configurable and 64 data channels allow multiple networks to operate in the same area.

Features and Benefits

- Supports up to 1000 addressed devices with 2000 radios per network
- 64 user-selectable data channels for multiple network operation
- Active antenna diversity
- 2.4 GHz frequency hopping spread spectrum (FHSS) technology
- Intelligent routing of DF1, DNP 3.0, and Modbus messages
- Secure wireless communications with data encryption, proprietary radio protocol, and 2.4 GHz FHSS physical layer
- Industrial temperature range
- 15 mile range with high-gain antennas (longer with repeaters)
- Remote diagnostics without interrupting data communications
- Three year standard warranty
- OPC server included

Specifications

Radio	
Frequency	2400 to 2483.5 MHz (varies by country)
Encryption	ARC4 (40 or 128 bit)
Network Topology	Peer-to-Peer, store and forward repeater, Point-to-Point, Point-to-Multipoint
Hop Patterns	64 independent, non-overlapping networks
Error Detection	32-bit CRC and ARQ (Automatic Re-Send Query)
Radio Type	Frequency Hopping Spread Spectrum
Output power	1mW to 250mW, programmable (varies by country)
Receiver sensitivity	–96 dBm @ 10^{-6} BER
Typical indoor range	500 to 1500 ft (150 to 450 meters)
Outdoor range	15 miles line of sight with high-gain antennas (varies by country)
Security	ARC4 (40 or 128 bit)

Physical	
Enclosure	Extruded aluminum with DIN and panel mount
Size	4.10" x 3.71" x 2.05" (104.1 mm x 94.23 mm x 52.07 mm)
Vibration Shock	IEC 60068-2-6 IEC 60068-2-27
Ports	RS-232, DB-9 RS-422 and RS-485 Asynchronous half-duplex/full-duplex 2400 bps to 115.2 Kbps full duplex
Antenna ports	(2) RP-SMA connectors, automatic antenna diversity
Weight	1 lbs /454g

Environmental	
Operating temperature	–40°C to +75°C (–40° F to 167° F)
Humidity	To 90% RH, non-condensing
External power	10 to 24 VDC
Average power	<4W

Regulatory Approvals

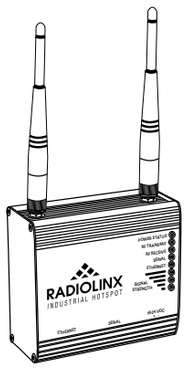
Wireless Approvals
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Hazardous Locations	
UL	UL 1604 Class 1 Division 2, Groups A, B, C, D Temp Code T4A
CSA/cUL	C22.2 No. 213-1987
ATEX Zone 2	ATEX II 3 G EEx nC IIC

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RADIOLINX

RLX-IH



The RadioLinx Industrial Hotspot is four times more powerful than high-speed commercial grade radios and allows better coverage of the factory floor with fewer radios and provides outdoor links of up to 20+ miles.

Features and Benefits

- Single unit repeater functionality
- Powerful transmitter with amplifier option for long range outdoor applications
- Redundant master radios
- WPA encryption, 802.1x and MAC ID authentication
- Built-in web server for browser-based configuration and remote diagnostics
- Automatic Parent Selection & Prioritized Parent Selection
- Continuous network monitoring
- 802.11 monitoring displays 802.11 devices in the area and the strength of each
- 802.1w RSTP allows redundant connections creation and allows the network to rapidly adapt to changes or faults
- Windows IH Browser displays Ethernet devices communicating on the network
- Fast data throughput
- Compatible with any device that supports EtherNet/IP, Modbus TCP/IP, or any 802.3 compliant Ethernet protocol
- IGMP snooping for multicast filtering
- Three year standard warranty
- OPC server included

Specifications

Radio	
Frequency	2400 to 2483.5 MHz (USA— varies for other countries)
Wireless Medium	Direct Sequence Spread Spectrum (DSSS)
Network standard	802.11b
Output power	200 mW / 500 mW (with external amplifier) (32 mW - Europe/Asia)
Channel data rates	11, 5.5, 2, 1 Mbps
Receiver sensitivity	–86 dBm @ 11 Mbps –88 dBm @ 5.5 Mbps –90 dBm @ 2 Mbps –92 dBm @ 1 Mbps
Channels - user selectable	11 - North America 13 - Europe
Outdoor range	20 + miles at 11 Mbps
Security	MAC access list WPA encryption WEP for legacy devices

Physical	
Enclosure	Extruded aluminum with DIN and panel mount
Size	3.98” x 3.475” x 2.183”
Vibration Shock	IEC 60068-2-6 IEC 60068-2-27
Ethernet port	10/100 Base-T connector, shielded RJ45 IEEE 802.3, 802.3u, 802.3x
Antenna ports	(2) RP-SMA connectors, automatic receive diversity
Weight	1.15 lbs /522g

Environmental	
Operating temperature	–30°C to +60°C
Humidity	To 90% RH, non-condensing
External power	10 to 24 VDC
Average power	5W

Regulatory Approvals

Wireless Approvals
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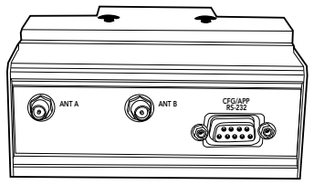
Hazardous Locations	
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CSA/cUL	C22.2 No. 213-1987
ATEX Zone 2	ATEX II 3 G EEx nC IIC

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Top Ports

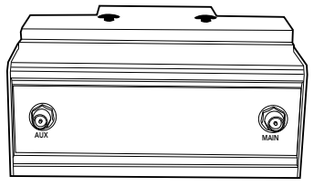
FH Radios

All three FH radios share the same top port configuration.



IH Radio

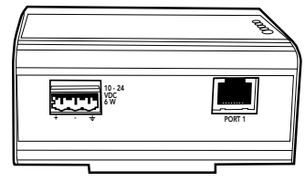
The Main IH antenna port supports both send and receive, while the Aux port supports only receive.



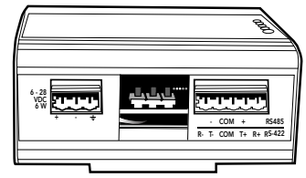
Bottom Ports

FHE and FHES

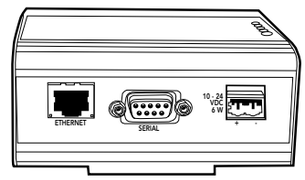
The FHE and FHES radios share the same bottom port configuration.



FHS



IH



Ordering Information

Use the following Ordering Information to identify the radio product needed for your region. If you are unsure which radio to select, please contact your local distributor.

RadioLinx 2.4 GHz Wireless Ethernet Switches (FHE, FHS, and FHES)

Country	Catalog #	Frequency
Australia	RLX-FHxx-AU	2400 to 2483.5 MHz
Brazil	RLX-FHxx-US	2400 to 2483.5 MHz
China	RLX-FHxx-CN	2400 to 2483.5 MHz
Europe	RLX-FHxx-EU	2400 to 2483.5 MHz
France	RLX-FHxx-FR	2400 to 2454 MHz
India	RLX-FHxx-UK	2400 to 2483.5 MHz
Malaysia	RLX-FHxx-UK	2400 to 2483.5 MHz
Mexico	RLX-FHxx-MX	2450 to 2483.5 MHz
Saudi Arabia	RLX-FHxx-SA	2413 to 2439 MHz
Singapore	RLX-FHxx-SG	2400 to 2483.5 MHz
South Africa	RLX-FHxx-EU	2400 to 2483.5 MHz
South Korea	RLX-FHxx-EU	2400 to 2483.5 MHz
United Kingdom	RLX-FHxx-UK	2400 to 2483.5 MHz
USA	RLX-FHxx-US	2400 to 2483.5 MHz
Venezuela	RLX-FHxx-VE	2400 to 2483.5 MHz

RadioLinx 2.4 GHz Industrial Hotspot

Country	Catalog #	Frequency
Australia	RLX-IH-AU	2400 to 2483.5 MHz
Brazil	RLX-IH-US	2400 to 2483.5 MHz
China	RLX-IH-CN	2400 to 2483.5 MHz
Europe	RLX-IH-EU	2400 to 2483.5 MHz
France	RLX-IH-FR	2400 to 2454 MHz
India	RLX-IH-UK	2400 to 2483.5 MHz
Malaysia	RLX-IH-UK	2400 to 2483.5 MHz
Mexico	RLX-IH-MX	2450 to 2483.5 MHz
Saudi Arabia	RLX-IH-SA	2413 to 2439 MHz
Singapore	RLX-IH-SG	2400 to 2483.5 MHz
South Africa	RLX-IH-EU	2400 to 2483.5 MHz
South Korea	RLX-IH-EU	2400 to 2483.5 MHz
United Kingdom	RLX-IH-UK	2400 to 2483.5 MHz
USA	RLX-IH-US	2400 to 2483.5 MHz
Venezuela	RLX-IH-VE	2400 to 2483.5 MHz

Visit our website at www.prosoft-technology.com for current wireless approval information.



All antennas in this section have been tested for compatibility with RadioLinx products. Please see our Antenna Selection Guide to assist you in choosing the best antenna for your application.

2.4 GHz Omnidirectional Antennas

2 dBi Halfwave Antenna

A2402S-OSLP



The Halfwave Antenna is molded in polyurethane with a reverse polarity SMA connector.

Features and Benefits

- Halfwave design does not require a groundplane
- Rugged injection molded design exceeds stringent OEM drop test requirements

Specifications

General Specifications	
Radome Material	Flexible Urethane Exterior (molded)
Polarization	Vertical
Nominal Impedance	50 Ohms
Termination	Type RP-SMA plug
Height	2.5″

Electrical Specifications			
Frequency Range	Gain	Bandwidth	VSWR
2400 to 2500 MHz	2 dBi	75 MHz	1.5:1

A2402S-OS / A2405S-OS



The Straight Antenna works well with belt-mounted remote radios and is available in two models.

Specifications

General Specifications	
Radome Material	Flexible Urethane Exterior (molded)
Connector Material	Brass with black chrome plating
Polarization	Vertical
Nominal Impedance	50 Ohms
Termination	Type RP-SMA plug
Height	2.5″

Electrical Specifications

Model #	Frequency Range	Gain
A2402S-OS	2400 to 2500 MHz	2 dBi
A2405S-OS	2400 to 2483.5 MHz	5 dBi

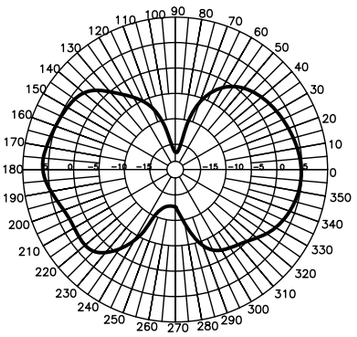
Mechanical Specifications

Model #	Height	Weight
A2402S-OS	4.1″ (104 mm)	0.34 lbs (0.172 kg)
A2405S-OS	7.1″ (180 mm)	0.38 lbs (0.172 kg)

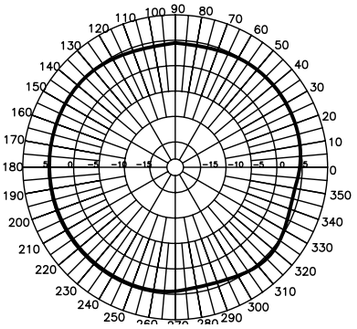
Model #	Operation Temp	Storage Temp
A2402S-OS	–20 to +65 celsius	–30 to +75 celsius
A2405S-OS	–20 to +65 celsius	–30 to +75 celsius

Patterns

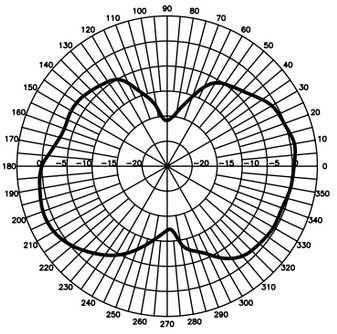
A2402S-OS Elevation



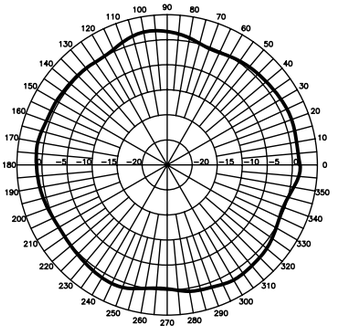
A2402S-OS Azimuth



A2405S-OS Elevation



A2405S-OS Azimuth



RADIOLINX

2.4 GHz Omnidirectional Antennas

2.4 GHz Articulating Omni Antenna

A2405S-OA



This type of portable antenna bends up to 90 degrees at the connector and is vertically polarized. The radiation elements of this antenna are coaxial cable housed in an injection molded sleeve made from polyurethane. The overall construction of this type of antenna provides flexibility and durability. This antenna can attach directly to the radio or be remote mounted.

Specifications

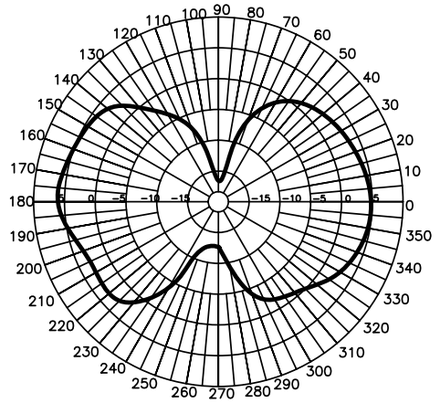
General Specifications	
Radome Material	Flexible Urethane Exterior (molded)
Connector Material	Brass with black chrome plating
Polarization	Vertical
Nominal Impedance	50 Ohms
Termination	Type RP-SMA plug
Height	2.5”

Electrical Specifications	
Frequency Range	2400 to 2500 MHz
Gain	5 dBi

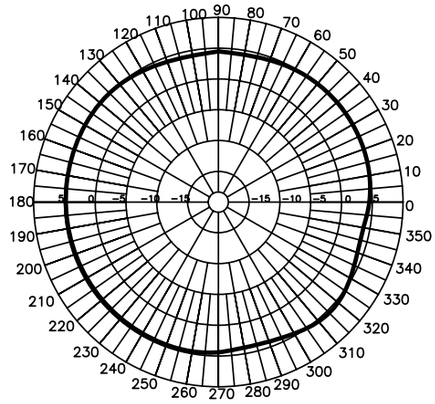
Mechanical Specifications	
VSWR	<2.0:1
Height	6.5” (166 mm)
Operation Temp	–20 to +65 celsius
Storage Temp	–30 to +75 celsius

Patterns

A2405S-OA Elevation



A2405S-OA Azimuth



RADIOLINX

A2403NBH-OC



The RadioLinx A2403NBH-OC Whipless Antenna is a tough antenna for outdoor or indoor applications. The revolutionary design features field diversity with both vertical and horizontal polarization components. This provides the antenna diversity, frequency agility, low visibility, wide bandwidth, and a low angle radiation pattern that is superior to traditional gain antennas in most applications.

Features and Benefits

- Excellent for voice to telemetry applications
- Permanent mount models are available for high-risk applications such as metering where antennas must resist vandalism and achieve economical mounting
- The patented whipless design allows car washes without removing the antenna. Whipless means they do not look like antennas, attract less attention, less vandalism, and have lower wind resistance. The A2403NBH-OC is also less susceptible to damage by trees, garages, or other obstructions
- Field diversity means that the antenna is simultaneously sensitive to both electric and magnetic fields of signal, like having two antennas. Field diversity makes the antenna resistant to the picket fence fading and multipath nulls that are found in urban operation and undulating mobile environments

Specifications

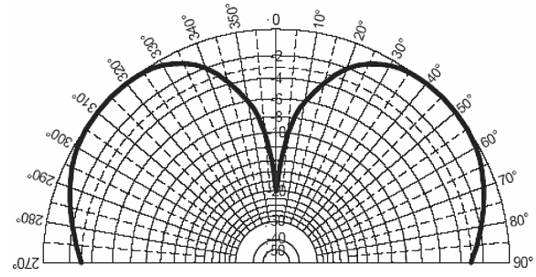
General Specifications	
Radome Material	White housing
Polarization	Vertical or horizontal
Nominal Impedance	50 Ohms
Mounting Base Diameter	Bulkhead mounting hardware included
Termination	Type N jack standard

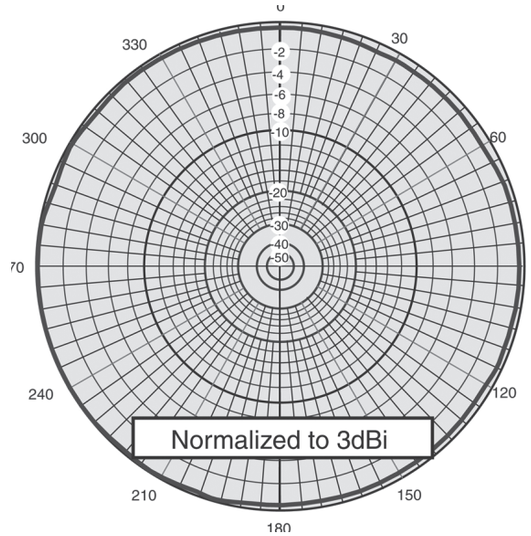
Electrical Specifications	
Frequency Range	2400 to 2500MHz
Gain	3 dBi
VSWR	1.5:1
Bandwidth @ 1.5:1 WVSR	>100 MHz
Max Power	100 W

Mechanical Specifications	
Height	3.5 inches (89.9 mm)
Weight	10 oz

Patterns

A2403NBH-OC Elevation





RADIOLINX

2.4 GHz Omnidirectional Antennas

2.4 GHz Magnetic Mount Antenna

A2405S-OM



The engineered design of the Magnetic Mount Omnicollinear Antenna combines a magnetic base, an antenna whip and high efficiency cable that allows direct installation on metallic surfaces without the need to use a separate antenna mount.

Features and Benefits

- Black coated whip assembly and machine polymer base. Inconspicuous appearance, less susceptible to theft or vandalism
- High efficiency cable provides maximum power to the antenna to help optimize system performance

Specifications

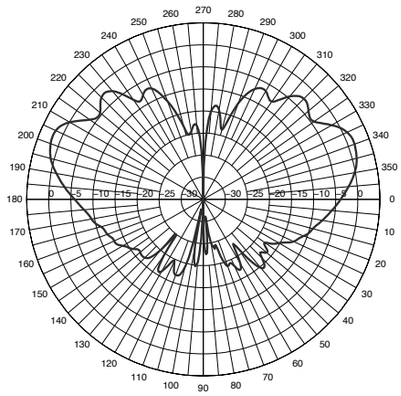
General Specifications	
Radome Material	Stainless steel with black chrome finish
Polarization	Vertical
Nominal Impedance	50 Ohms
Mounting Method	Magnetic Base
Termination	Type RP-SMA plug on 72" pigtail

Electrical Specifications	
Frequency Range	2400 to 2484 MHz
Gain	5 dBi
VSWR	<1.5:1
Max Power	15 W

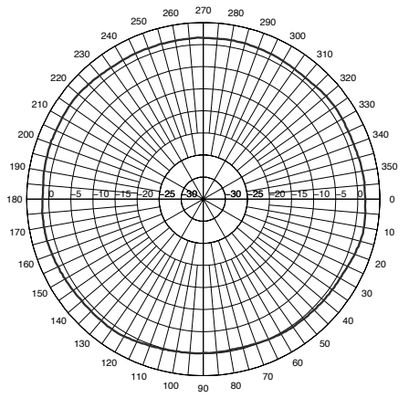
Mechanical Specifications	
Height	9" (228.6 mm)
Weight	2.5 oz
Operation Temp	–40 to +70 celsius
Rod/Coil Type	Trilinear/ open

Patterns

A2405S-OM Elevation



A2405S-OM Azimuth



RADIOLINX

A2404NJ-OC / A2406NJ-OC / A2408NJ-OC



The RadioLinx Omnidirectional Base Station Antennas are designed to provide maximum performance and reliability under the toughest weather conditions. These antennas feature a U.V. stable, vented radome that provides the ultimate protection against weather elements. The antennas can be mast, wall, or ceiling mounted.

These antennas are composed of several linear antennas stacked on top of each other. The number of stacked elements increases the gain of this antenna which is typically between 4 and 8 dBi depending on the number of elements. This array of antennas provides an omni-directional pattern. Polarity is linear, parallel to the length of the antenna.

Features and Benefits

- Superior Performance
- Heavy duty industrial grade design
- All weather operation
- DC Ground lightning protection
- Integral N-Female Connector
- Supplied with mast mounting kit (RLX-MMK8)
- RoHS Compliant

Specifications

General Specifications	
Radome Material	UV resistant fiberglass
Polarization	Vertical
Nominal Impedance	50 Ohms
Mounting Base Diameter	2.28 inches
Termination	Type N jack standard with all models

Electrical Specifications

Model #	Frequency	Gain	Bandwidth @ 1.5:1 WVSR
A2404NJ-OC	2400 to 2483.5 MHz	4 dBi	100 MHz
A2406NJ-OC	2400 to 2483.5 MHz	6 dBi	100 MHz
A2408NJ-OC	2400 to 2483.5 MHz	8 dBi	100 MHz

Model #	Vertical Beamwidth @ $^1/_2$ Power	VSWR	Max Power	Downtilt
A2404NJ-OC	30°	< 1.5:1	25 Watts	N/A
A2406NJ-OC	20°	< 1.5:1	25 Watts	N/A
A2408NJ-OC	13°	< 1.5:1	25 Watts	N/A

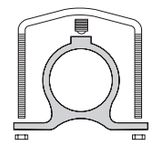
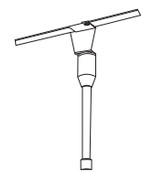
Mechanical Specifications

Model #	Wind Survival	Equivalent Flat Plate Area	Lateral Thrust @ Rated Wind
A2404NJ-OC	125 mph	.02 ft²	2.1 lbs
A2406NJ-OC	125 mph	.04 ft²	3.0 lbs
A2408NJ-OC	125 mph	.06 ft²	5.2 lbs

Model #	Bending Movement @ Rated Wind	Height	Weight
A2404NJ-OC	0.7 ft-lbs	8.1" (294.6 mm)	0.34 lbs (0.172 kg)
A2406NJ-OC	1.4 ft-lbs	11.6" (294.6 mm)	0.38 lbs (0.172 kg)
A2408NJ-OC	4.4 ft-lbs	20.2" (513.1 mm)	0.50 lbs (0.226 kg)

Mounting Hardware

Part #	Description	Included with
RLX-MMK8	Mounting bracket for mounting a 1 $^1/_4$ inch diameter antenna to a 2 inch diameter mast	A2404NJ-OC A2406NJ-OC A2408NJ-OC
RLX-MMK11	Ceiling mount bracket for 2.4 GHz	N/A
RLX-MMK1924	L bracket for mounting omnidirectional antennas to a 2 inch maximum diameter mast. Bracket is 6 inches long with a 5/8 diameter hole	N/A

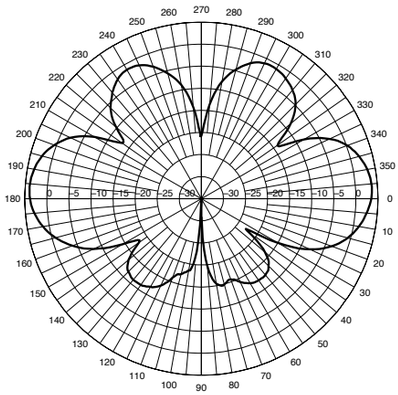
Part #	Works with	Illustration
RLX-MMK8	A2404NJ-OC A2406NJ-OC A2408NJ-OC	
RLX-MMK11	A2406NJ-OC A2408NJ-OC	
RLX-MMK1924	A2404NJ-OC A2406NJ-OC A2408NJ-OC	

RADIOLINX

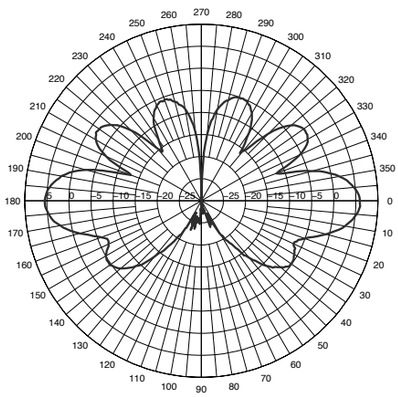
A2404NJ-OC / A2406NJ-OC / A2408NJ-OC continued

Patterns

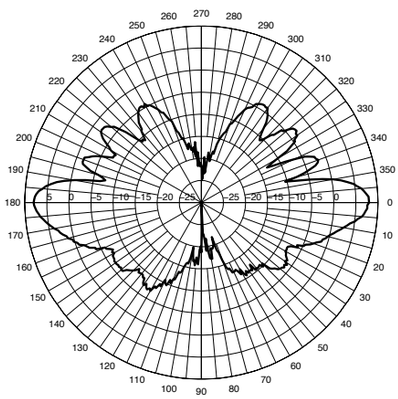
A2404NJ-OC Elevation



A2406NJ-OC Elevation



A2408NJ-OC Elevation



RADIOLINX

A2415NJ-OC



The A2415NJ-OC is a high gain omnidirectional base station antenna designed and optimized for the 2.4GHz ISM band. This antenna is ideally suited for IEEE 802.11b, 802.11g and 802.11n wireless LANs and other multipoint applications where long range and wide coverage is desired.

