

Air Conditioning Catalogue

Innovative solutions for your comfort



People



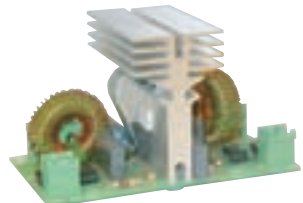
Products



Performance

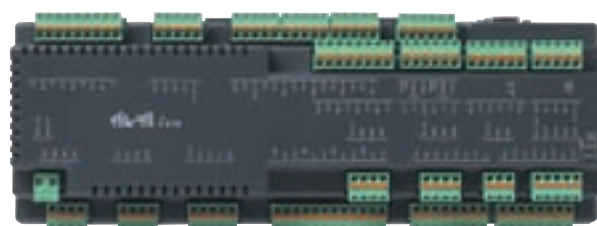
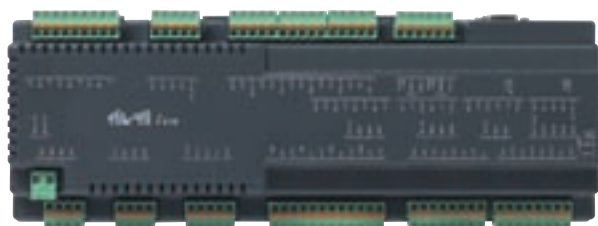


اللي

Section	Page	
Programmable Controllers • Development Tools	A3 - A12	
Chiller / Heat Pump Controllers • Condensing Units Controllers	A13 - A30	
FanCoil Controllers	A31 - A46	
Fan Speed Controllers	A47 - A49	
Temperature probes • Pressure transducers • Humidity probes	A50 - A54	
Interface modules • Software • Hardware interface	A55 - A57	

ENERGY XTM(/R) PRO ENERGY XTM/H(/HR) PRO

ENERGY XTM(/R) PRO ENERGY XTM/H(/HR) PRO



Applications

Energy XT PRO is a series of programmable and easily customised controllers for the HVAC/R market.

The controller allows customers to become independent, develops their own control software and protects their individual technical knowledge.

- Programmability using standard languages and compliant with IEC61131
- Modularity and flexibility using a powerful CPU based on Flash technology and a substantial memory

General description

The models that make up the Energy XT family are the bases, identified by the letters EXTM PRO, the expansions EXTE PRO and the keyboard EXTU PRO or EXTK PRO.

Four configuration of EXTM PRO are available with different number of inputs/outputs and two communication layers to

offer the best solution to the various application requirements.

The suffix /R indicates models with additional connectivity options (RS 232, remote keyboard) and Analog Output.

The letter /H indicates the bases and the expansions with a larger number of inputs and outputs.

General technical data	EXTM(/R) PRO	EXTM/H(/HR) PRO
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Mounting:	DIN-RAIL EN CEI 60715	DIN-RAIL EN CEI 60715
Dimensions:	316x114x80mm (Lxhxd)	316x114x80mm (Lxhxd)
Power Supply:	24V~ ±10% 50/60Hz	24V~ ±10% 50/60Hz
Consumption:	25VA	25VA
Insulation class:	II	II
Ambient operating temp.	-5...60°C	-5...60°C
Ambient storage temp.	-30...85°C	-30...85°C
Amb. operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue inputs:	*4 NTC configurable temp. inputs NTC / extended NTC **4 configurable inputs: • NTC / extended NTC temperature • 4...20mA input	*8 NTC configurable temp. inputs NTC / extended NTC **8 configurable inputs: • NTC / extended NTC temperature • 4...20mA input
Digital inputs:	14 digital inputs 24V~/ or, on demand, 10 digital inputs 24V~/ + 4 digital inputs 230V~	22 digital inputs 24V~/ or, on demand, 14 digital inputs 24V~/ + 8 digital inputs 230V~
Digital outputs:	3 x 8A 250V~ SPDT relays 9 x 8A 250V~ SPST N.O. relays	3 x 8A 250V~ SPDT relays 17 x 8A 250V~ SPST N.O. relays
Analogue outputs:	only for /R model: 4 outputs 0-10V~ up to 1% of resolution or 4...20mA on demand	only for /HR model: 4 outputs 0-10V~ up to 1% of resolution or 4...20mA on demand

* configurable (group of 4) NTC / NTC range -35 to 150°C

** (group of 2) NTC / NTC range -35...150°C / 4-20mA or I couple NTC / NTC range -35...150°C / 4-20mA, II couple 4-20mA / 0-10V~

Connectivity

	EXTM(/R) PRO	EXTM/H(/HR) PRO
COM1 • RS485	ModBus RTU Slave or Master; Micronet	ModBus RTU Slave or Master; Micronet
COM2 • CANBUS	for connection to EXTK / EXTU and up to 4 EXTEI - EXTEI/H expansion modules	for connection to EXTK / EXTU and up to 4 EXTEI - EXTEI/H expansion modules
COM3 • TTL	as per COM1 + ModBus ASCII only for EXTM model	as per COM1 + ModBus ASCII only for EXTM/H model
COM3 • RS232	as per COM1 + ModBus ASCII only for /R model	as per COM1 + ModBus ASCII only for /HR model
COM4 • CANBUS	for connection to remote keyboard EXTK / EXTU only for /R model	for connection to remote keyboard EXTK / EXTU only for /HR model

Part number

EXTM....EXP8BE0A0C500
EXTM/R....EXP8BEVA0G500 V-OUT
EXTM/R....EXP8BEAA0G500 C-OUT

EXTM/H....EXPADH0A0C500
EXTM/HR....EXPADHVA0G500 V-OUT
EXTM/HR....EXPADHAA0G500 C-OUT

ENERGY XTE1 PRO ENERGY XTE1/H PRO

ENERGY XTE1 PRO ENERGY XTE1/H PRO



Applications

Energy XT PRO is a series of programmable and easily customised controllers for the HVAC/R market.

The controller allows customers to become independent, develop their own control software and protect their individual technical knowledge.

- Programmability using standard languages and compliant with IEC61131
- Modularity and flexibility using a powerful CPU based on Flash technology and a substantial memory

General description

The combination of the 2 different available expansion modules offers ample modularity to cover a wide range of Air Conditioning applications with a high degree of scalability, optimising the cost to performance ratio.

Easy expansion module connectivity (max 4 in the network), through an "Ethernet" cable, ensures speed and reliability,

in order to reach the maximum I/O configuration and to cover the most complex applications in the Air Conditioning segment. The communication between each module, based on the CANBUS layer, ensures a fast and robust data exchange and an efficient system response time.

General technical data	EXTE1 PRO	EXTE1/H PRO
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Mounting	DIN-RAIL EN CEI 60715	DIN-RAIL EN CEI 60715
Dimensions:	158x110x80mm (Lxhxd)	158x110x80mm (Lxhxd)
Power supply:	24V~ ±10% 50/60Hz	24V~ ±10% 50/60Hz
Consumption:	25VA	25VA
Insulation class:	II	II
Ambient operating temp.	-5...60°C	-5...60°C
Ambient storage temp.	-30...85°C	-30...85°C
Ambient operating and storage humidity	10...90%RH (non condensing)	10...90%RH (non condensing)
Analogue inputs:	**4 configurable inputs: • NTC / extended NTC temperature • 4...20mA input	**4 configurable inputs: • NTC / extended NTC temperature • 4...20mA input
Digital inputs:	4 digital inputs 24V~/=	8 digital inputs 24V~/= or, on demand, 4 digital inputs 24V~/= + 4 digital inputs 230V~
Digital outputs:	2 x 8A 250V~ 8A SPDT relays 7 x 8A 250V~ 8A SPST N.O. relays	4 x 8A 250V~ SPDT relays 11 x 8A 250V~ SPST N.O. relays
Analogue outputs:		2 outputs 0-10V~ up to 1% of resolution or 4...20mA on demand

** configurable (group of 2) NTC / NTC range -35 to 150°C / 4-20mA

Part number

EXTE1 PRO....EXE4AA0000500

EXTE1/H PRO....EXE4CC2000500 V-OUT
EXTE1/H PRO....EXE4CC1000500 C-OUT

ENERGY XTK PRO ENERGY XTU PRO

ENERGY XTK PRO ENERGY XTU PRO



Applications

Energy XT PRO is a series of programmable and easily customised controllers for the HVAC/R market.

The controller allows customers to become independent, develop their own control software and protect their individual technical knowledge.

- Programmability using standard languages and compliant with IEC61131
- Modularity and flexibility using a powerful CPU based on Flash technology and a substantial memory

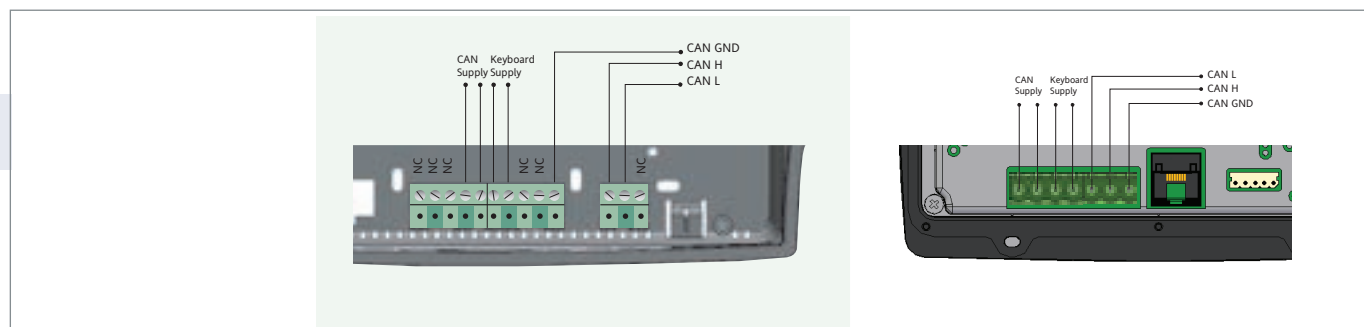
General description:

The keyboards have large LCD graphic display and 10 function buttons. They provide access to all basic control operations through a simple tree menu that can be easily customised in different languages using MenuMakerPRO software.

It is possible to connect to the EXTM PRO up to 2 keyboards (1 local keyboard + 1 remote keyboard) for panel (IP65 on the front) or wall mounting.

General technical data	EXTK PRO	EXTU PRO
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Casing colour:	Grey	Grey
Mounting:	Panel or Wall	Panel
Dimensions:	219x119x32mm (LxHxD) • cutout 200x103mm	160x96x10mm (LxHxD) • cutout 138x68mm
Power Supply:	12V~ ±10% 50/60Hz	12V~ ±10% 50/60Hz
Insulation class:	II	II
Housing protection:	IP65	IP40
Ambient operating temp.	-5...60°C	-5...60°C
Ambient storage temp.	-30...85°C	-30...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Display:	LCD 122x32px	LCD 128x64px
Keys:	10	8
View range:	16 bit integer with sign and decimal point	16 bit integer with sign and decimal point
Terminals:	removable, RJ45 e TTL	screw connectors, RJ45 e TTL

Wiring Diagram • Dimensions



Part number

EXTK PRO....EKPL0110BA00

EXTU PRO....EKUWL0110BA00

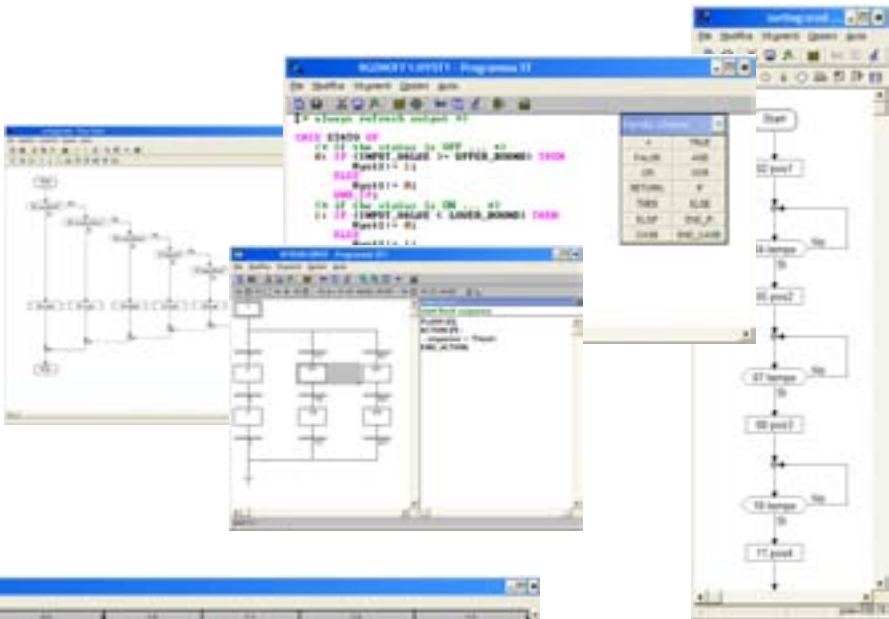


With a powerful **development tool**

Energy XT PRO can be used to develop and customise new programmes quickly and reliably for every type of application.

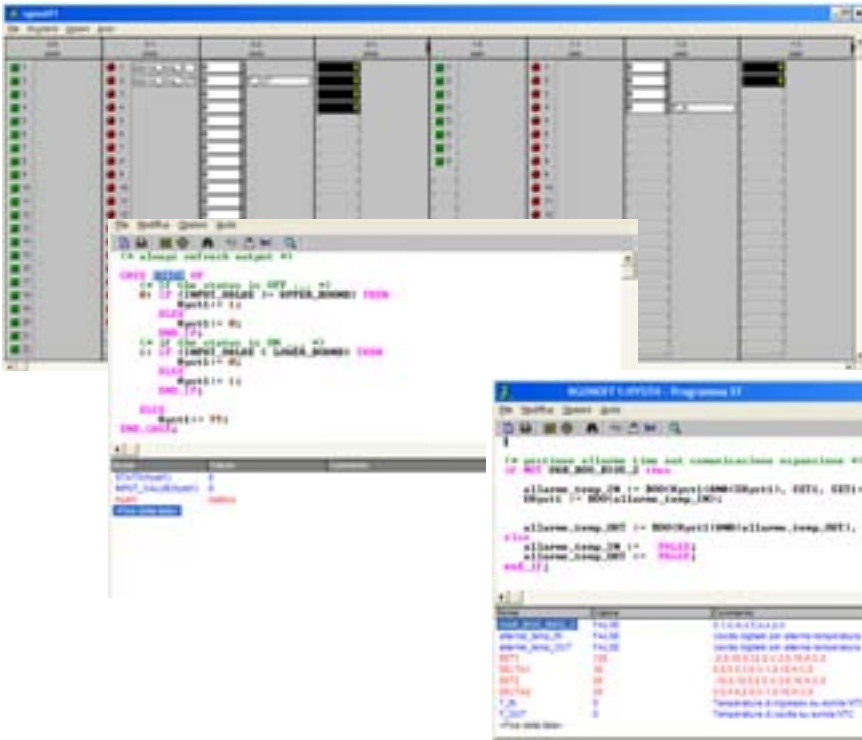
The use of several **standard languages,**

in line with IEC61131 requirements (programming standard for industrial control systems) offers customers the chance to develop their own new algorithms or whole programs whilst keeping their expert knowledge to themselves thus guaranteeing maximum confidentiality.



simulation panel

With the user-friendly the operating environment of the controller can be reproduced in real time at any stage of development and therefore improve on-site reliability.



Part number	Description
SLP1664WB0000	EXT SDK Suite 64 I/O - WBTools
SLP161HWB0000	EXT SDK Suite 128 I/O - WBTools
SLP162HWB0000	EXT SDK Suite 256 I/O - WBTools



General description

MenuMaker PRO allows to modify or to create a customised user interface both in terms of structure and labels, it provides also the possibility to manage a standard mask library for a quicker customisation. Moreover, it is possible to import and export text files for a simple languages management beside an automatic creation of applicative files and user manual. Furthermore it is possible to determine the functions related to

the 5 configurable buttons.
Starting from MenuMaker PRO 3.0 version, by working in SIMULATION mode, it is possible to check in real time on the PC how the panels and the navigation on the keyboard will be displayed. It is no longer necessary to download the menu into the device. This will increase the efficiency of the developing and debug process.

Main features

Graphic representation of logical disposition of displays (decks, pages, items)
Modification, deleting, copying and moving of existing decks
Creation, management and storage of custom menus
Interfacing with WORKBENCH system for definition of parameters and custom variables

Navigation Emulator
"Unique Firmware Model"
New decks development environment
"Full Reverse" property for Items
New Statistics in Real Time and during compilation.

Minimum System Requirements MenuMaker PRO 3.0	
Operating Systems:	• Windows XP Professional™ • Windows XP Home™ • Windows Vista Business™
Minimum hardware requirements:	• Video resolution 1024x768x65536 colours • Pentium 4 2.4 Ghz or above • RAM 1 GB or higher • 1 USB port (for protection key)
Disk space required:	Free space on HDU: 300MB



Part number	Description
SLP1664WBMM00	EXT SDK Suite 64 I/O - WBTools + MenuMaker PRO 3.0
SLP161HWBMM00	EXT SDK Suite 128 I/O - WBTools + MenuMaker PRO 3.0
SLP162HWBMM00	EXT SDK Suite 256 I/O - WBTools + MenuMaker PRO 3.0

ENERGY XT PRO

Minimum Starting Kit & Connectivity



Some examples of System Connectivity are described below.

* for different exigences please contact XT PRO Technical Support

The diagram illustrates the IEC1131 Workbench setup. It shows a 'Remote Keyboard' connected to a 'Local Keyboard' via a CAN bus (CAN0 and CAN1). The 'Remote Keyboard' is also connected to a 'MODEM - FAX - GSM' unit via an RS232 connection. This modem unit is connected to another 'MODEM - FAX - GSM' unit via a 'Mobile / SMS' connection. The second modem unit is connected to a laptop labeled 'SETTING MONITORING BIOS Updating'. A 'SETTING (Param Manager) MONITORING IEC1131 Workbench' laptop is also shown, connected to the CAN bus via an RS485 (MODBUS/Televis) connection.

The diagram illustrates a network topology for remote monitoring using RS485 Modbus. It features three 'Local Keyboard' units at the top, each connected to a 'Remote Keyboard (MASTER-SLAVE)' unit below it. The Remote Keyboard is connected to the Local Keyboard via CAN0 and CAN1. The Remote Keyboard is also connected to a 'MODEM - FAX - GSM' unit via RS232. The MODEM is connected to a 'SETTING MONITORING BIOS Updating' laptop. The Remote Keyboard is connected to an 'RS485 (MODBUS)' unit via RS485 (MODBUS). The RS485 unit is connected to an 'RS232/RS485 Converter' via RS232. The Converter is connected to a 'SETTING MONITORING BIOS Updating' laptop via RS485 (MODBUS/Televiz). The Converter is also connected to a 'MODEM - FAX - GSM' unit via RS485 (MODBUS/Televiz). The MODEM is connected to a 'SETTING MONITORING BIOS Updating' laptop. The Remote Keyboard is connected to a 'MODEM - FAX - GSM' unit via Mobile / SMS. The MODEM is connected to a 'SETTING MONITORING BIOS Updating' laptop.

Diagram illustrating the RS-485 Modbus RTU network topology:

- Remote Keyboard** (CAN1) and **Local Keyboard** (CAN0) are connected to the CAN bus.
- The **Remote Keyboard** is connected to a **Slave RS485 (MODBUS RTU)**.
- The **Local Keyboard** is connected to a **Slave RS485 (MODBUS RTU)**.
- The **Slave RS485 (MODBUS RTU)** is connected to a **SmartAdapter RS485-RS485**.
- The **SmartAdapter RS485-RS485** is connected to an **RS485 Televis**.
- The **RS485 Televis** is connected to an **RS 232** interface, which is connected to a **TelevisNet** laptop.

FREE SB4600/C/S
FREE SB5500/C/S

FREE SB4600/C/S
FREE SB5500/C/S



General description

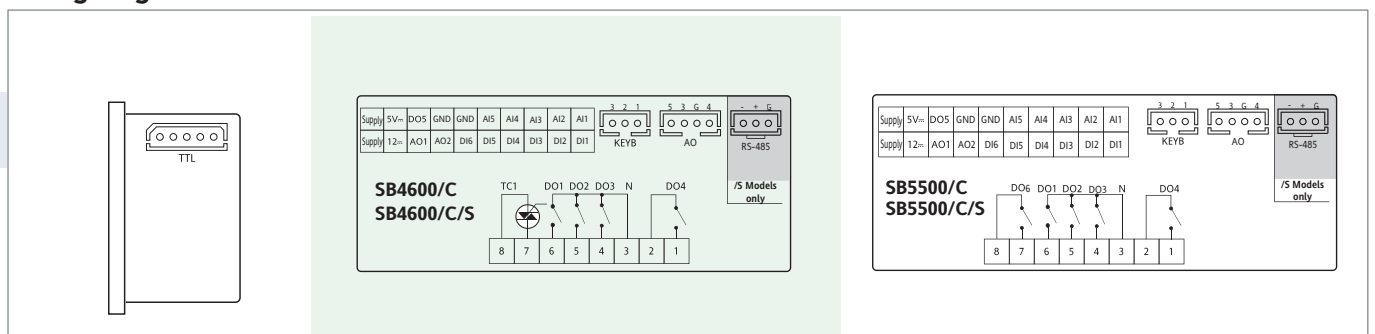
FREE Smart is a part of FREE controllers series, and represents the Eliwell solution for compact programmable controllers. FREE Smart controllers are suitable for HVAC/R market exigences.

In combination with the FREE Smart hardware, the FREE Studio development tool is supplied to create and personalize new programmes for any type of application in a quick and efficient manner.

The use of various programming languages according to IEC61131-3 (Industrial Control Programming Standard) makes it possible to develop in full autonomy both new algorithms and entire programmes which can be downloaded in FREE Smart modules via PC or Multi Function key thus granting the highest confidentiality by using proper protections.

General technical data	SB4600/C • SB4600/C/S	SB5500/C • SB5500/C/S
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Dimensions:	74x32x80mm (Lxhxd)	74x32x80mm (Lxhxd)
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ / 24V= ±10% 50/60Hz
Consumption:	6VA	6VA
Insulation class:	II	II
Housing protection:	IP65 (front protection)	IP65 (front protection)
Ambient operating temp.	-10...55°C	-10...55°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	6 digital inputs	6 digital inputs
Digital outputs:	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)
Open Collector low voltage digital output:	1 open collector output (DO5)	1 open collector output (DO5)
High voltage analogue outputs (TRIAC):	1 x 2A TRIAC, max 250V~ (TC1)	/
Low voltage(SELV) analogue outputs:	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)
Serial	TTL • /S only : RS485 on board	TTL • /S only : RS485 on board

Wiring Diagram



Part number

FREE SB4600/C.....contact Sales Dept.
FREE SB4600/C/S.....contact Sales Dept.