This antenna features an integral N-Female connector. The mounting system consists of a pair of steel brackets and 2.7 inch U-bolts, allowing installation on masts up to 2.0 inches in diameter.

Features and Benefits

- Superior performance
- Lightweight fiberglass radome
- All weather operation
- Heavy-duty steel mounting brackets
- Integral N-Female connector
- RoHS Compliant
- 2.4 GHz ISM Band
- IEEE 802.11b, 802.11g, 802.11n Wireless LAN
- Wireless Video Systems
- Multipoint and Mobile Applications

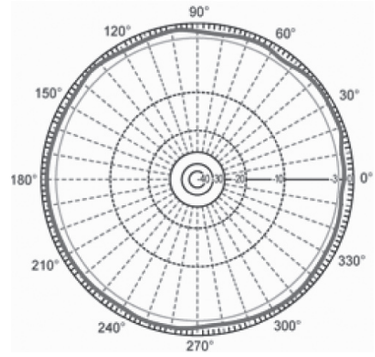
All antennas have been tested for compatibility with RadioLinx products. Please see our Antenna Selection Guide to assist you in choosing the best antenna for your application.

Specifications

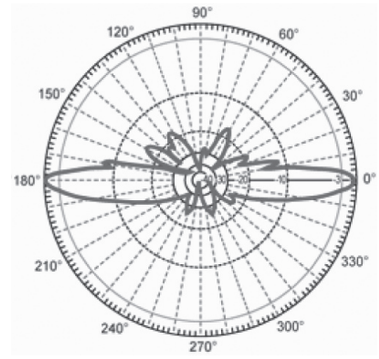
General Specifications	
Connector	Integral N-Female
Weight	3.3 lbs (1.5kg)
Length	40.5 in. (1.03m)
Base Diameter	1.69 in. (42.9mm)
Radome Diameter	1.52 in. (38.6mm)
Radome Material	Gray Fiberglass
Mounting	2.0” diameter mast (max.)
Wind Survival	up to 150 MPH
Operating Temperature	-40° C to 85° C (-40° F to 185° F)
RoHS Compliant	Yes

Electrical Specifications	
Frequency	2400 to 2500 MHz
Gain	15 dBi
Polarization	Vertical
Vertical Beam Width	8°
Horizontal Beam Width	360°
Impedance	50 Ohm
Max. Input Power	100 Watts
VSWR	< 1.5:1 (avg.)
Lightning Protection	DC Ground

RF Antenna Patterns



Horizontal



Vertical

RADIOLINX

2.4 GHz Omnidirectional Antennas

2.4 GHz Heavy Duty Antennas

A2406NJ-OCD / A2409NJ-OCD



The Omnidirectional Heavy Duty Antenna Series antennas are optimized for use in a wide variety of wireless systems. Typical uses include WLAN access points or bridge (802.11b/g), and surveillance transmitters.

These antennas consist of a collinear array with elements stacked vertically. Unique phasing cancels out-of-phase current distribution, improving system performance. This design maintains an omni pattern in the horizontal plane. No ground plane is required.

Features and Benefits

- UV stable, pultruded fiberglass radome. Allows outdoor installation even in harsh climates
- 6 dBi and 9 dBi antennas provide uniform omni coverage
- Unique design allows economical build out
- Mounting kit includes all hardware needed.
- Integral N-Female connector

Specifications

General Specifications	
Radome Material	Black fiberglass
Polarization	Vertical
Nominal Impedance	50 Ohms
Mounting Base Diameter	Use mast up to 2”
Mounting Method	Mast mount kit included
Termination	Type N jack

Electrical Specifications

Model #	Frequency	Gain
A2406NJ-OCD	2400 to 2485 MHz	6 dBi
A2409NJ-OCD	2400 to 2485 MHz	9 dBi

Model #	Vertical Beamwidth (-3 dB point)	Maximum Power
A2406NJ-OCD	25°	25 Watts
A2409NJ-OCD	14°	25 Watts

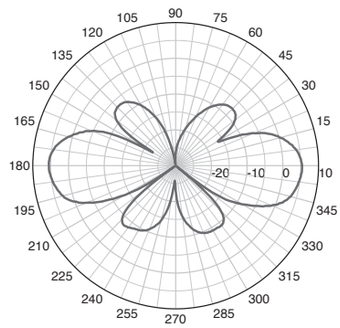
Mechanical Specifications

Model #	Wind Survival	Equivalent Flat Plate Area
A2406NJ-OCD	100 mph	10 to 40 Sq. inch
A2409NJ-OCD	100 mph	10 to 40 Sq. inch

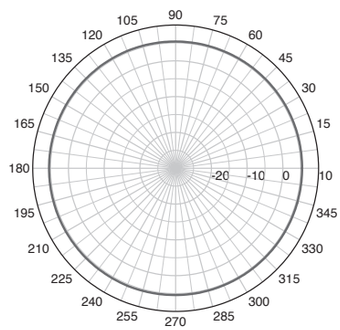
Model #	Height	Weight
A2406NJ-OCD	19”	1.5 lbs
A2409NJ-OCD	27”	2.0 lbs

Patterns

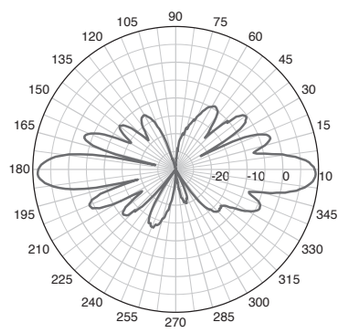
A2406NJ-OCD Elevation



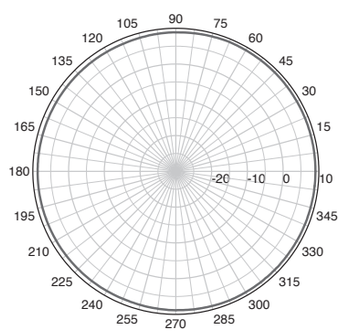
A2406NJ-OCD Azimuth



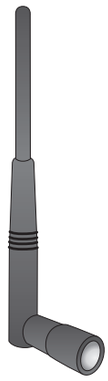
A2409NJ-OCD Elevation



A2409NJ-OCD Elevation



RADIOLINX



This type of portable antenna is vertically polarized and omni-directional. The radiation elements of this antenna are coaxial cable housed in an injection-molded sleeve made from polyurethane. The overall construction of this type of antenna provides flexibility and durability and is designed to attach directly to the radio or be remote mounted.

This antenna features an integral SMA Plug Reverse Polarity connector.

Features and Benefits

- Superior performance
- All weather operation
- SMA Plug Reverse Polarity Connector
- RoHS Compliant
- 2.4 GHz / 5 GHz Multi-Band
- IEEE 802.11b, 802.11g, 802.11n Wireless LAN
- Bluetooth®
- Public Wireless Hotspot
- WiFi
- Wireless Video Systems
- Multipoint and Mobile Applications

All antennas have been tested for compatibility with RadioLinx products. Please see our *Wireless Planning and Specification Guide* to assist you in choosing the best antenna for your application.

Specifications

General Specifications	
Connector	RP–SMA
Weight	
Length	5.93" (150.7mm)
Base Diameter	.51" (13.0mm)
Whip Material	Polycarbonate (Black)
Swivel Mechanism	Polycarbonate (Black)
Connector	Brass with black chrome plating
Storage Temperature	–30° C to +75° C
Operating Temperature	–20° C to +65° C (–40° F to 185° F)
RoHS Compliant	Yes

Electrical Specifications	
Frequency	2.4 to 2.5/4.9 to 5.35/5.725 to 5/85 GHz
Gain	2 dBi
Polarization	Vertical
Vertical Beam Width	
Horizontal Beam Width	
Impedance	50 Ohm
Max. Input Power	
VSWR	< 2.0:1 avg.
Lightning Protection	DC Ground

5 GHz Omnidirectional Antennas

Base Station Antennas

A5006NJ-OC / A5809NJ-OC / A5812NJ-OC



The RadioLinx Omnidirectional Base Station Antennas are designed to provide maximum performance and reliability under the toughest weather conditions. These antennas feature a U.V. stable, vented radome that provides the ultimate protection against weather elements. The antennas can be mast, wall, or ceiling mounted.

These antennas are typically composed of several linear antennas stacked on top of each other. The number of stacked elements increases the gain of the antenna. This array of antennas provides an omni-directional pattern. Polarity is vertical.

Features and Benefits

- Superior Performance
- Heavy duty industrial grade design
- All weather operation
- DC Ground lightning protection
- Integral N-Female Connector
- Supplied with mast mounting kit
- RoHS Compliant

Specifications

General Specifications	
Radome Material	UV resistant fiberglass
Polarization	Vertical
Nominal Impedance	50 Ohms
Mounting Base Diameter	2.28 inches
Termination	Type N jack standard with all models

Electrical Specifications

Model #	Frequency	Gain
A5006NJ-OC	5.0 to 6.0 GHz	6 dBi
A5809NJ-OC	5.725 to 5.875 GHz	9 dBi
A5812NJ-OC	5725 to 5850 MHz	12 dBi

Model #	Vertical Beamwidth @ 1/2 Power	VSWR	Max Power	Downtilt
A5006NJ-OC	25°	<1.5:1	25 Watts	
A5809NJ-OC	8°	<1.5:1	25 Watts	
A5812NJ-OC	6°	< 1.5:1	150 Watts	0°

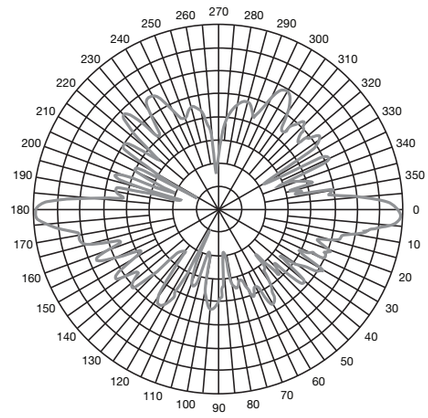
Mechanical Specifications

Model #	Wind Speed	Loading
A5006NJ-OC	100 mph 125 mph	
A5809NJ-OC	100 mph 125 mph	
A5812NJ-OC	100 mph 125	6 lbs 10 lbs

Model #	Height	Weight
A5006NJ-OC	11" (28cm)	<0.75 lbs (<0.340 kg)
A5809NJ-OC	15.7" (398.8 mm)	0.43 lbs (0.195 kg)
A5812NJ-OC	29.4" (0.7m)	1.5 lbs (0.7 kg)

Patterns

A5809NJ-OC



Vertical

RADIOLINX

RADIOLINX®

Directional Antennas

All antennas in this section have been tested for compatibility with RadioLinx products. Please see our Antenna Selection Guide to assist you in choosing the best antenna for your application.

2.4 GHz Directional Antennas

Panel/Patch Antennas

A2408NJ-DP / A2413NJ-DP / A2419NJ-DP



The RadioLinx Directional Panel/ Patch Antennas are designed to cover the 2.45 GHz ISM band obtaining maximum gain with an attractive, low profile package. All models provide efficient and stable performance across the band and can be mounted indoors or outdoors.

Features and Benefits

- High Gain / Low Profile / Wide Band
- Pole Mount or Surface Mount
- Rugged and Weatherproof
- Vertical or Horizontal Polarization
- Type N Female Connector

Specifications

General Specifications	
Cross Polarization	25 dB
Lightning Protection	Direct Ground
Mounting Method	Mounting brackets included
Termination	Type N jack

Electrical Specifications

Model #	Frequency Range	Gain
A2408NJ-DP	2.4 to 2.5 GHz	8.5 dBi
A2413NJ-DP	2.4 to 2.5 GHz	13 dBi
A2419NJ-DP	2.4 to 2.5 GHz	19 dBi

Model #	Front-to-Back Ratio	Max Power
A2408NJ-DP	>30 dB	100 W
A2413NJ-DP	>30 dB	100 W
A2419NJ-DP	>30 dB	100 W

Model #	Horizontal Beamwidth	Vertical Beamwidth	VSWR
A2408NJ-DP	60°	60°	<1.5:1
A2413NJ-DP	38°	38°	<1.5:1
A2419NJ-DP	18°	18°	<1.5:1

Mechanical Specifications

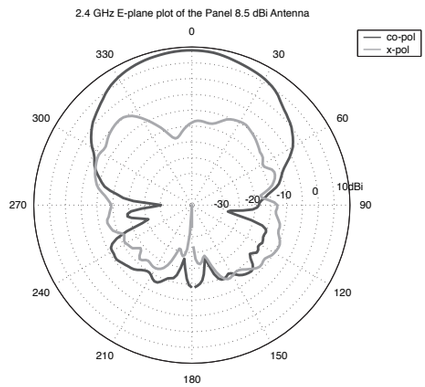
Model #	Wind/ice loading area	Lateral Thrust @ 100 mph
A2408NJ-DP	26.5 in^2 (171 cm^2)	5 lbs (11 kg)
A2413NJ-DP	72 in^2 (466 cm^2)	10 lbs (22 kg)
A2419NJ-DP	240 in^2 (1552 cm^2)	15 lbs (33 kg)

Model #	Torsional moment @ 100 mph with standard mounting
A2408NJ-DP	0.1 ft/lbs (0.22 m/kg)
A2413NJ-DP	0.2 ft/lbs (0.22 m/kg)
A2419NJ-DP	0.4 ft/lbs (0.88 m/kg)

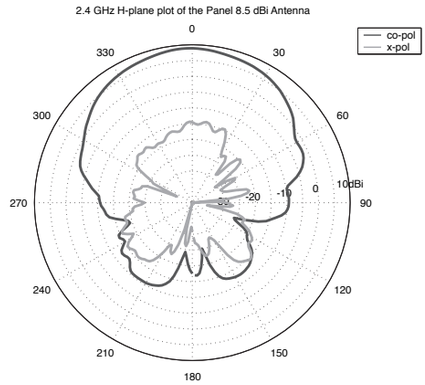
Model #	Dimensions
A2408NJ-DP	5.15" W x 5.15" H x .82" D (13.1 x 13.1 x 2.1 cm)
A2413NJ-DP	8.5" W x 8.5" H x 1.125" D (21.6 x 21.6 x 2.8 cm)
A2419NJ-DP	15.5" W x 15.5" H x 1.125" D (39.4 x 39.4 x 2.8 cm)

Patterns

A2408NJ-DP Elevation

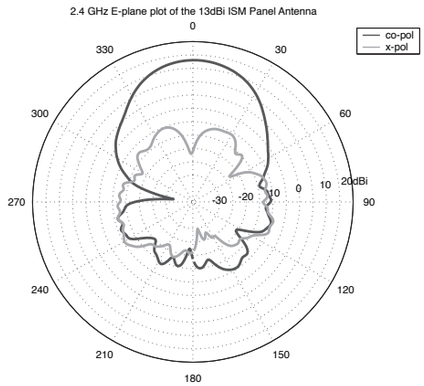


A2408NJ-DP Azimuth

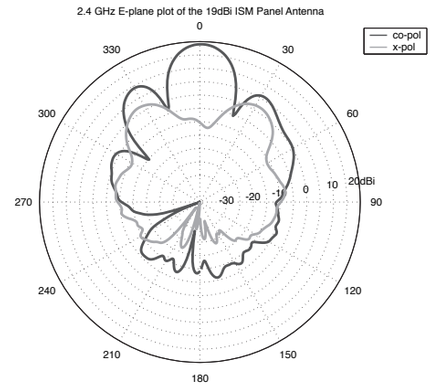


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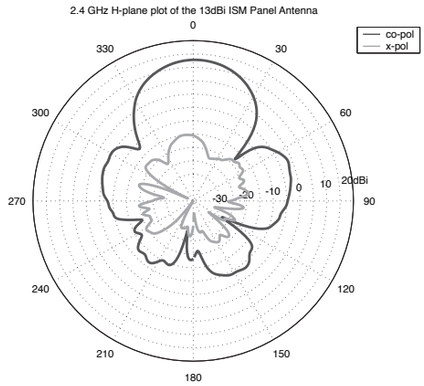
A2413NJ-DP Elevation



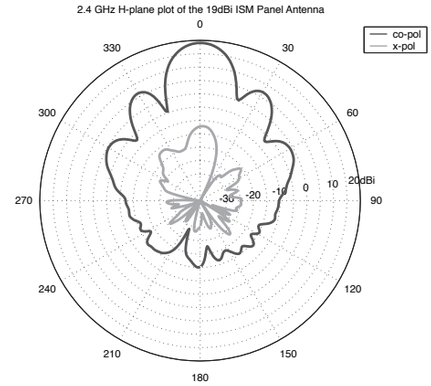
A2419NJ-DP Elevation



A2413NJ-DP Azimuth



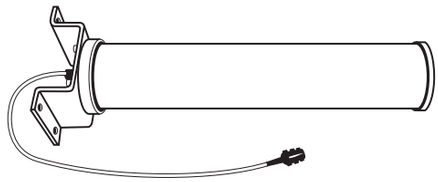
A2419NJ-DP Azimuth



2.4 GHz Directional Antennas

Yagi Antennas

A2410NJ-DY / A2415NJ-DY



Typically, Yagi antennas compose an array of linear elements, parallel to on another and attached perpendicular to and along the length of a metal boom. Elements on one side of the feed element are longer and act as reflectors. Elements on the other side of the feed element are shorter and act as directors. The antenna radiates in a beam out the end with the shorter elements. Beam width varies (longer length produces a narrower beam). This type of antenna produces gain in the 6 to 15 dBi range depending on the overall geometry of the antenna.

Features and Benefits

- Field adjustable to allow vertical or horizontal polarity. Eliminates co-channel interference from neighboring radiators. Polarity markings molded on the antenna ensure proper installation and correct orientation
- Optional articulating mount allows precise adjustment of the antenna both vertically and horizontally
- All antennas include a robust mast mount bracket designed to withstand 125 mph wind
- Matched principal plane beamwidths with excellent sidelobe suppression and cross polarization rejection of more than 20 dB. Provides superior signal quality with enhanced gain performance and minimal interference from neighboring radiators
- 30 dB front-to-back ratio permits less physical separation on the tower, thus adding mounting flexibility at installation sites where space is limited
- Attractive weather-proof radome constructed of UV resistant material provides robust and trouble free use in harsh outdoor climates

Specifications

General Specifications	
Radome Material	White plastic
Polarization	Vertical or horizontal, linear (user adjustable)
Lightning Protection	DC grounded
Nominal Impedance	50 Ohms
Mounting Method	Heavy duty Yagi mounting bracket (included) permits mast mounting on mast up to 2 inches O.D. RLX-MYK18 adjustable wall/pipe mount allows 180° (included angle) azimuth and elevation adjustment (sold separately)
Termination	Type N jack standard with all models

Electrical Specifications

Model #	Frequency Range	Gain	Front-to-Back Ratio
A2410NJ-DY	2.4 to 2.5 GHz	10 dBi	23 dB
A2415NJ-DY	2.4 to 2.5 GHz	15 dBi	30 dB

Model #	Horizontal Bandwidth	Vertical Beamwidth	VSWR
A2410NJ-DY	55°	55°	<1.5:1
A2415NJ-DY	30°	30°	<1.5:1

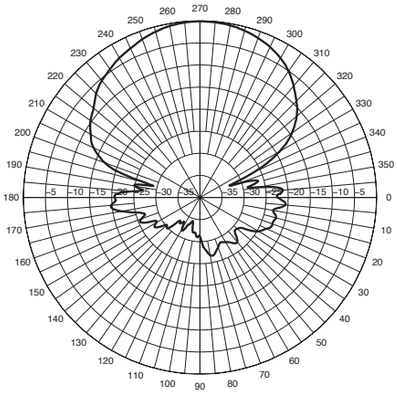
Mechanical Specifications

Model #	Wind Survival	Lateral Thrust at Rated Wind	Equivalent Flat Plate Area
A2410NJ-DY	125 mph	5.8 lbs	0.060 ft^2
A2415NJ-DY	125 mph	18.3 lbs	0.020 ft^2

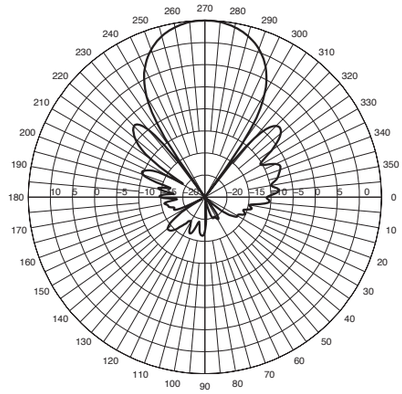
Model #	Length	Weight	Cable
A2410NJ-DY	4.5" x 3" OD (114 mm x 76 mm OD)	1 lbs (0.5 kg)	18" (457 mm) coax
A2415NJ-DY	14" x 3" OD (356 mm x 76 mm OD)	1 lbs (0.5 kg)	18" (457 mm) coax

Patterns

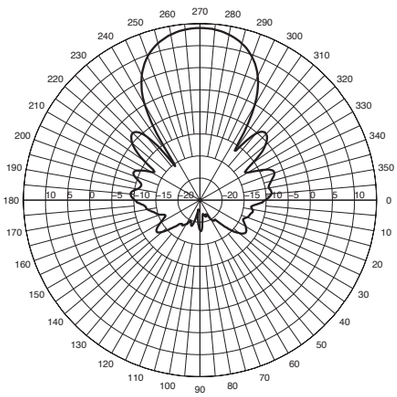
A2410NJ-DY Azimuth



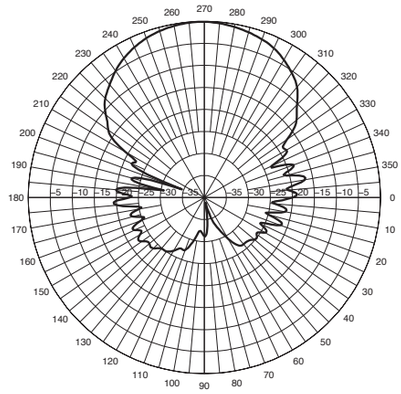
A2415NJ-DY Azimuth



A2410NJ-DY Elevation



A2415NJ-DY Elevation



Mounting Hardware

Part Number	Description	Included with
RLX-MYK18	Adjustable Yagi mounting kit. Clamps to a vertical mast up to 2 inches OD	N/A

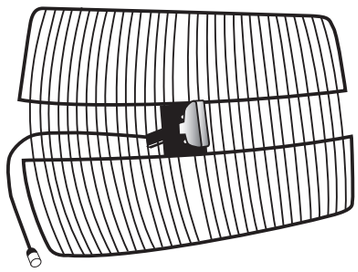
Part Number	Works with	Illustration
RLX-MYK18	A2410NJ-DY A2415NJ-DY	

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2.4 GHz Directional Antennas

Parabolic Antennas

A2419NJ-DB / A2424NJ-DB



The Parabolic Antenna is constructed of welded steel wires which are galvanized and then powder coat painted with a light gray epoxy paint. The wire grid semi-parabolic design offers unsurpassed low wind loading while maintaining good RF performance. The compact low visual impact attractive styling blends well in almost any application.

Features and Benefits

- Rugged and Weatherproof
- Ultra Low Wind Loading and Low Visual Impact
- Vertical or Horizontal Polarization
- N-Female Connector

Specifications

General Specifications	
Radome Material	White plastic
Polarization	Vertical or horizontal, linear (user adjustable)
Nominal Impedance	50 Ohms
Termination	Type N jack

Electrical Specifications

Model #	Frequency Range	Gain
A2419NJ-DB	2.4 to 2.485 GHz	19 dBi
A2424NJ-DB	2.4 to 2.485 GHz	24 dBi

Model #	3dB BW	VSWR	Front-to-Back Ratio
A2419NJ-DB	11″ V 17″ H	<1.5:1	22 dB
A2424NJ-DB	8″ V 10″ H	<1.5:1	25 dB

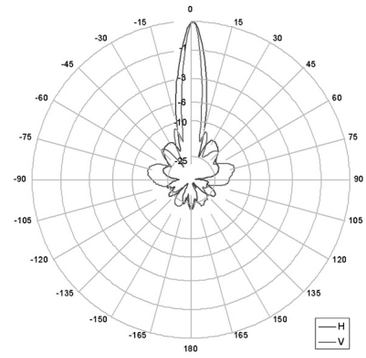
Mechanical Specifications

Model #	Dimensions
A2419NJ-DB	16.5″ x 24″ (419 x 610 mm)
A2424NJ-DB	28.5″ x 36″ (724 x 914 mm)

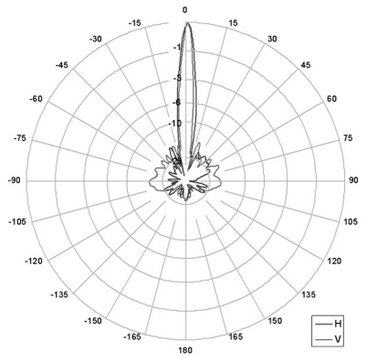
Model #	Weight	Vertical Tilt
A2419NJ-DB	6 lbs (2.7 kg)	0 to 45°
A2424NJ-DB	11 lbs (5 kg)	0 to 45°

Patterns

A2419NJ-DB



A2424NJ-DB



RADIOLINX

A5019NJ-DP / A5024NJ-DP

The RadioLinx Directional Panel/Patch Antennas are designed to cover the 5 GHz ISM band, obtaining maximum gain with an attractive, low profile package. All models provide efficient and stable performance across the band and can be mounted indoors or outdoors. The antenna can be used in horizontal or vertical polarization.

Features and Benefits

- High Gain / Low Profile / Wide Band
- Pole Mount or Surface Mount
- Rugged and Weatherproof
- Vertical or Horizontal Polarization
- Type N Female Connector

Specifications

General Specifications	
Cross Polarization	25 dB
Lightning Protection	Direct Ground
Mounting Method	Mounting brackets included
Termination	Type N jack

Electrical Specifications

Model #	Frequency Range	Gain
A5019NJ-DP	5150 to 5825 GHz	19 dBi
A5024NJ-DP	5150 to 5825 GHz	24 dBi

Model #	Front-to-Back Ratio	Max Power
A5019NJ-DP	>30 dB	100 W
A5024NJ-DP	>40 dB	100 W

Model #	Horizontal Beamwidth	Vertical Beamwidth	VSWR
A5019NJ-DP	16°	16°	<2.0:1
A5024NJ-DP	8°	8°	<1.5:1

Mechanical Specifications

Model #	Sq. In	100 MPH	125 MPH	100 MPH with 1/2 in. radial ice
A5019NJ-DP	56	14 lbs	22 lbs	14 lbs
A5024NJ-DP	163	41 lbs	64 lbs	41 lbs

Model #	Dimensions
A5019NJ-DP	7.5" W x 7.5" H x 0.8" D (190mm x 190mm x 20mm)
A5024NJ-DP	15.4" W x 14.6" H x 0.8" D (390mm x 371mm x 21mm)

5 GHz Directional Antennas

Parabolic Antennas

A5826NJ-DB / A5829NJ-DB

The Parabolic Antenna is constructed of welded steel wires which are galvanized and then powder coat painted with a light gray epoxy paint. The wire grid semi-parabolic design offers unsurpassed low wind loading while maintaining good RF performance. The compact low visual impact attractive styling blends well in almost any application.

Features and Benefits

- Rugged and Weatherproof
- Ultra Low Wind Loading and Low Visual Impact
- Vertical or Horizontal Polarization
- N-Female Connector

Specifications

General Specifications	
Radome Material	White plastic
Polarization	Vertical or horizontal, linear (user adjustable)
Nominal Impedance	50 Ohms
Termination	Type N jack

Electrical Specifications

Model #	Frequency Range	Gain
A5826NJ-DB	5.725 to 5.860 GHz	26 dBi
A5829NJ-DB	5.725 to 5.860 GHz	29 dBi

Model #	3dB BW	VSWR	Front-to-Back Ratio
A5826NJ-DB	6" V 6" H	<1.5:1	25 dB
A5829NJ-DB	4" V 4" H	<1.5:1	25dB

Mechanical Specifications

Model #	Dimensions
A5826J-DB	16.8" x 24" (427x 610 mm)
A5829NJ-DB	28.5" x 36" (724 x 914 mm)

Model #	Weight	Vertical Tilt
A5826NJ-DB	6 lbs (2.7 kg)	0 to 45°
A5829NJ-DB	11 lbs (5 kg)	0 to 45°



RadioLinx cables are designed to provide the lowest attenuation and are pre-cut and assembled with connectors at the factory to ensure ultimate reliability and customer satisfaction.

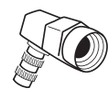
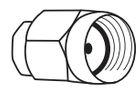
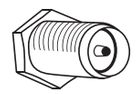
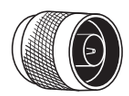
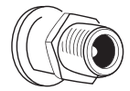
Cable Numbering

The following Cable Numbering chart shows a cable number example, and how the numbering is broken down.

C40M40-40-020				
C	**40M**	**40**	**40**	**020**
Designator for Cable	Cable Type LMR400	First Connector N Plug	End Connector N Plug	Length Measured in Feet

Cable Types	19M = LMR195
	40M = LMR400
	60M = LMR600
	VX5 = VXL5

Connector Types	RP = Reverse Polarity
	RA = Right Angle
	Jack = threads on the outside
	BH = Bulkhead
	Plug = threads on the inside
	SMA = SMA Type Connector
	N = N Type Connector

Connector Numbers	10 = RA RP SMA Plug	
	20 = RP SMA Plug	
	30 = RP SMA BH Jack	
	40 = N Plug	
	50 = N Jack	
	60 = RA N Plug	
	80 = N Jack BH	

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Features and Benefits

- **Flexible:** With a $^1/_2$–inch minimum bend radius, the LMR-195 cable is substantially more flexible than RG-142 and very comparable to RG-58. The LMR-195 cable affords lower loss, greater shielding, and lower cost
- **Low Loss:** LMR-195 boasts lower loss than other RG58/RG142 type cables. This is achieved through the use of a high velocity gas-injected closed cell foam dielectric, and bonded aluminum tape outer conductor
- **Weatherproof:** The UV-protected black polyethylene jacket makes the cables rugged and resistant to the full range of outdoor environments. Various jacket materials are available to address other indoor and outdoor requirements
- **RF Shielding:** The bonded aluminum tape outer conductor is overlapped to provide 100% coverage, resulting in >90 dB RF shielding (>180 dB crosstalk) and excellent interference immunity (ingress and egress); a substantial improvement from RG58s 40 dB and RG142s 60 dB performance level
- **Phase Stability:** The intimately bonded structure and foam dielectric of LMR cables provide excellent phase stability over temperature and with bending. The high velocity dielectric results in superior phase stability as compared with RG58 and RG142 solid dielectric cables

Specifications

Mechanical Specifications	
Minimum Bend Radius	0.5 in (12.7 mm)
Bending Movement	0.2 ft lbs (0.27 N-m)
Weight	0.021 lb/ft (0.03 kg/m)
Tensile Strength	40 lbs (18.2 kg)
Flat Plate Crush	15 lb/in (0.27 kg/mm

Environmental Specifications	
Installation Temp Range	–40° / +185°F (–40° / +85°C)
Storage Temp Range	–94° / +185°F (–70° / +85°C)
Operating Temp Range	–40° / +185°F (–40° / +85°C)

Electrical Specifications	
Voltage Withstand	1000 VDC
Peak Power	2.5 kW
Jacket Spark	3000 VRMS

Attenuation Average @ 2500 MHz	
dB/100 ft	18.1
dB/100 m	59.5

Attenuation Average @ 5800 MHz	
dB/100 ft	29.9
dB/100 m	98.1

Ordering Information

To order this product, please use the following:

Part Number	Part Description
C19M10-30-002	2′ LMR 195 RA RP-SMA plug → RP-SMA BH jack cable
C19M10-30-005	5′ LMR 195 RA RP-SMA plug → RP-SMA BH jack cable
C19M10-30-010	10′ LMR 195 RA RP-SMA plug → RP-SMA BH jack cable
C19M10-30-015	15′ LMR 195 RA RP-SMA plug → RP-SMA BH jack cable
C19M10-30-020	20′ LMR 195 RA RP-SMA plug → RP-SMA BH jack cable
C19M10-40-002	2′ LMR 195 RA RP-SMA plug → N plug cable
C19M10-40-005	5′ LMR 195 RA RP-SMA plug → N plug cable
C19M10-40-010	10′ LMR 195 RA RP-SMA plug → N plug cable
C19M10-40-020	20′ LMR 195 RA RP-SMA plug → N plug cable
C19M10-60-002	2′ LMR 195 RA RP-SMA plug → RA-N plug
C19M10-80-002	2′ LMR 195 RA RP-SMA plug → N BH jack cable
C19M10-80-005	5′ LMR 195 RA RP-SMA plug → N BH jack cable
C19M10-80-010	10′ LMR 195 RA RP-SMA plug → N BH jack cable
C19M40-60-003	3′ LMR 195 N plug → RA-N plug cable
C19M40-80-003	3′ LMR 195 N plug → N Jack BH
C19M60-90-003	3′ LMR 195 RA N plug → NBH jack cable



LMR-400 Type Cables

Features and Benefits

- **Flexible:** With a 1-inch minimum bend radius, LMR-400 cable can be easily routed into and through tight spaces without kinking
- **Low Loss:** LMR400 has the lowest loss of any RG8/RG13 type cable. This is achieved through the use of a high velocity gas-injected closed cell foam dielectric, and bonded aluminum tape outer conductor
- **Weatherproof:** The UV protected black polyethylene jacket makes the cable rugged and resistant to the full range of outdoor environments. The DB version of the cable includes a water blocking material within the braid to protect the cable from moisture ingress and eliminates any potential for corrosion in harsh environments or should the jacket become damaged
- **RF Shielding:** The bonded aluminum tape outer conductor is overlapped to provide 100% coverage, resulting in >90 dB RF shielding (>180 dB crosstalk) and excellent interference immunity (ingress and egress)
- **Phase Stability:** The intimately bonded structure and foam dielectric of LMR cables provide excellent phase stability over temperature and with bending. The high velocity dielectric results in superior phase stability as compared with solid and air-spaced dielectric cables

Specifications

Mechanical Specifications	
Minimum Bend Radius	1 in (25.4 mm)
Bending Movement	0.5 ft lbs (0.68 N-m)
Weight	0.068 lb/ft (0.10 kg/m)
Tensile Strength	160 lbs (72.6 kg)
Flat Plate Crush	40 lb/in (0.71 kg/mm

Environmental Specifications	
Installation Temp Range	–40° / +185°F (–40° / +85°C)
Storage Temp Range	–94° / +185°F (–70° / +85°C)
Operating Temp Range	–40° / +185°F (–40° / +85°C)

Electrical Specifications	
Voltage Withstand	2500 VDC
Peak Power	16 kW
Jacket Spark	8000 VRMS

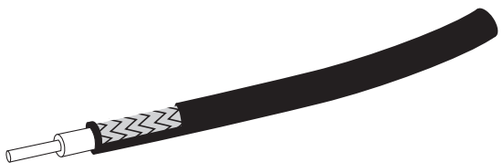
Attenuation Average @ 2500 MHz	
dB/100 ft	6.8
dB/100 m	22.2

Attenuation Average @ 5800 MHz	
dB/100 ft	10.8
dB/100 m	35.4

Ordering Information

To order this product, please use the following:

Part Number	Part Description
C40M40-40-002	2′ LMR 400 N Plug → N plug cable
C40M40-40-005	5′ LMR 400 N Plug → N plug cable
C40M40-40-010	10′ LMR 400 N Plug → N plug cable
C40M40-40-015	15′ LMR 400 N Plug → N plug cable
C40M40-40-020	20′ LMR 400 N Plug → N plug cable
C40M40-40-025	25′ LMR 400 N Plug → N plug cable
C40M40-40-040	40′ LMR 400 N Plug → N plug cable
C40M40-40-050	50′ LMR 400 N Plug → N plug cable
C40M40-40-060	60′ LMR 400 N Plug → N plug cable
C40M40-40-080	80′ LMR 400 N Plug → N plug cable
C40M40-40-100	100′ LMR 400 N Plug → N plug cable
C40M40-40-150	150′ LMR 400 N Plug → N plug cable
C40M40-40-200	200′ LMR 400 N Plug → N plug cable
C40M40-40-250	250′ LMR 400 N Plug → N plug cable



LMR-600 Type Cables are ideal for jumper assemblies in wireless communication systems and antenna feed runs greater than one-hundred feet.

Features and Benefits

- **Flexible:** With a 1 $^{1}/_{2}$-inch minimum bend radius, LMR-600 cable can be easily routed into and through tight spaces without kinking.
- **Low Loss:** LMR-600 has the lowest loss of any $^{1}/_{2}$-inch superflex cable. This is achieved through the use of a high velocity gas-injected closed cell foam dielectric, and bonded aluminum tape outer conductor
- **Weatherproof:** The UV protected black polyethylene jacket makes the cable rugged and resistant to the full range of outdoor environments. The DB version of the cable includes a water blocking material within the braid to protect the cable from moisture ingress and eliminates any potential for corrosion in harsh environments or should the jacket become damaged
- **RF Shielding:** The bonded aluminum tape outer conductor is overlapped to provide 100% coverage, resulting in >90 dB RF shielding (>180 dB crosstalk) and excellent interference immunity (ingress and egress)
- **Phase Stability:** The intimately bonded structure and foam dielectric of LMR cables provide excellent phase stability over temperature and with bending. The high velocity dielectric results in superior phase stability as compared with solid and air-spaced dielectric cables

Specifications

Mechanical Specifications	
Minimum Bend Radius	1.5 in (38.1 mm)
Bending Movement	2.75 ft lbs (3.73 N-m)
Weight	0.031 lb/ft (0.20 kg/m)
Tensile Strength	350 lbs (158.9 kg)
Flat Plate Crush	60 lb/in (1.07 kg/mm

Environmental Specifications	
Installation Temp Range	–40° / +185°F (–40° / +85°C)
Storage Temp Range	–94° / +185°F (–70° / +85°C)
Operating Temp Range	–40° / +185°F (–40° / +85°C)

Electrical Specifications	
Voltage Withstand	4000 VDC
Peak Power	40 kW
Jacket Spark	8000 VRMS

Attenuation Average @ 2500 MHz	
dB/100 ft	4.4
dB/100 m	14.5

Attenuation Average @ 5800 MHz	
dB/100 ft	7.3
dB/100 m	24.0

Ordering Information

To order this product, please use the following:

Part Number	Part Description
C60M40-40-050	50′ LMR 600 N Plug → N plug cable
C60M40-40-060	60′ LMR 600 N Plug → N plug cable
C60M40-40-080	80′ LMR 600 N Plug → N plug cable
C60M40-40-100	100′ LMR 600 N Plug → N plug cable
C60M40-40-125	125′ LMR 600 N Plug → N plug cable
C60M40-40-150	150′ LMR 600 N Plug → N plug cable
C60M40-40-200	200′ LMR 600 N Plug → N plug cable



VXL5-50 Type Cables

Faster Site Completion

VXL series cable makes the job go faster. VXL cable is easier to handle, easier to bend, and easier to install. Using VXL5-50 reduces the number of connectors and weatherproofing. The result is a faster tower build out.

The lowest loss solution in the industry

When used as a one-piece feeder line, VXL5-50 requires no antenna jumpers. It lowers VSWR, reduces insertion loss, and minimizes installation time. System designers and engineers can eliminate the need for jumper cables when VXL5-50, a 7/8-inch feeder cable is specified. It is suitable for continuous cable runs from the base station cabinet to the antenna.

Specifications

Mechanical Specifications	
Nominal Size	7/8-in
Jacket O.D.	1.08 in (27.5 mm)
Minimum Bend Radius	5 in (125 mm)
One Time Minimum Bend Radius	3.5 in (89 mm)
Bending Movement	12 ft lbs (16.3 N-m)
Number of Bends	15 min (40 typical)
Weight	0.29 lb/ft (0.431 kg/m)
Tensile Strength	225 lbs (102 kg)
Flat Plate Crush	80 lb/in (1.4 kg/mm

Environmental Specifications	
Installation Temp Range	–40° / +185°F (–40° / +85°C)
Storage Temp Range	–94° / +185°F (–70° / +85°C)
Operating Temp Range	–40° / +185°F (–40° / +85°C)

Electrical Specifications	
Voltage Withstand	1000 VDC
Peak Power	
Jacket Spark	8000 VRMS

Attenuation Average @ 2500 MHz	
dB/100 ft	2.18
dB/100 m	7.15
Power kW	1.21

Ordering Information

To order this product, please use the following:

Part Number	Part Description
CVX540-40-100	100′ VXL5 N Plug → N plug cable
CVX540-40-120	120′ VXL5 N Plug → N plug cable
CVX540-40-140	140′ VXL5 N Plug → N plug cable
CVX540-40-160	160′ VXL5 N Plug → N plug cable
CVX540-40-180	180′ VXL5 N Plug → N plug cable
CVX540-40-200	200′ VXL5 N Plug → N plug cable
CVX540-40-400	400′ VXL5 N Plug → N plug cable

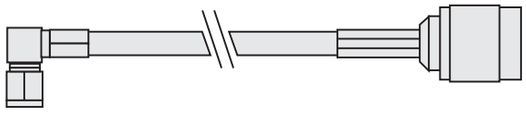


The following Extension and Conversion Cables can be purchased for use with RadioLinx products.

Conversion Cables

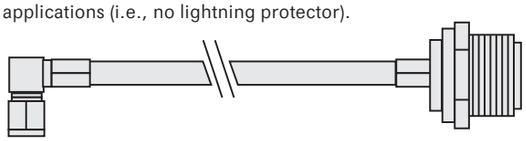
C19M10-40-0XX

LMR-195 type conversion cable with reverse-polarity, right angle SMA female type connector on radio side and standard N male plug connector on antenna side. Converts SMA connector type to N plug type and normally attaches to enclosure side bulkhead lightning protector.



C19M10-80-0XX

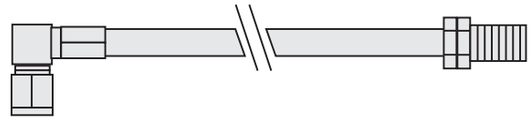
LMR-195 type conversion cable with reverse-polarity, right angle SMA female type connector on radio side and standard N bulkhead connector on antenna side. Converts SMA extension cable on outside of enclosure for indoor applications (i.e., no lightning protector).



Extension Cables

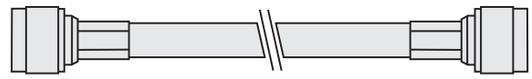
C19M10-30-0XX

LMR-195 extension cable with reverse-polarity, right angle SMA female type connector on radio side and reverse-polarity, SMA bulkhead connector on antenna side.



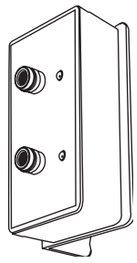
C40M40-40-XXX, C60M40-40-XXX and CVX540-40-XXX

LMR-400, 600, VLX5 type extension cables with standard N plug connector to radio side and standard N plug connector on antenna side.



RadioLinx amplifiers are automatic gain control compensated for constant power output bi-directional amplification.





The RadioLinx AMP24-500 Amplifier is Automatic Gain Control (AGC) compensated for constant power output bi-directional amplification. This provides constant maximum output power at the antenna over a wide RF input range. An antenna amplifier significantly improves the link reliability and operating range by low noise amplification in receive mode, and spectrally clean power amplification in transmit mode. This amplifier has unique internal filtering and AGC in both the Tx and Rx paths. This combination provides exceptional performance in high traffic areas.

The bi-directional amplifier may be needed if an application requires long lengths of coaxial cable to reach the antenna. The amplifier is designed to put maximum power right at the antenna and boost the received signal primarily to overcome cable loss and improve overall receiver signal quality. Only the AMP24-500 amplifier has been specifically FCC approved for use with RadioLinx radios.

Features and Benefits

- High dynamic range
- High Q filtering in both Tx and Rx paths
- Extremely low transmit harmonics
- Transmit AGC
- Low receive noise filter
- Internal lightning protection
- Rx high level AGC (Preserves noise figure while providing maximum input dynamic range even with high inband RF levels)
- Tx/Rx LED indicator
- Automatically switches between Rx/Tx
- Rugged weatherproof housing

Specifications

Frequency Coverage	2400 MHz to 2500 MHz
Supply Voltage	+12 to 15 VDC
Receive Gain	20 dB +/- 2dB
Receive High Level AGC Gain	Maintains receive chain linearity when receive. Pin > -12 dBm by automatically reducing gain. High level receive gain - 4 dB +/- 2dB
Noise Figure	4.5 dB
Tx to Rx Switching	2 µSec
IP3 (Input)	+13 dBm
Transmit AGC Gain	Automatically adjusts to specified power output loop 3 dB bandwidth = 150 KHz
RF Input Power for Turn On	> +2 dBm to +20 dBm (100mW max input)
Harmonic Rejection	> 70 dBc @ Power Out
Supply Current	< 900 mA
Rx to Tx Switching	2 µSec
Maximum Ratings	Pin (Radio port) + 30 dBm Pin (Antenna port) + 27 dBm

Specifications

System Filtering	An internal 3-pole filter in both Rx and Tx paths provides superior performance achieving maximum dynamic range and low harmonic distortion
RF Connector Size	2.53" x 5.90" x1.45" (N type jack connectors)
Weight	< 15 oz.
Chassis	Watertight diecast aluminum with black powder paint. Internal PCB is sealed via conformal coating to enhance weather protection.
Indicator LED	Green LED - Rx mode, Red LED - Tx mode.
Lightning Suppression	¼ wavelength short

Installation Guidelines

1. Each AMP24-500 amplifier is equipped with internal ¼ wave technology lightning protection.
2. The AMP24-500 amplification device is a RadioLinx subassembly and its use has been FCC approved for use in an RF system. The AMP24-500 kit has been pre-designed to meet FCC approval and use under the following guidelines:
   - The bi-directional amplifier has been designed to operate with a cable loss between the radio and amplifier of 6.5 dB to 20 dB. Within this range, the output of the amplifier will always be ½ W regardless of the input level
   - The amplifier may not be used with less than 6.5 dB cable loss
   - Use of the amplifier outside of these guidelines will result in violation of 47 CFR Part 15 FCC Rules, under which the equipment has been authorized
   - With more than 20 dB of coaxial cable loss, the amplifier will not turn on
   - Maximum antenna transmit gain allowed for use with the AMP24-500 amplifier is 15 dBi for point-to-point paths and 9 dBi for point-to-multipoint paths

Lightning protection is recommended for all outdoor installations.