FREE SB5500/C.....contact Sales Dept.
FREE SB5500/C/S.....contact Sales Dept.

FREE SD4600/C/S
FREE SD5500/C/S

FREE SD4600/C/S
FREE SD5500/C/S



General description

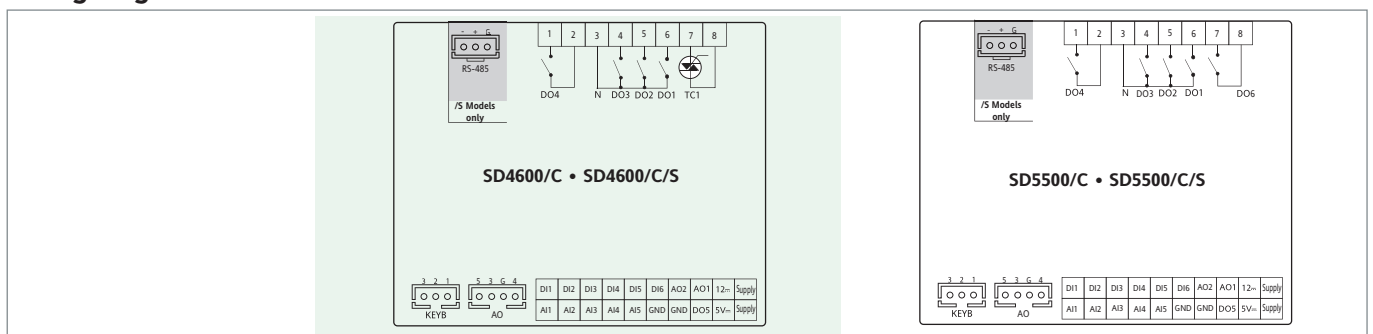
FREE Smart is a part of FREE controllers series, and represents the Eliwell solution for compact programmable controllers. FREE Smart controllers are suitable for HVAC/R market exigences.

In combination with the FREE Smart hardware, the FREE Studio development tool is supplied to create and personalize new programmes for any type of application in a quick and efficient manner.

The use of various programming languages according to IEC61131-3 (Industrial Control Programming Standard) makes it possible to develop in full autonomy both new algorithms and entire programmes which can be downloaded in FREE Smart modules via PC or Multi Function key thus granting the highest confidentiality by using proper protections.

General technical data	SD4600/C • SD4600/C/S	SD5500/C • SD5500/C/S
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Mounting:	4DIN	4DIN
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ / 24V= ±10% 50/60Hz
Consumption:	6VA	6VA
Insulation class:	II	II
Ambient operating temp.	-10...60°C	-10...60°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	6 digital inputs	6 digital inputs
Digital outputs:	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)
Open Collector low voltage digital output:	1 open collector output (DO5)	1 open collector output (DO5)
High voltage analogue outputs (TRIAC):	1 x 3A TRIAC, max 250V~ (TC1)	/
Low voltage(SELV) analogue outputs:	2 PWM/Open Collector output (AO1, AO2) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)	2 PWM/Open Collector output (AO1, AO2) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)
Serial	TTL • /S only: RS485 on board	TTL • /S only: RS485 on board

Wiring Diagram



Part number

FREE SD4600/C.....contact Sales Dept.
FREE SD4600/C/S.....contact Sales Dept.

FREE SD5500/C.....contact Sales Dept.
FREE SD5500/C/S.....contact Sales Dept.

FREE SC4600/C/S
FREE SC5500/C/S

FREE SC4600/C/S
FREE SC5500/C/S



General description

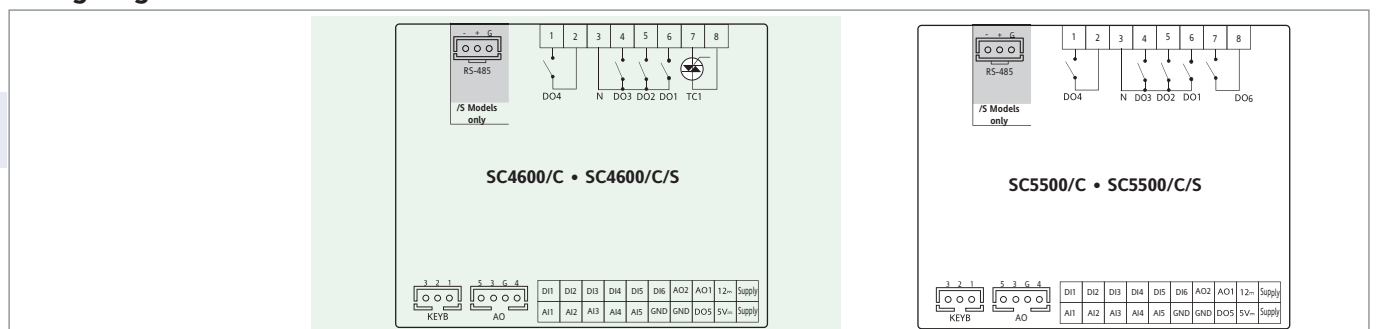
FREE Smart is a part of FREE controllers series, and represents the Eliwell solution for compact programmable controllers. FREE Smart controllers are suitable for HVAC/R market exigences.

In combination with the FREE Smart hardware, the FREE Studio development tool is supplied to create and personalize new programmes for any type of application in a quick and efficient manner.

The use of various programming languages according to IEC61131-3 (Industrial Control Programming Standard) makes it possible to develop in full autonomy both new algorithms and entire programmes which can be downloaded in FREE Smart modules via PC or Multi Function key thus granting the highest confidentiality by using proper protections.

General technical data	SC4600/C • SC4600/C/S	SC5500/C • SC5500/C/S
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Mounting:	4DIN without display	4DIN without display
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ / 24V~ ±10% 50/60Hz
Consumption:	6VA	6VA
Insulation class:	II	II
Ambient operating temp.	-10...60°C	-10...60°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	6 digital inputs	6 digital inputs
Digital outputs:	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)
Open Collector low voltage digital output:	1 open collector output (DO5)	1 open collector output (DO5)
High voltage analogue outputs (TRIAC):	1 x 3A TRIAC, max 250V~ (TC1)	/
Low voltage(SELV) analogue outputs:	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...1V/4...20mA output (AO3 AO4 AO5)	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...1V/4...20mA output (AO3 AO4 AO5)
Serial	TTL • /S only: RS485 on board	TTL • /S only: RS485 on board

Wiring Diagram



Part number

FREE SC4600/C.....contact Sales Dept.
FREE SC4600/C/S.....contact Sales Dept.

FREE SC5500/C.....contact Sales Dept.
FREE SC5500/C/S.....contact Sales Dept.

FREE SC3600/C/S 2 TRIAC FREE SD3600/C/S 2 TRIAC

FREE SC3600/C/S 2 TRIAC FREE SD3600/C/S 2 TRIAC



General description

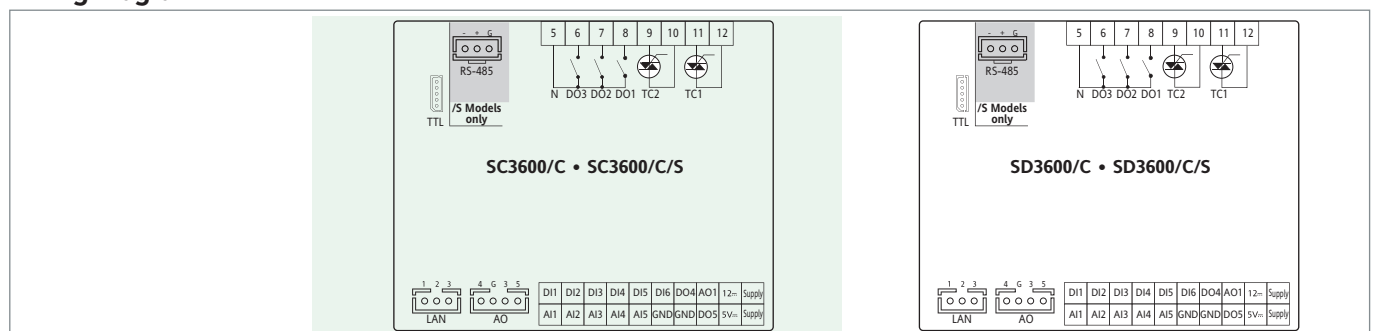
FREE Smart is a part of FREE controllers series, and represents the Eliwell solution for compact programmable controllers. FREE Smart controllers are suitable for HVAC/R market exigences.

In combination with the FREE Smart hardware, the FREE Studio development tool is supplied to create and personalize new programmes for any type of application in a quick and efficient manner.

The use of various programming languages according to IEC61131-3 (Industrial Control Programming Standard) makes it possible to develop in full autonomy both new algorithms and entire programmes which can be downloaded in FREE Smart modules via PC or Multi Function key thus granting the highest confidentiality by using proper protections.

General technical data	SC3600/C • SC3600/C/S	SD3600/C • SD3600/C/S
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing, polycarbonate glass, thermoplastic resin keys
Mounting:	4DIN without display	4DIN with 4-digit display
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ ±10% 50/60Hz
Power draw:	6VA / 4W max.	6VA / 4W max.
Insulation class:	II	II
Ambient operating temp.	-10...55°C	-10...55°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	6 digital inputs	6 digital inputs
Digital outputs:	3 x 2A 250V~ relays (DO1,DO2,DO3)	3 x 2A 250V~ relays (DO1,DO2,DO3)
Open Collector low voltage digital output:	2 open collector output (DO4, DO5)	2 open collector output (DO4, DO5)
High voltage analogue outputs (TRIAC):	2 x 3A TRIAC, max 250V~ (TC1, TC2)	2 x 3A TRIAC, max 250V~ (TC1, TC2) 1% full scale accuracy; Resolution 1%
Low voltage(SELV) analogue outputs:	1 PWM/Open Collector output (AO1) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)	1 PWM/Open Collector output (AO1) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)
Serial	TTL • /S only : RS485 on board	TTL • /S only : RS485 on board

Wiring Diagram



Part number

FREE SC3600/C.....contact Sales Dept.
FREE SC3600/C/S.....contact Sales Dept.

FREE SD3600/C.....contact Sales Dept.
FREE SD3600/C/S.....contact Sales Dept.

ENERGY ST542/C ENERGY ST543/C ENERGY ST544/C

ENERGY ST542/C ENERGY ST543/C ENERGY ST544/C



Applications

Single circuit control of centralized air-conditioning systems with 1 or 2 compressors (steps), such as:

Chillers, Heat Pump, Close Control:

water-air, air-water, water-water, air-air

Condensing units: air-cooled, water-cooled

Typical applications:

- Minimarkets, - offices
- industrial plants - hotels
- residential buildings

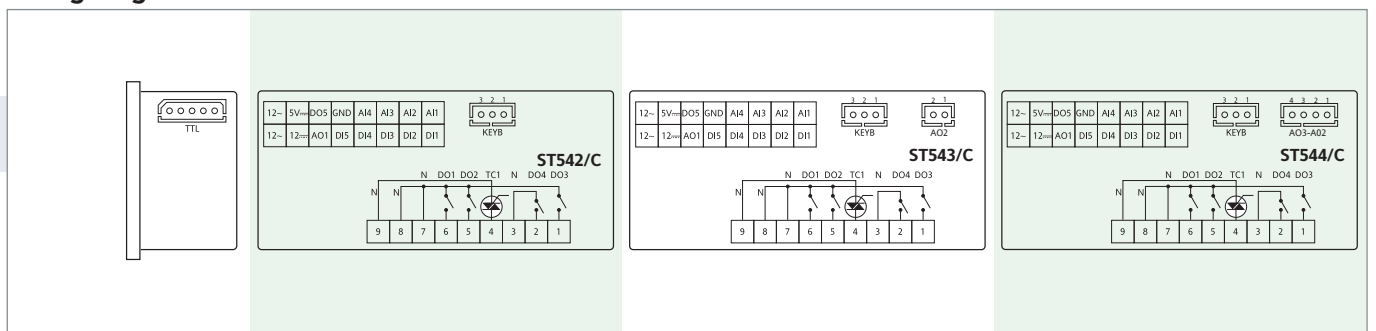
Main functions:

Temperature control via the input or output probe
Integrated boiler or heating control
Integrated control of two electrical heaters or heating system
Dynamic setpoint
Automatic change-over
Indoor ventilation control
Dynamic defrosting

Full diagnostics
Modulating water pump control
Adaptive function for units with no accumulation
Antifreeze function with water pump on external probe
Control of non-uniform tandem compressors
Power limitation
Resources optimized in relation to external temperature

General technical data	ST542/C	ST543/C	ST544/C
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Dimensions:	74x32x60mm (Lxhxd)	74x32x60mm (Lxhxd)	74x32x60mm (Lxhxd)
Power supply:	12V~ ±10% 50/60Hz (other supply on request)	12V~ ±10% 50/60Hz (other supply on request)	12V~ ±10% 50/60Hz (other supply on request)
Consumption:	5VA	5VA	5VA
Insulation class:	II	II	II
Housing protection:	IP65 (front protection)	IP65 (front protection)	IP65 (front protection)
Ambient operating temp.	-10...60°C	-10...60°C	-10...60°C
Ambient storage temp.	-20...85°C	-20...85°C	-20...85°C
Ambient operating and storage humidity	10...90%RH (non condensing)	10...90%RH (non condensing)	10...90%RH (non condensing)
Analogue inputs:	2 NTC temperature inputs (-50...10°C)+ 2 configurable NTC temperature / 4...20mA/0...10V/0...5V/0...1V input	2 NTC temperature inputs (-50...10°C)+ 2 configurable NTC temperature / 4...20mA/0...10V/0...5V/0...1V input	2 NTC temperature inputs (-50...10°C)+ 2 configurable NTC temperature / 4...20mA/0...10V/0...5V/0...1V input
Digital inputs:	5 digital inputs	5 digital inputs	5 digital inputs
Digital outputs:	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)
Open Collector low voltage digital output	1 open collector output (DO5)	1 open collector output (DO5)	1 open collector output (DO5)
High voltage analogue outputs (TRIAC):	1 x 2A TRIAC, max 250V~ (TC1)	1 x 2A TRIAC, max 250V~ (DO5)	1 x 2A TRIAC, max 250V~ (DO5)
Low voltage(SELV) analogue outputs:	1 PWM/Open Collector output (AO1);	2 PWM/Open Collector output(AO1, AO2)	2 PWM/Open Collector output(AO1, AO2)
Serial	TTL	TTL	+ 1 x 0...1V0/4...20mA output (AO3) TTL

Wiring Diagram



Part number

ST 542/C...ST54110411300

ST 543/C...ST54120411300

ST 544/C...ST54121411300

ENERGY ST551/C ENERGY ST552/C ENERGY ST553/C

ENERGY ST551/C ENERGY ST552/C ENERGY ST553/C



Applications

Single circuit control of centralized air-conditioning systems with 1 or 2 compressors (steps), such as:

Chillers, Heat Pump, Close Control:

water-air, air-water, water-water, air-air

Condensing units: air-cooled, water-cooled

Typical applications:

- Minimarkets,
- industrial plants
- residential buildings
- offices
- hotels

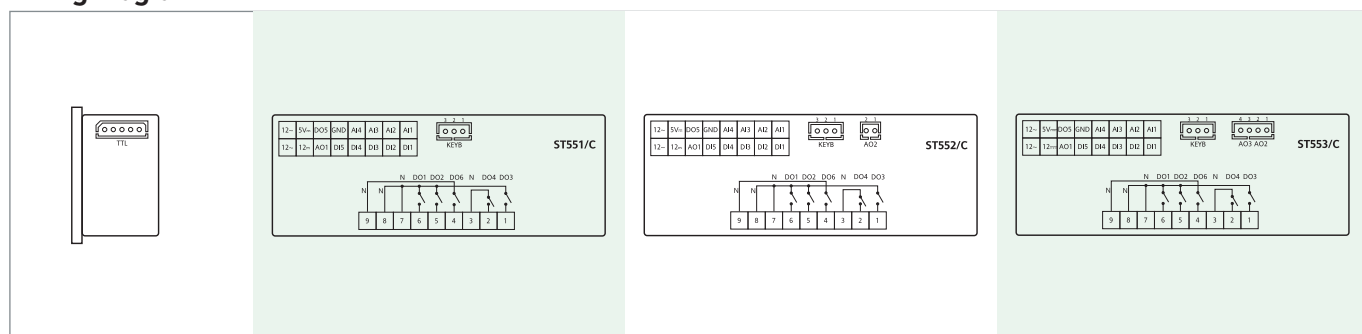
Main functions:

Temperature control via the input or output probe
Integrated boiler or heating control
Integrated control of two electrical heaters or heating system
Dynamic setpoint
Automatic change-over
Indoor ventilation control
Dynamic defrosting

Full diagnostics
Modulating water pump control
Adaptive function for units with no accumulation
Antifreeze function with water pump on external probe
Control of non-uniform tandem compressors
Power limitation
Resources optimized in relation to external temperature

General technical data	ST551/C	ST552/C	ST553/C
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Dimensions:	74x32x60mm (Lxhxd)	74x32x60mm (Lxhxd)	74x32x60mm (Lxhxd)
Power supply:	12V~ ±10% 50/60Hz (other supply on request)	12V~ ±10% 50/60Hz (other supply on request)	12V~ ±10% 50/60Hz (other supply on request)
Consumption:	5VA	5VA	5VA
Insulation class:	II	II	II
Housing protection:	IP65 (front protection)	IP65 (front protection)	IP65 (front protection)
Ambient operating temp.	-10...60°C	-10...60°C	-10...60°C
Ambient storage temp.	-20...85°C	-20...85°C	-20...85°C
Ambient operating and storage humidity	10...90%RH (non condensing)	10...90%RH (non condensing)	10...90%RH (non condensing)
Analogue inputs:	2 NTC temperature inputs (-50...110°C)+ 2 configurable NTC temperature / 4...20mA/0...10V/0...5V/0...1V input/D.I.	2 NTC temperature inputs (-50...110°C)+ 2 configurable NTC temperature / 4...20mA/0...10V/0...5V/0...1V input/D.I.	2 NTC temperature inputs (-50...110°C)+ 2 configurable NTC temperature / 4...20mA/0...10V/0...5V/0...1V input/D.I.
Digital inputs:	5 digital inputs	5 digital inputs	5 digital inputs
Digital outputs:	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)
Open Collector low voltage digital output	1 open collector output (DO5)	1 open collector output (DO5)	1 open collector output (DO5)
Low voltage(SELV) analogue outputs:	1 PWM/Open Collector output(AO1)	2 PWM/Open Collector output(AO1, AO2)	2 PWM/Open Collector output(AO1, AO2) + 1 x 0...10V/4...20mA output (AO3)
Serial	TTL	TTL	TTL

Wiring Diagram



Part number

ST551/C....ST55010411300

ST552/C....ST55020411300

ST553/C....ST55021411300

ENERGY ST744/C

ENERGY ST753/C

ENERGY ST744/C

ENERGY ST753/C



Applications

Single circuit control of centralized air-conditioning systems with 4 compressors (steps), such as:

Chillers, Heat Pump, Close Control:

water-air, air-water, water-water, air-air

Condensing units: air-cooled, water-cooled

Typical applications:

- Minimarkets,
- industrial plants
- residential buildings
- offices
- hotels

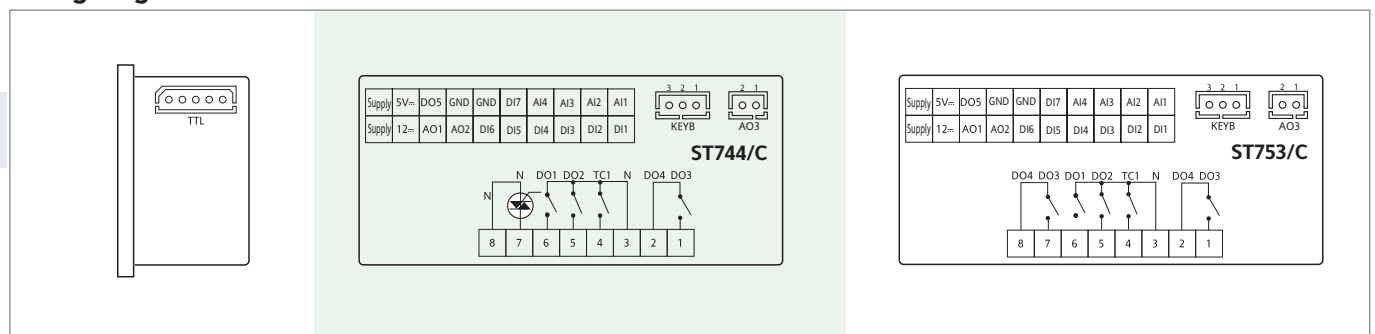
Main functions:

Temperature control via the input or output probe
Integrated boiler or heating control
Integrated control of two electrical heaters or heating system
Dynamic setpoint
Automatic change-over
Indoor ventilation control
Dynamic defrosting

Inverter compressor management
Full diagnostics
Modulating water pump control
Adaptive function for units with no accumulation
Antifreeze function with water pump on external probe
Control of non-uniform tandem compressors
Power limitation
Resources optimized in relation to external temperature

General technical data	ST744/C	ST753/C
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Dimensions:	74x32x80mm (Lxhxd)	74x32x80mm (Lxhxd)
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ / 24V= ±10% 50/60Hz
Consumption:	5VA	5VA
Insulation class:	II	II
Housing protection:	IP65 (front protection)	IP65 (front protection)
Ambient operating temp.	-10...60°C	-10...60°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity	10...90%RH (non condensing)	10...90%RH (non condensing)
Analogue inputs:	2 NTC temperature inputs (-50...110°C)+ 2 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 2 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	7 digital inputs	7 digital inputs
Digital outputs:	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)
Open Collector low voltage digital output	1 open collector output (DO5)	1 open collector output (DO5)
High voltage analogue outputs (TRIAC):	1 x 2A TRIAC, max 250V~ (TC1)	/
Low voltage(SELV) analogue outputs:	2 PWM/Open Collector output(AO1, AO2) + 1 x 0...10V output (AO3)	2 PWM/Open Collector output(AO1, AO2) + 1 x 0...10V output (AO3)
Serial	TTL	TTL

Wiring Diagram



Part number

ST 744/C....ST74121411400

ST 753/C....ST75021411400

ENERGY SB646/C/S

ENERGY SB655/C/S

ENERGY SB646/C/S

ENERGY SB655/C/S



Applications

Single or double circuit control of centralized air-conditioning systems up to 4 compressors (steps), such as:

Chillers, Heat Pump, Close Control:

water-air, air-water, water-water, air-air

Condensing units: air-cooled, water-cooled

Typical applications:

- Minimarkets,
- offices
- industrial plants
- hotels
- residential buildings

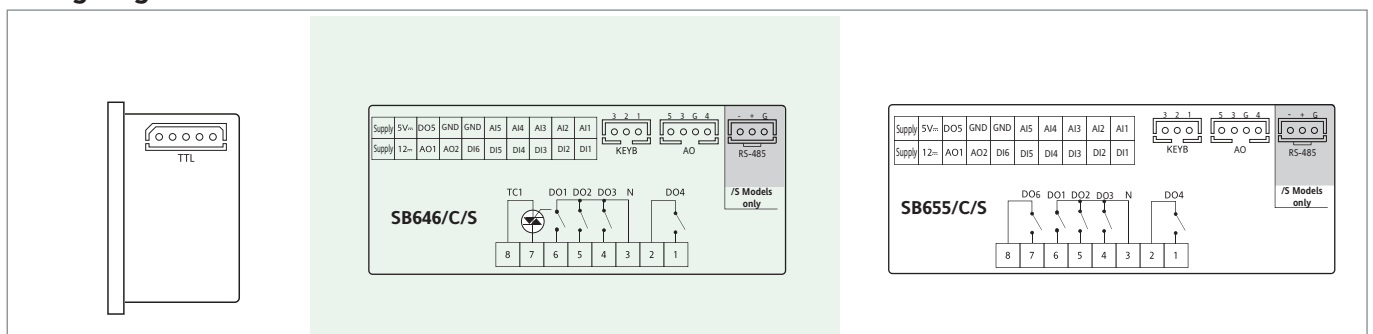
Main functions:

Temperature control via the input or output probe
Integrated boiler or heating control
Integrated control of two electrical heaters or heating system
Dynamic setpoint
Automatic change-over
Indoor ventilation control
Dynamic defrosting

Full diagnostics
Modulating water pump control
Adaptive function for units with no accumulation
Antifreeze function with water pump on external probe
Control of non-uniform tandem compressors
Power limitation
Resources optimized in relation to external temperature

General technical data	SB646/C • SB646/C/S	SB655/C • SB655/C/S
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Dimensions:	74x32x80mm (Lxhxd)	74x32x80mm (Lxhxd)
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ / 24V= ±10% 50/60Hz
Consumption:	6VA	6VA
Insulation class:	II	II
Housing protection:	IP65 (front protection)	IP65 (front protection)
Ambient operating temp.	-10...55°C	-10...55°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity	10...90%RH (non condensing)	10...90%RH (non condensing)
Analogue inputs:	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	6 digital inputs	6 digital inputs
Digital outputs:	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)
Open Collector low voltage digital output	1 open collector output (DO5)	1 open collector output (DO5)
High voltage analogue outputs (TRIAC):	1 x 2A TRIAC, max 250V~ (TC1)	/
Low voltage(SELV) analogue outputs:	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)
Serial	TTL • /S only: RS485 on board	TTL • /S only: RS485 on board

Wiring Diagram



Part number

SB 646/C.....SB64123511400
SB 646/C/S.....SB64123512400

SB 655/C.....SB65023511400
SB 655/C/S.....SB65023512400

ENERGY SD646/C/S

ENERGY SD655/C/S

ENERGY SD646/C/S

ENERGY SD655/C/S



Applications

Single or double circuit control of centralized air-conditioning systems up to 4 compressors (steps), such as:

Chillers, Heat Pump, Close Control:

water-air, air-water, water-water, air-air

Condensing units: air-cooled, water-cooled

Typical applications:

- Minimarkets,
- offices
- industrial plants
- hotels
- residential buildings

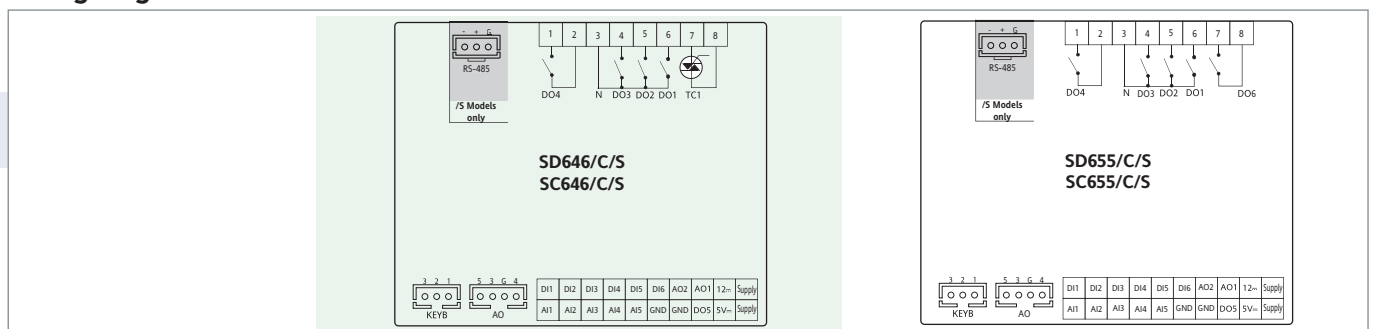
Main functions:

Temperature control via the input or output probe
Integrated boiler or heating control
Integrated control of two electrical heaters or heating system
Dynamic setpoint
Automatic change-over
Indoor ventilation control
Dynamic defrosting

Full diagnostics
Modulating water pump control
Adaptive function for units with no accumulation
Antifreeze function with water pump on external probe
Control of non-uniform tandem compressors
Power limitation
Resources optimized in relation to external temperature

General technical data	SD646/C • SD646/C/S	SD655/C • SD655/C/S
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Mounting:	4DIN	4DIN
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ / 24V= ±10% 50/60Hz
Consumption:	6VA	6VA
Insulation class:	II	II
Ambient operating temp.	-10...60°C	-10...60°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	6 digital inputs	6 digital inputs
Digital outputs:	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)
Open Collector low voltage digital output:	1 open collector output (DO5)	1 open collector output (DO5)
High voltage analogue outputs (TRIAC):	1 x 3A TRIAC, max 250V~ (TC1)	/
Low voltage(SELV) analogue outputs:	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)
Serial	TTL • /S only: RS485 on board	TTL • /S only: RS485 on board

Wiring Diagram



Part number

SD 646/C.....SD64123511400
SD 646/C/S....SD64123512400

SD 655/C.....SD65023511400
SD 655/C/S....SD65023512400

ENERGY SC646/C/S

ENERGY SC655/C/S

ENERGY SC646/C/S

ENERGY SC655/C/S



Applications

Single or double circuit control of centralized air-conditioning systems up to 4 compressors (steps), such as:

Chillers, Heat Pump, Close Control:

water-air, air-water, water-water, air-air

Condensing units: air-cooled, water-cooled

Typical applications:

- Minimarkets,
- offices
- industrial plants
- hotels
- residential buildings

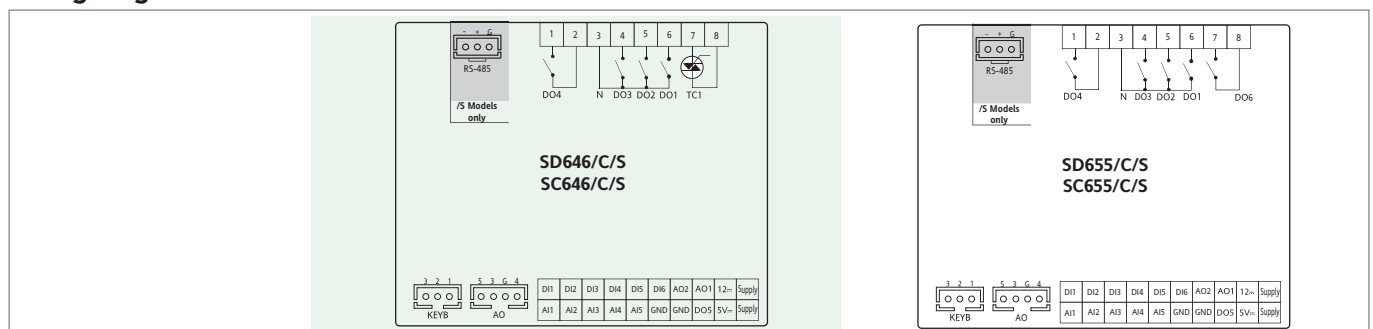
Main functions:

Temperature control via the input or output probe
Integrated boiler or heating control
Integrated control of two electrical heaters or heating system
Dynamic setpoint
Automatic change-over
Indoor ventilation control
Dynamic defrosting

Full diagnostics
Modulating water pump control
Adaptive function for units with no accumulation
Antifreeze function with water pump on external probe
Control of non-uniform tandem compressors
Power limitation
Resources optimized in relation to external temperature

General technical data	SC646/C • SC646/C/S	SC655/C • SC655/C/S
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Mounting:	4DIN without display	4DIN without display
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ / 24V~ ±10% 50/60Hz
Consumption:	6VA	6VA
Insulation class:	II	II
Ambient operating temp.	-10...60°C	-10...60°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	6 digital inputs	6 digital inputs
Digital outputs:	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)
Open Collector low voltage digital output:	1 open collector output (DO5)	1 open collector output (DO5)
High voltage analogue outputs (TRIAC):	1 x 3A TRIAC, max 250V~ (TC1)	/
Low voltage(SELV) analogue outputs:	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...1V/4...20mA output (AO3 AO4 AO5)	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...1V/4...20mA output (AO3 AO4 AO5)
Serial	TTL • /S only: RS485 on board	TTL • /S only: RS485 on board

Wiring Diagram



Part number
SC 646/C.....SC64123511400
SC 646/C/S....SC64123512400

SC 655/C.....SC65023511400
SC 655/C/S....SC65023512400

ENERGY SC636/C/S 2 TRIAC ENERGY SD636/C/S 2 TRIAC

ENERGY SC636/C/S 2 TRIAC ENERGY SD636/C/S 2 TRIAC



Applications

Single or double circuit control of centralized air-conditioning systems up to 4 compressors (steps), such as:

Chillers, Heat Pump, Close Control:

water-air, air-water, water-water, air-air

Condensing units: air-cooled, water-cooled

Typical applications:

- Minimarkets,
- industrial plants
- residential buildings
- offices
- hotels

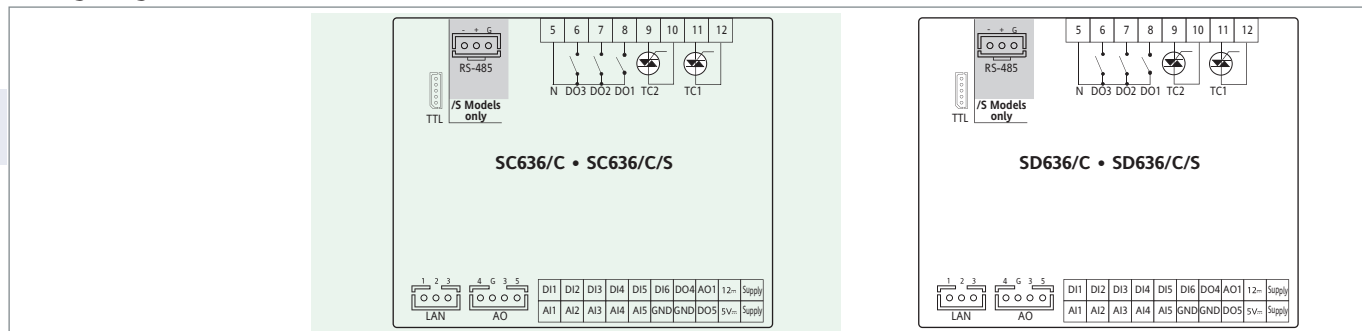
Features:

2 TRIAC output (3 + 3A)

ON/OFF and proportional condensation control without external devices up to 3A

General technical data	SC636/C • SC636/C/S	SD636/C • SD636/C/S
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing, polycarbonate glass, thermoplastic resin keys
Mounting:	4DIN without display	4DIN with 4-digit display
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ ±10% 50/60Hz
Power draw:	6VA / 4W max.	6VA / 4W max.
Insulation class:	II	II
Ambient operating temp.	-10...55°C	-10...55°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	6 digital inputs	6 digital inputs
Digital outputs:	3 x 2A 250V~ relays (DO1,DO2,DO3)	3 x 2A 250V~ relays (DO1,DO2,DO3)
Open Collector low voltage digital output:	2 open collector output (DO4, DO5)	2 open collector output (DO4, DO5)
High voltage analogue outputs (TRIAC):	2 x 3A TRIAC, max 250V~ (TC1, TC2)	2 x 3A TRIAC, max 250V~ (TC1, TC2) 1% full scale accuracy; Resolution 1%
Low voltage(SELV) analogue outputs:	1 PWM/Open Collector output (AO1) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)	1 PWM/Open Collector output (AO1) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)
Serial	TTL • /S only: RS485 on board	TTL • /S only: RS485 on board

Wiring Diagram



Part number

SC 636/C.....SC63213511400
SC 636/C/S....SC63213512400

SD 636/C.....SD63213511400
SD 636/C/S....SD63213512400

ENERGY SBW646/C/S

ENERGY SBW655/C/S

ENERGY SBW646/C/S

ENERGY SBW655/C/S



Applications

Double circuit control of centralized air-conditioning systems up to 4 compressors (steps), such as:

Typical applications:

- Residential Heat Pumps

Chillers, Heat Pump, Close Control:

water-air, air-water, water-water, air-air

Condensing units: air-cooled, water-cooled

Main functions:

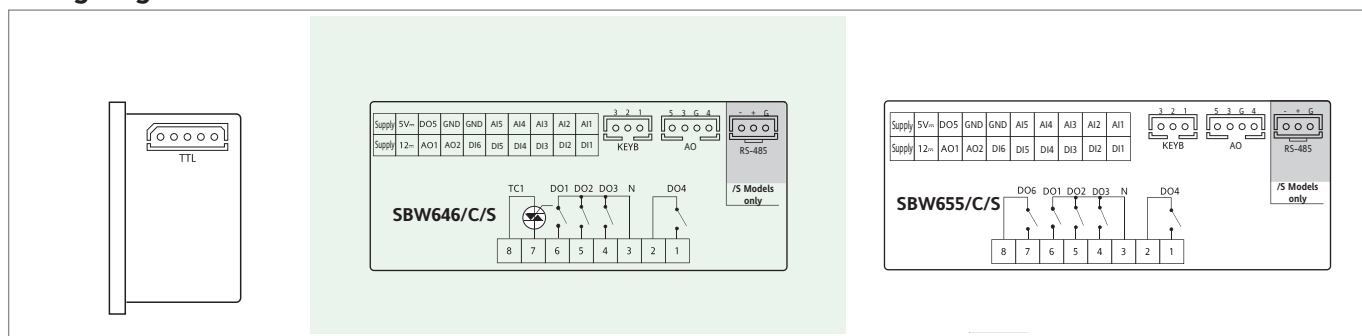
Sanitary hot water with auto-adaptive setpoint
Sanitary Water and Anti-legionnaire's
Disease with weekly programming
Inverter compressor management
Temperature control via the input or output probe
Integrated boiler or heating control

Integrated control of two electrical heaters or heating system
Dynamic setpoint
Automatic change-over
Indoor ventilation control
Dynamic defrosting
Full diagnostics
Modulating water pump control

Adaptive function for units with no accumulation
Antifreeze function with water pump on external probe
Control of non-uniform tandem compressors
Power limitation
Resources optimized in relation to external temperature

General technical data	SBW646/C • SBW646/C/S	SBW655/C • SBW655/C/S
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Dimensions:	74x32x80mm (Lxhxd)	74x32x80mm (Lxhxd)
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ / 24V= ±10% 50/60Hz
Consumption:	6VA	6VA
Insulation class:	II	II
Housing protection:	IP65 (front protection)	IP65 (front protection)
Ambient operating temp.	-10...55°C	-10...55°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	6 digital inputs	6 digital inputs
Digital outputs:	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)
Open Collector low voltage digital output:	1 open collector output (DO5)	1 open collector output (DO5)
High voltage analogue outputs (TRIAC):	1 x 3A TRIAC, max 250V~ (TC1)	/
Low voltage(SELV) analogue outputs:	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...1V/4...20mA output (AO3 AO4 AO5)	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...1V/4...20mA output (AO3 AO4 AO5)
Serial	TTL • /S only: RS485 on board	TTL • /S only: RS485 on board

Wiring Diagram



Part number

SBW 646/C.....SB64123511400
SBW 646/C/S....SB64123512400

SBW 655/C.....SB65023511400
SBW 655/C/S....SB65023512400

ENERGY SDW646/C/S

ENERGY SDW655/C/S

ENERGY SDW646/C/S

ENERGY SDW655/C/S



Applications

Double circuit control of centralized air-conditioning systems up to 4 compressors (steps), such as:

Chillers, Heat Pump, Close Control:

water-air, air-water, water-water, air-air

Condensing units: air-cooled, water-cooled

Typical applications:

- Residential Heat Pumps

Main functions:

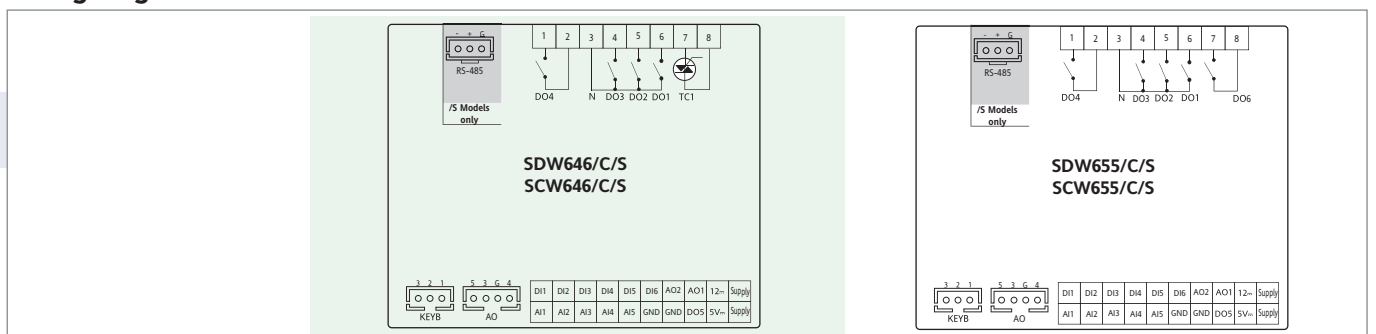
Sanitary hot water with auto-adaptive setpoint
Sanitary Water and Anti-legionnaire's
Disease with weekly programming
Inverter compressor management
Temperature control via the input or output probe
Integrated boiler or heating control

Integrated control of two electrical heaters or heating system
Dynamic setpoint
Automatic change-over
Indoor ventilation control
Dynamic defrosting
Full diagnostics
Modulating water pump control

Adaptive function for units with no accumulation
Antifreeze function with water pump on external probe
Control of non-uniform tandem compressors
Power limitation
Resources optimized in relation to external temperature

General technical data	SDW646/C • SDW646/C/S	SDW655/C • SDW655/C/S
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Mounting:	4DIN	4DIN
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ / 24V= ±10% 50/60Hz
Consumption:	6VA	6VA
Insulation class:	II	II
Ambient operating temp.	-10...60°C	-10...60°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	6 digital inputs	6 digital inputs
Digital outputs:	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)
Open Collector low voltage digital output:	1 open collector output (DO5)	1 open collector output (DO5)
High voltage analogue outputs (TRIAC):	1 x 3A TRIAC, max 250V~ (TC1)	/
Low voltage(SELV) analogue outputs:	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...1V/4...20mA output (AO3 AO4 AO5)	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...1V/4...20mA output (AO3 AO4 AO5)
Serial	TTL • /S only: RS485 on board	TTL • /S only: RS485 on board

Wiring Diagram



Part number
SDW 646/C.....SD64123511400
SDW 646/C/S....SD64123512400

Part number
SDW 655/C.....SD65023511400
SDW 655/C/S....SD65023512400

ENERGY SCW646/C/S

ENERGY SCW655/C/S

ENERGY SCW646/C/S

ENERGY SCW655/C/S



Applications

Double circuit control of centralized air-conditioning systems up to 4 compressors (steps), such as:

Chillers, Heat Pump, Close Control:
water-air, air-water, water-water, air-air

Condensing units: air-cooled, water-cooled

Typical applications:

- Residential Heat Pumps

Main functions:

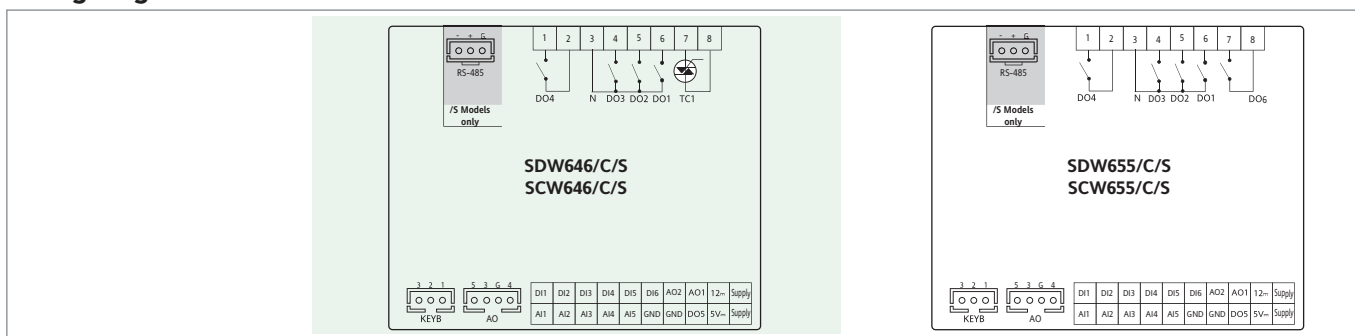
Sanitary hot water with auto-adaptive setpoint
Sanitary Water and Anti-legionnaire's
Disease with weekly programming
Inverter compressor management
Temperature control via the input or output probe
Integrated boiler or heating control

Integrated control of two electrical heaters or heating system
Dynamic setpoint
Automatic change-over
Indoor ventilation control
Dynamic defrosting
Full diagnostics
Modulating water pump control

Adaptive function for units with no accumulation
Antifreeze function with water pump on external probe
Control of non-uniform tandem compressors
Power limitation
Resources optimized in relation to external temperature

General technical data	SCW646/C • SCW646/C/S	SCW655/C • SCW655/C/S
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Mounting:	4DIN without display	4DIN without display
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ / 24V~ ±10% 50/60Hz
Consumption:	6VA	6VA
Insulation class:	II	II
Ambient operating temp.	-10...60°C	-10...60°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	6 digital inputs	6 digital inputs
Digital outputs:	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	5 x 2A 250V~ relays (DO1,DO2,DO3, DO4,DO6)
Open Collector low voltage digital output:	1 open collector output (DO5)	1 open collector output (DO5)
High voltage analogue outputs (TRIAC):	1 x 3A TRIAC, max 250V~ (TC1)	/
Low voltage(SELV) analogue outputs:	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...1V/4...20mA output (AO3 AO4 AO5)	2 PWM/Open Collector output(AO1, AO2) + 3 x 0...1V/4...20mA output (AO3 AO4 AO5)
Serial	TTL • /S only: RS485 on board	TTL • /S only: RS485 on board