LP-24002 / LP-24003

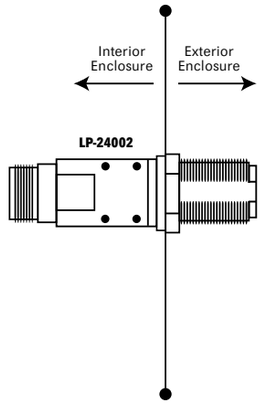
RadioLinx Lightning Protection is designed to protect the radio in the event of a lightning strike. A minimum 6 gauge copper wire should be used to connect the lightning protection to earth ground.

Features

- Multi-strike capability
- Fully weatherized housing
- Low throughput energy
- DC blocked

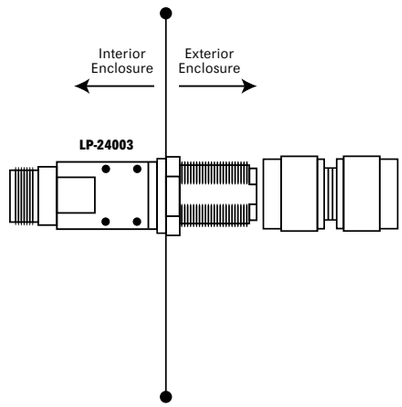
LP-24002

The LP-24002 lightning protection is designed for use inside an enclosure with the bulkhead fitting protruding through the enclosure. The connectors are standard N jack connector to standard N jack BH connector. The bulkhead fitting can be connected to any standard N type connector extension cable.



LP-24003

The LP-24003 lightning protection is designed for use inside an enclosure with the bulkhead fitting protruding through the enclosure and connecting to a N plug barrel adapter. This can then connect to any antenna with a standard N type connector.



Technical Specifications

Surge Capabilities	IEC 1000-4-5, 8/20µs @ 10kA
Frequency Range	2.0 to 6.0 GHz
Return Loss	> 20 dB
Insertion Loss	≤ 0.2 dB
RF Power	10W
Temperature Operating/ Storage	-40° to + 85° C
Relative Humidity	0 to 100% condensing
Surge Throughput Energy	≤ 0.5µJ (6kV/3kA 8/20µs)
Peak Let-Through Voltage	± 3V (6kV/3kA 8/20µs)

Ordering Information

To order this product, please use the following:

LP-24002	Lightning Protector
LP-24003	Lightning Protector with barrel adapter

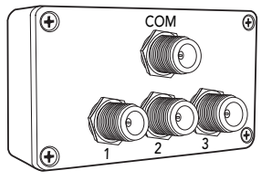
RADIOLINX

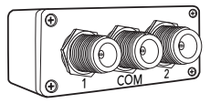
RADIOLINX®

Power Divider

2.4 GHz POWER DIVIDERS

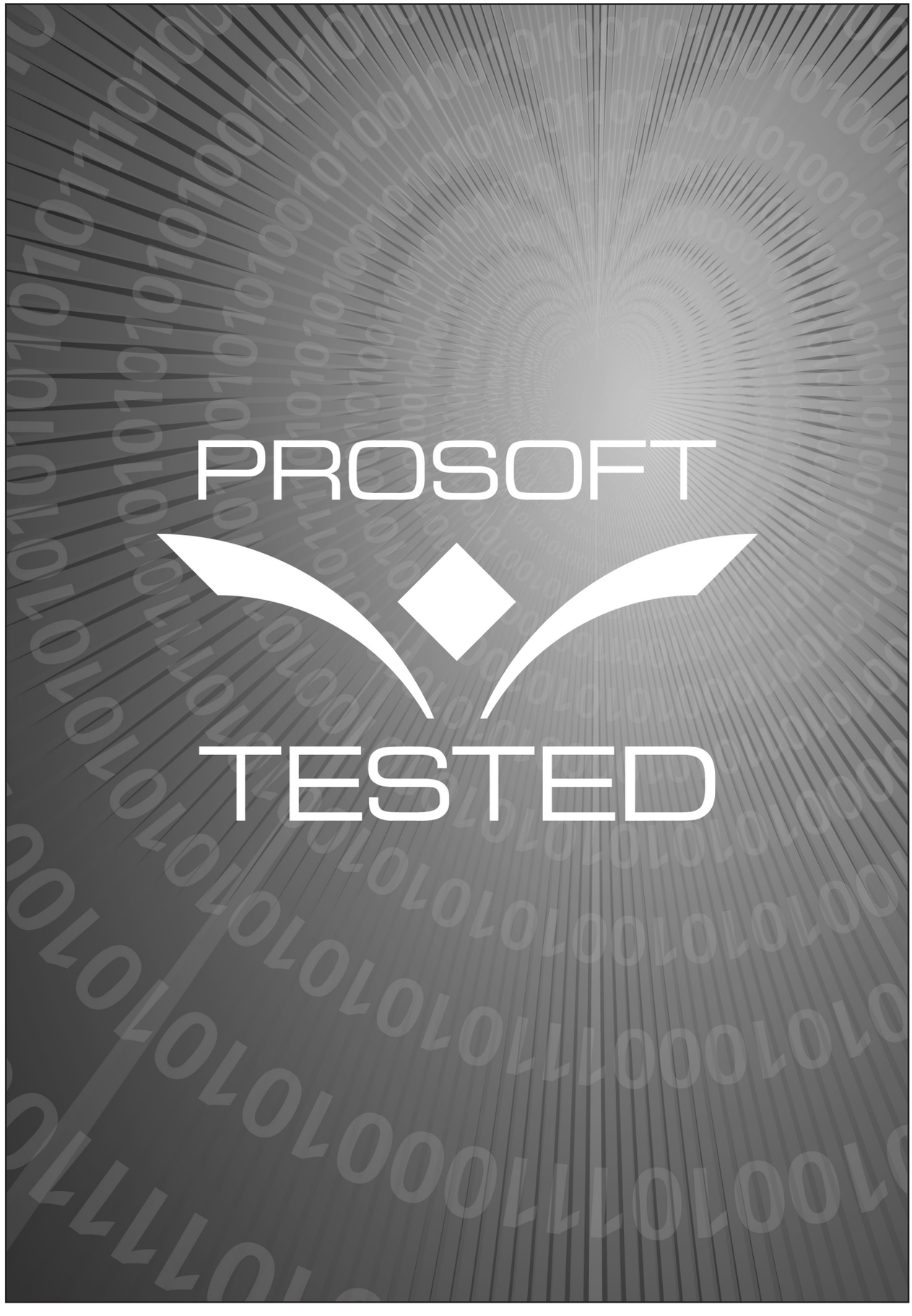
PD24-2 / PD24-3





RadioLinx Power Dividers have the following features:

- RoHS compliant
- Industrial grade
- Cast aluminum construction
- Weatherproof for indoor or outdoor use
- DC power will pass all ports
- N female connectors
- Optional mounting kits available
- PDMT01 mast mount kit
- PDMT02 panel mount kit


PROSOFT
TESTED

About the Program

Communication Testing Solutions for Industrial Devices

ProSoft Tested provides End-Users, System Integrators, Distributors, Consultants and Manufacturers with a way to bulletproof the integration planning, qualifying and implementation tasks for devices on the plant floor and in the field.

Do you make purchasing decisions?

Then buy ProSoft Tested devices.

When you choose ProSoft Technology products, how do you know that they will integrate effectively into your existing network infrastructure? If they don't, the loss in productively could significantly affect your business performance.

Our comprehensive testing solutions from ProSoft Tested enable our clients to reduce time-to-market and achieve rapid deployment of the certified products.

ProSoft Tested is the only outsource communication certification program with the technology infrastructure capable of testing stand-alone communication devices for connectivity to ProSoft modules.

Do you manufacture industrial devices with Modbus, Modbus Plus, Modbus TCP/IP, DF1, EtherNet/IP, DNP 3.0, PROFIBUS DP, Honeywell DE or HART multidrop interfaces?

Then certify them.

ProSoft Tested provides manufacturers of devices leverage with closely integrated ProSoft Tested marketing channels, including email newsletters, advertisements, press releases and allows other products to pull sales for your business by positioning products across diverse facets of the engineering process.

Encourage your potential customers to choose your product for their enterprise by assuring them that your product will integrate effectively into their existing network infrastructure. Do this by displaying a ProSoft Tested certification logo on your product. Immediately, your customers know that it has passed a rigorous test that compares the product with certification requirements and industry network standards.

And you can achieve instant end-user recognition by leveraging the device with leading industrial networks.

ProSoft Tested certification provides users with sufficient technical and performance information with which to make a confident purchasing decision. The ProSoft Tested program offers assistance in selecting devices with confidence that proven connectivity has been established for a wide range of certified products offering options to best suit the users application.

Our testing experts take the uncertainty out of device connectivity. Since 1990, our team of test application engineers and product engineers has delivered the know-how required to execute complex test missions for the most demanding device, networks and protocols.

The program goal is to first, provide the ultimate in satisfaction for device-to-device communication and second, to insure a business relationship to successfully promote product visibility and revenues.

ProSoft Tested provides in house testing and verification for device-to-device communication. Upon completion of testing, technical documents are made available containing pertinent information regarding the testing procedure and how to connect the devices.

ProSoft Tested
Solutions

In order to ensure confidence and success with the use of our products, we have implemented the ProSoft Tested Program. Devices have been extensively tested with ProSoft products so that we can provide the performance information you need to make confident purchasing decisions for your automation applications.

This program provides:

- Proven connections
- Simulation of field applications
- Commands tested
- Various configurations tested
- Documentation
- Detailed test reports
- All accessory requirements listed
- All reports available on the website

Featured Solutions

Get the technical and performance information you need to make confident purchasing decisions for automation applications.

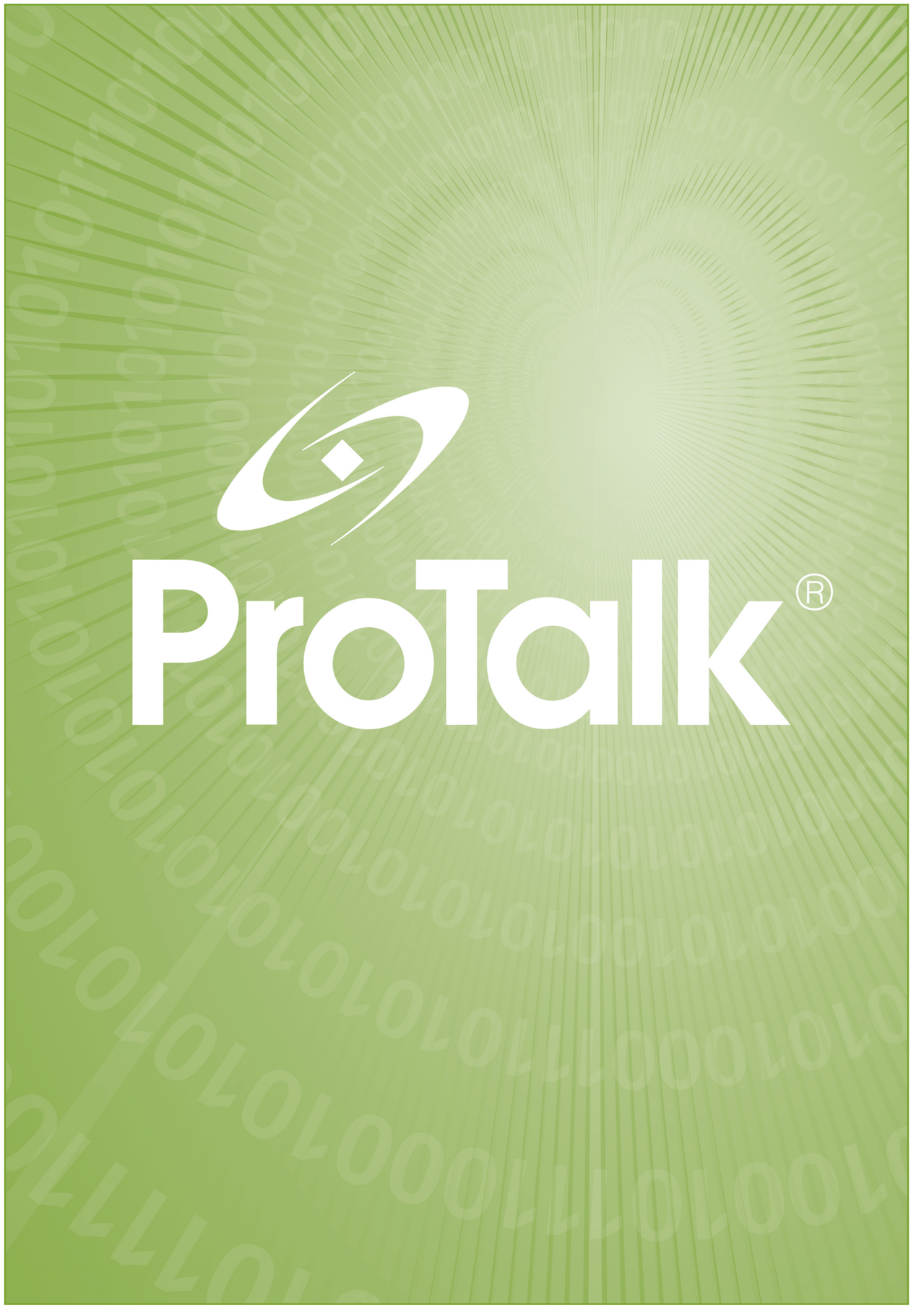
- **Bar Code Scanners**
  AccuSort Model 20A
- **Chart Recorders**
  Yokogawa DX 100/200
- **Drives**
  A-B 1336, 1336 Plus, 1305 Micro
- **Flow Devices**
  OMNI 3000 Flow Computer
- **Level Interfaces**
  Vegalog COM557
- **Loop Controllers**
  CAL Controls CAL-3300
- **Miscellaneous**
  MTL 8000 Process I/O
- **Modems, Radios, Fiber Optics**
  RadioLinx RLX-FHS modem
- **PLC Manufacturers**
  Siemens 353 loop / iPAC controller
- **Power Devices**
  Startco MPU-16A
- **PROFIBUS**
- Temperature Controller
  Fuji Electric Micro Controller PXR4
- Valves
  Valvcon IVO (Intelligent Valve Operator)

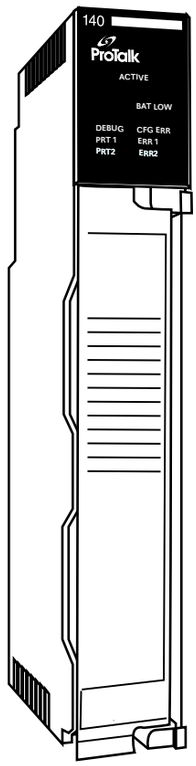


Do you have a question about the compatibility of a ProSoft product?

Call Technical Support at 661.716.5100 or
email support@prosoft-technology.com

www.prosoft-tested.com


ProTalk®



General Specifications

- Single Slot – Quantum backplane compatible
- The module is recognized as an Options module and has access to PLC memory for data transfer
- Configuration data is stored in non-volatile memory in the ProTalk module
- Up to six modules can be placed in a rack
- Local rack – The module must be placed in the same rack as processor
- Compatible with common Quantum / Unity programming tools
- Quantum data types supported: 3x, 4x
- High speed data transfer across backplane provides quick data update times
- Sample ladder file available

Hardware Specifications

Specification	Description
Backplane Current Load	800 mA @ 5 V
Operating Temperature	0 to 60°C (32 to 140°F)
Storage Temperature	–40 to 85°C (–40 to 185°F)
Relative Humidity	5 to 95% (non-condensing)
LED Indicators	Module Status Backplane Transfer Status Serial Port Activity LED Serial Activity and Error LED Status
Configuration Serial Port (PRT1)	DB-9M PC Compatible RS-232 only No hardware handshaking
Application Serial Ports	(PRT2, PRT3) DB-9M PC Compatible RS-232/422/485 jumper selectable RS-422/485 screw termination included RS-232 handshaking configurable 500V Optical isolation from backplane

ProTalk Application Chart

Protocol/ Application	Protocol
AGA/API Gas & Liquid Flow Computer	PTQ-AFC
'C' Programmable	PTQ-ADM
'C' Programmable over Ethernet	PTQ-ADMNET
DeviceNet	PTQ-DNET
DF1 Master/Slave	PTQ-DFCM
DH-485	PTQ-DH485
DNP 3.0 Master/Slave	PTQ-DNP
DNP 3.0 Slave	PTQ-DNPS
DNP 3.0 over Ethernet	PTQ-DNPSNET
EtherNet/IP	PTQ-DFNT
Ethernet Global Data	PTQ-EGD
Generic Ethernet	PTQ-GEC
Generic Serial	PTQ-GSC
HART Multi-drop	PTQ-HART
Honeywell DE Master	PTQ-DEM
IEC 60870-5-101 Master	PTQ-101M
IEC 60870-5-101 Slave	PTQ-101S
IEC 60870-5-103 Master	PTQ-103M
IEC 60870-5-104 Server	PTQ-104S
Landis & Gyr 8979F Slave	PTQ-LNG
Modbus Master/Slave	PTQ-MCM
PROFIBUS DP Master/Slave	PTQ-PDPMV1 PTQ-PDPS
High Speed Wireless	PTQ-WA-PWP

IEC 60870-5-101 Master Communication Module

PTQ-101M

The IEC 60870-5-101 Master Communication Module allows Quantum backplane I/O compatible processors to interface easily with IEC 60870-5-101 slave (controlled unit) devices.

Features and Benefits

The PTQ-101M module interfaces up to 32 serial communication devices with a Quantum or Unity processor. Two communication ports on the module act as controlling devices (masters) to interface with controlled devices on their own networks. Each port is individually configurable and can be set for balanced or unbalanced mode. Data is exchanged between the serial network and the processor using the internal database contained in the module and direct control by the controller's ladder logic.

Applications

The PTQ-101M module is the ideal solution for many applications where IEC protocol connectivity must be added to a Quantum or Unity system. The IEC solution is designed to address the expanding interest in the IEC protocol and the use of IEC compatible devices in industrial applications such as those in the water/wastewater, power and oil & gas industries.

Compatible devices include relays, breakers, substation Communication Modules and other serial communication devices.

Functional Specifications

- Built in accordance to the approved international specification
- Two independent master ports completely user configurable
- Support for balanced and unbalanced mode
- Up to 32 sessions
- Up to five sectors (separate databases) for each session
- Individual database definition for each sector
- 1000 commands to control stations
- Processor can issue control commands directly to the module or a controlled device (10 at each scan)
- Pass-through of event messages from controlled device to processor for logging of time-tagged events
- Supports clock synchronization from/to the processor
- Receives events from the slave and sends them to the processor
- Supports monitored data
  - Single-point
  - Double-point
  - Step-point
  - Measured-point
  - Bitstring 32-bit
  - Integrated total point
- Class 1 and Class 2 delay parameter in the configuration file
- Complete set up and monitoring of module through Unity Pro XL or Concept software and user constructed configuration file (IEC101M.CFG)
- All data related to the module is contained in user data files to ease in the monitoring and interfacing with the module

The IEC 60870-5-101 Slave Communication Module is a Quantum backplane compatible module that allows Quantum processors to interface easily with IEC 60870-5-101 protocol compatible hosts. This module has two powerful and highly configurable IEC 60870-5-101 Slave ports, allowing the many SCADA and field devices supporting the IEC protocol to be integrated into the Quantum platform.

Features and Benefits

The PTQ-101S module is the fastest and easiest way to add IEC 60870-5-101 protocol interface support to the Quantum platform. It is a single slot, backplane compatible solution for the Schneider Electric Quantum platform.

The PTQ-101S module acts as an input/output module between the IEC 60870-5-101 telecontrol network and the Schneider Electric Quantum backplane. The data transfer from the Quantum processor is asynchronous from the actions on the network. A 5000-word register space in the module exchanges data between the processor and the telecontrol network.

Applications

The PTQ-101S Slave module is designed to address the application where a host system using the IEC 60870-5-101 protocol must communicate with a Quantum processor. As such, the IEC Slave module can be used as a gateway in many SCADA installations in industries such as:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- Oil & gas production

Functional Specifications

The PTQ-101S module accepts commands from a master on the network. In addition, the module's port can be configured to generate event or periodic unsolicited messages in either a spontaneous or cyclic fashion.

The module has 5000 words of user defined internal register space that are accessible to the protocol driver and to the Quantum processor memory. Any of the supported database types can be individually located (within the total database size limit of 4000 words) and each database point is mapped within the module and can be assigned to one or more groups.

IEC 60870-5-103 Master Communication Module

PTQ-103M

The IEC 60870-5-103 Master Communication Module allows Quantum backplane I/O compatible processors to interface easily with IEC 60870-5-103 compatible devices. Devices commonly supporting the protocol include relays, breakers, substation Communication Modules and other serial communication devices used in power monitoring.

Features and Benefits

The PTQ-103M supports up to 32 total field devices between the module's two IEC 60870-5-103 Master ports. The module's communication ports can each be independently configured, allowing two separate field networks to be implemented. The field device data is exchanged between the ProTalk module and the Quantum processor over the backplane.

The PTQ-103M module is a powerful communication interface for Quantum platform processors. Developed under license from Schneider Electric, the module incorporates proprietary backplane technology that enables powerful data access to the Quantum processor.

Applications

The PTQ-103M IEC Master module has been designed for applications where field devices supporting the IEC 60870-5-103 protocol must communicate with a Quantum processor. These devices include breakers, relays, substation Communication Modules and other serial communication devices. As such, the IEC Master module is a powerful solution for applications in Water/Wastewater, Power, and in the Oil & Gas industries.

Functional Specifications

The PTQ-103M module supports the IEC 60870-5-103 protocol to the following specifications:

- The IEC 60870-5-103 communication driver is built in accordance to the approved IEC specification
- Module memory usage that is completely user definable
- The module has two independent master ports, each configurable via a simple configuration file
- Supports up to 32 sessions (controlled devices) between the two ports
- Supports up to five sectors (separate databases) for each session, with individual database definition for each sector
- Total of 1000 user configurable commands to control data transfer to/from devices (controlled devices)
- Supports clock synchronization from/to the processor
- Event data received from the Control Devices updates the module database (Date and Time stamping is not stored or used by module)
- Class 1 and Class 2 delay parameter are configurable for each session
- An IEC Interoperability Document for the module is available from the web site, which fully documents data types supported by the module

The IEC 60870-5-104 Server Communication Module allows Quantum backplane I/O compatible processors to interface easily with IEC 60870-5-104 protocol-compatible hosts.

Features and Benefits

The PTQ-104S module acts as an input/output module between the IEC-870-5-104 Ethernet network and the Quantum backplane. Data transfer between the ProTalk module and the Quantum processor is asynchronous from the actions on the network. Databases are defined by the user for the module to hold data as required by the protocol.

The PTQ-104S module is a powerful communication interface for Quantum platform processors. Developed under license from Schneider Electric, the module incorporates proprietary backplane technology that enables powerful data access to the Quantum processor.

Applications

The PTQ-104 Server module is designed to address the application where a device using the IEC 60870-5-104 protocol must communicate with a Quantum processor. As such, the IEC Server module can be used as a gateway in many SCADA installations in industries such as:

- Power and distribution applications
- Petrochemical
- Water & Gas Applications
- Oil & Gas production
- SCADA & DCS applications

Functional Specifications

The PTQ-104S module accepts data read/write commands from a master/client on the network. In addition, the module can be configured to generate unsolicited messages in either a spontaneous or cyclic fashion.