Wiring Diagram



Part number
SCW 646/C.....SC64123511400
SCW 646/C/S....SC64123512400

Part number
SCW 655/C.....SC65023511400
SCW 655/C/S....SC65023512400

ENERGY SCW636/C/S 2 TRIAC

ENERGY SDW636/C/S 2 TRIAC

ENERGY SCW636/C/S 2 TRIAC

ENERGY SDW636/C/S 2 TRIAC



Applications

Single or double circuit control of centralized air-conditioning systems up to 4 compressors (steps), such as:

Chillers, Heat Pump, Close Control:

water-air, air-water, water-water, air-air

Condensing units: air-cooled, water-cooled

Typical applications:

- Residential Heat Pumps

Features:

2 TRIAC output (3 + 3A)

ON/OFF and proportional condensation control without external devices up to 3A

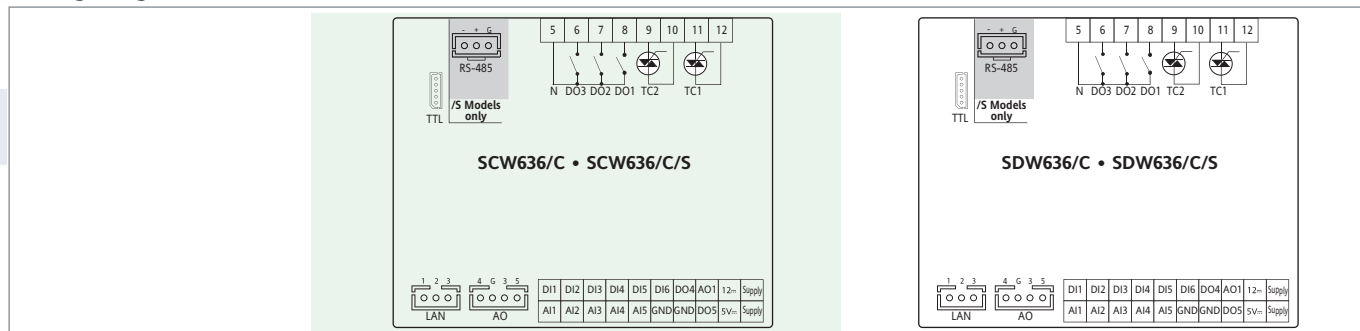
Sanitary hot water with auto-adaptive setpoint

Sanitary Water and Anti-legionnaire's Disease with weekly programming

Other functions: see SBW-SDW646 series

General technical data	SCW636/C • SCW636/C/S	SDW636/C • SDW636/C/S
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing, polycarbonate glass, thermoplastic resin keys
Mounting:	4DIN without display	4DIN with 4-digit display
Power supply:	12-24V~ ±10% 50/60Hz	12-24V~ ±10% 50/60Hz
Power draw:	6VA / 4W max.	6VA / 4W max.
Insulation class:	II	II
Ambient operating temp.	-10...55°C	-10...55°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input / D.I.
Digital inputs:	6 digital inputs	6 digital inputs
Digital outputs:	3 x 2A 250V~ relays (DO1,DO2,DO3)	3 x 2A 250V~ relays (DO1,DO2,DO3)
Open Collector low voltage digital output:	2 open collector output (DO4, DO5)	2 open collector output (DO4, DO5)
High voltage analogue outputs (TRIAC):	2 x 3A TRIAC, max 250V~ (TC1, TC2)	2 x 3A TRIAC, max 250V~ (TC1, TC2)
Low voltage(SELV) analogue outputs:	1 PWM/Open Collector output (AO1) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)	1 PWM/Open Collector output (AO1) + 3 x 0...10V/4...20mA output (AO3 AO4 AO5)
Serial	TTL • /S only: RS485 on board	TTL • /S only: RS485 on board

Wiring Diagram



Part number

SCW 636/C.....Contact Sales Dept.
SCW 636/C/S....Contact Sales Dept.

SDW 636/C.....Contact Sales Dept.
SDW 636/C/S....Contact Sales Dept.

ENERGY SE632

ENERGY SE646

ENERGY SE655

ENERGY SE632

ENERGY SE646

ENERGY SE655



Features

Expansion module for SB/SC/SD 600 series, SBW/SDW/SCW 600 series.

See related sections

Main functions:

Temperature control via the input or output probe

Integrated boiler or heating control

Integrated control of two electrical heaters or heating system

Dynamic setpoint

Automatic change-over

Indoor ventilation control

Dynamic defrosting

Full diagnostics

Modulating water pump control

Adaptive function for units with no accumulation

Antifreeze function with water pump on external probe

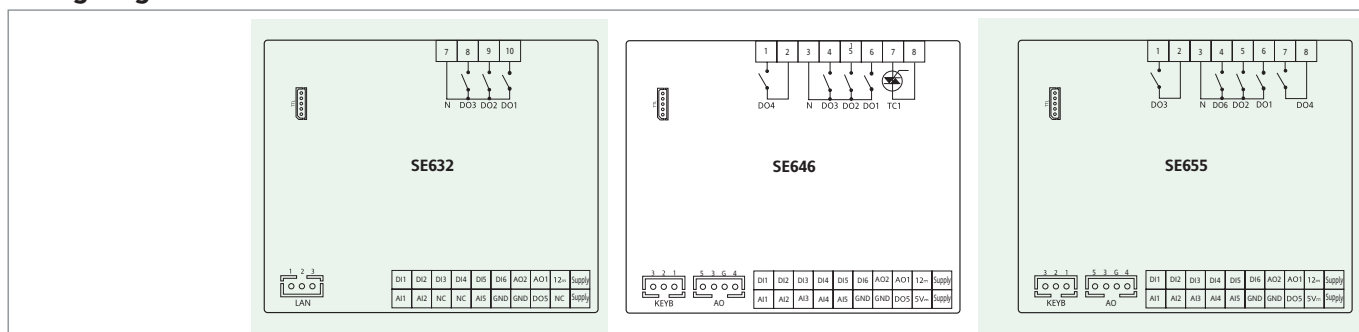
Control of non-uniform tandem compressors

Power limitation

Resources optimized in relation to external temperature

General technical data	SE632	SE646	SE655
Casing:	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing	PC+ABS UL94 V-0 resin plastic casing
Mounting:	4DIN without display	4DIN without display	4DIN without display
Power supply:	12-24V~ / 24V= ±10% 50/60Hz	12-24V~ ±10% 50/60Hz	12-24V~ / 24V= ±10% 50/60Hz
Consumption:	5VA	5VA	5VA
Insulation class:	II	II	II
Ambient operating temp.:	-10...60°C	-10...60°C	-10...60°C
Ambient storage temp.:	-20...85°C	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non condensing)	10...90%RH (non condensing)	10...90%RH (non condensing)
Analogue Inputs:	3 configurable inputs: NTC temperature / D.I.	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input	2 NTC temperature inputs (-50...110°C)+ 3 configurable inputs: NTC temperature / 4...20mA/0...10V/0...5V/0...1V input
Digital inputs:	6 no-voltage digital inputs	6 no-voltage digital inputs	6 no-voltage digital inputs
Digital outputs:	3 x 2A 250V~ relays (DO1,DO2,DO3)	4 x 2A 250V~ relays (DO1,DO2,DO3,DO4)	5 x 2A 250V~ relays (DO1,DO2,DO3,DO4,DO5)
Open Collector low voltage digital output:	1 open collector output (DO5)	1 open collector output (DO5)	1 open collector output (DO5)
High voltage analogue outputs (TRIAC):	/	1 x 2A TRIAC, max 250V~ (TC1) 1% full scale accuracy; Resolution 1%	/
Low voltage(SELV) analogue outputs:	2 PWM/Open Collector output (AO1,AO2)	2 PWM/Open Collector output (AO1,AO2) + 3 x 0...1V/4...20mA output (AO3 AO4 AO5)	2 PWM/Open Collector output (AO1, AO2) + 3 x 0...1V/4...20mA output (AO3 AO4 AO5)
Serial:	TTL	TTL	TTL

Wiring Diagram



Part number SE 632....SE63020310400

SE 646....SE64123510400

SE 655....SE65023510400

ENERGY SKP10 ENERGY SKW22 ENERGY SKW22/L

ENERGY SKP10 ENERGY SKW22 ENERGY SKW22/L

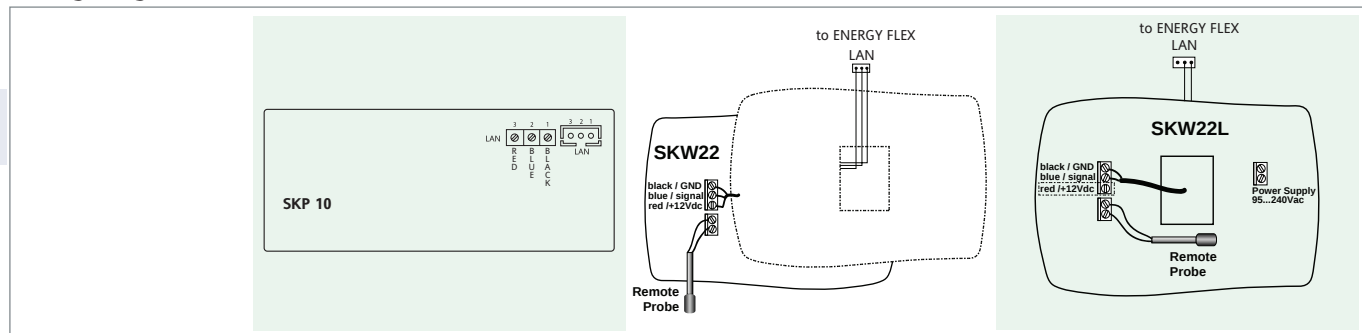


General description

Remote terminals for SB/SC/SD series, SBW/SDW/SCW 600 series. See related sections.

General technical data	SKP10	SKW22	SKW22/L
Casing:	PC+ABS UL94 V-0 resin plastic casing, polycarbonate glass, thermo-plastic resin keys	ABS white plastic casing	ABS white plastic casing
Dimensions:	74x32x30mm (LxHxD)	137.0x96.5x31.3mm (LxHxD) max.	137.0x96.5x31.3mm (LxHxD) max.
Mounting:	panel mounting with 71x29mm (+0.2/-0.1mm) drilling template	wall mounting	wall mounting
Power supply:	from power base module	from power base module	100-240V ~ ± 10% 50/60Hz
Power draw:	30mA max	30mA max	2W max
Front protection:	IP65	IP40	IP40
Ambient operating temp.:	-10...60°C	-5...60°C	-5...60°C
Ambient storage temp.:	-20...85°C	-10...70°C	-10...70°C
Ambient operating and storage humidity:	10...90% RH (non condensing)	10...90% RH (non condensing)	10...90% RH (non condensing)
Analogue Inputs:	/	1 on/board configurable NTC; 1 remote configurable NTC/4...20mA/D.I. (remote probe not included in the package)	1 on/board configurable NTC; 1 remote configurable NTC/4...20mA/D.I. (remote probe not included in the package)
Display:	4-LED display	LCD display	LCD display backlit
LAN:	connection to power base module	connection to power base module	connection to power base module
Cables:	not included	included in the package	not included

Wiring Diagram



Part number	SKP10....SKP1000000000	SKW22....SKW2200000000	SKW22/L....SKW22L0000H00
-------------	------------------------	------------------------	--------------------------

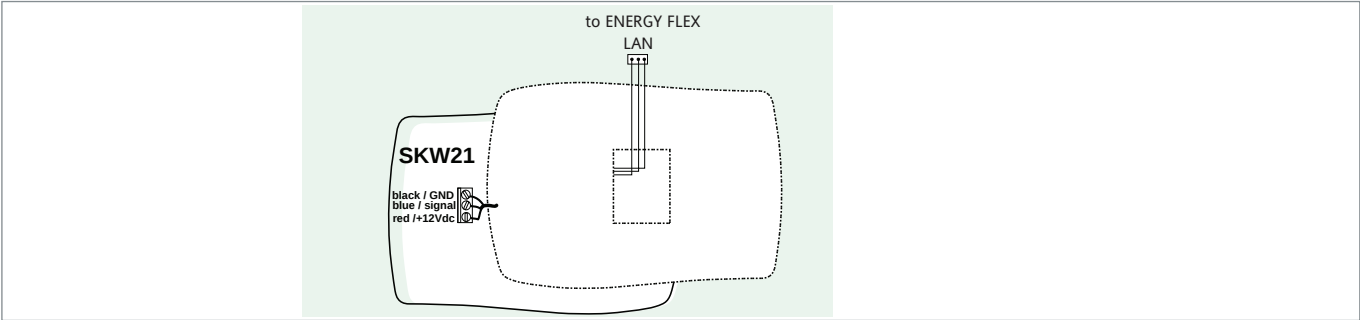


General description

Remote terminals for ST 500-700 series. See related sections.

General technical data	SKW21
Casing:	ABS white plastic casing
Dimensions:	137.0x96.5x31.3mm (LxHxD) max.
Mounting:	wall mounting
Power supply:	from ST 500-700
Power draw:	500mW max
Front protection:	IP40
Ambient operating temp.:	-5...60°C
Ambient storage temp.:	-10...70°C
Ambient operating and storage humidity:	10...90% RH (non condensing)
Analogue Input:	1 on/board configurable NTC
Display:	LCD display
LAN:	connection to power base module
Cables:	included in the package

Wiring Diagram



Part number SKW21....SKW210000000

Product	Part number	Description	Utilisation				
			ST500	ST700	SB/SC/SD	SBW/SDW/SCW	FREE SB/SC/SD
	SKP1000000000	SKP10 remote terminal	-	-	✓	✓	✓
	SKW2200000000	SKW22 remote terminal	-	-	✓	✓	✓
	SKW22L0000H00	SKW22/L remote terminal	-	-	✓	✓	✓
	SKW2100000000	SKW21 remote terminal	✓	✓	-	-	-
	MW320100	EXP211 expansion module	✓	✓	✓	✓	✓
	COLV000000100*	16-ways connection cable for signal line (low voltage I/O)	✓	-	-	-	-
	COLV0000E0100*	20-ways connection cable for signal line (low voltage I/O)	-	✓	✓	✓	✓
	COHV000000100*	9-ways connection cable for high voltage outputs	✓	✓	-	-	-
	COLV000042100	4-ways connection cable for analogue outputs	✓	-	✓	✓	✓
	COLV000022100	2-ways connection cable for analogue output	✓	✓	-	-	-
	COLV000035100	Connection cable for RS-485 serial port	-	-	✓	✓	✓
	COLV000033200	Connection cable for remote terminal SKW	✓	✓	✓	✓	✓

* accessories necessary for minimum configuration

			Utilisation					
			ST500	ST700	SB/SC/SD	SBW/SDW/SCW	FREESB/SC/SD	XT PRO
Product	Part number	Description						
	TF411200	230V~/12V 5VA (protected) transformer	✓	✓	-	-	-	-
	TF411210	230V~/12V 11VA (protected) transformer	-	-	✓	✓	✓	-
	TF111202	230V~/24V 25VA (protected) transformer	-	-	-	-	-	✓
	VAL00031K	Energy Flex Demo Kit	✓	✓	✓	✓	✓	-
	VAL00020	XT PRO Demo Kit	-	-	-	-	-	✓



Applications

ECH 985 is a heat pump controller for the following kinds of applications:

- water-water
- water-air

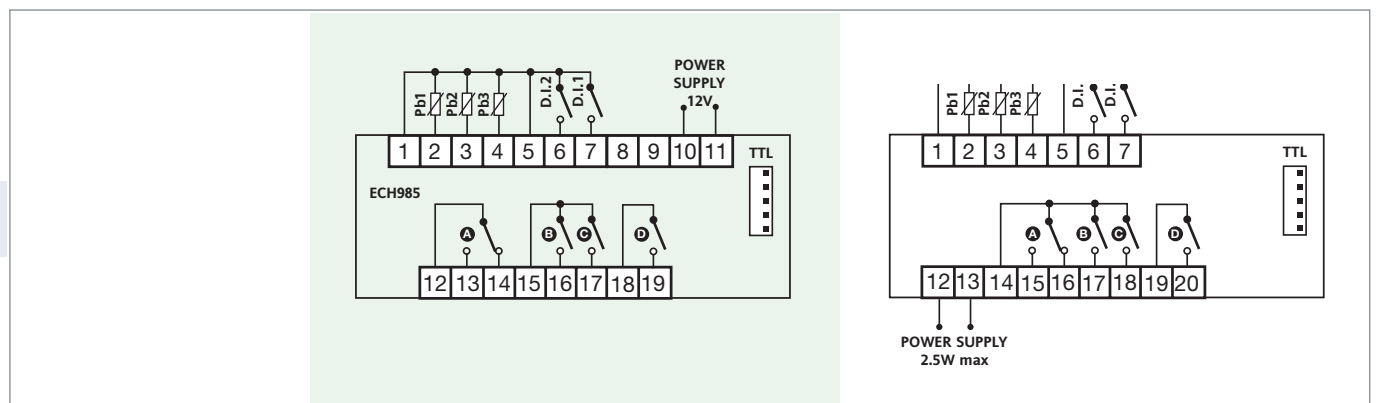
with accumulation tank for residential water heating applications.

Main functions:

- Control of 1 compressor
- 2 configurable digital inputs
- 3 analogue inputs for NTC probes
- 4 configurable digital outputs on relays
- 1 TTL serial port for connection to Copy Card accessory
- Anti-legionella function
- Timer function to run daily events
- Party function to manually enable temperature control
- Party Full function as above (compressor x electric heater working in parallel)
- Parameter setting from keypad
- Copy Card for uploading or downloading parameter maps
- Menu type user interface with 2 different levels of password controlled access

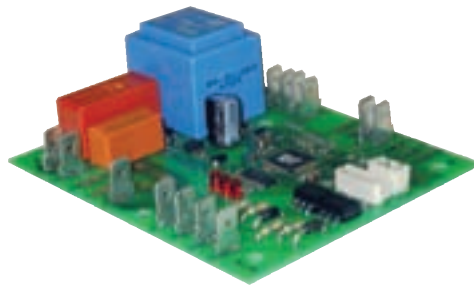
General technical data	ECH 985 12V	ECH 985 100-240V
Casing:	PC+ABS UL94 V-0 resin plastic casing, polycarbonate glass, thermoplastic resin keys	PC+ABS UL94 V-0 resin plastic casing, polycarbonate glass, thermoplastic resin keys
Dimensions:	front 32x74mm	front 32x74mm
Mounting:	Panel mounting with 29x71mm drilling template (+0.2/-0.1mm)	Panel mounting with 29x71mm drilling template (+0.2/-0.1mm)
Ambient operating temperature:	-5...+55°C	-5...+55°C
Ambient Storage temperature:	-30...+85°C	-30...+85°C
Housing protection:	IP65	IP65
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs	3 NTC temperature inputs (-50...+110°C)	3 NTC temperature inputs (-50...+110°C)
Digital inputs:	2 voltage free digital inputs	2 voltage free digital inputs
Digital outputs:	3 SPST 2A 250V~ + 1 SPDT 2A 250V relays	3 SPST 2A 250V~ + 1 SPDT 2A 250V relays
Buzzer:	present	present
Display resolution:	0.1°C (0.1°F up to +199.9°F; then 1°F)	0.1°C (0.1°F up to +199.9°F; then 1°F)
Power draw:	3VA	2.5W max
Power Supply:	12V~ ±10% 50/60Hz	100-240V~ ±10% 50/60Hz

Wiring Diagram



Part number ECH 985....MW329000

ECH 985....MW329003



Applications

MC3 is an electronic controller for management of water condensing unit machines.

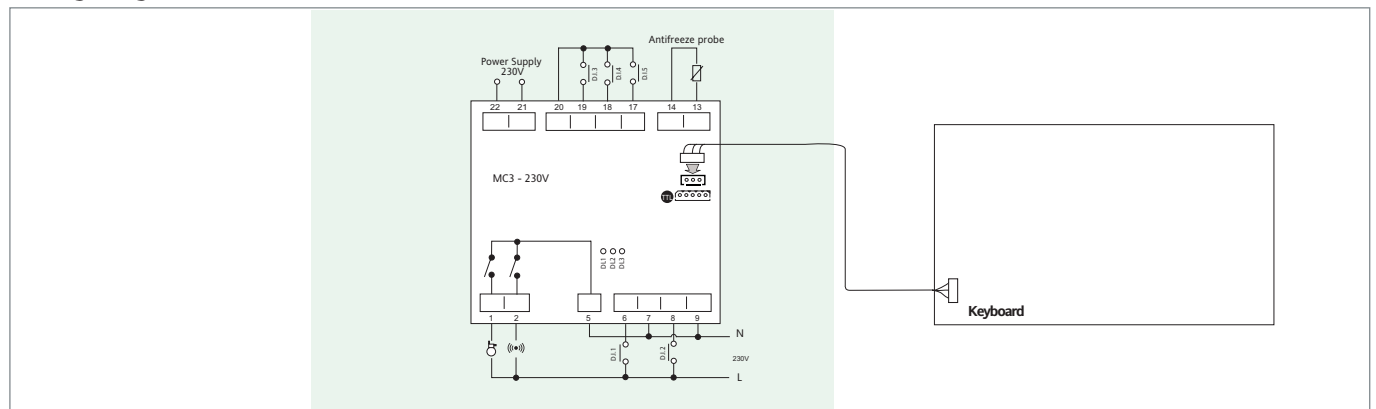
It enables management of:

- compressor safety time
- high pressure and low pressure alarm
- Flow switch alarm
- Antifreeze alarm

The instrument consists of an open board, programmable by means of Param Manager or by means of optional keyboard MCK.

General technical data	MC3	Keyboard MCK
Format:	open board	
Dimensions:	front 103x86mm	front panel 94x70mm, depth 30mm
Insulation class:	II	-
Housing protection:		IP20
Ambient operating temperature:	0...+50°C	-5...+55°C
Ambient Storage temperature:	-20...+85°C	-30...+85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Analogue Inputs:	1 NTC temperature inputs (-50...110°C) (anti-freeze probe)	-
Digital inputs:	2 digital inputs 230V~ + 3 voltage free digital inputs	-
Digital outputs:	1 SPST 8(3)A 1/2hp 250V~ + 1 SPST 5(2)A 1/4hp 250V relays	-
Serial port:	TTL for connection to Copy Card + 3 way fast connector for MCK external Keyboard	3 way fast connector for base MC3
Display resolution:	-	0.1°C (0.1°F up to +199.9°F; then 1°F)
Power draw:	3VA	-
Power Supply:	230V~ ±10% 50/60Hz	from base MC3

Wiring Diagram



Part number

MC3....MC5BN002W0701

MCK....MK0000040H001

FC BASIC 210/L FC BASIC 220/W FC BASIC 220/R

FC BASIC 210/L FC BASIC 220/W FC BASIC 220/R



Applications

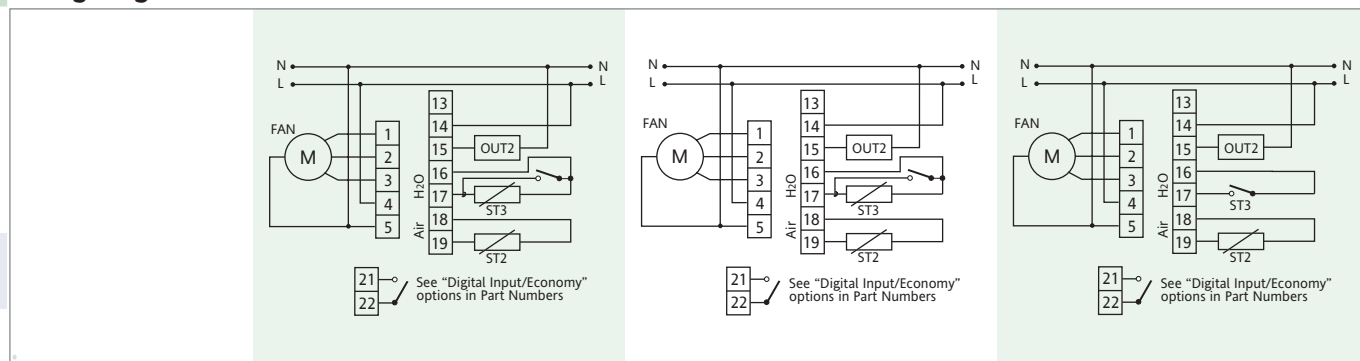
Fan coil electronic controller for 2-pipes

Characteristics:	FC BASIC 210/L	FC BASIC 220/W	FC BASIC 220/R
Switches:	Heat/OFF/Cool Fan speed high/medium/low	Mains ON/OFF Fan speed high/medium/low	Mains ON/OFF Fan speed high/medium/low
Outputs:	Heat or Cool valve Fan speed high/medium/low	Heat or Cool valve Fan speed high/medium/low	Heat or Cool valve Fan speed high/medium/low
Inputs:	Remote air sensor (not supplied) Remote water sensor (not supplied) Window contact	Remote air sensor (not supplied) Remote water sensor (not supplied) Window contact	Remote air sensor (not supplied) Remote Heat/Cool input
Indication lamps:	Heat/Cool/ON	Heat/Cool/ON	Heat/Cool/ON

General technical data

Power supply:	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)
Switching current:	2A cosφ = 0.4	2A cosφ = 0.4	2A cosφ = 0.4
Contact configuration:	SPDT	SPDT	SPDT
Temperature range:	5...35°C	5...35°C	5...35°C
Hysteresis:	~1K or ~2K (selectable with DIP switch)	~1K or ~2K (selectable with DIP switch)	~1K or ~2K (selectable with DIP switch)
Neutral zone:	~2K or ~5K (selectable with DIP switch)	~2K or ~5K (selectable with DIP switch)	~2K or ~5K (selectable with DIP switch)
Connections:	Screw down terminal board for wires with a diameter of 2.5mm max.	Screw down terminal board for wires with a diameter of 2.5mm max.	Screw down terminal board for wires with a diameter of 2.5mm max.
Insulation class:	II	II	II
Housing protection:	IP30 / isolated	IP30 / isolated	IP30 / isolated
Colour of housing:	front white, base plate grey	front white, base plate grey	front white, base plate grey
Functions:	Manual change over Antifrost Hot start (timer and temperature) Periodic ventilation Setpoint limits	Auto change over Antifrost Hot start (timer and temperature) Periodic ventilation Setpoint limits	Manual change over Hot start (timer) Periodic ventilation Setpoint limits
Dimensions:	120 x 80 x 40 mm	120 x 80 x 40 mm	120 x 80 x 40 mm
Options:	Economy switch for temperature set-back, remote air and water temperature sensor probe NTC 6 x 40 1.5m metal cap, probe NTC 103AT-2 1.5m plastic cap (in diff. length)		

Wiring Diagram



Part numbers

FC BASIC 210/L...FB1*L0000500

FC BASIC 220/W...FB3*W0000500

FC BASIC 220/R...FB3*R0000500

Digital input ECO options (see digit * in part numbers):

0=ECO/D.I. not present; E=ECO Switch present, D.I. not present; 1=Voltage free ECO Digital Input N.O. 2=230V~ ECO Digital Input N.O. 3=115V~ ECO Digital Input N.O. 5=Voltage free ECO Digital Input N.C. 6=230V~ ECO Digital Input N.C. 7=115V~ ECO Digital Input N.C.

FC BASIC 211/L FC BASIC 221/W FC BASIC 221/R

FC BASIC 211/L FC BASIC 221/W FC BASIC 221/R

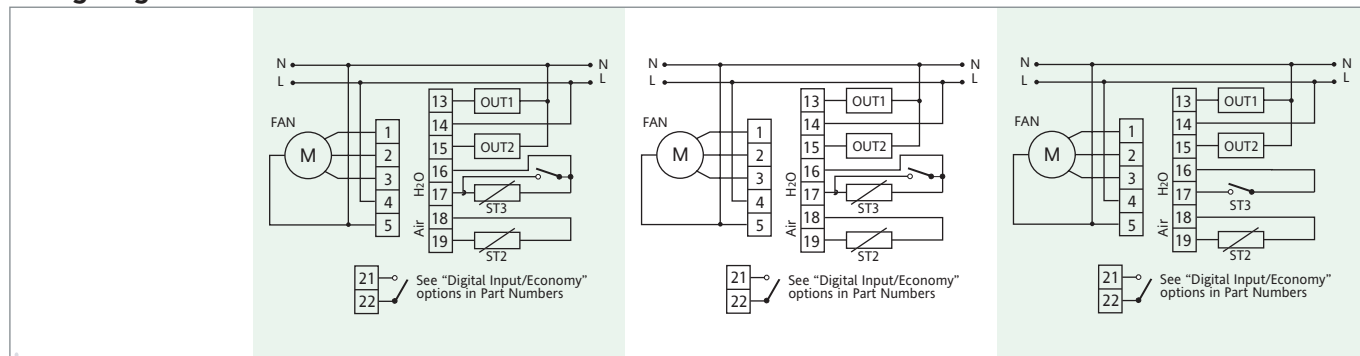


Applications

Fan coil electronic controller for 2-pipes + electric heater

Characteristics:	FC BASIC 211/L	FC BASIC 221/W	FC BASIC 221/R
Switches:	Heat/OFF/Cool Fan speed high/medium/low	Mains ON/OFF Fan speed high/medium/low	Mains ON/OFF Fan speed high/medium/low
Outputs:	Heat or Cool valve Fan speed high/medium/low Electric heaters	Heat or Cool valve Fan speed high/medium/low Electric heaters	Heat or Cool valve Fan speed high/medium/low Electric heaters
Inputs:	Remote air sensor (not supplied) Remote water sensor (not supplied) Window contact	Remote air sensor (not supplied) Remote water sensor (not supplied) Window contact	Remote air sensor (not supplied) Remote Heat/Cool input
Indication lamps:	Heat/Cool/ON	Heat/Cool/ON	Heat/Cool/ON
General technical data			
Power supply:	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)
Switching current:	2A cosφ= 0.4	2A cosφ= 0.4	2A cosφ= 0.4
Contact configuration:	SPDT	SPDT	SPDT
Temperature range:	5...35°C	5...35°C	5...35°C
Hysteresis:	~1K or ~2K (selectable with DIP switch)	~1K or ~2K (selectable with DIP switch)	~1K or ~2K (selectable with DIP switch)
Neutral zone:	~2K or ~5K (selectable with DIP switch)	~2K or ~5K (selectable with DIP switch)	~2K or ~5K (selectable with DIP switch)
Connections:	Screw down terminal board for wires with a diameter of 2.5mm max.	Screw down terminal board for wires with a diameter of 2.5mm max.	Screw down terminal board for wires with a diameter of 2.5mm max.
Insulation class:	II	II	II
Housing protection:	IP30 / isolated	IP30 / isolated	IP30 / isolated
Colour of housing:	front white, base plate grey	front white, base plate grey	front white, base plate grey
Functions:	Manual change over Antifrost Hot start (timer and temperature) Periodic ventilation Setpoint limits	Auto change over Antifrost Hot start (timer and temperature) Periodic ventilation Setpoint limits	Manual change over Hot start (timer) Periodic ventilation Setpoint limits
Dimensions:	120 x 80 x 40 mm	120 x 80 x 40 mm	120 x 80 x 40 mm
Options:	Economy switch for temperature set-back, remote air and water temperature sensor probe NTC 6 x 40 1.5m metal cap, probe NTC 103AT-2 1.5m plastic cap (in diff. lenght)		

Wiring Diagram



Part numbers

FC BASIC 211/L...FB2*L0000500 FC BASIC 221/W...FB4*W0000500 FC BASIC 221/R...FB4*R0000500

Digital input ECO options (see digit * in part numbers):

0=ECO/D.I. not present; E=ECO Switch present, D.I. not present; 1=Voltage free ECO Digital Input N.O. 2=230V~ ECO Digital Input N.O.
3=115V~ ECO Digital Input N.O. 5=Voltage free ECO Digital Input N.C. 6=230V~ ECO Digital Input N.C. 7=115V~ ECO Digital Input N.C.

FC BASIC 410/L FC BASIC 420/W FC BASIC 420/R

FC BASIC 410/L FC BASIC 420/W FC BASIC 420/R

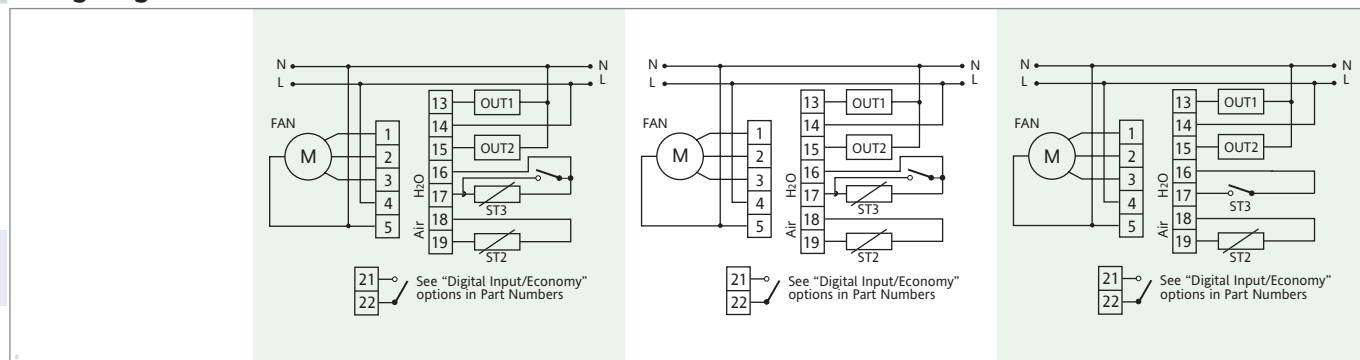


Applications

Fan coil electronic controller for 4-pipes

Characteristics:	FC BASIC 410/L	FC BASIC 420/W	FC BASIC 420/R
Switches:	Heat/OFF/Cool Fan speed high/medium/low	Mains ON/OFF Fan speed high/medium/low	Mains ON/OFF Fan speed high/medium/low
Outputs:	Heat and Cool valve Fan speed high/medium/low	Heat and Cool valve Fan speed high/medium/low	Heat and Cool valve Fan speed high/medium/low
Inputs:	Remote air sensor (not supplied) Remote water sensor (not supplied) Window contact	Remote air sensor (not supplied) Remote water sensor (not supplied) Window contact	Remote air sensor (not supplied) Remote Heat/Cool input
Indication lamps:	Heat/Cool/ON	Heat/Cool/ON	Heat/Cool/ON
General technical data			
Power supply:	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)
Switching current:	2A cosφ= 0.4	2A cosφ= 0.4	2A cosφ= 0.4
Contact configuration:	SPDT	SPDT	SPDT
Temperature range:	5...35°C	5...35°C	5...35°C
Hysteresis:	~1K or ~2K (selectable with DIP switch)	~1K or ~2K (selectable with DIP switch)	~1K or ~2K (selectable with DIP switch)
Neutral zone:	~2K or ~5K (selectable with DIP switch)	~2K or ~5K (selectable with DIP switch)	~2K or ~5K (selectable with DIP switch)
Connections:	Screw down terminal board for wires with a diameter of 2.5mm max.	Screw down terminal board for wires with a diameter of 2.5mm max.	Screw down terminal board for wires with a diameter of 2.5mm max.
Insulation class:	II	II	II
Housing protection:	IP30 / isolated	IP30 / isolated	IP30 / isolated
Colour of housing:	front white, base plate grey	front white, base plate grey	front white, base plate grey
Functions:	Manual change over Antifrost Hot start (timer and temperature) Periodic ventilation Setpoint limits	Auto change over Antifrost Hot start (timer and temperature) Periodic ventilation Setpoint limits	Manual change over Hot start (timer) Periodic ventilation Setpoint limits
Dimensions:	120 x 80 x 40 mm	120 x 80 x 40 mm	120 x 80 x 40 mm
Options:	Economy switch for temperature set-back, remote air and water temperature sensor probe NTC 6 x 40 1.5m metal cap, probe NTC 103AT-2 1.5m plastic cap (in diff. length)		

Wiring Diagram



FC BASIC 410/L....FB5*L0000500 FC BASIC 420/W....FB6*W0000500 FC BASIC 420/R....FB6*R0000500

Digital input ECO options (see digit * in part numbers):

0=ECO/D.I. not present; E=ECO Switch present, D.I. not present; 1=Voltage free ECO Digital Input N.O. 2=230V~ ECO Digital Input N.O.
3=115V~ ECO Digital Input N.O. 5=Voltage free ECO Digital Input N.C. 6=230V~ ECO Digital Input N.C. 7=115V~ ECO Digital Input N.C.

FC BASIC U12/L FC BASIC U22/W FC BASIC U22/R

FC BASIC U12/L FC BASIC U22/W FC BASIC U22/R

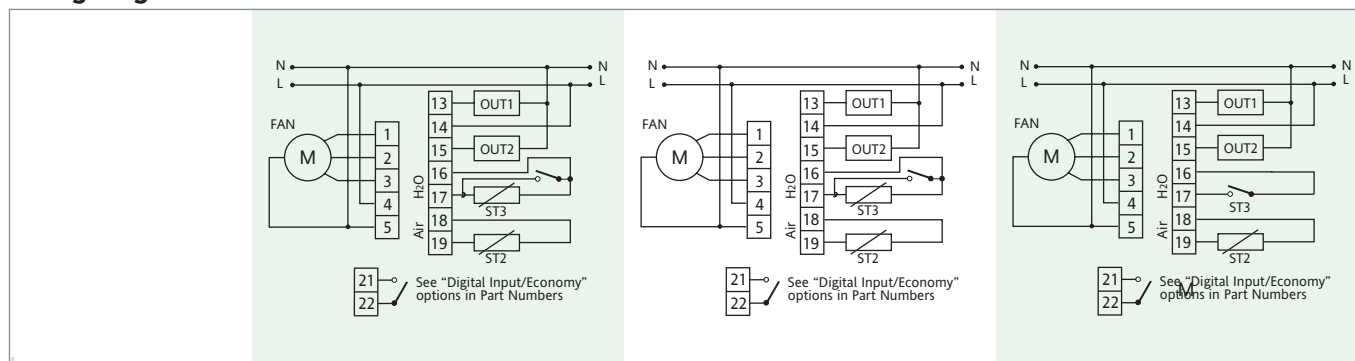


Applications

Fan coil electronic controller for 4-pipes / 2-pipes / 2-pipes + electric heater

Characteristics:	FC BASIC U12/L	FC BASIC U22/W	FC BASIC U22/R
Switches:	Heat/OFF/Cool Fan speed high/medium/low	Mains ON/OFF Fan speed high/medium/low	Mains ON/OFF Fan speed high/medium/low
Outputs:	Heat or Cool valve Fan speed high/medium/low Electric heaters	Heat or Cool valve Fan speed high/medium/low Electric heaters	Heat or Cool valve Fan speed high/medium/low Electric heaters
Inputs:	Remote air sensor (not supplied) Remote water sensor (not supplied) Window contact	Remote air sensor (not supplied) Remote water sensor (not supplied) Window contact	Remote air sensor (not supplied) Remote Heat/Cool input
Indication lamps:	Heat/Cool/ON	Heat/Cool/ON	Heat/Cool/ON
General technical data			
Power supply:	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)
Switching current:	2A cosφ= 0.4	2A cosφ= 0.4	2A cos = 0.4
Contact configuration:	SPDT	SPDT	SPDT
Temperature range:	5...35°C	5...35°C	5...35°C
Hysteresis:	~1K or ~2K (selectable with DIP switch)	~1K or ~2K (selectable with DIP switch)	~1K or ~2K (selectable with DIP switch)
Neutral zone:	~2K or ~5K (selectable with DIP switch)	~2K or ~5K (selectable with DIP switch)	~2K or ~5K (selectable with DIP switch)
Connections:	Screw down terminal board for wires with a diameter of 2.5mm max.	Screw down terminal board for wires with a diameter of 2.5mm max.	Screw down terminal board for wires with a diameter of 2.5mm max.
Insulation class:	II	II	II
Housing protection:	IP30 / isolated	IP30 / isolated	IP30 / isolated
Colour of housing:	front white, base plate grey	front white, base plate grey	front white, base plate grey
Functions:	Manual change over Antifrost Hot start (timer and temperature) Periodic ventilation Setpoint limits	Auto change over Antifrost Hot start (timer and temperature) Periodic ventilation Setpoint limits	Manual change over Hot start (timer) Periodic ventilation Setpoint limits
Dimensions:	120 x 80 x 40 mm	120 x 80 x 40 mm	120 x 80 x 40 mm
Options:	Economy switch for temperature set-back, remoteair and water temperature sensor probe NTC 6 x 40 1.5m metal cap, probe NTC 103AT-2 1.5m plastic cap (in diff. lenght)		

Wiring Diagram



Part number

FC BASIC U12/L...FB7*L0000500 **FC BASIC U22/W**...FB8*W0000500 **FC BASIC U22/R**...FB8*R0000500

Digital input ECO options (see digit * in part numbers):

0=ECO/D.I. not present; **E**=ECO Switch present, D.I. not present; **1**=Voltage free ECO Digital Input N.O. **2**=230V~ ECO Digital Input N.O. **3**=115V~ ECO Digital Input N.O. **5**=Voltage free ECO Digital Input N.C. **6**=230V~ ECO Digital Input N.C. **7**=115V~ ECO Digital Input N.C.

FC BASIC Applications

		2-pipe fan coils			2-pipe fan coils + electric heater			4-pipe fan coils			Universal (all applications)		
Model		210/L	220/W	220/R	211/L	221/W	221/R	410/L	420/W	420/R	U12/L	U22/W	U22/R
	Part number	FB10L0000500	FB30W0000500	FB30R0000500	FB20L0000500	FB40W0000500	FB40R0000500	FB50L0000500	FB60W0000500	FB60R0000500	FB70L0000500	FB80W0000500	FB80R0000500
Outputs	Heat or cool valve	✓	✓	✓	✓	✓	✓				✓	✓	✓
	Electric heater				✓	✓	✓				✓	✓	✓
	Heat and cool valve							✓	✓	✓	✓	✓	✓
	Fan speed	3	3	3	3	3	3	3	3	3	3	3	3
Inputs	Remote air sensor	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Water sensor input	✓	✓		✓	✓		✓	✓		✓	✓	
	Window contact input	✓	✓		✓	✓		✓	✓		✓	✓	
	Remote Heat/Cool input			✓			✓			✓			✓
Switches	3 fan speed	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	On/Off	✓	✓		✓	✓		✓	✓		✓	✓	
	Heat/Off/Cool	✓			✓			✓			✓		
	Economy switch ⁽¹⁾	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Functions	Auto changeover		✓			✓			✓			✓	
	Manual changeover	✓		✓	✓		✓	✓		✓	✓		✓
	Anti-frost	✓	✓		✓	✓		✓	✓		✓	✓	
	Hot start (timer)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Hot start (temperature)	✓	✓		✓	✓		✓	✓		✓	✓	
	Periodic ventilation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Set point limits	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	LED (Heat/Cool/On)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

(1) Digital input ECO options (see digit * in part numbers):

0=ECO/D.I. not present; E=ECO Switch present, D.I. not present; 1=Voltage free ECO Digital Input N.O. 2=230V~ ECO Digital Input N.O.

3=115V~ ECO Digital Input N.O. 5=Voltage free ECO Digital Input N.C. 6=230V~ ECO Digital Input N.C. 7=115V~ ECO Digital Input N.C.