The module has 4000 words of user defined internal register space that are accessible to the protocol driver and to the Quantum processor memory. Any of the supported database types can be individually located and each database point is mapped within the module and can be assigned to one or more groups. The supported database point types are:

Database Type	Description	Event Generation	Point Size
M_SP_NA	Monitored single-point database	State Change	1 bit
M_DP_NA	Monitored dual-point database	State Change	2 bits
M_ST_NA	Monitored step-point database	State Change	1 byte
M_ME_NA	Monitored normalized-point database	Dead-band	1 word
M_ME_NB	Monitored scaled-point database	Dead-band	1 word
M_ME_NC	Monitored short-float point database	Deadband	2 words
M_IT_NA	Monitored integrated total database	N/A	2 words
C_SC_NA	Command single-point database	N/A	1 bit
C_DC_NA	Command dual-point database	N/A	2 bit
C_RC_NA	Command step-point database	N/A	1 byte
C_SE_NA	Command normalized-point database	N/A	1 word
C_SE_NB	Command scaled-point database	N/A	1 word
C_SE_NC	Command short-float point database	N/A	2 words

IEC 60870-5-104 Server Specifications

Operating in the Server mode, the module accepts commands from a Client(s) to read/write data stored in the module's internal registers. This data is easily and continuously transferred between the ProTalk module and the Quantum processor's data registers.

The IEC 60870-5-104 Server functionality supported by the module includes:

- The IEC 60870-5-104 communication driver is built in accordance to the approved IEC specification
- The module functions as a server on the network supporting data read/write commands from an IEC 60870-5-104 client on the network
- One TCP server socket
- Supports unsolicited messages, either cyclic or spontaneous (cyclic rate is configurable)
- Supports clock synchronization commands from client or from the Quantum
- Supports Group interrogation (Global, General 1 to 16, Global Counters, Counters 1-4)
- Event timestamping configurable by type (None, 24 bit, 56 bit)
- Event queue supports 99 points for each data type
- Optional user defined list of acceptable client host IP addresses
- Configurable Common ASDU address (sector) and Information Object Address
- An IEC Interoperability Document for the ProTalk is available which fully documents data types supported by the module

‘C’ Programmable Application Development Module

PTQ-ADM

The Application Development Module is a Quantum backplane compatible module that allows user-developed ‘C’ applications to operate on the Quantum platform. A great way to speed up custom ASCII data communications or to protect a proprietary algorithm, the ADM is a powerful tool for the Quantum platform.

Features and Benefits

The ADM module is a single-slot, backplane compatible solution for the Quantum platform that supports user-developed applications. ‘C’ code applications are developed using Digital Mars or Borland/Microsoft 16-bit development tools, downloaded to, and then debugged on the module.

The ProTalk module is a powerful platform for the Quantum family of processors. Developed under license from Schneider Electric, the module incorporates proprietary backplane technology that enables powerful data access to the Quantum processor.

Applications

The PTQ-ADM module is the ideal solution where serial connectivity must be added to the Quantum platform, or where a proprietary algorithm must be protected. Applications using the ADM module include:

- Bar Code Scanner interface
- Legacy ASCII protocol connections
- Terminal Port Emulation
- Printer Driver (Alarm/Status printer)
- Customized Serial Communications

Functional Specifications

The PTQ ADM API Suite allows software developers to access the Quantum backplane and serial ports without needing detailed knowledge of the module’s hardware design.

Serial Port API Functions

The serial port API provides a common interface to the serial ports across all of the PTQ hardware platforms. Functions include configuring, opening, closing, controlling and monitoring the serial port, and sending and receiving serial data

Backplane API Functions

The backplane API provides an interface to transfer data between the module and the processor over the backplane. Functions include initialization, configuration, direct I/O access, synchronization, messaging, and control of the console and LEDs.

ADM API Functions

The ADM API provides an interface to initialize the API, control the debug port, read and write data to the database, start and check timers, transfer data over the backplane, parse configuration files, set user LED indicators, and configure the console.

Module Specifications

Module

- Memory Usage is completely user-configurable, supporting the storage and transfer of up to 5000 registers to/from the control processor
- Floating-point data movement support

Development Environment

- Operating system: General software DOS 6-XL
- Compatible compilers (16-bit DOS target)
  - Digital Mars C++ V8.49 (included)
  - Borland C++ V5.02

PROTALK

The ProTalk Application Development Ethernet Communication Module is a Quantum backplane compatible module that allows Modicon Quantum processors to interface with protocols that support Ethernet compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs, and host HMI systems.

Features and Benefits

The PTQ-ADMNET module acts as an input/output module between the Ethernet Explicit Messaging network, and the Quantum backplane. Data transfer from the Quantum processor is asynchronous from the actions on the Ethernet network. A 4000-word register space in the module exchanges data between the processor and the Ethernet network.

The PTQ-ADMNET module is a powerful communication interface for Quantum platform processors. Developed under license from Schneider Electric, the module incorporates proprietary backplane technology that enables powerful data access to the Quantum processor.

Applications

The PTQ-ADMNET module is the ideal solution for the many applications where Ethernet connectivity must be added to a Quantum system.

The ADMNET module is a powerful solution that will support both Client and Server applications. This broad support enables the module to function as a data collection client, or as a server to another host. Applications for the module are found in most industries, especially Manufacturing, Oil & Gas, Electrical Power and Food processing.

Functional Specifications

The PTQ-ADM API Suite allows software developers access to the top layer of the Quantum backplane and serial ports. The PTQ-ADMNET API suite accesses the Ethernet port.

Both APIs can be easily used without having detailed knowledge of the module's hardware design. The PTQ-ADMNET API Suite consists of the Ethernet Port API. The Ethernet Port API provides access to the Ethernet network. Applications for the PTQ-ADMNET module may be developed using industry-standard DOS programming tools and the appropriate API components.

The PTQ-ADMNET module has three serial ports, two of which are isolated for field interfaces, and one Ethernet port.

- CFG – debug/configuration – RS-232
- PRT1 – Application – RS-232, RS-422 or RS-485
- PRT2 – Application – RS-232, RS-422 or RS-485
- Ethernet Port

PRT1 and PRT2 are jumper configured for direct or Multi-drop field communication. The application program can be written to control the two application ports independently, allowing maximum flexibility in the design.

General Protocol Specifications

- Allows software developers to access Quantum / Unity backplane and Serial/Ethernet ports without needing detailed knowledge of the module's hardware design
- API library functions are specified using the C programming language syntax
- Supports multi-threaded applications
- Compatible compilers (16-bit DOS target)
  - Digital Mars C++ V8.49 (included)
  - Borland C++ V5.02
- Operating System - General software DOS 6-XL
- Flash ROM program space: 896 KB
- RAM program and data space: 640 KB
- Compact Flash socket: Up to 64 MB

ADM API Libraries

Each API provides a library of function calls. This library supports any programming language that is compatible with the Pascal calling convention.

- Initialization - Open and close the API
- Debug Port - Debug port user interface
- Database - Read and write data to database
- Timer - Start and check timers
- Backplane - Transfer data over the backplane
- LED - Set user LED indicators
- Flash - Parse configuration files
- Miscellaneous - Configure the console

Liquid and Gas Flow Computer

PTQ-AFC

The Liquid & Gas Flow Computer Module is a Quantum backplane compatible module that allows Quantum processors to easily support flow applications with 16 meter runs performing measurement of hydrocarbon gases or liquids using AGA 3, 7, 8 and API 2540 measurement standards.

Features and Benefits

The PTQ-AFC is an in-rack Liquid & Gas Flow Computer Module for the Quantum platform. The PTQ-AFC Flow computer module supports 16 meter channels for the measurement of hydrocarbon gases and liquids using currently accepted industry measurement standards.

The module obtains its process inputs for the calculations using analog data collected by the Quantum processor from analog input module. The PTQ-AFC module reads these process input values out of the Quantum data memory, and then calculates the flow rates, accumulated volumes, accumulated mass and accumulated energy (heating value). The calculation results are transferred back to the Quantum memory for use in the application ladder program or for transfer back to a SCADA host.

The PTQ-AFC module is a powerful flow calculation module for Quantum platform processors. Developed under license from Schneider Electric, the module incorporates proprietary backplane technology that enables powerful data access to the Quantum processor.

Applications

The PTQ-AFC module is the ideal solution for the many applications where hydrocarbon flow and SCADA communication must be added to the Quantum platform. Applications using the PTQ-AFC module can be found mainly in the oil & gas industrial sectors.

Functional Specifications

The AFC module operates as a powerful flow computer module, augmenting the operation of the Quantum processor by providing a dedicated and accurate set of flow calculations; the results of which are easily available to process monitoring and control applications developed in the Quantum.

The module is highly-configurable, allowing each of the 16 meter runs to be individually setup to meet the specific requirement of an application. Some of the configurable parameters include:

- Physical data for each meter run including orifice and pipe diameters, tap type selection, and tap location for Orifice Measurement.
- K-Factor and Meter Factors for pulse measurement
- Gas analysis concentrations for all 21 components
- Reference pressure, temperature, and local atmospheric conditions
- Default process and operating parameters such as differential pressure threshold for flow cutoff

General Functional Specifications

- Product measurement: hydrocarbon gases and liquids
- Number of Meter Runs: 16
- Calculation Methods
  - AGA3-1992 (Orifice Meters)
  - AGA 7 (Pulse Meters)
  - AGA8-1992 (Detailed Characterization Method)
  - API 2540
  - API Chapter 12
  - API Chapter 21.1
- The gas molar concentration values can be updated dynamically from the Quantum to the module (for chromatograph applications)
- For pulse applications the user can configure up to 5 meter factor points (depending on the flow rate) that will be interpolated by the module
- The module can use the frequency value transferred from a Densitometer (via processor) to calculate liquid density
- Each meter has a configurable “Hourly” and “Daily” archive file
  - Hourly period end can be selected to be at any minute of the hour.
  - Daily period end can be selected to be at any minute of the day.
  - Archive records may be scheduled to record hourly, daily or upon explicit trigger.
  - Record Size – Available sizes are 10, 20, 30, and 40 words.
  - For a record size of 30 words, 48 hourly and 35 daily records will be retained.
  - The addition of a compact flash allows archival storage to be extended to 1260 hourly and 350 daily records.
- All archived data is available in the onboard Modbus memory map (Modbus Primary Slave)
- Meter proving interface

Modbus Slave Interface

The three Modbus Slave ports allow the unit to be used as a SCADA interface and to broaden access to the AFC module’s data table. A Modbus Master device can be connected to one of the Modbus ports (RS-232, RS-422 or RS-485) for data polling.

- The Modbus slave ports provide access to all configuration and measurement data mapped to the Modbus table.
- The module has two internal Modbus Slaves with distinct and configurable addresses. The module data is stored in the Primary Modbus Slave (130.000 registers).
- The Primary Modbus data can be re-mapped to the Virtual Modbus Slave for contiguous register polling from a Modbus master.
- All data located at both slaves can be transferred between the module and the Quantum processor.
- All data located at both slaves can also be easily accessed using the AFC Manager Software.
- Each port is individually configurable (RTU or ASCII mode, baud rate, data bits, stop bits).

Reports

- Event log reports for all security sensitive configuration data (for example, orifice diameter) are date and time stamped and mapped to the local Modbus memory map. This data can be imported into any spreadsheet program and saved to disk or printed as hard copy.
- Hourly and daily archive reports mapped to local Modbus memory. This data can be imported into any spreadsheet program and saved to disk or printed as hard copy.
- System configuration can be downloaded or uploaded from the module and printed for hard reference or archiving.

PROTALK

The ProTalk DE Master Communication Module allows Quantum backplane I/O compatible processors to interface easily with Honeywell DE instruments. Compatible devices include a large array of field devices including pressure, temperature, metering and many other instruments.

Features and Benefits

The module supports 16 DE channels, allowing both single and/or multivariable Honeywell transmitters operating in the DE mode to be directly integrated in the Rockwell Automation environment.

Applications

Supported Honeywell instruments include:

- ST 3000 smart pressure transmitter
- STT 3000 smart temperature transmitter
- SMV 3000 smart multivariable transmitter
- MagneW 3000 smart magnetic flowmeter
- SCM 3000 smart coriolis mass flowmeter
- SGC 3000 smart gas chromatograph

Functional Specifications

- Backplane data transfer via input/output Imax files
- Interfaces with Honeywell smart transmitters operating in the DE mode.
- Support multiple DE channels CLX - up to 16 Channels with single PV transmitter, multivariable transmitters
- Instrument database mismatch verification
- Interfaces directly to Honeywell Field Terminal Assembly (FTA)
- Single cable connection from DEM module to FTA
- External 24 VDC source connection on front of DEM module for instrument loop power
- LEDs for visual module status
  - Module active
  - Module fault
- Operation via simple ladder logic

DF1 Half/Full Duplex Master/Slave Communication Module

PTQ-DFCM

The DF1 Master/Slave Communication Module is a Quantum backplane compatible module that allows Modicon Quantum processors to interface easily with DF1 protocol compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs and power monitoring equipment, as well as several other third party devices in the marketplace.

Features and Benefits

The module has two serial ports supporting the DF1 protocol, with each port user configurable to act as a Master or as a Slave. Data transfer between the module and the Quantum processor is asynchronous to the DF1 network, with the module's internal database being used to exchange data between the Quantum processor and the DF1 network.

The PTQ-DFCM module is a powerful communication interface for Quantum platform processors. Developed under license from Schneider Electric, the module incorporates proprietary backplane technology that enables powerful data access to the Quantum processor.

Applications

The PTQ-DFCM module is the ideal solution for many applications where DF1 Master/Slave protocol connectivity must be added to a Quantum system.

The DFCM solution is a powerful module designed with both Master and Slave support. This broad support enables the module to function as a SCADA sub-master, or to be a powerful slave on a SCADA system. Applications for the module are found in most industries, especially the Water/Wastewater, Oil & Gas, Electrical Power and Food processing.

- Foreign device data concentrator
- SCADA system pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper

Functional Specifications

General Protocol specifications

Type	Specifications
Internal Database	4000 registers (words) available for transfer to and from Quantum processor
Communication parameters	Local Station ID: 0 to 254 Port 1&2 Baud Rate: 110 to 115K baud Stop Bits: 1 Data Size: 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
DF1 Modes	Full-Duplex • Master and Slave, multi-drop addressing Half-Duplex • Master-Slave polling by master • Peer to Peer (Slave to Slave)
Error Checking	BCC and CRC
Miscellaneous	Full hardware handshaking control, providing radio, modem and Multi-drop support 125 word read and write data lengths supported Floating point data supported

PROTALK

DF1 Slave Protocol Specifications

The ports on the PTQ-DFCM module can be individually configured to support the Slave mode of the DF1 protocol. When in the Slave mode, the module can accept DF1 commands from a Master to read/write data stored in the module's internal registers. This data is easily transferred to the Quantum processor's data registers.

DF1 Slave Driver	
Configurable Parameter per slave port	Data Table File Start (File N[X] 0 to 999) Data Table File Size (1–1000 words) Data Table location in module (0 to 3999)
DF1 Commands supported	Basic Command Set 0x00: Protected Write 0x01: Unprotected Read 0x02: Protected Bit Write 0x05: Unprotected Bit Write 0x08: Unprotected Write **PLC-5 Command Set (0x0F)** 0x00: Word Range Write (Binary Address) 0x01: Word Range Read (Binary Address) 0x00: Word Range Write (ASCII Address) 0x01: Word Range Read (ASCII Address) **SLC Command Set (0x0F)** 0xA1: Protected Typed Read with 2 addr fields 0xA2: Protected Typed Read with 3 addr fields 0xA9: Protected Typed Write with 2 addr fields 0xAA: Protected Typed Write with 3 addr fields

DF1 Master Protocol Specifications

The ports on the PTQ-DFCM can individually be configured as master ports. When configured in the master mode, the DFCM module is capable of reading and writing data to remote DF1 devices, enabling the Quantum platform to act as a SCADA sub-master.

DF1 Master Driver	
General	Full-Duplex • Master Half-Duplex • Master • Peer to Peer (Slave to Slave)
DF1 Commands supported	Basic Command Set 0x00: Protected Write 0x01: Unprotected Read 0x02: Protected Bit Write 0x05: Unprotected Bit Write 0x08: Unprotected Write **PLC-5 Command Set (0x0F)** 0x00: Word Range Write (Binary Address) 0x01: Word Range Read (Binary Address) 0x26: Read-Modify-Write (Binary Address) 0x00: Word Range Write (ASCII Address) 0x01: Word Range Read (ASCII Address) 0x26: Read-Modify-Write (ASCII Address) **SLC Command Set (0x0F)** 0xA1: Protected Typed Read with 2 addr fields 0xA2: Protected Typed Read with 3 addr fields 0xA9: Protected Typed Write with 2 addr fields 0xAA: Protected Typed Write with 3 addr fields 0xAB: Protected Typed Write with Mask 3 addr fields
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Status Data	Error codes available on an individual command basis. In addition, a slave status list is maintained per active master port.
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

EtherNet/IP Client/Server Communication Module

PTQ-DFNT

The EtherNet/IP Client/Server Communication Module is a Quantum backplane compatible module that allows Modicon Quantum processors to interface easily with EtherNet/IP protocol (Explicit Messaging) compatible devices and hosts. Devices commonly supporting the protocol include Rockwell Automation PLCs, and host HMI systems.

Features and Benefits

The PTQ-DFNT module is a single slot solution that provides a powerful connection between Schneider Electric's Quantum and Unity processors and EtherNet/IP network applications.

The module can send read or write commands to remote devices on the EtherNet/IP network. The PTQ-DFNT also has 20 servers that allow the module to receive commands from remote devices. Up to 100 commands can be configured by the user.

The PTQ-DFNT module is a powerful communication interface for Quantum platform processors. Developed under license from Schneider Electric, the module incorporates proprietary backplane technology that enables powerful data access to the Quantum processor.

Applications

With the growing trend of EtherNet/IP technology in the industrial marketplace, this product has a wide variety of application uses. Industries that use this technology:

- Food Processing
- Petrochemical
- Pulp and Paper
- Automobile Manufacturing

Functional Specifications

Type	Specifications
Internal Database	4000 registers (words) available for transfer to and from Quantum processor
Modes	Client and Server supported
Messaging	PCCC or CIP – See command list that follows CIP Services (Server Only) – See command list below
Service Port	AF12Hex (44818)
Compatibility	Compatible devices include a wide assortment of other client/server devices such as: PLC: PLC5/E Rev. C/N, D/E, E/D or later,1785-ENET Series A, Rev. D SLC: SLC5/05 Series A, OS501 fm5 or later CLX: 1756-ENET, 1756-ENBT CPLX: 1769-L5335E Rev. 12.26 Interchange (limited – Contact Tech Support) RSLinx: Gateway V1.7 or later
Miscellaneous	125 word read and write data lengths Floating point data supported

EtherNet/IP Server Specifications

When in the Server mode, the module accepts commands from a Client(s) to read/write data stored in the module's internal registers. This data is easily transferred to the Quantum processor's data registers.

The EtherNet/IP functionality supported by the module includes:

EtherNet/IP Server	
Connections	Twenty independent TCP server sockets permit remote clients to interact with all data contained in the module. Data can be derived from other clients on the network, through the client on the module, or from the Quantum processor
Data File	Data Table File Start – Fixed at N10 Data Table File Size – 100 or 1000 words Data Table location in PTQ – Start Register 0

EtherNet/IP Client Specifications

When configured in the client mode the DFNT module is capable of reading and writing data to remote EtherNet/IP devices, enabling the Quantum platform to act as a SCADA sub-master.

The EtherNet/IP Client functionality supported by the module includes:

EtherNet/IP Client Specifications	
Messaging	PCCC or CIP Explicit Messaging supported
General	One client configurable for timing and commands
Command List	Up to 100 command, each fully configurable for function, slave address, register to/from addressing and word/bit count
Polling of command list	User configurable polling of commands, including disabled, continuous and on change of data (write only)

PROTALK

The DH-485 Communication Module allows Schneider Electric Quantum / Unity I/O compatible processors to interface easily with other DH-485 protocol compatible devices. Compatible devices include not only Rockwell Automation PLCs (which support the DH-485 protocol) but also a wide assortment of end devices.

Features and Benefits

The PTQ-DH485 module actively issues DH-485 commands to other nodes on the DH-485 network. One hundred user-defined commands are supported by the module on each port. The Quantum processor can be programmed to control the activity on the port by actively enabling or disabling each command directly.

The module also accepts DH-485 commands from an attached DH-485 master unit. The module permits a remote master to interact with all data contained in the module. This data can be derived from other DH-485 slave devices on the network through a master port or from the Quantum processor.

Applications

The PTQ-DH485 module can be used in any application where DH-485 network connectivity is required with the Quantum platform. Compatible devices on a DH-485 network include:

- SLC 5/03
- SLC 5/05 (RS-232 Channel)
- 1746BAS
- MVI56-BAS

Functional Specifications

The PTQ-DH485 module acts as an input/output module between the DH-485 network and the Schneider Electric Quantum backplane. The data transfer from the Quantum processor is asynchronous from the actions on the DH-485 network. A 4000-word register space in the module exchanges data between the processor and the DH-485 network.

- The module has a Common Interface File (CIF) with 244 words that can be accessed by remote DH-485 nodes
- Read and write commands can be sent associated to the following file types: status, bit, timer, counter, control, integer, float, and CIF
- User-definable module memory usage
- Two ports emulate the DH-485 devices (peer-to-peer) with distinct node addresses
- All configuration information contained in a single, user-defined text file
- Quantum / Unity backplane interface
- All module-related data is contained in an internal database
- Ability to add or remove nodes without disruption of the network
- Baud rates: 9600 or 19200 baud

DeviceNet Scanner / Slave Module

PTQ-DNET

The DeviceNet Scanner/Slave Module is an interface between DeviceNet slave devices and a Schneider Electric Quantum platform processor.

DeviceNet is a low-level network that provides connections between simple industrial devices (sensors, actuators) and higher-level devices (controllers). DeviceNet is based on the Common Industrial Protocol (CIP) and shares all the common aspects of CIP with adaptations to fit the message frame size of DeviceNet.

The DeviceNet Scanner/Slave supports complete specifications according to CAN bus and ISO 11898 standards and the Common Industrial Protocol (CIP) for the upper layers of their network protocol.

Features and Benefits

- Allows connection for a single DeviceNet network
- Connect up to 63 slave devices
- Supports either Scanner or Slave modes
- Supports Auto Device Replacement (ADR); consists of Node Recovery and Configuration Recovery
- Node Recovery allows for the node number of the replacement device to be automatically changed to the node number of the original device
- Configuration Recovery allows the replacement device's configuration to be made identical to the original device.
- Provides processor module status and access to scanner network diagnostic tables such as node idle, node status, and node fault information
- Acts as an I/O data server for explicit peer-to-peer messaging
- DeviceNet bandwidth can be saved by not transferring I/O values unless a change-of-state (COS) has occurred.
- DeviceNet transfer of I/O data can be scheduled (cyclic data)

Applications

The DeviceNet network is based on the producer consumer network model allowing for real-time control data exchange, configuration capabilities exclusive from control performance, and collection of data at regular intervals or based on-demand. Industries using DeviceNet:

- Water/Wastewater
- Factory Automation applications
- Automotive
- Food Processing/packaging
- Conveyors
- Other high speed applications

Functional Specifications

Module has been tested and certified according to ODVA guidelines to guarantee proper interoperability on a DeviceNet network.