Dip Switch Tables - Universal Model (6 dip) & Specific Models (4 dip)

Universal Model (6 dip)		DIP Nr.	Description	ON	OFF
		6	Air probe used*	local	remote
		5	Fan in cooling status	on demand	always ON
		4	Neutral Zone value	5°C	2°C
			Hysteresis value	2°C	1°C
		3	Electric heater control	regulation	integration
			Hot Start	0 (time)	enabled
		2	2-pipes / 4-pipes	4-pipes	2-pipes
		1	Electric heater presence	yes	no
Specific Model (4 dip)		DIP Nr.	Description	ON	OFF
		4	Air probe used*	local	remote
		3	Fan in cooling status	on demand	always ON
		2	Neutral Zone value	5°C	2°C
			Hysteresis value	2°C	1°C
		1	Electric heater control	regulation	integration
			Hot Start	0 (time)	enabled

* internal sensor (local) always present, device-mounted, enabled with

• DIP6=ON (Universal Models)

• DIP4=ON (Specific Models)

FC BASICOM 320/S FC BASICOM 32E/S FC BASICOM 32W/S

FC BASICOM 320/S FC BASICOM 32E/S FC BASICOM 32W/S



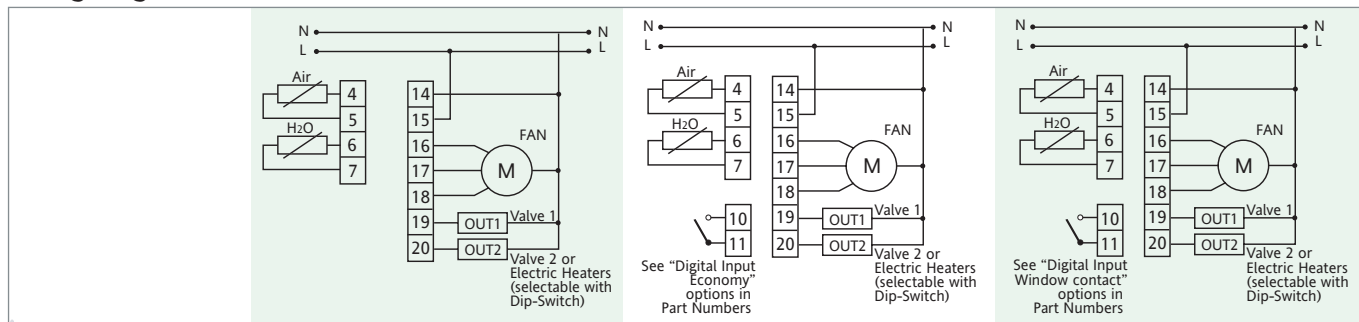
Applications

Electronic universal controller for fan coils with manual mode selection (slider with 4 positions: OFF/Heat/Cool/Auto)

Characteristics:	FC BASICOM 320/S	FC BASICOM 32E/S	FC BASICOM 32W/S
Switches:	OFF/Heat/Cool/Auto Fan speed high/medium/low/auto	OFF/Heat/Cool/Auto Fan speed high/medium/low/auto	OFF/Heat/Cool/Auto Fan speed high/medium/low/auto
Outputs:	Fan speed high/medium/low- 1A max. 2 Triac output 230V~ Valve- 0.5A max.	Fan speed high/medium/low- 1A max. 2 Triac output 230V~ Valve- 0.5A max.	Fan speed high/medium/low- 1A max. 2 Triac output 230V~ Valve- 0.5A max.
Inputs:	Internal air probe Remote air sensor (not supplied) Remote water sensor (not supplied)	Internal air probe Remote air sensor (not supplied) Remote water sensor (not supplied) Digital input Economy	Internal air probe Remote air sensor (not supplied) Remote water sensor (not supplied) Digital input window contact
Indication lamps:	Thermostat/Fan/Heating-Cooling	Thermostat/Fan/Heating-Cooling	Thermostat/Fan/Heating-Cooling
General technical data			
Power supply:	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)
Insulation class:	II	II	II
Housing protection:	IP30	IP30	IP30
Analogue inputs:	1 internal NTC air probe 1 remote air probe: cover 4.7x27mm plastic resin tube cable 1.5m 1 remote water probe: cover 6x23mm plastic resin tube cable 2m	1 internal NTC air probe 1 remote air probe: cover 4.7x27mm plastic resin tube cable 1.5m 1 remote water probe: cover 6x23mm plastic resin tube cable 2m	1 internal NTC air probe 1 remote air probe: cover 4.7x27mm plastic resin tube cable 1.5m 1 remote water probe: cover 6x23mm plastic resin tube cable 2m
Serial port:	TTL for connection to Modbus or TelevisSystem (according to part number)	TTL for connection to Modbus or TelevisSystem (according to part number)	TTL for connection to Modbus or TelevisSystem (according to part number)
Dimensions:	80x120x40mm	80x120x40mm	80x120x40mm
Mounting:	Wall mounted or device mounted	Wall mounted or device mounted	Wall mounted or device mounted
Functions:	Hot Start*, Too Cool*, Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Regulation of valves/fans	Hot Start*, Too Cool*, Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Economy input, Regulation of valves/fans	Hot Start*, Too Cool*, Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Window contact, Regulation of valves/fans
Dip Switch:	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.

*only if remote probe is present

Wiring Diagram



Part numbers

FC Basicom U320/S.....FC10S0*00500 FC Basicom U32E/S.....FC1ES0*00500 FC Basicom U32W/S.....FC1WS0*00500

Digital input ECO options (see digit * in part numbers):

0=24V~ Digital Input N.O.; 1=Voltage free Digital Input N.O.; 2=230V~ Digital Input N.O.; 3=115V~ Digital Input N.O.; 4=24V~ Digital Input N.C.; 5=Voltage free Digital Input N.C.; 6=230V~ Digital Input N.C.; 7=115V~ Digital Input N.C.; X= Other

FC BASICOM 120/S FC BASICOM 12E/S FC BASICOM 12W/S

FC BASICOM 120/S FC BASICOM 12E/S FC BASICOM 12W/S



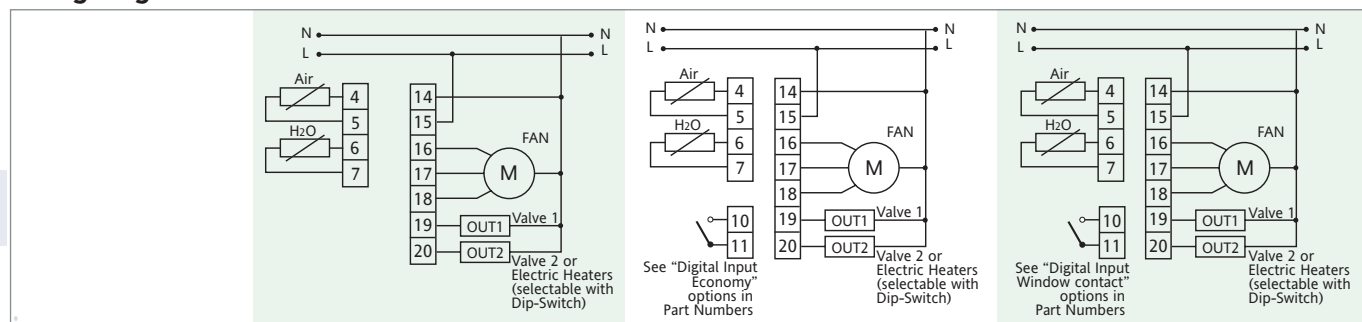
Applications

Electronic universal controller for fan coils with automatic mode selection (slider with 2 positions: OFF/Auto)

Characteristics:	FC BASICOM 120/S	FC BASICOM 12E/S	FC BASICOM 12W/S
Switches:	OFF/Auto Fan speed high/medium/low/auto	OFF/Auto Fan speed high/medium/low/auto	OFF/Auto Fan speed high/medium/low/auto
Outputs:	Fan speed high/medium/low- 1A max. 2 Triac output 230V~ Valve- 0.5A max.	Fan speed high/medium/low- 1A max. 2 Triac output 230V~ Valve- 0.5A max.	Fan speed high/medium/low- 1A max. 2 Triac output 230V~ Valve- 0.5A max.
Inputs:	Internal air probe Remote air sensor (not supplied) Remote water sensor (not supplied)	Internal air probe Remote air sensor (not supplied) Remote water sensor (not supplied) Digital input Economy	Internal air probe Remote air sensor (not supplied) Remote water sensor (not supplied) Digital input window contact
Indication lamps:	Thermostat/Fan/Heating-Cooling	Thermostat/Fan/Heating-Cooling	Thermostat/Fan/Heating-Cooling
General technical data			
Power supply:	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)
Insulation class:	II	II	II
Housing protection:	IP30	IP30	IP30
Analogue inputs:	1 internal NTC air probe 1 remote air probe: cover 4.7x27mm plastic resin tube cable 1.5m 1 remote water probe; cover 6x23mm plastic resin tube cable 2m	1 internal NTC air probe 1 remote air probe: cover 4.7x27mm plastic resin tube cable 1.5m 1 remote water probe; cover 6x23mm plastic resin tube cable 2m	1 internal NTC air probe 1 remote air probe: cover 4.7x27mm plastic resin tube cable 1.5m 1 remote water probe; cover 6x23mm plastic resin tube cable 2m
Serial port:	TTL for connection to Modbus or TelevisSystem (according to part number)	TTL for connection to Modbus or TelevisSystem (according to part number)	TTL for connection to Modbus or TelevisSystem (according to part number)
Dimensions:	80x120x40mm	80x120x40mm	80x120x40mm
Mounting:	Wall mounted or device mounted	Wall mounted or device mounted	Wall mounted or device mounted
Functions:	Hot Start*, Too Cool*, Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Regulation of valves/fans	Hot Start*, Too Cool*, Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Economy input, Regulation of valves/fans	Hot Start*, Too Cool*, Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Window contact, Regulation of valves/fans
Dip Switch:	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.

*only if remote probe is present

Wiring Diagram



Part numbers

FC Basicom U120/S.....FC10S0*20500

FC Basicom U12E/S.....FC1ES0*20500

FC Basicom U12W/S.....FC1WS0*20500

Digital input ECO options (see digit * in part numbers):

0=24V~ Digital Input N.O.; 1=Voltage free Digital Input N.O.; 2=230V~ Digital Input N.O.; 3=115V~ Digital Input N.O.; 4=24V~ Digital Input N.C.; 5=Voltage free Digital Input N.C.; 6=230V~ Digital Input N.C.; 7=115V~ Digital Input N.C.; X= Other

FC BASICOM Applications

2-pipe fan coils, 2 pipes fan coils with integrated or regulated electric heaters, 4 pipes fan coils

Model	Part number	320/S	32E/S	32W/S	120/S	12E/S	12W/S
		FC10S0X00500	FC1ES0*00500	FC1WS0*00500	FC10S0X20500	FC1ES0*20500	FC1WS0*20500
Installation	Wall-mounted	✓	✓	✓	✓	✓	✓
	Device-mounted -- ceiling	✓	✓	✓	✓	✓	✓
	Device-mounted -- floor	✓	✓	✓	✓	✓	✓
Inputs	Digital Inputs	-	1	1	-	1	1
	Air Probe	1	1	1	1	1	1
	Remote air probe(not supplied)	1	1	1	1	1	1
	Remote water probe(not supplied)	1	1	1	1	1	1
Outputs	Triac output 230V~ Fans 1A max	3	3	3	3	3	3
	Triac output 230V~ Valve 0,5A max	2	2	2	2	2	2
	Leds	3	3	3	3	3	3
Functions	Hot Start	✓	✓	✓	✓	✓	✓
	Too Cool	✓	✓	✓	✓	✓	✓
	Economy Input		✓			✓	
	Window contact			✓			✓
	Modbus compatibility	✓	✓	✓	✓	✓	✓
	Automatic change over	✓	✓	✓	✓	✓	✓
	Post ventilation	✓	✓	✓	✓	✓	✓
	Periodic ventilation	✓	✓	✓	✓	✓	✓
	Automatic speeds	✓	✓	✓	✓	✓	✓
	Control of setpoint	✓	✓	✓	✓	✓	✓
	Regulation of valves/fans	✓	✓	✓	✓	✓	✓

✓ system configuration (wall mounted) automatically identified if the remote air probe is not installed

✓ only if remote water probe is present

(1) Digital input ECO options (see digit * in part numbers):

0=ECO/D.I. not present; E=ECO Switch present, D.I. not present;
 1=Voltage free ECO Digital Input N.O. 2=230V~ ECO Digital Input N.O.
 3=115V~ ECO Digital Input N.O. 5=Voltage free ECO Digital Input N.C.
 6=230V~ ECO Digital Input N.C. 7=115V~ ECO Digital Input N.C.

Dip Switch Tables

Universal Model (5 dip)		DIP Nr.	Description	ON	OFF
	1	Type of installation	ceiling mounted	floor mounted	
	2	Fan	continous (1)	on request (2)	
	3	Thermostat control	on valve	on fan	
	4+5	Type of unit:			
		2 pipes without elctic heaters	-	4 + 5	
		2 pipes with integrated elctic heaters	4 + 5	-	
		2 pipes with regulated elctic heaters	5	4	
		4 pipes	4	5	

(1) no Hot Start and Too Cool

(2) on request in heating mode / continuous in cooling mode

FC PLUS 320/B FC PLUS 32E/B FC PLUS 32W/B

FC PLUS 320/B FC PLUS 32E/B FC PLUS 32W/B



Applications

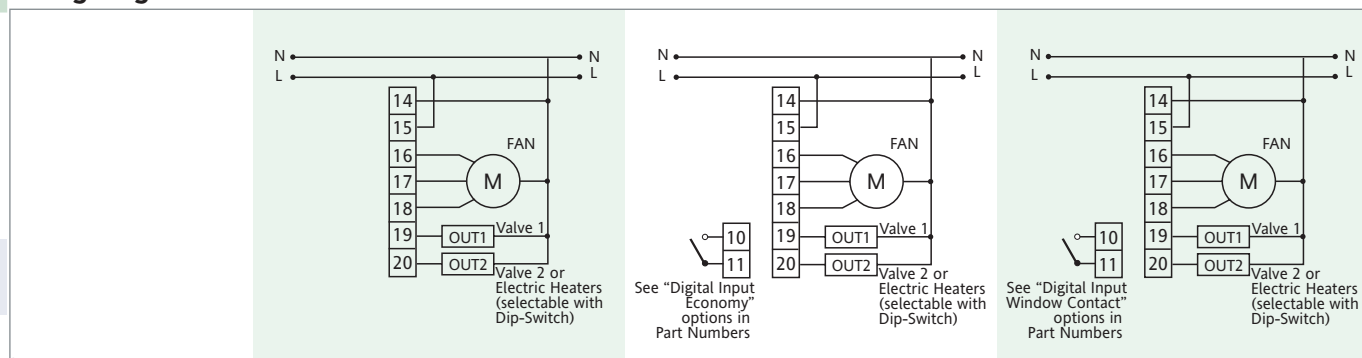
Universal thermostats designed to control valves with ON/OFF actuators, any electrical heater and the three fan speeds.

Characteristics:	FC PLUS 320/B	FC PLUS 32E/B	FC PLUS 32W/B
Switches:	OFF/Heat/Cool/Auto Fan speed high/medium/low/auto	OFF/Heat/Cool/Auto Fan speed high/medium/low/auto	OFF/Heat/Cool/Auto Fan speed high/medium/low/auto
Outputs:	Fan speed high/medium/low - 1A max. 2 Triac output 230V~ Valve - 0.5A max.	Fan speed high/medium/low - 1A max. 2 Triac output 230V~ Valve - 0.5A max.	Fan speed high/medium/low - 1A max. 2 Triac output 230V~ Valve - 0.5A max.
Inputs:	Internal air probe	Internal air probe Digital input Economy	Internal air probe Digital input window contact
Indication lamps:	Thermostat/Fan/Heating-Cooling	Thermostat/Fan/Heating-Cooling	Thermostat/Fan/Heating-Cooling

General technical data

Power supply:	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)
Insulation class:	II	II	II
Housing protection:	IP30	IP30	IP30
Analogue inputs:	1 internal NTC air probe	1 internal NTC air probe	1 internal NTC air probe
Digital inputs:	-	1 digital input Economy (see options Part numbers)	1 digital input window contact (see options Part numbers)
Dimensions:	80x120x40mm	80x120x40mm	80x120x40mm
Mounting:	Wall mounted or device mounted	Wall mounted or device mounted	Wall mounted or device mounted
Functions:	Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Regulation of valves/fans	Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Economy input, Regulation of valves/fans	Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Window Contact, Regulation of valves/fans
Dip Switch:	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.

Wiring Diagram



Part numbers

FC PLUS 320/B....FP10B0000500

FC PLUS 32E/B....FP1EB0*00500

FC PLUS 32W/B....FP1WB0*00500

Digital input Economy/Window Contact options (see digit * in part numbers):

0=24V~ Digital Input N.O.; **1**=Voltage free Digital Input N.O.; **2**=230V~ Digital Input N.O.; **3**=115V~ Digital Input N.O.; **4**=24V~ Digital Input N.C.; **5**=Voltage free Digital Input N.C.; **6**=230V~ Digital Input N.C.; **7**=115V~ Digital Input N.C.; **X**= Other

FC PLUS 120/B FC PLUS 12E/B FC PLUS 12W/B

FC PLUS 120/B FC PLUS 12E/B FC PLUS 12W/B



Applications

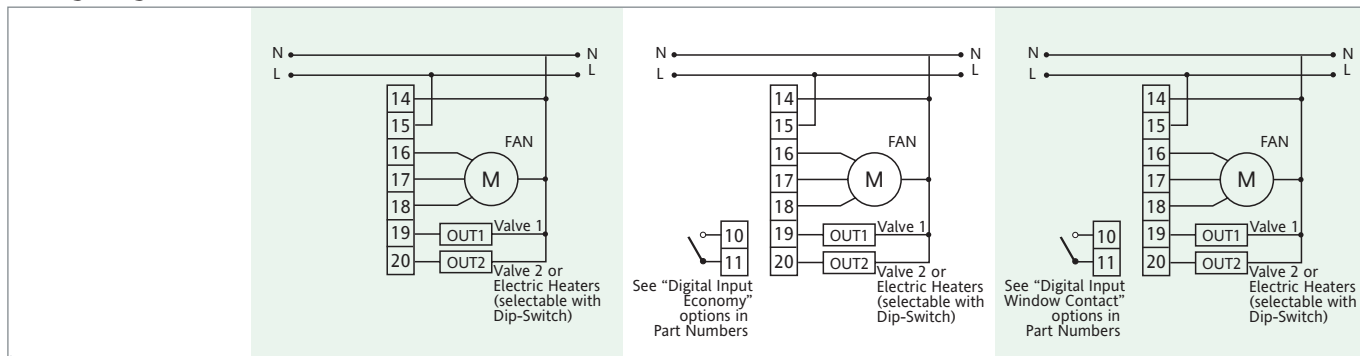
Universal thermostats designed to control valves with ON/OFF actuators, any electrical heater and the three fan speeds.

Characteristics:	FC PLUS 120/B	FC PLUS 12E/B	FC PLUS 12W/B
Switches:	OFF/Auto Fan speed high/medium/low/auto	OFF/Auto Fan speed high/medium/low/auto	OFF/Auto Fan speed high/medium/low/auto
Outputs:	Fan speed high/medium/low - 1A max. 2 Triac output 230V~ Valve - 0.5A max.	Fan speed high/medium/low - 1A max. 2 Triac output 230V~ Valve - 0.5A max.	Fan speed high/medium/low - 1A max. 2 Triac output 230V~ Valve - 0.5A max.
Inputs:	Internal air probe	Internal air probe Digital input Economy	Internal air probe Digital input window contact
Indication lamps:	Thermostat/Fan/Heating-Cooling	Thermostat/Fan/Heating-Cooling	Thermostat/Fan/Heating-Cooling

General technical data

Power supply:	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)
Insulation class:	II	II	II
Housing protection:	IP30	IP30	IP30
Analogue inputs:	1 internal NTC air probe	1 internal NTC air probe	1 internal NTC air probe
Digital inputs:	-	1 digital input Economy (see options Part numbers)	1 digital input window contact (see options Part numbers)
Dimensions:	80x120x40mm	80x120x40mm	80x120x40mm
Mounting:	Wall mounted or device mounted	Wall mounted or device mounted	Wall mounted or device mounted
Functions:	Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Regulation of valves/fans	Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Economy input, Regulation of valves/fans	Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Window Contact, Regulation of valves/fans
Dip Switch:	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.

Wiring Diagram



Part numbers

FC PLUS 120/B....FP10B0020500 **FC PLUS 12E/B....FP1EB0*20500** **FC PLUS 12W/B....FP1WB0*20500**

Digital input Economy/Window Contact options (see digit * in part numbers):

0=24V~ Digital Input N.O.; **1**=Voltage free Digital Input N.O.; **2**=230V~ Digital Input N.O.; **3**=115V~ Digital Input N.O.; **4**=24V~ Digital Input N.C.; **5**=Voltage free Digital Input N.C.; **6**=230V~ Digital Input N.C.; **7**=115V~ Digital Input N.C.; **X**= Other

FC PLUS 320/S FC PLUS 32E/S FC PLUS 32W/S

FC PLUS 320/S FC PLUS 32E/S FC PLUS 32W/S



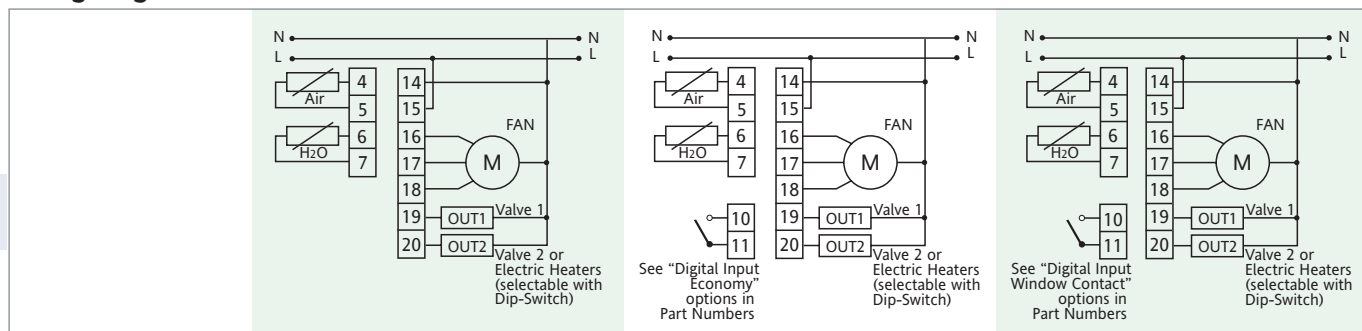
Applications

Universal thermostats designed to control valves with ON/OFF actuators, any electrical heater and the three fan speeds.

Characteristics:	FC PLUS 320/S	FC PLUS 32E/S	FC PLUS 32W/S
Switches:	OFF/Heat/Cool/Auto Fan speed high/medium/low/auto	OFF/Heat/Cool/Auto Fan speed high/medium/low/auto	OFF/Heat/Cool/Auto Fan speed high/medium/low/auto
Outputs:	Fan speed high/medium/low - 1A max. 2 Triac output 230V~ Valve - 0.5A max.	Fan speed high/medium/low - 1A max. 2 Triac output 230V~ Valve - 0.5A max.	Fan speed high/medium/low - 1A max. 2 Triac output 230V~ Valve - 0.5A max.
Inputs:	Internal air probe Remote air sensor (not supplied) Remote water sensor (not supplied)	Internal air probe Remote air sensor (not supplied) Remote water sensor (not supplied) Digital input Economy	Internal air probe Remote air sensor (not supplied) Remote water sensor (not supplied) Digital input window contact
Indication lamps:	Thermostat/Fan/Heating-Cooling	Thermostat/Fan/Heating-Cooling	Thermostat/Fan/Heating-Cooling
General technical data			
Power supply:	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)
Insulation class:	II	II	II
Housing protection:	IP30	IP30	IP30
Analogue inputs:	1 internal NTC air probe 1 remote air probe: cover 4.7x27mm plastic resin tube cable 1.5m 1 remote water probe; cover 6x23mm plastic resin tube cable 2m	1 internal NTC air probe 1 remote air probe: cover 4.7x27mm plastic resin tube cable 1.5m 1 remote water probe; cover 6x23mm plastic resin tube cable 2m	1 internal NTC air probe 1 remote air probe: cover 4.7x27mm plastic resin tube cable 1.5m 1 remote water probe; cover 6x23mm plastic resin tube cable 2m
Digital inputs:	-	1 digital input Economy (see options Part numbers)	1 digital input window contact (see options Part numbers)
Dimensions:	80x120x40mm	80x120x40mm	80x120x40mm
Mounting:	Wall mounted or device mounted	Wall mounted or device mounted	Wall mounted or device mounted
Functions:	Hot Start*, Too Cool*, Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Regulation of valves/fans	Hot Start*, Too Cool*, Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Economy input, Regulation of valves/fans	Hot Start*, Too Cool*, Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Window Contact, Regulation of valves/fans
Dip Switch:	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.