- **DeviceNet Data:**
  - Strobe, poll, COS, or cyclic I/O data
  - Configurable data parameters include: Complete data mapping between PLC scan and I/O image tables and DeviceNet devices
  - Background poll rate
  - Strobe or poll for each node
- **PLC Processor-to-Scanner Communication**
  - Synchronous Transfer: 973 Input Words and 990 Output words, plus status and control data
- **Electronic Keying allows** the scanner to match device by device type, vendor, product code and major revision for I/O exchange
- **Embedded EDS** – allows the EDS to be retrieved directly from the module
- **Slave Mode** – allows the scanner to act as a slave to another scanner
- **Auto Scan** – enables the scanner to automatically generate a scan list of devices on the network
- Supports **CIP Explicit Messaging** via PLC ladder logic

The DNP 3.0 Master/Slave Communication Module is a single slot, backplane compatible DNP 3.0 interface solution for the Schneider Electric Quantum or Unity platform. This module provides highly configurable support of both DNP 3.0 Master and Slave implementations.

Features and Benefits

The module supports DNP Subset Level 2 features and some of the Level 3 features allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the Quantum or Unity platform. The module acts as an input/output module between the DNP network and the Modicon backplane. The data transfer from the Quantum or Unity processor is asynchronous from the actions on the DNP network. Databases are user defined and stored in the module to hold the data required by the protocol.

Applications

The PTQ-DNP module is the ideal solution for many applications where DNP 3.0 Master/Slave protocol connectivity must be added to a Quantum or Unity system.

The DNP solution is designed to address the expanding interest in the DNP 3.0 protocol. The protocol was developed for the Power Utility industry and is recommended by the IEEE for RTU-IED communication applications. Additional industrial applications are quickly arising in the Water/Wastewater and Oil & Gas industries.

Functional Specifications

The module has two DNP protocol ports that can be configured to operate in a Master/Slave or Slave/Slave redundant port configuration. User defined internal register space is accessible to the protocol driver and to the Quantum processor memory.

Redundant Slave Port Operation

When configured in the Slave/Slave port configuration, the module's slave ports operate in a primary and secondary fashion. In this mode, a single host polls the module via redundant physical layer connections.

DNP 3.0 Slave Protocol Specifications

The DNP Slave port accepts DNP commands to control and monitor data stored in the module's DNP Slave databases. If a DNP Master port is configured, a portion of the slave databases can be derived from or can control IED devices connected to the DNP master port.

- Report-by-Exception data is logged to the module's database
- Supports unsolicited messaging
- Each DNP point type is user configurable by point
- Class assignments are completely user-definable on a type and point basis (BI, AI, FI, DI point types)
- Supports clock synchronization from a master or from the processor
- Support for four octet-strings are supported (object type 110) in the slave driver to return version and other module information
- Up to 400 events are stored for Floats, Binary In, Analog In and Double Inputs
- Configurable event buffer transmission threshold based on count and/or time since last event transmission
- Collision avoidance for redundant port switching
- Special modem AT command string and timing support for dialing out on redundant port

DNP 3.0 Master Protocol Specifications

The DNP 3.0 Master port can be configured as a virtual DNP Master device that actively issues user-defined DNP commands to nodes on the network.

- Supports 300 user defined commands
- Master port logically supports up to 40 slave devices
- Individual command configuration includes conditional or continuous polling, Poll Delay Time
- Slave status and Command status available for transfer to the processor
- Event data received from the slave devices updates the module database (Date and Time stamping is not stored or used by module)
- Special command handling for Digital Output CROB under processor control for pulse output control
- Supports Report-by-Exception and Unsolicited Responses on a Time Interval basis or on a user determined Event Count basis. Analog and Binary input points are supported.

DNP 3.0 ports (PRT1 & PRT2)

- Memory usage is user definable
- Full radio, modem and multi-drop support
- Support for the storage and transfer of all DNP data types across the backplane.

DNP 3.0 Slave Communication Module

PTQ-DNPS

The ProTalk DNPS 3.0 Slave Communication Module (PTQ-DNPS) is a Quantum backplane compatible module that allows Quantum processors to interface easily with DNP 3.0 compatible devices and hosts. Devices commonly supporting the protocol include relays, breakers, substation Communication Modules and other serial devices most commonly associated with power monitoring.

Features and Benefits

The module supports DNP Subset Level 2 features and some of the Level 3 features allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the Quantum platform. The module acts as an input/output module between the DNP network and the Modicon backplane. The data transfer from the Quantum processor is asynchronous from the actions on the DNP network. Databases are user defined and stored in the module to hold the data required by the protocol.

The PTQ-DNPS module is a powerful communication interface for Quantum platform processors. Developed under license from Schneider Electric, the module incorporates proprietary backplane technology that enables powerful data access to the Quantum processor.

Applications

The PTQ-DNPS module is the ideal solution for many applications where DNP 3.0 Slave protocol connectivity must be added to a Quantum system.

The DNPS solution is designed to address the expanding interest in the DNP 3.0 protocol. The protocol was developed for the Power Utility industry and is recommended by the IEEE for RTU-IED communication applications. Additional industrial applications are quickly arising in the Water/Wastewater and Oil & Gas industries.

Functional Specifications

The PTQ-DNPS module supports the DNP 3.0 protocol with a minimum of Level 2 functionality. DNP protocol Subset Definitions for the Slave drivers are available in the module's User Manual.

The module has two DNP protocol ports that can be user configured to operate in a Slave/Slave redundant port configuration.

The module has 4000 words of user defined internal register space that are accessible to the protocol driver and to the Quantum processor memory.

Redundant Slave Port Operation

When configured in the Slave/Slave port configuration, the module's slave ports operate in a primary and secondary fashion. In this mode, a single host polls the module via redundant physical layer connections. Several methods are supported to automatically switch between the primary and secondary slave ports.

DNP 3.0 Slave Protocol Specifications

The DNP Slave port(s) accepts DNP commands to control and monitor data stored in the module's DNP Slave databases.

- Report-by-Exception data is logged to the module's database
- Supports unsolicited messaging
- Each DNP point type is user configurable by point
- Total point counts must be configured so that Class 0 responses do not exceed 2048 bytes in size
- Class assignments are completely user-definable on a Type and point basis (BI, AI, FI, DI point types)
- The analog inputs are class and deadband configurable on a point basis for all formats (integer, float, double float)
- Supports clock synchronization from a master or from the Quantum
- Support for four octet-strings are supported (object type 110) in the slave driver to return version and other module information
- Up to 400 events are stored for Floats, Binary In, Analog In and Double Inputs
- In addition to the module generated events, AI and BI events can be generated in the Quantum and transferred to the module (useful with external timestamping hardware)
- Configurable event buffer transmission threshold based on count and/or time since last event transmission
- Collision avoidance algorithm per DNP organization for redundant port switching (redundant slave mode)
- Special modem AT command string and timing support for dialing out on redundant port (redundant slave mode)

The ProTalk DNP 3.0 Server over Ethernet Communications Module (PTQ-DNPSNET) supports the implementation of the DNP 3.0 (Distributed Network Protocol) over Ethernet, allowing Quantum processors to easily communicate with host systems supporting the protocol. The module supports DNP Subset Level 2 features and some Level 3 features.

Features and Benefits

The module supports DNP Subset Level 2 features and some of the Level 3 features allowing the many SCADA systems supporting the DNP protocol to be integrated into the Quantum platform. The module acts as an input/output module between the DNP network and the Quantum processor. The data transfer from the Quantum processor is asynchronous from the actions on the DNP network. Databases are user defined and stored in the module to hold the data required by the protocol.

The PTQ-DNPSNET module is a powerful communication interface for Quantum platform processors. Developed under license from Schneider Electric, the module incorporates proprietary backplane technology that enables powerful data access to the Quantum processor.

Applications

With the growing usage of the DNP protocol over Ethernet technology in the industrial marketplace, this product has a wide variety of application uses. Industries that use this technology include:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- SCADA and DCS applications

Functional Specifications

The PTQ-DNPSNET module accepts data read/write commands from a master/client on the network. The PTQ-DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. In addition, the module can be configured to generate unsolicited messages.

The module has 4000 data words of internal register space that are accessible to the protocol driver and to the Quantum processors memory. Memory usage is user configurable within these 4000 words. Each of the supported database types can be individually sized and each database point is mapped within the module. The supported database point types are:

- Binary Input: 8000 Bits (500 words)
- Binary Output: 2000 Bits (125 words)
- Counter: 250 Double words
- Analog Input: 500 Words
- Analog Output: 500 Words

Total point counts must be configured such that Class 0 responses do not exceed 2048 bytes in size

DNP 3.0 Server over Ethernet Specifications

Operating in the Server mode, the module accepts commands from a Client(s) to read/write data stored in the module's internal registers. This data is easily and continuously transferred between the ProTalk module and the Quantum processor's data registers.

The Server functionality supported by the module includes:

- The DNP on Ethernet communication driver is built in accordance with the DNP organizations WAN/LAN Recommended Practices
- Ethernet port supporting TCP (events, monitor and control) and UDP (monitor and control)
- Supports DNP 3.0 in a Level 2 implementation
- The module functions as a Server on the network supporting data read/write commands from masters/clients on the network
- Report-by-Exception data is logged to the module's database and reported on TCP socket
- Supports unsolicited messaging
- Analog deadband configurable at module level
- Supports clock synchronization from client or from Quantum (configurable synchronization frequency)
- Supports timestamp events (BI/AI). Configurable enable/disable for AI
- User defined list of acceptable host IP addresses
- Event queue supports 200 events per data type(BI/AI)
- DNP Object Definition documents are available

Ethernet Global Data Communication Module

PTQ-EGD

The ProTalk Ethernet Global Data (EGD) module can be used to interface many different protocols with EGD devices. The EGD driver supports both the producer/consumer service port (18246) and the command service port (7937) using the UDP protocol over an IP network. The user defines the data to be produced and consumed in a configuration file downloaded to the module.

Features and Benefits

Ethernet Global Data (EGD) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed, and with high reliability. High reliability means fewer communication failures and having the ability to detect failures upon occurrence. Particular emphasis is delivered for applications requiring periodic or frequent updates and time synchronization of devices. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the network can produce these types of messages and each device determines which of these messages to consume.

Applications

Use the ProTalk EGD module to connect various field devices using different networks or protocols, and share data between these devices over a wired connection. This is accomplished by exchanging shared common database information with the efficient but powerful Ethernet Global Data protocol.

Functional Specifications

The driver interfaces with a common internal database in the module. This permits the sharing of data across many different networks.

The module supports UDP of service port 7927 (0x1F01) to handle all requests made of the module. The module will only service the requests and generate response messages. It will not generate command requests. The module supports the following functions specified in the EGD protocol:

Code	Description
3	Retrieve Configuration Request
4	Retrieve Configuration Response
7	Summary Request
8	Summary Response
9	Capabilities Request
10	Capabilities Request
15	Statistics Request
16	Statistics Response
18	Command NAK
32	Read Request
33	Read Response
34	Write Request
35	Write Response
36	Masked Write Request
37	Masked Write Response

The producer functionality provided in the EGD protocol is used to transfer portions of the module's database to other EGD nodes on the network. The consumer functionality is used to transfer data from other nodes on the network into the module's database.

The EGD module generates produced data as defined in the user configuration exchange list, from the module's internal database, and is produced at the frequency defined in the exchange list. This data can be broadcast to all nodes or to a specific node on the network.

The EGD module consumes data as defined in the user configuration exchange list. This data is derived from other nodes on the network and is placed in the module's internal database. If a consumer exchange is not received at the specified timeout, the driver will update the status of the exchange. When the driver again receives the exchange, the status will be updated.

The Generic ASCII Ethernet Interface module is designed to allow Schneider Electric Quantum I/O compatible processors to interface easily with ASCII devices using the TCP/IP protocol and the Quantum processor. Compatible devices may be either ASCII instruments with Ethernet built-in or Ethernet connection via a thin server to the existing ASCII device.

Features and Benefits

Five servers and clients are present on the module permitting both the reception and transmission of data between the Quantum or Unity processor and attached devices.

The PTQ-GEC module is a powerful communication interface for Quantum platform processors. Developed under license from Schneider Electric, the module incorporates proprietary backplane technology that enables powerful data access between the module and the Quantum processor.

Applications

The use of the TCP/IP protocol with Ethernet at the device level on the plant floor is becoming widespread in many industry segments. Using the PTQ-GEC the advantage of Ethernet speed is realized while allowing greater distances between networked devices.

- Bar code scanner interfaces
- Weigh scale interfaces
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)

Functional Specifications

Functional specification for this module are as follows:

- Five servers to receive and/or transmit data
- 10/100 Mbps Ethernet-compatible interface
- Configurable parameters
  - Service port number
  - Connection timeout
  - Close type
- Simple ladder logic operation
- Setup and monitoring through Concept or Unity Pro XL software and user-constructed configuration file (GEC.CFG)
- Quantum or Unity backplane interface via I/O access
- Configuration/Debug Port (CFG)
  - Module configuration
  - Operates at 57600, no parity, 1 stop (fixed), 8 data bits
  - Communication and backplane transfer stats
  - Server statistics and configuration
  - Warm boot
  - Configuration file transfer
  - Network configuration (includes the module IP address, mask, gateway address)
- Each server monitors
  - State
  - IP and port number of connected client
  - Number of messages received and transmitted
  - Error codes
- ASCII character strings up to 2048 characters in length supported
- Full hardware handshaking control, providing radio, modem, and Multi-drop support
- Memory usage is completely user-configurable, supporting the storage and transfer of up to 4000 bytes to/from the control processor
- Module error and status conditions returned to processor for diagnostic purposes
  - Module status
  - Port error status word (bit mapped)
  - Port receive state
  - Port receive character count
  - Port receive block count
  - Port transmit state
  - Port transmit character count
  - Port transmit block count
- All data related to the module is contained in a single controller tag with defined objects to ease in the configuration, monitoring, and interfacing with the module
- Module configuration and communication configuration data is transferred to the PTQ-GEC via a pre-defined user data type in the processor

Generic ASCII Serial Communication Module

PTQ-GSC

The Generic ASCII Serial Communication Module is a fast and easy way to add two fully configurable ASCII communication ports to the Schneider Electric Quantum platform without consuming the front port of the processor.

Features and Benefits

The PTQ-GSC module is a single slot, backplane compatible solution for the Quantum platform. This module has two powerful and fully configurable ASCII communication ports, each supporting the sending and receiving of large ASCII character strings. With the implementation of some supporting ladder logic in the processor, the many different devices supporting ASCII communications can be integrated into the Quantum platform.

Applications

The PTQ-GSC module is the ideal solution for the many applications where ASCII character communications must be added to the Quantum platform. Applications using the PTQ-GSC module can be found in many industrial sectors generally involving the following applications:

- Bar code scanner interfaces
- Weigh scale interfaces
- Legacy ASCII protocol connections
- Terminal port emulation
- Printer driver (alarm/status printer)

Functional Specifications

- ASCII Communication ports 1 & 2 (PRT1, PRT2)
  - Both ports are capable of transmitting and/or receiving ASCII character strings. Each port is individually configurable:
- Termination types
  - Termination character(s)
  - Message timeout
  - Intercharacter timeout
  - Baud rate: 110 to 115.2K baud
  - Parity: none, even, odd
  - Stop bits: 1 or 2
  - Data bits: 5 to 8
  - RTS on/off timing: 0 to 65535 milliseconds
  - Minimum delay: 0 to 65535 milliseconds
- Handshaking (optional)
  - Hardware: RTS/CTS, DTR/DSR
  - Software: XON/XOFF
- Module error and status conditions returned to processor for diagnostic purposes
  - Module status
  - Port error status word (bit mapped)
  - Port receive state
  - Port receive character count
  - Port receive block count
  - Port transmit state
  - Port transmit character count
  - Port transmit block count
- All data related to the module is contained in a single controller tag with defined objects to ease in the configuration, monitoring and interfacing with the module
- Module configuration and communication configuration data is transferred to the module via a predefined user data type in the processor.

The HART Multi-drop Master Communication Module is a Quantum backplane-compatible module that allows Quantum processors to interface easily with HART compatible devices. Devices commonly supporting the protocol include pressure, temperature, flow transmitters, as well as other similar instruments commonly found in the process (and other) industry.

HART® is a registered trademark of the HART Communication Foundation

Features and Benefits

The PTQ-HART module interfaces up to 15 devices on each of four HART Multi-drop channels with a Quantum processor. The four ports on the module support HART master commands to interface with slave devices on their own networks. Each port is individually configurable. Compatible devices include a large array of field devices including pressure, temperature, metering, and many other instruments.

Data is exchanged between the HART network and the Quantum processor backplane using the internal database contained in the module. The database is user-defined and stored in the module to hold the data required by the protocol.

Applications

The HART protocol is supported by major instrument suppliers and the HART Communication Foundation (HCF).

The PTQ-HART module is the perfect solution for industrial applications in chemical and refining operations, to gas and liquid distribution systems, and remote offshore monitoring stations are addressing virtually all aspects of control, data acquisition, and maintenance.

Today, HART is the most widely used digital communications protocol for instruments in the process control industry. More than 105 manufacturers support HART with a choice of more than 170 different field instruments.

Functional Specifications

The PTQ-HART module supports the HART Multi-drop implementation of the protocol. Following are some general specifications for the module:

- Built in accordance to the HART Bell 202 Frequency Shift Keying (FSK) standard to superimpose digital signals at a low level on top of the 4 – 20mA
- Four independent HART master ports that are completely user-configurable
- Supports up to 15 devices per port Point-to-point (slave address 0), and Multi-drop (slave address 1 to 15) modes supported
- Supports 99 universal and common practice commands per port to control and monitor devices with integer, IEEE754 floating-point and packed ASCII character string data blocks
- Burst mode can be used for faster update of data from a single slave
- Supports an auto polling feature that will automatically collect data from each HART instrument on the channel and store the data in the module database
- Communication ports can be configured as a secondary master (that is, handheld configuration device)

HART Multi-drop Specifications

The PTQ-HART module supports the HART Multi-drop implementation of the protocol. The following are relevant specifications:

- **Protocol Supported**: HART protocol uses the Bell 202 standard frequency shift-keying (FSK) digital signal to communicate at 1200 baud, superimposed at a low level on the 4 to 20mA analog measurement signal.
- **Supported Function Codes**: HART Universal Commands Set supported are 00-03, 06-09, and 11-22. HART Common Practice Commands Set supported are 33-83 and 105–110.
- **HART Network Communications**: Supports four master channels. Each channel on the module is configured independently to emulate a HART master. Burst mode can be used for faster update of data from a slave device.
- **HART Network Polling**: With the auto-poll feature enabled, the module automatically generates the following HART commands and stores the data in the module's database at the user-specified location:

CMD	Description
0	Read Unique Identifier
3	Read Current and Four Dynamic Variables
13	Read Tag, Descriptor and Date
14	Read PV Sensor Information

  Read Output Information

  Command polling is also user-configurable, including disabled, continuous, on change of data (write only), and dynamically user or automatic enabled.

PROTALK

- **Module Internal Database**: All data used for communication is stored in the modules internal database. Data contained in the database is paged through the input and output images by coordination of the ladder logic and the modules proprietary program.
- **Configurable parameters**: Application parameters such as the general module parameters, HART port configuration, and HART command list parameters, are accessible thru the module configuration file sections.
- **Configurable parameters**: Error codes returned by the HART protocol available on an individual command basis. In addition, a slave status list is maintained per active channel.

Diagnostics and troubleshooting:

- Configuration/Debug port attached to a terminal emulator allows all data contained in the module database to be viewed.
- LED status indicators on the front of the module provide information on the module, port communication and backplane activity status and faults.
- Data analyzer tool extremely useful in determining the communication operation of the module and nodes on the network of each port
- Block transfer statistics option used to display the configuration and statistics of the backplane data transfer operations.

HART Channel Physical Termination

Specification	Description
External Power Supply	24 VDC nominal 250 mA max
Power Connector	+/-/GND screw connectors 2.5 mm screwdriver blade
HART Port	Screw Terminal Connection Four Channels supported 2.5 mm screwdriver blade

The Landis & Gyr Telegyr Slave Communication Module is a Quantum backplane compatible module that allows Quantum processors to interface easily with Telegyr Master host devices. SCADA systems supporting this application are commonly found in the power utility industry.

Features and Benefits

The PTQ-LNG module acts as a communication gateway between the Telegyr 8979 Rev. F version of the protocol and the Quantum backplane. The module functions as a Telegyr slave, receiving commands from the host. Data transfer between the module and the Quantum processor is asynchronous to the Telegyr network, with the module's internal database being used to exchange data between the Quantum processor and the Telegyr network.

The PTQ-LNG module is a powerful communication interface for Quantum platform processors. Developed under license from Schneider Electric, the module incorporates proprietary backplane technology that enables powerful data access to the Quantum processor.

Applications

The PTQ-LNG module is the perfect solution for existing Landis and Gyr Telegyr (8979 Rev. F) master devices requiring Modicon Quantum integration. Industries and services that benefit from this integration include:

- Power and distribution applications
- Energy Management Systems
- Water and Gas Applications
- Substation Automation

Functional Specifications

The PTQ-LNG module supports the Landis & Gyr Telegyr 8979 Rev F slave protocol to the following specifications:

- Supports two serial ports emulating the protocol, each individually configurable for:
  - Slave Address
  - Communication parameters
  - Timing
- The module supports a database common to both serial ports. The supported point types and their maximum point counts are:
  - Binary Input: 800 points
  - Binary Output: 800 points
  - Analog Input: 300 points
  - Analog Output: 50 points
  - Accumulators: 50 points
  - Indication Points: 800 points

Supported Function Codes

Code	Description
0	Analog Change Report
1	Analog Force Report
2	Analog Group Change Report
3	Analog Group Force Report
5	ADC Reference Force Report
6	Indication Change Report
7	Indication Force Report
11	Digital Input Force Report
12	Accumulator Change Report
13	Accumulator Force Report
20	Analog Report
21	SBO Select
22	SBO Operate
23	Digital Output
24	Accumulator Freeze
25	Pulse Output
26	Pulse Train Output
30	Restart RTU
31	RTU Configuration
32	Time Synchronization
34	Analog Deadbands
35	Analog Group Define
36	Accumulator Preset
37	Continuation Request
38	Repeat Last Message
39	Firmware Configuration

PROTALK

Modbus Master/Slave Communication Module

PTQ-MCM

The ProTalk Modbus Master/Slave Communication Module allows Schneider Electric Quantum processors to interface easily with other Modbus protocol compatible devices and hosts. The data transfer from the Quantum processor is asynchronous from the actions on the Modbus network.

Compatible devices include not only Modicon PLCs (which all support the Modbus protocol) but also a wide assortment of end devices.

Features and Benefits

Many host SCADA packages support the Modbus protocol, while devices commonly supporting the protocol include several PLCs, as well as many other third party devices in the marketplace. (For a partial list of devices that speak Modbus, please visit the ProSoft Tested section of the ProSoft Technology web site).

Applications

Applications using the Modbus Communication Module can be found in many industrial sectors and in the following applications:

- Foreign device data concentrator
- Pipelines and offshore platforms
- Food processing
- Mining
- Pulp and paper
- SCADA communications
- Supports Enron version of Modbus protocol for floating point data transactions.

Functional Specifications

Some of the general specifications include:

- Support for the storage and transfer of up to 5000 registers to/from the Quantum processor's data files
- Module memory usage that is completely user definable
- Two ports to emulate any combination of Modbus master or slave device
- Configurable parameters include:

Parameter	Description
Protocol	RTU or ASCII
Baud Rate	110 to 115,200
Parity	None, Odd and Even
Data Bits	5 to 8
Stop Bits	1 or 2
RTS On and Off Timing	0 to 65535 milliseconds
Minimum Response Delay	0 to 65535 milliseconds
Use of CTS Modem Line	Yes or No
Floating-Point Support	

Slave Specifications

The PTQ-MCM module accepts Modbus function code commands of 1, 2, 3, 4, 5, 6, 8, 15, 16, 17, 22 and 23 from an attached Modbus Master unit. A port configured as a Modbus slave permits a remote master to interact with all data contained in the module. This data can be derived from other Modbus slave devices on the network, through a master port, or from the Quantum processor.