*only if remote probe is present

Wiring Diagram



Part number

FC PLUS 320/S....FP10S0000500

FC PLUS 32E/S....FP1ES0*00500

FC PLUS 32W/S....FP1WS0*00500

Digital input Economy/Window Contact options (see digit * in part numbers):

0=24V~ Digital Input N.O.; **1**=Voltage free Digital Input N.O.; **2**=230V~ Digital Input N.O.; **3**=115V~ Digital Input N.O.; **4**=24V~ Digital Input N.C.; **5**=Voltage free Digital Input N.C.; **6**=230V~ Digital Input N.C.; **7**=115V~ Digital Input N.C.; **X**= Other

FC PLUS 120/S FC PLUS 12E/S FC PLUS 12W/S

FC PLUS 120/S FC PLUS 12E/S FC PLUS 12W/S



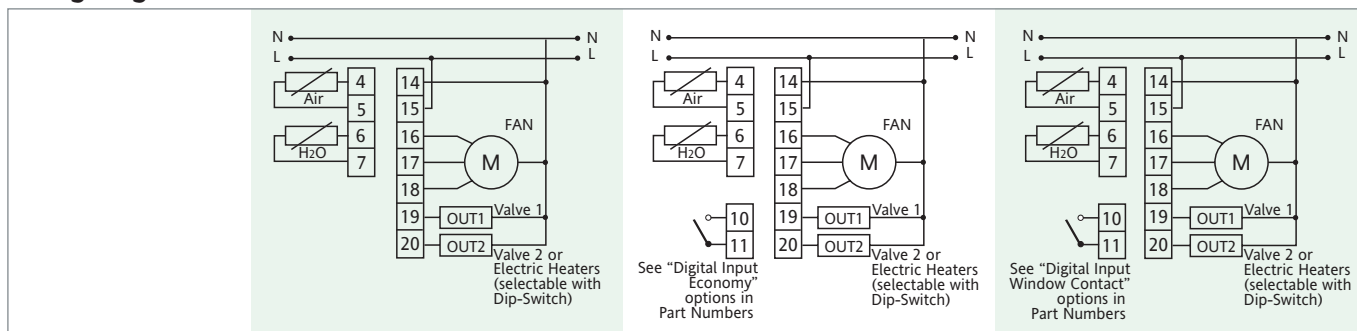
Applications

Universal thermostats designed to control valves with ON/OFF actuators, any electrical heater and the three fan speeds.

Characteristics:	FC PLUS 120/S	FC PLUS 12E/S	FC PLUS 12W/S
Switches:	OFF/Auto Fan speed high/medium/low/auto	OFF/Auto Fan speed high/medium/low/auto	OFF/Auto Fan speed high/medium/low/auto
Outputs:	Fan speed high/medium/low - 1A max. 2 Triac output 230V~ Valve - 0.5A max.	Fan speed high/medium/low - 1A max. 2 Triac output 230V~ Valve - 0.5A max.	Fan speed high/medium/low - 1A max. 2 Triac output 230V~ Valve - 0.5A max.
Inputs:	Air probe Remote air sensor (not supplied) Remote water sensor (not supplied)	Air probe Remote air sensor (not supplied) Remote water sensor (not supplied) Digital input Economy	Air probe Remote air sensor (not supplied) Remote water sensor (not supplied) Digital input window contact
Indication lamps:	Thermostat/Fan/Heating-Cooling	Thermostat/Fan/Heating-Cooling	Thermostat/Fan/Heating-Cooling
General technical data			
Power supply:	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)	230V~ ±10% 50/60Hz (other supply on request)
Insulation class:	II	II	II
Housing protection:	IP30	IP30	IP30
Analogue inputs:	1 internal NTC air probe 1 remote air probe: cover 4.7x27mm plastic resin tube cable 1.5m 1 remote water probe; cover 6x23mm plastic resin tube cable 2m	1 internal NTC air probe 1 remote air probe: cover 4.7x27mm plastic resin tube cable 1.5m 1 remote water probe; cover 6x23mm plastic resin tube cable 2m	1 internal NTC air probe 1 remote air probe: cover 4.7x27mm plastic resin tube cable 1.5m 1 remote water probe; cover 6x23mm plastic resin tube cable 2m
Digital inputs:	-	1 digital input Economy (see options Part numbers)	1 digital input window contact (see options Part numbers)
Dimensions:	80x120x40mm	80x120x40mm	80x120x40mm
Mounting:	Wall mounted or device mounted	Wall mounted or device mounted	Wall mounted or device mounted
Functions:	Hot Start*, Too Cool*, Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Regulation of valves/fans	Hot Start*, Too Cool*, Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Economy input, Regulation of valves/fans	Hot Start*, Too Cool*, Auto change-over, Post ventilation, Periodic ventilation, Auto speeds, Control of Setpoint, Window Contact, Regulation of valves/fans
Dip Switch:	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.	5 Dip Switch to select: Type of installation, Fan, Thermostat Control, Type of unit.

*only if remote probe is present

Wiring Diagram



Part number

FC PLUS 120/S....FP10S0020500

FC PLUS 12E/S....FP1ES0*20500

FC PLUS 12W/S....FP1WS0*20500

Digital input Economy/Window Contact options (see digit * in part numbers):

0=24V~ Digital Input N.O.; **1**=Voltage free Digital Input N.O.; **2**=230V~ Digital Input N.O.; **3**=115V~ Digital Input N.O.; **4**=24V~ Digital Input N.C.; **5**=Voltage free Digital Input N.C.; **6**=230V~ Digital Input N.C.; **7**=115V~ Digital Input N.C.; **X**= Other

FC PLUS Applications

2-pipe fan coils, 2 pipes fan coils with integrated or regulated electric heaters, 4 pipes fan coils

Model	320/B	32E/B	32W/B	320/S	32E/S	32W/S	120/B	12E/B	12W/B	120/S	12E/S	12W/S
Part number	FP10SOX00500	FP1ESO*00500	FP1WS0*00200	FP10SOX00500	FP1ESO*00500	FP1WS0*00500	FP10SOX20500	FP1ESO*20500	FP1WS0*20500	FP10SOX00500	FP1ESO*00500	FP1WS0*00500
Installation	Wall-mounted	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Device-mounted -- ceiling	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Device-mounted -- floor	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Inputs	Digital Inputs	-	1	1	-	1	1	-	1	1	-	1
	Air Probe	1	1	1	1	1	1	1	1	1	1	1
	Remote air probe(not supplied)	-	-	-	1	1	1	-	-	-	1	1
	Remote water probe(not supplied)	1	1	1	1	1	1	1	1	1	1	1
Outputs	Triac output 230V~ Fans 1A max	3	3	3	3	3	3	3	3	3	3	3
	Triac output 230V~ Valve 0,5A max	2	2	2	2	2	2	2	2	2	2	2
	Leds	3	3	3	3	3	3	3	3	3	3	3
Functions	Hot Start			✓	✓	✓				✓	✓	✓
	Too Cool			✓	✓	✓				✓	✓	✓
	Economy Input		✓		✓			✓			✓	
	Window contact			✓		✓			✓			✓
	Automatic change over	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Post ventilation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Periodic ventilation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Automatic speeds	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Control of setpoint	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Regulation of valves/fans	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ system configuration (wall mounted) automatically identified if the remote air probe is not installed

✓ only if remote water probe is present

(1) Digital input ECO options (see digit * in part numbers):

0=ECO/D.I. not present; E=ECO Switch present, D.I. not present;
 1=Voltage free ECO Digital Input N.O. 2=230V~ ECO Digital Input N.O.
 3=115V~ ECO Digital Input N.O. 5=Voltage free ECO Digital Input N.C.
 6=230V~ ECO Digital Input N.C. 7=115V~ ECO Digital Input N.C.

Dip Switch Tables

Universal Model (5 dip)	DIP Nr.	Description	ON	OFF
	1	Type of installation	ceiling mounted	floor mounted
	2	Fan	continous (1)	on request (2)
	3	Thermostat control	on valve	on fan
	4+5	Type of unit:		
		2 pipes without electric heaters	-	4 + 5
		2 pipes with integrated electric heaters	4 + 5	-
		2 pipes with regulated electric heaters	5	4
		4 pipes	4	5

(1) no Hot Start and Too Cool

(2) on request in heating mode / continuous in cooling mode



Applications

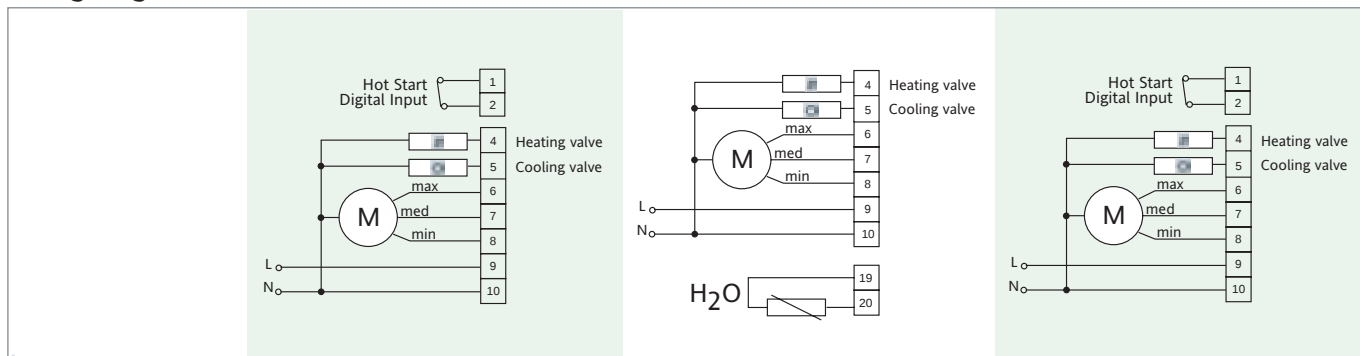
Universal thermostats designed to control 2/4-pipe fan coils with electric heaters.

Characteristics:	FSC100	FSC200	FSS110
Switches:	OFF/Heat/Cool Fan speed high/medium/low	OFF/Heat/Cool Fan speed high/medium/low/auto	OFF/Heat/Cool Fan speed high/medium/low/auto
Outputs:	Fan speed high/medium/low - 1A max. Heat water valve - 0.5A max. Cool water valve - 0.5A max.	Fan speed high/medium/low - 1A max. Heat water valve - 0.5A max. Cool water valve - 0.5A max.	Fan speed high/medium/low - 1A max. Heat water valve - 0.5A max. Cool water valve - 0.5A max.
Inputs:	Hot Start digital input (clacson)	Remote water probe (Hot Start analogic Input) (probe not supplied)	Internal air probe Hot Start digital input (clacson)

General technical data

Power supply:	230V~ ±10% 50/60Hz	230V~ ±10% 50/60Hz	230V~ ±10% 50/60Hz
Insulation class:	II	II	II
Housing protection:	IP30	IP30	IP30
Analogue inputs:	-	1 remote water probe (Hot Start Input) cover 6x23mm plastic resin tube length of cable 2m	1 Internal NTC air probe
Digital inputs:	1 Hot Start digital input (clacson)	-	1 Hot Start digital input (clacson)
Dimensions:	80x120x40mm	80x120x40mm	80x120x40mm
Mounting:	Wall mounted or device mounted	Wall mounted or device mounted	Wall mounted or device mounted
Functions:	Manual mode selection, Manual speed selection, Hot Start with digital input	Manual mode selection, Manual speed selection, Hot Start with water probe	Ambient thermostat Manual mode selection, Manual speed selection, Hot Start with digital input

Wiring Diagram



Part numbers

FSC100.....FSC100000500

FSC200.....FSC200000500

FSS110..FSS1B0000500



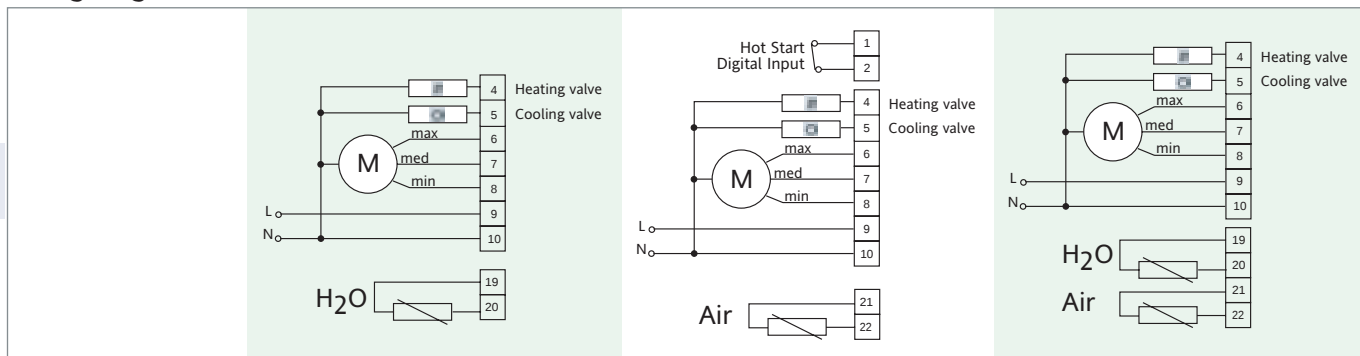
Applications

Universal thermostats designed to control 2/4-pipe fancoils with electric heaters.

Characteristics	FSS210	FSS120	FSS220
Switches:	OFF/Heat/Cool Fan speed high/medium/low	OFF/Heat/Cool Fan speed high/medium/low/auto	OFF/Heat/Cool Fan sp
Outputs:	Fan speed high/medium/low - 1A max. Heat water valve - 0.5A max. Cool water valve - 0.5A max.	Fan speed high/medium/low - 1A max. Heat water valve - 0.5A max. Cool water valve - 0.5A max.	
Inputs:	Internal air probe Remote water probe (Hot Start analogic Input) (probe not supplied)	Hot Start digital input (clacson) Remote air probe (not supplied)	

General technical data			
Power supply:	230V~ ±10% 50/60Hz	230V~ ±10% 50/60Hz	230V~ ±10% 50/60Hz
Insulation class:	II	II	II
Housing protection:	IP30	IP30	IP30
Analogue inputs:	1 Internal NTC air probe 1 remote water probe (Hot Start Input) cover 6x23mm plastic resin tube length of cable 2m	1 remote air probe cover 6x23mm plastic resin tube length of cable 2m	1 remote air probe cover 6x23mm plastic resin tube length of cable 2m 1 remote water probe(Hot Start Input) cover 6x23mm plastic resin tube length of cable 2m
Digital inputs:	-	1 Hot Start digital input (clacson)	-
Dimensions:	80x120x40mm	80x120x40mm	80x120x40mm
Mounting:	Wall mounted or device mounted	Wall mounted or device mounted	Wall mounted or device mounted
Functions:	Ambient thermostat Manual mode selection, Manual speed selection, Hot Start with water probe	Ambient thermostat Manual mode selection, Manual speed selection, Hot Start with digital input	Ambient thermostat Manual mode selection, Manual speed selection, Hot Start with water probe

Wiring Diagram



Part numbers

FSS210..FSS2B0000500

FSS120..FSS1R0000500

FSS220..FSS2R0000500

FC BASICSTAT Applications

2-pipe fan coils, 2 pipes fan coils with electric heaters, 4 pipes fan coils

Model		FSC 100 FSC 200		FSS 110 FSS 210 FSS 120 FSS 220			
		Part number					
		FSC100000500	FSC200000500	FSS1B00000500	FSS2B00000500	FSS1R00000500	FSS2R00000500
Inputs	Built-in air probe			✓	✓		
	Remote air probe(not supplied)					✓	✓
	Water probe(not supplied)		✓		✓		✓
	Hot start digital input	✓		✓		✓	
Outputs	Cold water valve	✓	✓	✓	✓	✓	✓
	Hot water valve	✓	✓	✓	✓	✓	✓
	Fan speed	3	3	3	3	3	3
Functions	Ambient thermostat			✓	✓	✓	✓
	Manual mode selection	✓	✓	✓	✓	✓	✓
	Manual speed selection	✓	✓	✓	✓	✓	✓
	Hot Start with probe		✓		✓		✓
	Hot Start with digital probe	✓		✓		✓	

CFS02...08/V/I Fan Speed Controllers

CFS02...08/V/I Fan Speed Controllers



General description

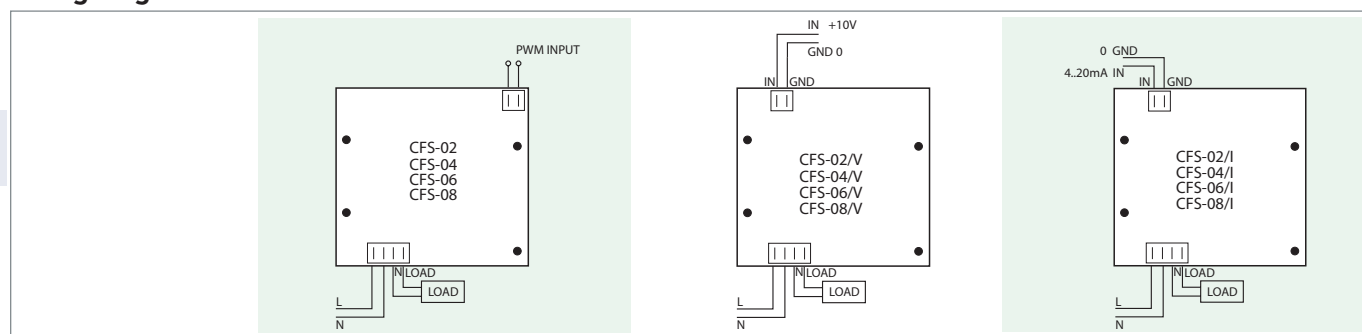
The new Eliwell CFS series regulators are optional modules which can be connected to the main control systems to allow for speed regulation of fans with asynchronous single-phase motors with currents from 2 A to 9 A. Power supply is 230V~ max.

Features:

Eliwell CFS series regulators come in an "open board" format and are available in various models (see table). The models differ according to the nominal current of the applicable load and the type of input control signal, whether current, voltage or PWM (Pulse Width Modulation).

General technical data	CFS02...08	CFS02...08/V	CFS02...08/I
Dimensions:	CFS02: 90.0x83.0x38.0mm(LxDxH)+1.6mm(PCB) CFS04: 90.0x83.0x51.0mm(LxDxH)+1.6mm(PCB) CFS06: 90.0x83.0x63.5mm(LxDxH)+1.6mm(PCB) CFS08: 90.0x83.0x63.5mm(LxDxH)+1.6mm(PCB)	CFS02/V: 90.0x83.0x38.0mm(LxDxH)+1.6mm(PCB) CFS04/V: 90.0x83.0x51.0mm(LxDxH)+1.6mm(PCB) CFS06/V: 90.0x83.0x63.5mm(LxDxH)+1.6mm(PCB) CFS08/V: 90.0x83.0x63.5mm(LxDxH)+1.6mm(PCB)	CFS02/I: 90.0x83.0x38.0mm(LxDxH)+1.6mm(PCB) CFS04/I: 90.0x83.0x51.0mm(LxDxH)+1.6mm(PCB) CFS06/I: 90.0x83.0x63.5mm(LxDxH)+1.6mm(PCB) CFS08/I: 90.0x83.0x63.5mm(LxDxH)+1.6mm(PCB)
Power supply	230V~ ±10% 50Hz	230V~ ±10% 50Hz	230V~ ±10% 50Hz
Nominal current @40°C	2.5A - CFS02 model 5A - CFS04 model 7A - CFS06 model 9A - CFS08 model	2.5A - CFS02/V model 5A - CFS04/V model 7A - CFS06/V model 9A - CFS08/V model	2.5A - CFS02/I model 5A - CFS04/I model 7A - CFS06/I model 9A - CFS08/I model
Nominal current @50°C	2A - CFS02 model 4A - CFS04 model 6A - CFS06 model 8A - CFS08 model	2A - CFS02/V model 4A - CFS04/V model 6A - CFS06/V model 8A - CFS08/V model	2A - CFS02/I model 4A - CFS04/I model 6A - CFS06/I model 8A - CFS08/I model
Input signal	PWM	0...10V=	4...20mA
Ambient operating temp.:	-10...+50°C	-10...+50°C	-10...+50°C
Ambient storage temp.:	-20...+85°C	-20...+85°C	-20...+85°C
Ambient operating and storage humidity:	10...90%RH (non condensing)	10...90%RH (non condensing)	10...90%RH (non condensing)

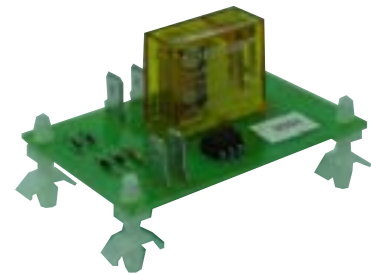
Wiring Diagram



Part number	CFS0x...CF10x11011000 x=2,4,6,8	CFS0x/V...CF10x21011000 x=2,4,6,8	CFS0x/I...CF10x31011000 x=2,4,6,8
-------------	------------------------------------	--------------------------------------	--------------------------------------

CF-11 CF-REL Fan Speed Controllers

CF11 CF-REL Fan Speed Controllers



General description

The CF-11 fan regulator is an optional module that, when connected to the main control systems, can be used to adjust the speed of single-phase fans with currents of 5A (rated current at 60°C).

They come in an "open board" format destined to drive motors - typically fans.

Typical applications

CF-11

Use with Energy series controllers to modulate the speed of fans on the condenser battery.

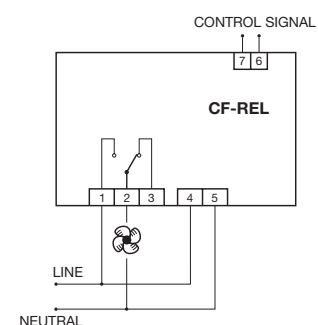
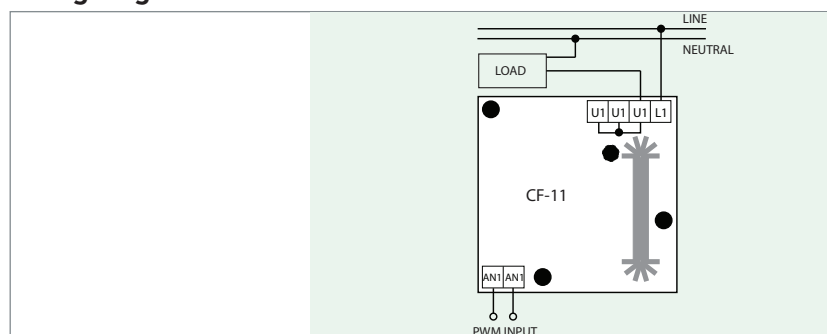
CF-REL

It is developed for the connection to Eliwell devices: it must be connected to the output - low voltage - of the condensation fans of the Energy family.