Master Specifications

A port configured as a virtual Modbus Master device on the PTQ-MCM module actively issues Modbus commands to other nodes on the Modbus network. One hundred (100) commands are supported on each port. Additionally, the master ports have an optimized polling characteristic that polls slaves with communication problems less frequently. The Quantum processor can be programmed to control the activity on the port by actively selecting commands from the command list to execute or issuing commands directly from the ladder logic.

The PROFIBUS DPV1 Master Module is a powerful communication interface for Unity and Quantum platform processors. Developed under license from Schneider Electric, the module incorporates proprietary backplane technology that enables powerful data exchange with Unity and Quantum processors.

The PROFIBUS DPV1 Master Communication Module is designed according to IEC 61158 specifications and has been tested and certified according to PTO guidelines to guarantee proper interoperability on a PROFIBUS network. Acyclic parameter data can be transferred with Class 1 or Class 2 DPV1 services, allowing processors to easily communicate with slave devices supporting PROFIBUS DPV0/V1 protocol.

Features and Benefits

- The module is built on Siemens ASIC ASPC2 Step E with Infineon C165 Microprocessor.
- The firmware is flash-upgradable.
- The PROFIBUS DPV1 module allows for slave messaging, diagnostics and alarm handling, and notification.
- Adheres to the Unity HEC Hot Standby Functional Specifications
- Cyclic Data: (Process I/O data) 1536 bytes of input and 1536 bytes of output data.
- Configure PTQ module and PROFIBUS network over Ethernet.

Applications

With the growing usage of the PROFIBUS DPV1 protocol in the industrial marketplace, this product has a wide variety of application uses. Industries that use this technology include:

- Power and distribution applications
- Petrochemical
- Water and Gas Applications
- SCADA and DCS applications
- Manufacturing and Factory Automation Applications

Functional Specifications

- Easy-to-use drag and drop Busview configuration interface via ProSoft Configuration Builder software (see PSW-PCB Datasheet)
- Monitor/Modify of process data and DPV1 acyclic data with online slave diagnostics
- Supports PROFIBUS PA slaves on the network through DP/PA coupler or link
- Supports up to 125 slave devices with repeaters
- Supports extended diagnostic data (DPV1)
- Supports all standardized baud rates, up to 12 Mbits/s
- Auto baud detection at all valid PROFIBUS DPV1 rates
- Supports PROFIdrive 3.1 compliant parameter read and write operations
- Supports Sync and Freeze commands
- Alarm indications and confirmations handling (DPV1)
- Supports Multicast and Broadcast telegrams (DPV1)
- CRC checksum determination of slave configuration consistency to processor

Hot Standby

- Hot Standby features supporting the SE 140 671 CPU
- Supports a single PTQ-PDPMV1 module per rack
- Diagnostic and status words are provided for Active Primary and Passive Secondary master health status
- PROFIBUS switchover time will be nominal 100 milliseconds not to exceed 300 milliseconds
- Cable break detection with segmented network slave quantity information
- PROFIBUS health messages are generated from secondary master via FDL ping services
- No setup parameters required. Module automatically detects Hot Standby system

Physical

- PROFIBUS DPV1 RS-485 interface with a 9-pin D shell female connector and isolated Opto-Couplers
- Master Status LED Indicators for Operations, Network Drop Communication, Master Token-Hold

PROFIBUS DP Slave Communication Module

PTQ-PDPS

The ProTalk PROFIBUS DP Slave Communication Module allows Schneider Electric Quantum / Unity I/O compatible processors to interface easily with a PROFIBUS DP Master device.

Features and Benefits

The PROFIBUS DP Slave protocol driver supports the PROFIBUS V0 Slave implementation, providing powerful data transfer capability between the module and Schneider Electric Quantum / Unity processors. DP port operation makes the interface an easy to use and powerful data transfer tool.

- The PTQ module Configuration/Debug Serial port connects a PC to the module for configuration, status, monitoring, and troubleshooting (Serial cable is included with product shipment). After editing on a PC, a configuration file is downloaded and stored on the PTQ module.

The PROFIBUS DP Slave gives access to the unit's input and output images with up to 244 bytes of Input and Output data, for a maximum of 400 bytes total.

- Automatic project documentation
- Supports all standardized baud rates, up to 12Mbps
- Single Slot Quantum / Unity backplane-compatible
- Configuration data is stored in non-volatile Compact Flash memory in the PTQ module
- Supports extended diagnostic data (DPV0)
- Auto baud detection at all valid PROFIBUS DPV0 rates
- Multiple modules can be placed in a single rack

Applications

The PROFIBUS DP slave interface enables Schneider Electric Quantum / Unity processors to interface with a PROFIBUS DP network. The PTQ-PDPS module is the ideal solution for many applications where connectivity to a PROFIBUS Master must be added to a Quantum / Unity system. The PROFIBUS solution is designed to address the expanding interest in Schneider Electric and PROFIBUS in industrial applications such as those in the Water/Wastewater, Power and Oil & Gas industries, SCADA and DCS applications.

Functional Specifications

PROFIBUS Slave	
Communication parameters	Baud Rate: 9.6 kbit/s12 Mbit/s
Supported I/O length	Up to 244 bytes Input data Up to 244 bytes Output data Total not to exceed 400 bytes.
Supported PROFIBUS DP features	Freeze Mode Sync Mode Auto Baud Setting
Configurable Parameters	a) PROFIBUS Node Address: 0 to 125 b) Data byte swapping c) Action on loss of PROFIBUS connection d) Comm Fail Timeout Multiplier e) Status Data location in Internal Database
Status Data	PROFIBUS Status Data for slave
Physical Connection	PROFIBUS Connector Standard PROFIBUS DB-9F communication connector. Cable connection matches PROFIBUS pin out specification.

PROTALK

The High Speed Wireless Communication Module creates a powerful wireless connection between devices located remotely, and the PTQ-WA-PWP in a Quantum / Unity rack.

Features and Benefits

ProSoft Wireless Protocol (PWP) offers versatility where a mix of control devices requires cooperation with each other. This involves sharing of information across the applications regardless of device or network type, often at high speed. Wireless bandwidth utilization is optimized by using efficient communication methods. The protocol supports Unicast, Broadcast and Multicast group messaging. Efficiency is based on the fact each device on the "wireless" network can produce these types of messages and each device determines which of these messages to consume.

Applications

The ProTalk series of wireless products provides users more flexibility than ever before seen in wireless solutions. Use the PTQ-WA-PWP module to connect various field devices using different networks or protocols, and share data between these devices "over-the-air." This is accomplished by exchanging shared common database information wirelessly with ProSoft Technology's efficient but powerful wireless protocol, PWP.

Functional Specifications

Includes ProSoft Configuration Builder (PCB)configuration software (see PSW-PCB).

General Radio Specifications

Specification	Value
Frequency	2.4 GHz band (2400 to 2483.5 MHz)*
Wireless medium	DSSS - Direct Sequence Spread Spectrum (802.11b)
Output power	32 mW (15 dBm)
Channel data rates	11, 5.5, 2, 1 Mbps
Channels - user selectable	11 - North America 13 - Europe** 14 - Japan
Security	PWP + WEP 64/128 Encryption with WEP key rollover management
Antenna Ports	(2) RP-SMA connectors, automatic antenna diversity
Bit Error Rate (BER)	Better than 10^{-5}

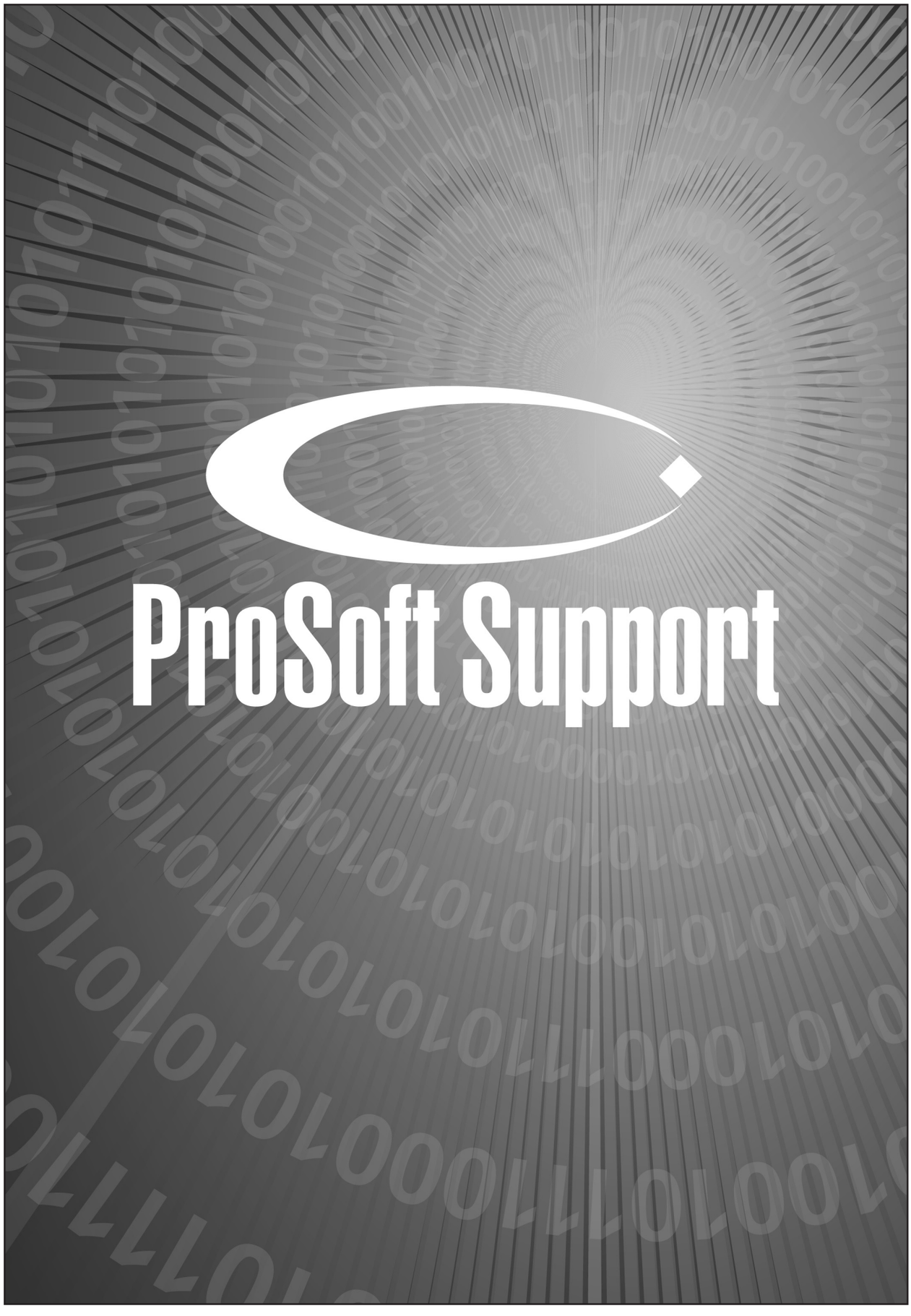
Range / Transmit Rate	High Speed 11 Mb/s	Medium Speed 5.5 Mb/s	Standard Speed 2 Mb/s	Low Speed 1 Mb/s
Open Office Environment	160m (525 ft.)	270 m (885 ft.)	400 m (1300 ft.)	550 m (1750 ft)
Semi-Open Office Environment	50 m (165 ft.)	70 m (230 ft.)	90 m (300 ft.)	115 m (375 ft.)
Closed Office	25 m (80 ft.)	35 m (115 ft.)	40 m (130 ft.)	50 m (165 ft)
Receiver Sensitivity	–83 dBm	–87 dBm	–91 dBm	–94 dBm

General range guidelines (actual results may vary)

* Varies with country regulation

** Some European countries such as France allow fewer channels

PROTALK


ProSoft Support

The support you need is here!

With ProSoft Technology, you have access to high quality, free Technical Support. ProSoft has created numerous ways for customers to acquire knowledge, fast! In an all-encompassing support page, technical support is right at your fingertips. Here you get the ProSoft Knowledgebase, a community of experts and experienced end-users on our bulletin board, as well as presentations, one-on-one chat and, on-the-go tutorials and streaming media training.

ProSoft Support

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Asia Pacific
+603.7724.2080
asiapc@prosoft-technology.com

Europe
+33 (0)5.34.36.87.20
Fax: +33 (0) 5.61.78.40.52
europe@prosoft-technology.com

Latin America
+1 281.298.9109
latinam@prosoft-technology.com

North America
+1 661.716.5100
Fax: +1 661.716.5101
info@prosoft-technology.com

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We offer many ways for you to learn how to effectively use your ProSoft Technology communication modules. Using these documents and tools will allow you to quickly become an expert at using our products.

Training courses

These courses guide you through the installation, configuration and usage of ProSoft, ProLinx and RadioLinx products.

- MVI46-MCM Training Course
- RadioLinx Introductory Training (PPT)

Procedures and Tech Notes

These procedures will guide you through specific configurations and actions when using your ProSoft product.

- Assign RLX-FHE Radio IP Address
- Cognex Camera Ethernet Communications
- PC56 Programming Flow Diagram
- ProLinx Allen-Bradley to Modbus Addressing Map
- RLX-FHS OEM Protocol Setup Guide
- ProLinx PROFIBUS Master Setup Guide
- RSLinx DDE/OPC Connection to DFNT Setup Guide
- 4102-DFS3-DFM Port Expander Setup Guide
- PCCC vs. CIP Messaging Guide
- Allen Bradley PanelView Plus to DFNT Setup Guide
- PTQ-DFNT Setup Guide
- RLX-IH to RLX-PC-IB/EB (PCMCIA) Setup Guide
- MVI56-MCM Setup Guide

Desktop Videos

(Installs WebEx Recorded Session Player on your local system)

These recorded sessions will walk you through training sessions for ProSoft, ProLinx and RadioLinx products, as well as some other subjects.

- Using Primus Knowledgebase
- Connecting to the Debug Port of the MVI56 Module

To access these training tools, go online at
www.prosoft-technology.com/support

ProSoft Support


ProSoft
Software

Software Application Chart

Application	Software
PROFIBUS DPV1 Master	PSW-cDTM-PDPM
ProSoft Configuration Builder	PSW-PCB
RadioLinx IH-Browser	PSW-RLX-IHB
RadioLinx ControlScape	PSW-RLX-CS
ProSoft AFC Manager	PSW-AFC
EZ Design Studio for AppSrvCE 7000 series of products	EZ-ASCE
EZ Design Studio for the PC56	EZ-PC56
RadioLinx OPC Server	RLX-OPC-SERVER

System Requirements

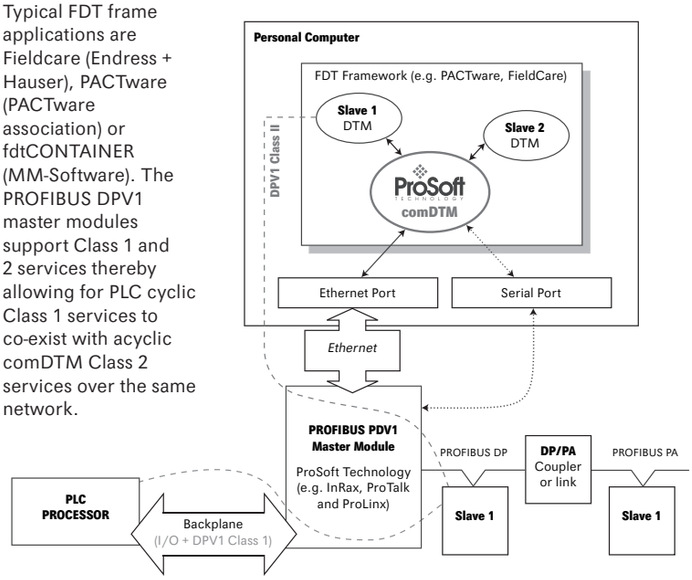
These configuration tools are designed for Microsoft Windows XP, 2000 and NT. Minimum hardware requirements are:

- 100 MHz or faster Pentium PC
- 128 MB RAM
- CD-ROM drive
- 100 MB available hard drive space
- Available RS-232 serial port and null modem cable
- Ethernet port with RJ45 crossover cable for direct connection to module
  or
  Ethernet hub with standard RJ45 Ethernet cable

The PROFIBUS DPV1 Master FDT (Field Device Tool) communication DTM (comDTM) software is an interface between any compliant FDT software container, an FDT device DTM and applicable PROFIBUS slave devices.

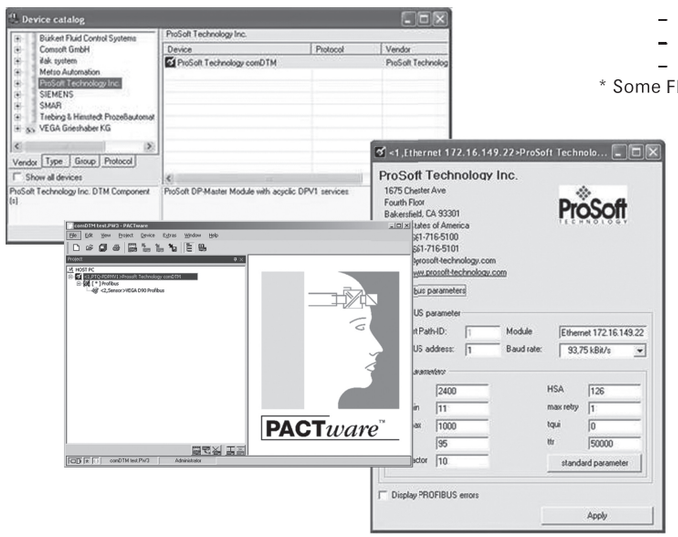
The FDT PROFIBUS comDTM and a compatible FDT 1.2a frame application connect multiple device DTMs to their respective PROFIBUS connected field instruments using the Ethernet port on the PC and PROFIBUS DPV1 master module.

Typical FDT frame applications are Fieldcare (Endress + Hauser), PACTware (PACTware association) or fdtCONTAINER (MM-Software). The PROFIBUS DPV1 master modules support Class 1 and 2 services thereby allowing for PLC cyclic Class 1 services to co-exist with acyclic comDTM Class 2 services over the same network.



Applications

FDT (Field Device Tool) technology standardizes the communication interface between field devices and systems. The key feature is its independence from the communication protocol and the software environment of either the device or the host system. FDT allows any device to be accessed from any host through any protocol.



General Specifications

General specifications for comDTM software include:

- Support for PTQ-PDPMV1 Ethernet port (no serial connectivity)
- Support for MVI46 and MVI56 COM 2 serial port (no Ethernet connectivity, use Serial to Ethernet converter)
- FDT 1.2a compatible
    - Official FDT-JIG certificate
    - PROFIBUS-DPV1 master Class II operation (acyclic master/slave services)
    - PROFIBUS DPV1 Class II Services:
        - Initiate
        - Read
        - Write
        - Data transport
        - Abort
    - Can be used to access Slaves concurrently as the master is scanning (Class I) the network I/O for the PLC
    - Supports many FDT containers such as FieldCare and PACTware
    - Built-in Ethernet and serial transport communication providers
    - Software license provides full support of all configured device DTMs and communication of up to 15 master modules
    - Additional Functions performed:
        - Scan list function
        - Set Slave address

System Requirements

- A ProSoft Technology PROFIBUS DPV1 Master module with available user Ethernet or Serial port
- FDT v1.2a Frame program such as FieldCare or PACTware
- Hardware Requirements (Recommended)
    - Pentium 4 with 2 GHz Processor, 256 MB RAM
    - 450 MB disk space (for DTM Libraries)
    - Monitor 1024 X 768, 64k colors
- Software Requirements (Minimum)
    - Windows NT 4.0 Service Pack 6A, Windows 2000 SP3 or Windows XP
    - Microsoft Internet Explorer Version 6.0
    - Microsoft Management Console*
    - Adobe Acrobat Reader 5.0*

* Some FDT Containers require these components

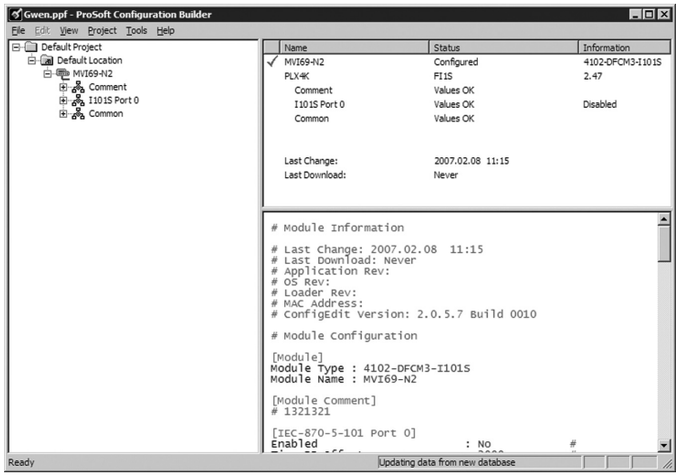
PROSOFT SOFTWARE

ProSoft Configuration Builder

PSW-PCB

Use a single software tool to configure and test all ProLinx modules, as well as a growing selection of ProSoft inRAx and ProTalk modules. ProSoft Configuration Builder simplifies the task of managing the configuration files that control how your ProSoft module operates. ProSoft Configuration Builder is designed for computers running the following versions of Microsoft Windows:

- Windows NT4, service pack 6 or higher
- Windows 98 SE or higher
- Windows 2000
- Windows XP



- Graphical User Interface replaces the Hyperterminal download and monitor method
- Provides error reduction in setting up configuration files
- Extensive online help for module-specific configuration options

Features and Benefits

Configuration and Debug Functionality

The module's Configuration/Debug (Serial or Ethernet) port is used to connect a PC to the module for configuration, status, online monitoring, and troubleshooting (Serial and Ethernet cables are included with hardware shipment). After a module's profile is created on a PC, a configuration file is downloaded and stored on the module.

When operational, the Debug port allows access to detailed protocol and module status data and provides a view of the communications data bytes with the built-in data analyzer for most protocols.

Integrated Technical Email Support

The software provides integrated email technical support. This service will package all required support information to help expedite the solution.

Applications

ProSoft Configuration Builder manages configuration files for your ProSoft ProLinx, inRAx and ProTalk modules in a graphical, tree-structured layout, with extensive online help to define configuration parameters and database configuration. Create plant-wide configurations of all ProSoft Technology products. Manage configuration of complex protocols and networks, including PROFIBUS DP.

Functional Specifications

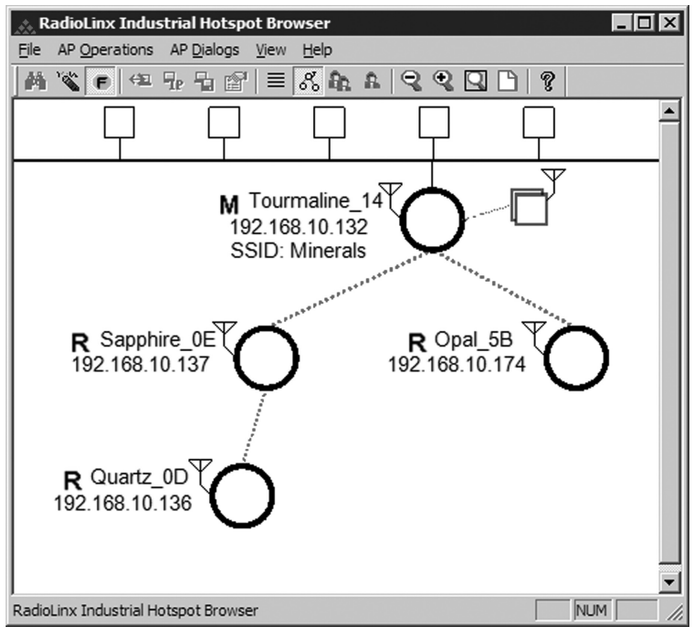
In addition to creating configuration files for your module, ProSoft Configuration Builder also lets you…

- Transfer and modify existing configuration files from the module
- Set up External File Locations
- Export the configuration to text files
- Get email support that packages and sends the configuration file to technical support
- Run Diagnostics

PROSOFT SOFTWARE

RadioLinx IH Browser is a configuration and monitoring tool for the RadioLinx Industrial Hotspot radios. Use RadioLinx IH Browser to view your network topology, determine the best "path" between Master, Client, and Repeater radios, and detect the presence of other vendors' 802.11 radios on the network.

Features and Benefits



The RadioLinx IH Browser configuration tool is designed for Microsoft Windows XP, 2000 and NT. Features of RadioLinx IH Browser tool include:

- Compatible with any device that supports EtherNet/IP, Modbus TCP/IP, or any 802.3 compliant Ethernet protocol
- 802.11 Monitoring
- Automatic Parent Selection & Prioritized Parent Selection
- Rapid Spanning Tree
- Specific Information on Ethernet Devices attached to the network
- Redundant Link Visibility
- Rapid Network Adaptation to changes without the need for user intervention
- Tools to trade automatic adjustment for manual control
- Tools for monitoring 802.11 traffic from other WiFi devices

Applications

The RadioLinx Industrial Hotspot is four times more powerful than high-speed commercial grade radios, and allows better coverage of the factory floor with fewer radios and provides outdoor links of up to 20+ miles. The RadioLinx Industrial Hotspot comes with the RadioLinx IH Browser configuration and monitoring tool.

Functional Specifications

RadioLinx IH Browser includes the following functionality:

- Connect: Log in to the Radio Configuration / Diagnostic Utility to configure a radio or check diagnostics.
- Assign IP: Assign a temporary IP address to a radio
- Update Firmware: Update the version of firmware the radio uses
- Wireless Clients: View a list of client radios
- Ethernet Nodes: View a list of wired Ethernet nodes connected to the network
- Scan List: View a list of all the radios detected on the network (including those from other vendors)
- Properties: View the selected radio's properties
- You can print a list of the radios' properties, or a topology view showing the relationships between all radios detected on the network
- Change how the RLX-IH Browser scans for radios.

802.11 Access Point Detector

The IH Browser can be used as an installation tool to analyze the 802.11 environment and provide the user with information on choosing antenna location and channel selection.

RadioLinx IH Browser will report:

- Each 802.11 AP heard including SSID
- Actual RSSI from each given in dBm
- Channel of each radio

Use this information to help choose a channel that is least utilized, or to select appropriate antenna types and alignments to minimize interference.

System Requirements

These configuration tools are designed for Microsoft Windows XP, 2000 and NT. Minimum hardware requirements are:

- 100 MHz or faster Pentium PC
- 128 MB RAM
- CD-ROM drive
- 100 MB available hard drive space
- Available RS-232 serial port and null modem cable
- Ethernet port with RJ45 crossover cable for direct connection to module
  or
  Ethernet hub with standard RJ45 Ethernet cable

PROSOFT SOFTWARE

RadioLinx ControlScape

PSW-RLX-CS

The RadioLinx ControlScape application provides a graphical representation of your RLX-FH radio network, allowing you to easily configure the radios and monitor their performance. ControlScape can be used to support configuration and installation as well as provide long-term monitoring of system performance.

Features and Benefits

- Works for all FH radios: RLX-FHS, RLX-FHE, and RLX-FHES
- Displays important parameters from any radio
- Updates the firmware for all radios
- Provides simplified parameter modification
- Provides a "health view" (color-coded links indicate strong, marginal, or poor signals)
- Provides advanced information such as signal-to-noise ratio
- Allows diagnostics to be performed from any radio

ControlScape is easy to use and intuitive. Default values built into the software work well for initial installation and testing making it easy for first-time users. ControlScape manages all important settings to ensure that the network performs correctly, yet it is powerful enough for advanced users to specify their own settings such as mixing and matching protocols and radio types in a single network providing increased flexibility. Diagnostics are simple but informative. The status of all network links (including relative strength) are continuously displayed.

Functional Specifications

RadioLinx ControlScape provides a means to:

- **Configure** new networks and radios:
  - assign roles (Master, Remote, or Repeater) to the radios
  - define data paths
  - set the radio's operation parameters (baud rate, parity, IP Address etc.)
- **Edit** existing networks or radios:
  - add or delete Remote or Repeater radios
  - re-assign roles to the radios
  - define operation parameters
- **Diagnose** functionality of existing networks.
  - display the status of each Remote or Repeater radio (when a Master radio is cabled to the PC)

System Requirements

These configuration tools are designed for Microsoft Windows XP, 2000 and NT. Minimum hardware requirements are:

- 100 MHz or faster Pentium PC
- 128 MB RAM
- CD-ROM drive
- 100 MB available hard drive space
- Available RS-232 serial port and null modem cable
- Ethernet port with RJ45 crossover cable for direct connection to module
  or
  Ethernet hub with standard RJ45 Ethernet cable

The AFC Manager is an easy-to-use Windows 98/NT/2000/XP based configuration, reporting and monitoring tool provided with the AFC modules. Project configurations may be uploaded, downloaded, and saved to the PC under user-selectable file names.

- Allows the user to monitor each meter run (flow rates, accumulator values and other calculation results). All alarm data is displayed on the screen
- Allows user to download and view the archives and events
- Allows the user to perform an Audit scan. This shows the process input variables and calculation results as "snapshots", allowing verification of the calculations
- Provides easy access to the Primary Modbus Slave data (130.000 registers) and Virtual Modbus Slave data (20.000) registers
- Provides the ability to perform data remapping to optimize the polling of data
- An optional password protects changes to certain configuration parameters and reading of critical meter data

Features and Benefits

The AFC Manager allows you to perform the following tasks with your AFC modules:

- Manage multiple AFC modules with multiple firmware revisions
- Configure project parameters (site configuration)
- Configure the port communication parameters
- Remap registers from the primary slave to the virtual slave. Modbus master interface allows easy access to primary and virtual database
- Configure meter channels
- Enable and disable the meter channels
- Set the module passwords
- Keep track of configuration changes
- Monitor the meter operation
- Perform an audit scan
- Configure the archives
- Monitor the archives
- Monitor the events

Applications

The AFC Manager can be used to configure the AFC module project parameters (Site Configuration) and each meter (Meter Configuration).

Once your project is up and running, you can also use the AFC Manager to monitor each meter run (Meter Monitor), archives, and events.

Functional Specifications

- Process I/O: analog inputs (pressure, temperature, diff pressure) from analog modules and pulse inputs from pulse/frequency input modules in rack
- Number of meter channels: 8 or 16 meters (depending on module capabilities)
- Fluid groups: Hydrocarbon gases and liquids, including Crudes & NGLs (API-2540 "A" and "E" Tables), Refined Products (API-2540 "B" Tables), and Oil-Water Emulsion (API-2540 "A" Tables with high-water-content methods of MPMS Ch 20.1)
- Meter types: Differential (orifice, V-cone), Linear (pulse train), Flow rate integration, Pulse frequency integration

Calculation Methods

- AGA3 (1992) or ISO5167 (2003)
- AGA7
- AGA8 (1992) (Detail Characterization Method)
- Energy (heating value) for gases according to AGA 8 Appx C-4
- API MPMS Ch 12.2
- API-2540 Tables (API MPMS Ch 11.1) 23/53 and 24/54 for Hydrocarbon Liquids
- GPA TP-25 for Hydrocarbon Liquids (Tables 23E/24E)
- API MPMS Ch 11.2
- GPA TP-15 for Vapor Pressure Correlation
- API MPMS Ch 20.1
- API MPMS Ch 21.1 and 21.2 or equivalent

Supports energy measurement for gas applications.

Product Measurement: Hydrocarbon gases and liquids including refined products.

Process I/O Calibration Mode: Prevents introduction of spurious process input values during calibration of transmitters.

Data Archiving

- Hourly for 2 days for each meter run (48 records per channel)
- Daily for 35 days
- Extended archive feature supports up to 350 additional daily archives and 1260 additional hourly archives on compact flash
- Each record consists of nearly 20 process and other variables
- All archived data is available in or via the onboard Modbus memory map
- User may configure when archives are generated
- User may configure archive content (from pre-defined list)
- Archives can be exported to an Excel spreadsheet or printed to a local printer

Other Features

- Event Log with 1999-event buffer and timestamp
- Virtual Slave with 20,000 re-mappable Modbus registers for contiguous SCADA polling
- Password protection

PROSOFT SOFTWARE

EZ Design Studio for AppSrvCE 7000 series of products

EZ-ASCE

EZ Design Studio automation software is a scalable development system and real-time control engine that runs re-usable program application code on the AppSrvCE controller.

The distributed architecture offers a central database for program development, debugging and monitoring which provides security and allows users backup capability.

Features and Benefits

EZ Design Studio real-time control engines are programmed using a full set of re-usable objects including network nodes, interface cards, and program control units, which include standard, user-defined, and 'C' function blocks. Use the local I/O on the AppSrvCE or connect Rockwell Automation 1769, 1794, or 1793 I/O directly to the controller. Device network communications are also available through Modbus, Modbus TCP/IP and other protocols.

EZ Design Studio development software consists of configuration and programming editors that run on the development station, and a real-time control engine that runs on the control node platform. The control node executes the control logic and interfaces to the I/O system. The development station and control node communicate over an Ethernet network. Multiple workstations and control nodes can reside on the same Ethernet network and communicate with each other.

EZ Design Studio features include:

- Windows Tree-structured EZ Manager to view and edit NT/2000/XP control nodes;
- Multiple document interface (MDI)

Applications

EZ Design Studio software is ideally suited for a wide variety of machine and process control applications. These include embedded control applications requiring real-time diskless operation, plant-wide distributed machine applications, and integrated workstation applications.

Functional Specifications

Development Environment

- EZ Design Studio to configure and program control applications
- IEC Languages and Standard Function Library
- User-Defined Functions
- Re-useable Program Objects
- Portable Application Code
- Scalable Controllers
- Task Objects and Task Management
- Use any combination of the five IEC 61131-3 programming languages in one control application:
  - Sequential Function Chart for machine sequencing control and for control applications that have multiple operating modes, such as manual mode and automatic mode
  - Ladder Diagram (Relay Ladder Logic) for discrete logic programs
  - Function Block Diagram for analog signal processing and any control process or algorithm that runs on a continuous basis
  - Structured Text for complex algorithms, string and file operations, and manipulation of data structures best done in a procedural (text based) language
  - Instruction List for compact assembly language-like programming
  - Function Library includes all defined IEC 61131-3 functions and function blocks and is augmented with many custom developed functions
- Create your own functions and function block libraries in 'C' and import them into EZ Design Studio to further enhance functionality
- Re-useable programs and configurations
- Central database for storage and management of all program objects
- Node Templates and Object Archive to easily duplicate and reuse all or parts of existing programs and configurations
- Libraries simplify re-using functions and function blocks.
- Run the same application code regardless of software platform: Windows XP, Windows CE
- A minimum hardware platform is required to run the Portable Application Code. You can scale the hardware features to meet the needs of the application by upgrading with a faster processor, additional program memory, flash memory (only Industrial Grade Compact Flash should be used), retentive memory, and other components
- Place a program object in one or more tasks and have it run continuously, periodically at the task scan rate, or periodically at the I/O scan rate
- Networking and Remote multi-node programming. Each controller is a node
- Distributed Control on the network. You can easily distribute control applications among nodes to control loading and have control at the point of operation. Controllers communicate with each other over the network
- On-Line Monitoring. Observe control application program operation graphically and in real-time, within the same editors used to create the control application programs
- Integrated Watch Window to watch and force variables
- Control Node Monitor to observe node status (running, faults, statistics). Monitoring and HMI can run on the development station, the monitor station, or locally at the embedded node
- Online Help Tutorials and sample applications are provided to assist you in quickly learning to use EZ Design Studio

EZ Design Studio automation software is a scalable development system and real-time control engine that runs re-usable program application code on the PC56 controller.

The distributed architecture offers a central database for program development, debugging and monitoring which provides security and allows users backup capability.

Features and Benefits

EZ Design Studio real-time control engines are programmed using a full set of re-usable objects including network nodes, interface cards, and program control units, which include standard, user-defined, and 'C' function blocks. Use the local I/O on the PC56 or connect Rockwell Automation 1756 I/O directly to the controller. Device network communications are also available through Modbus, Modbus TCP/IP and other protocols.

EZ Design Studio development software consists of configuration and programming editors that run on the development station, and a real-time control engine that runs on the control node platform. The control node executes the control logic and interfaces to the I/O system. The development station and control node communicate over an Ethernet network. Multiple workstations and control nodes can reside on the same Ethernet network and communicate with each other.

EZ Design Studio features include:

- Windows Tree-structured EZ Manager to view and edit NT/2000/XP control nodes
- Multiple document interface (MDI)

Applications

Typical uses for the 'C' applications include: Insertion of proprietary algorithms into Logix applications, Logix applications with Intensive C processing, and Logix applications with time stamped database applications.

Functional Specifications

Development Environment

- EZ Studio to configure and program control applications
- IEC Languages and Standard Function Library
- User-Defined Functions
- Re-useable Program Objects
- Portable Application Code
- Scalable Controllers
- Task Objects and Task Management
- Use a combination of the two supported IEC 61131-3 programming languages in one control application:
  - Function Block Diagram for analog signal processing and any control process or algorithm that runs on a continuous basis
  - Structured Text for complex algorithms, string and file operations, and manipulation of data structures best done in a procedural (text based) language
- Create your own functions and function block libraries in 'C' and import them into EZ Design Studio to further enhance functionality
- Re-useable programs and configurations
- Central database for storage and management of all program objects
- Node Templates and Object Archive to easily duplicate and reuse all or parts of existing programs and configurations
- Libraries simplify re-using functions and function blocks.
- Run the same application code regardless of software platform: Windows XP, Windows CE
- Place a program object in one or more tasks and have it run continuously
- Networking and Remote multi-node programming. Each controller is a node
- Distributed Control on the network. You can easily distribute control applications among nodes to control loading and have control at the point of operation. Controllers communicate with each other over the network
- On-Line Monitoring. Observe control application program operation graphically and in real-time, within the same editors used to create the control application programs
- Integrated Watch Window to watch and force variables
- Control Node Monitor to observe node status (running, faults, statistics). Monitoring and HMI can run on the development station, the monitor station, or locally at the embedded node
- Online Help Tutorials and sample applications are provided to assist you in quickly learning to use EZ Design Studio

RadioLinx OPC Server for FHE, FHS, FHES, and IH Radios

RLX-OPC

The RadioLinx OPC Server seamlessly links customer applications to RadioLinx radios. Any application that can act as an OPC Client (such as an HMI) can interact with any type of RadioLinx radio. It allows the applications to get signal strength, serial number and throughput information, as well as other useful statistics.

The RadioLinx OPC Server operates in the background on any PC. It independently manages all requests from OPC Clients for information on RadioLinx radios. The OPC Clients are typically HMI programs, but can also be easily monitored by Microsoft Excel. The clients can be programs running either on the same PC as the OPC Server or on a separate PC connected via a network connection.

Features and Benefits

The RadioLinx OPC Server manages querying the RadioLinx radios over the Ethernet connection. The OPC Server manages all requests for information about those radios, and communicates over the appropriate connection to retrieve the information.

Applications

The RadioLinx OPC Server manages information about the radios and queries the radios appropriately to provide the needed information to the clients. For example, several HMIs may request signal strength of a single radio. These requests will be sent to the RadioLinx OPC Server. The RadioLinx OPC Server queries the radio once and replies back to all HMIs with the information they requested. The rate at which the RadioLinx OPC Server queries the radios on the network is determined by the rates that the individual HMIs request updates.

Functional Specifications

- Presents data from ProSoft RadioLinx products to OPC clients
- Communicates with three different types of radios:
  - RLX-FHE
  - FHS
  - RLX-FHES
  - RLX-IH
- The FH radios present the following tags for OPC clients to monitor:
  - RSSI
  - Signal to noise
  - Serial number
  - Parent address
  - Associations
  - Bit error rate
  - Total bytes forwarded
  - Total bytes reversed
  - Total good packets
  - Tx Packet Errors
  - Reset Stats
- The IH radio presents the following tags for OPC clients to monitor:
  - RSSI
  - Firmware version
  - SSID
  - MAC ID
  - Parent MAC
  - Number of associations
  - Up time
  - Total good packets TX
  - Total failed packets TX
  - Soft reset
  - Total bytes TX
- Updates on demand, or every 10 seconds
- Survives communication errors and power failures
  Recovers through power cycles
- Reads radio tags only; writing to tags is not fully implemented (Reset Stats and Soft Reset only)
- Implemented as a background application with a system tray icon
- Maintains quality values for radio tags

System Requirements

These configuration tools are designed for Microsoft Windows XP, 2000 and NT. Minimum hardware requirements are:

- 100 MHz or faster Pentium PC
- 128 MB RAM
- CD-ROM drive
- 100 MB available hard drive space
- Available RS-232 serial port and null modem cable
- Ethernet port with RJ45 crossover cable for direct connection to module
  or
  Ethernet hub with standard RJ45 Ethernet cable

PROSOFT SOFTWARE

ProSoft Technology survives on its ability to provide meaningful support to its customers. Should any questions or problems arise, please feel free to contact us at:

Internet

Web Site: http://www.prosoft-technology.com/support
E-mail address: support@prosoft-technology.com

Phone

+1 (661) 716-5100
+1 (661) 716-5101 (Fax)

Postal Mail

ProSoft Technology
1675 Chester Avenue, Fourth Floor
Bakersfield, CA 93301

Before calling for support, please prepare yourself for the call. In order to provide the best and quickest support possible, we will most likely ask for the following information (you may wish to fax it to us prior to calling):

1. Product Version Number
2. System hierarchy
3. Module Operation
   - Configuration/Debug status information
   - LED patterns
4. Details about the network

An after-hours answering system allows pager access to one of our qualified technical and/or application support engineers at any time to answer the questions that are important to you.

Module Service and Repair

The ProSoft Technology device is an electronic product, designed and manufactured to function under somewhat adverse conditions. As with any product, through age, misapplication, or any one of many possible problems the device may require repair.

When purchased from ProSoft Technology, Inc., the device has a 1 year parts and labor warranty (3 year for RadioLinx) according to the limits specified in the warranty. Replacement and/or returns should be directed to the distributor from whom the product was purchased. If you must return the device for repair, obtain an RMA (Returned Material Authorization) number from ProSoft Technology, Inc. Please call the factory for this number, and print the number prominently on the outside of the shipping carton used to return the device.

General Warranty Policy

ProSoft Technology, Inc. (Hereinafter referred to as ProSoft) warrants that the Product shall conform to and perform in accordance with published technical specifications and the accompanying written materials, and shall be free of defects in materials and workmanship, for the period of time herein indicated, such warranty period commencing upon receipt of the Product.

This warranty is limited to the repair and/or replacement, at ProSoft's election, of defective or non-conforming Product, and ProSoft shall not be responsible for the failure of the Product to perform specified functions, or any other non-conformance caused by or attributable to: (a) any misapplication or misuse of the Product; (b) failure of Customer to adhere to any of ProSoft's specifications or instructions; (c) neglect of, abuse of, or accident to, the Product; or (d) any associated or complementary equipment or software not furnished by ProSoft.

Limited warranty service may be obtained by delivering the Product to ProSoft and providing proof of purchase or receipt date. Customer agrees to insure the Product or assume the risk of loss or damage in transit, to prepay shipping charges to ProSoft, and to use the original shipping container or equivalent. Contact ProSoft Customer Service for more information.

Limitation of Liability

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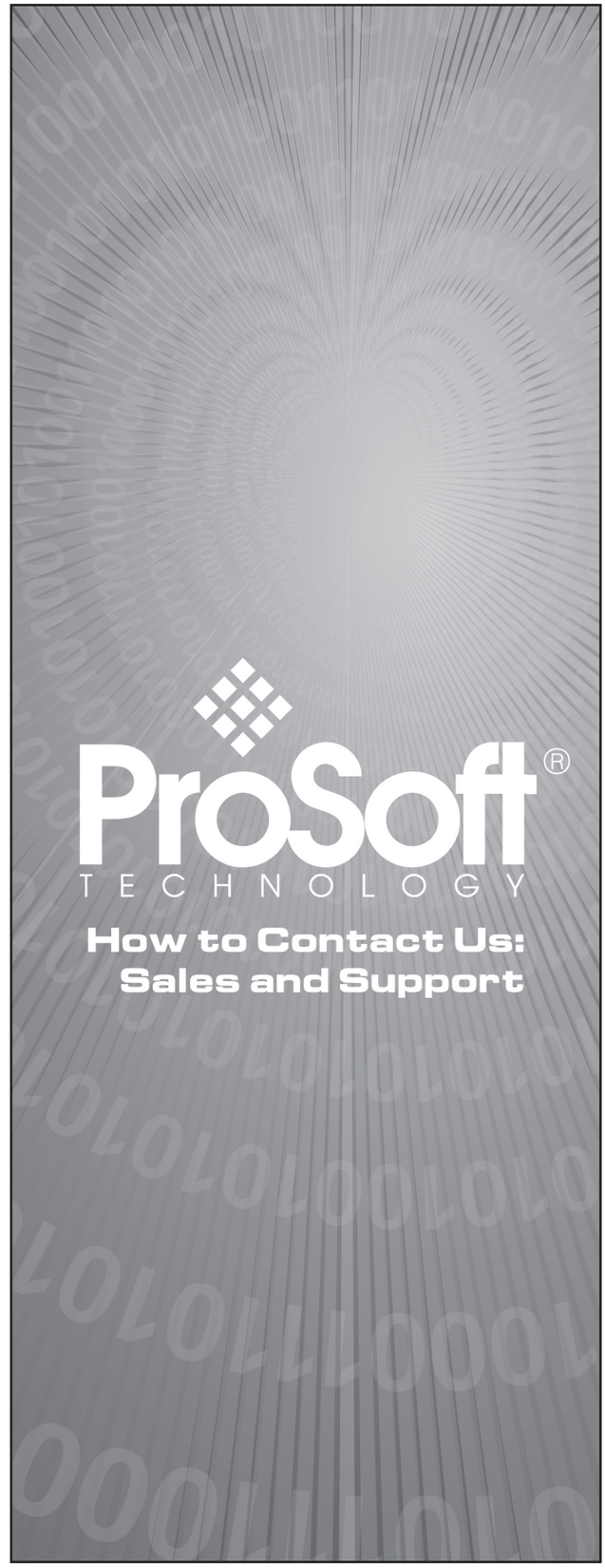
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Hardware Product Warranty Details

Warranty Period: ProSoft warranties hardware Product for a period of 1 year (3 year for RadioLinx).

Warranty Procedure: Upon return of the hardware Product ProSoft will, at its option, repair or replace Product at no additional charge, freight prepaid, except as set forth below. Repair parts and replacement Product will be furnished on an exchange basis and will be either reconditioned or new. All replaced Product and parts become the property of ProSoft. If ProSoft determines that the Product is not under warranty, it will, at the Customer's option, repair the Product using current ProSoft standard rates for parts and labor, and return the Product freight collect.

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Asia Pacific
+603.7724.2080, asiapc@prosoft-technology.com
Languages spoken include: Chinese, Japanese, English

Europe – Middle East – Africa
+33 (0) 5.34.36.87.20, support.EMEA@prosoft-technology.com
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North America
+1.661.716.5100, support@prosoft-technology.com
Languages spoken include: English, Spanish

Latin America (Sales only)
+1.281.298.9109, latinam@prosoft-technology.com
Languages spoken include: Spanish, English

Brasil
+55-11.5084.5178, eduardo@prosoft-technology.com
Languages spoken include: Portuguese, English

Product Notes

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