General technical data

	CF-11	CF-REL
Dimensions:	48.4x47.7mm (LxD), maximum height 50.0mm (H)	72.0x47.0x26.0mm (LxDxH)
Power Supply:	230V~ ±10% 50Hz	230V~ ±10% 50Hz
Minimum input signal amplitude	5V	5V
Maximum input signal amplitude	9.3V	9.3V
Nominal current @ 60°C	5A	
Input signal	PWM	
Ambient operating temp.	0...60°C	-10...50°C
Ambient storage temp.	-20...85°C	-20...85°C
Ambient operating and storage humidity:	10...90%RH (non-condensing)	10...90%RH (non-condensing)
Relay output		10A max. 250V~

Wiring Diagram



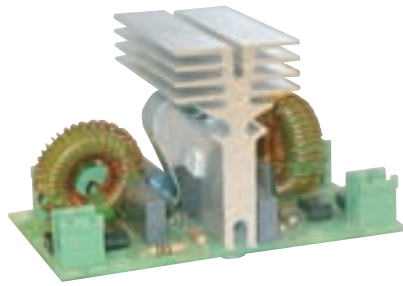
Part number

CF-11....MW991010
CF-11....MW991011 (with spacers)

CF-REL....MW991301

CFS05 TANDEM Fan Speed Controllers

CFS 05 TANDEM Fan Speed Controllers



General description

The CFS 05 'TANDEM' fan regulator is an optional module that, when connected to the main control systems, can be used to adjust the speed of single-phase fans with currents of 5 A +5 A (rated current at 60°C).

It comes in an "open board" format destined to drive motors - typically fans.

Typical applications

Use with Energy series controllers to modulate the speed of fans on the condenser battery.

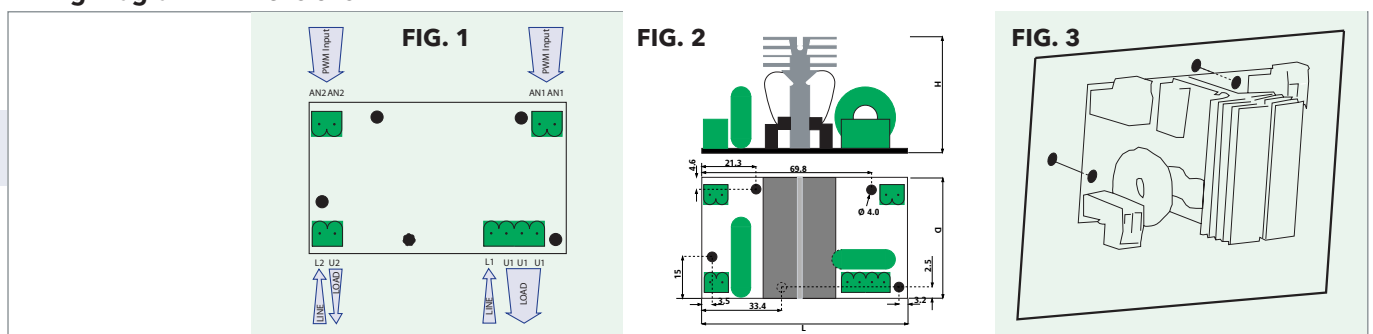
It is recommended that you check to ensure that the motors used are suitable for use with a phase cut-out setting.

General technical data	CFS05 TANDEM
Casing:	PC+ABS UL94 V-0 resin plastic casing
Mounting	Square back installation - vertical see fig. 3
Dimensions:	85x50mm (Lxd) maximum height 48.8 mm (H) see fig. 1
Power supply:	230V~ ±10% 50Hz
Consumption:	25VA
Insulation class:	II
Housing protection:	IP00 (Open Board)
Ambient operating temp.	0...60°C
Ambient storage temp.	-20...85°C
Ambient operating and storage humidity	10...90%RH (non condensing)
Rated current	(at 60°C): 5 A + 5 A
Type of control signal:	impulse modulation (PWM). NOTE: The PWM impulse must be synchronised with the mains frequency.
Minimum input signal amplitude:	5V
Maximum input signal amplitude:	9.3V
Inputs AN1, AN2:	2 inputs 2-way removable terminal* **
Line/output U1:	4-way removable terminal*
Line/output U2:	2-way removable terminal*

*connection cable cross-section 0.2-2.5mm²

**alternatively screw terminals

Wiring Diagram • Dimensions



Part number

CFS05 TANDEM....MW991012



General description

The various available models of temperature probe are devices which, by means of a physical process, provide the instrument they are connected to with the temperature reading.

Common features

Temperature range accuracy: $\pm 1\%$

Double insulation

General technical data - NTC over moulded with double insulation

Part number	Description	Capsule Material	Capsule Dimensions (LxØ)	Cable type	Protection grade	Temp. range	Probe lenght
SN8T6H1502	NTC over moulded with double insulation	Thermoplastic rubber	20x5mm	Thermoplastic rubber	IP68	-50...+110°C	1.5m
SN8T6N1502	NTC over moulded with double insulation	AISI 304	50x6mm	Thermoplastic rubber	IP68	-50...+110°C	1.5m

General technical data - NTC over moulded with double insulation cable

SN8T6H1505	NTC over moulded with double insulation cable	Thermoplastic rubber	20x5mm	Black thermoplastic rubber screened	IP68	-50...+110°C	1.5m
SN8T6H3002	NTC over moulded with double insulation cable	Thermoplastic rubber	20x5mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP68	-50...+110°C	3.0m
SN8T6H0005	NTC over moulded with double insulation cable	Thermoplastic rubber	20x5mm	Black thermoplastic rubber screened	IP68	-50...+110°C	1.0m
SN8T6A1502	NTC over moulded with double insulation cable	AISI 304	40x6mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP68	-50...+110°C	1.5m
SN8T6A3002	NTC over moulded with double insulation cable	AISI 304	40x6mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP68	-50...+110°C	3.0m
SN8T6I1500	NTC over moulded with double insulation cable	AISI 304	20x6mm	Thermoplastic rubber	IP68	-50...+110°C	1.5m
SN8DAE53002C5	NTC over moulded with double insulation cable	AISI 304	50x6mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP68	-50...+110°C	3.0m
SN8DAE51502C5	NTC over moulded with double insulation cable	AISI 304	50x6mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP68	-50...+110°C	1.5m
SN8DAE46002C0	NTC over moulded with double insulation cable	AISI 304	40x6mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP68	-50...+110°C	6.0m
SN8DAE43005C0	NTC over moulded with double insulation cable	AISI 304	40x6mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP68	-50...+110°C	3.0m
SN8DAE135B2C0	NTC over moulded with double insulation cable	AISI 304	20x6mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP68	-50...+110°C	3.5m
SN8DAE125B2C0	NTC over moulded with double insulation cable	AISI 304	20x6mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP68	-50...+110°C	2.5m
SN8DAE115B2C0	NTC over moulded with double insulation cable	AISI 304	20x6mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP68	-50...+110°C	1.5m

General technical data - NTC double insulation

SN8SAA1502	NTC double insulation	AISI 304 (ext.)	40x6mm	Silicon	IP67	-50...+120°C	1.5m
SN8PAA0000	NTC double insulation	AISI 304 (ext.)	40x6mm	PVC	IP67	-30...+105°C	10.0m
SN8PAA0001	NTC double insulation	AISI 304 (ext.)	40x6mm	PVC	IP67	-30...+105°C	15.0m
SN8PAA1500	NTC double insulation	AISI 304 (ext.)	40x6mm	PVC	IP67	-30...+105°C	1.5m
SN8PCL1002	NTC double insulation	Nylon	26x7mm	PVC	IP67	-30...+80°C	1.0m
SN8PCL1500	NTC double insulation	Nylon-double tube	26x7mm	PVC	IP67	-30...+80°C	1.5m
SN8PCL2502	NTC double insulation	Nylon	26x7mm	PVC	IP67	-30...+80°C	2.5m



General description

The various available models of temperature probe are devices which, by means of a physical process, provide the instrument they are connected to with the temperature reading.

Common features

Temperature range accuracy: $\pm 1\%$

General technical data

Part number	Description	Capsule Material	Capsule Dimensions (LxØ)	Cable type	Protection grade	Temp. range	Probe Length
SN8DEB21502C0	NTC clamp-on 'FAST'	Copper	16x4mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP68	-50...+110°C	1.5m
SN8DNB11502A0	NTC clamp-on FAST response	Copper	16x4mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP67	-50...+110°C	1.5m
SN8DEC11502A0	NTC FAST response	AISI 304	40x4mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP67	-50...+110°C	1.5m
SN8P0X3002	NTC FAST - steel tube	AISI 304	40x4mm	Thermoplastic rubber (ext.) Polypropylene (int.)	IP67	-50...+110°C	3.0m
SN8P0A1500	NTC steel tube	AISI 304	40x6mm	PVC	IP67	-30...+80°C	1.5m
SN8D6L4002	NTC extended range	High temperature polyester	20x5mm	Polyester	IP65	-50...+120°C; 150°C max for 3000h	4.0m

EWPA 007 - 030 - 050F Pressure transducers

EWPA 007 - 030 - 050F Pressure transducers



General description

EWPA series pressure transducers are sensors with a current output through which they transmit the signal to the instruments they are connected to.

Common features

Protection rating: IP65

Electrical connection: 2m cable

Connection: with 2 wires

Output: current 4...20mA

General technical data	EWPA 007	EWPA 030	EWPA 050F
Operating range:	-0.5...8 bar (relative) 0.5...8 bar (absolute)	0...30 bar (relative) 1...31 bar (absolute)	0...50 bar (relative)
Overload:	20 bar	100 bar	100 bar
Operating temperature:	-20...80°C	-20...80°C	-25...80°C
Accuracy at ambient temperature:	±1% E.o.S.	±1% E.o.S.	±0,5% E.o.S.
Accuracy at 0...50°C:	typical: ±1%; max: ±2% E.o.S.	typical: ±1%; max: ±2% E.o.S.	±2% E.o.S.
Accuracy for values other than 0...50°C:	typical: ±2.5%; max: ±4% E.o.S.	typical: ±2.5%; max: ±4% E.o.S.	from ±3% E.o.S. to ±4% E.o.S
Impact resistance:	sinusoidal pulse, 20g/11 msec (IEC-68-2-36)	sinusoidal pulse, 20g/11 msec (IEC-68-2-36)	sinusoidal pulse, 20g/11 msec (IEC-68-2-36)
Vibrations:	5...2000 Hz/10 g on 3 axes (IEC-68-2-6)	5...2000 Hz/10 g on 3 axes (IEC-68-2-6)	5...2000 Hz/20 g on 3 axes (IEC-68-2-6)
Power supply:	8...28V $\overline{=}$	8...28V $\overline{=}$	8...28V $\overline{=}$
Compensated temperature:	0...50°C	0...50°C	0...50°C
Power supply unit:	available	available	available
Mechanical connections:	male connector / female connector 1/4 SAE (7/16" - 20 UNF)	male connector / female connector 1/4 SAE (7/16" - 20 UNF)	male connector 1/4 SAE (7/16" - 20 UNF)

Part number

EWPA007 - male...TD200107
EWPA007 - female...TD300008

EWPA030 - male...TD200130
EWPA030 - female...TD200030

EWPA050F - male...TD300050

EWPA 010 - 030 - 050

Ratiometric pressure transducers

EWPA 010 - 030 - 050

Ratiometric pressure transducers



General description

EWPA series pressure transducers are sensors with a voltage output through which they transmit the signal to the instruments they are connected to. They provide accurate performance over wide temperatures.

Common features

Protection rating: IP65

Electrical connection: 1m cable

Connection: with 3 wires

General technical data	EWPA 010	EWPA 030	EWPA 050
Operating range @ 0.5...4.5V:	0...150 psi / 0...11 bar	15...515 psi / 1...35 bar	14...667 psi / 1...46 bar
Overload:	450 psi / 31 bar	1030 psi / 71 bar	1334 psi / 92 bar
Operating temperature:	-40...120°C	-40...120°C	-40...120°C
Accuracy:	±1.2% span	±1.2% span	±1.2% span
Vibrations:	50...2000 Hz/11 g	50...2000 Hz/11 g	50...2000 Hz/11 g
Power supply:	4.5...5.5V=	4.5...5.5V=	4.5...5.5V=
Output voltage:	0.5...4.5V= typical	0.5...4.5V= typical	0.5...4.5V= typical
Supply current:	8mA max	8mA max	8mA max
Output load:	10K ohms typical	10K ohms typical	10K ohms typical
Mechanical connections:	female connector 1/4 SAE (7/16" - 20 UNF)	female connector 1/4 SAE (7/16" - 20 UNF)	female connector 1/4 SAE (7/16" - 20 UNF)

Accessories

Part number	Description
CO000027	Wire harness - 1m length

Part number

EWPA010...TD400010

EWPA030...TD400030

EWPA050...TD400050

EWHS 280 - 300 - 310-2

Humidity probes

EWHS 280 - 300 - 310-2

Humidity probes



General description

EWHS 280/300/310-2 series probes are specially made for connecting to humidity measurement instruments and humidity/temperature characterised by high accuracy.

Common features

Environment humidity: 0...10% RH
Maximum load: 250 Ohm

Maximum air speed: 20m/s
Polarity inversion protection: diode

General technical data	EWHS 280	EWHS 300	EWHS 310-2
Insulation grade:	IP54	IP65	IP65
Installation:	use the clip supplied with the probe	Via 2 external slots	Via 2 external slots
Electrical Connections:	PVC bipolar cable	Screw-type terminals	Screw-type terminals
Dimensions:	103x25mm	80x80x52mm	80x80x52mm
Power supply:	9...28V=	9...30V=	15...40V= or 12...28V~
Input:	20mA max	20mA max	<50mA max
Ambient temperature:	-10...60°C	-30...70°C	-40...60°C (-40...140°F)
Humidity sensor:	resistive	Hygromer® IN-1	Hygromer® IN-1
Humidity measurement range:	15...90% RH	0...100% RH	0...100% RH
Output current of humidity measurement:	4 (0%)...20mA (100%)	4 (0%)...20mA (100%)	0 (0%)...20mA (100%)
Response time in constant conditions (63%) at 23°C:	60 sec	typically 10 sec	typically 10 sec
Recovery time from saturation:	360 sec	depending on airflow	depending on airflow
Storage temperature:	-20...70°C	-50...70°C	-50...70°C
Accuracy of humidity measurement (at 23°C):	±5% RH (in the interval 15...90% RH)	±2% RH (in the interval 10...95% RH) ±3% RH (for <10% or >95%RH values)	±2% RH
Number of wires per connection	2 (blue: power supply; brown: output)	2	4
Air filter:	metal wire mesh	polyethylene	polyethylene
Temperature sensor:	-	-	Pt100B
Temperature range:	-	-	-40...60°C (-40...140°F)
Output current of temperature measurement:	-	-	0 (-30°C)...20mA (70°C)
Temperature measurement accuracy (at 0°C and 23°C):	-	-	±0.3K
Compensation temperature:	-	with NTC	with Pt100B
Connection cable:	1m or 3m	-	-

Part number

EWHS 280....SN560000

EWHS 300....SN520000

EWHS 310-2....SN510010

BusAdapter 130 BusAdapter 150 BusAdapter 350

BusAdapter 130 BusAdapter 150 BusAdapter 350



General description

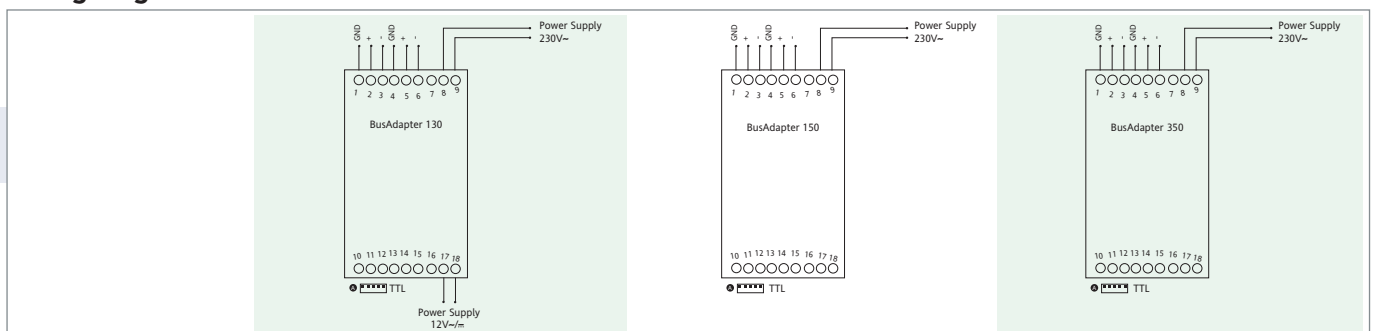
BusAdapter 130-150-350 are interface modules that connect the TTL communication line and the RS-485 serial line.

Features

- The 130 models have a 12V (5 VA) auxiliary output to power the instrument
- The 150 models have reinforced electrical insulation
- The 350 models have reinforced electrical insulation and are used with FC BASICOM devices

General technical data	BusAdapter 130	BusAdapter 150	BusAdapter 350
Casing:	3 DIN modules plastic container	3 DIN modules plastic container	3 DIN modules plastic container
Mounting:	on DIN rail	on DIN rail	on DIN rail
Power supply:	230V~ / 115V~ ±10% 50/60Hz	230V~ / 115V~ ±10% 50/60Hz	230V~ / 115V~ ±10% 50/60Hz
Consumption:	6VA	1.5VA	1.5VA
Insulation class:	II	II	II
Ambient operating temp.:	-5...+55°C	-5...+60°C	-5...+60°C
Ambient storage temp.:	-30...+75°C	-30...+75°C	-30...+75°C
Ambient operating and storage humidity:	10...90% RH (non condensing)	10...90% RH (non condensing)	10...90% RH (non condensing)
Connections:	screw terminal block for wires ≤ 2.5mm ² (one wire per terminal for power supply)	screw terminal block for wires ≤ 2.5mm ² (one wire per terminal for power supply)	screw terminal block for wires ≤ 2.5mm ² (one wire per terminal for power supply)
Serial connections:	• double RS-485 serial port for the connection to the TelevisSystem; • TTL for connection with instruments	• double RS-485 serial port for the connection to the TelevisSystem; • TTL for connection with instruments	• double RS-485 serial port for the connection to the TelevisSystem; • TTL for connection with instruments
Baud rate:	2400...9600 Baud	2400...9600 Baud	2400...9600 Baud
Auxiliary output:	12V~ / ±10% 50/60Hz	/	/

Wiring Diagram



Part number	BusAdapter 130....BA11250N370x x=0: 1mt cable • x=3: 2.5mt cable	BusAdapter 150....BA10000R370x x=0: 1mt cable • x=3: 2.5mt cable	BusAdapter 350....BA10000R370x x=1: 1mt cable • x=4: 2.5mt cable
-------------	---	---	---

RadioAdapter(/S) RadioAdapter(/S) EXT RadioKey

RadioAdapter(/S) RadioAdapter(/S) EXT RadioKey



General description

Radio**Adapter** provides a cost-effective, reliable way of building cable-free communication networks between monitoring systems and controllers or a means of extending existing networks.

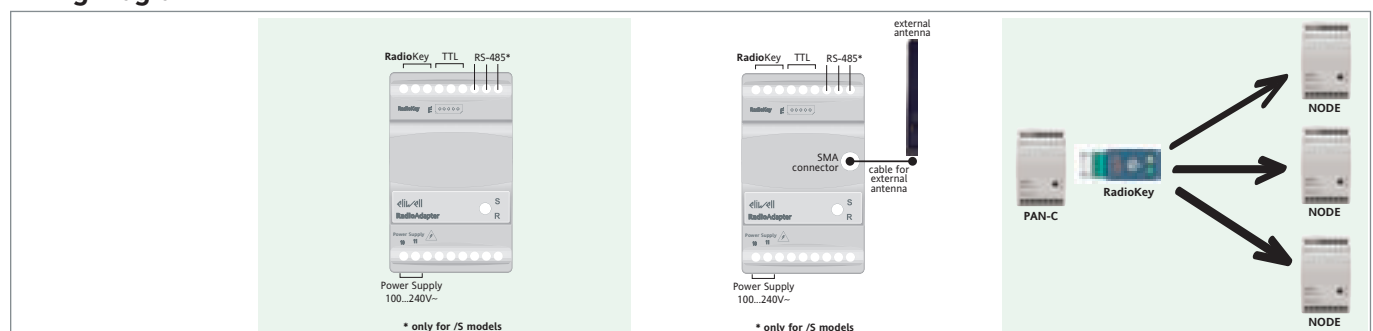
Radio**Key** is a network configuration device.

Features

- IEEE 802.15.4 standard functions
- running on ISM frequency band at 2.4GHz
- MESH networking technology with associated dynamic routing
- capability to act as a repeater for adjacent nodes
- large surface areas covering
- sending/receiving messages getting around blocked paths
- continuous function guaranteed even when one or more nodes breaks down

General technical data	RadioAdapter • RadioAdapter/S	RadioAdapterEXT • RadioAdapter/S EXT	RadioKey
Casing:	3 DIN modules plastic container	3 DIN modules plastic container	-
Mounting:	on DIN rail	on DIN rail	-
Power supply:	100...240V~ ±10% 50/60Hz	100...240V~ ±10% 50/60Hz	-
Power draw:	2W	2W	-
Insulation class:	II	II	-
Ambient operating temp.:	-5...+60°C	-5...+60°C	-
Ambient storage temp.:	-20...+85°C	-20...+85°C	-
Ambient operating and storage humidity:	10...90%RH (non condensing)	10...90%RH (non condensing)	-
Standard:	IEEE 802.15.4	IEEE 802.15.4	-
Class of use:	Class 4 classification ISA SP100.11 (do not use for safety devices)	Class 4 classification ISA SP100.11 (do not use for safety devices)	-
Network architectures permitted:	star, tree or MESH	star, tree or MESH	-
Protocols supported:	Televis and Modbus RT	Televis and Modbus RTU	-
Number of nodes per network:	100 max.	100 max.	-
Number of controllers per NODE:	240 max.	240 max.	-
Response time of radio:	800msec max. (value to be added to the response time of the controller to calculate transmission timeout)	800msec max. (value to be added to the response time of the controller to calculate transmission timeout)	-
Serial connections:	TTL port for connection to devices • on /S model only: RS-485 serial port	TTL port for connection to devices • on /S model only: RS-485 serial port	-
Antenna:	2.4GHz integrated, multidirectional	external - not included (see Accessories)	-
Accessories		External antenna kit + SMA 90° connector + 1m cable. To be ordered separately	-

Wiring Diagram



Part number

RadioAdapter..BARF0TS00NH00
RadioAdapter/S..BARF0DS00NH00

RadioAdapterEXT..BARF0TS20NH00
RadioAdapterEXT/S..BARF0DS20NH00
Antenna Kit..MD0000003

RadioKey(Televis)..CCA0B0T01Tx00
RadioKey(Modbus)..CCA0B0T01Mx00
x = depending on bit rate/parity values



General description

DeviceManager is a software used to simplify and assist the installation and operation of Eliwell-compatible devices.

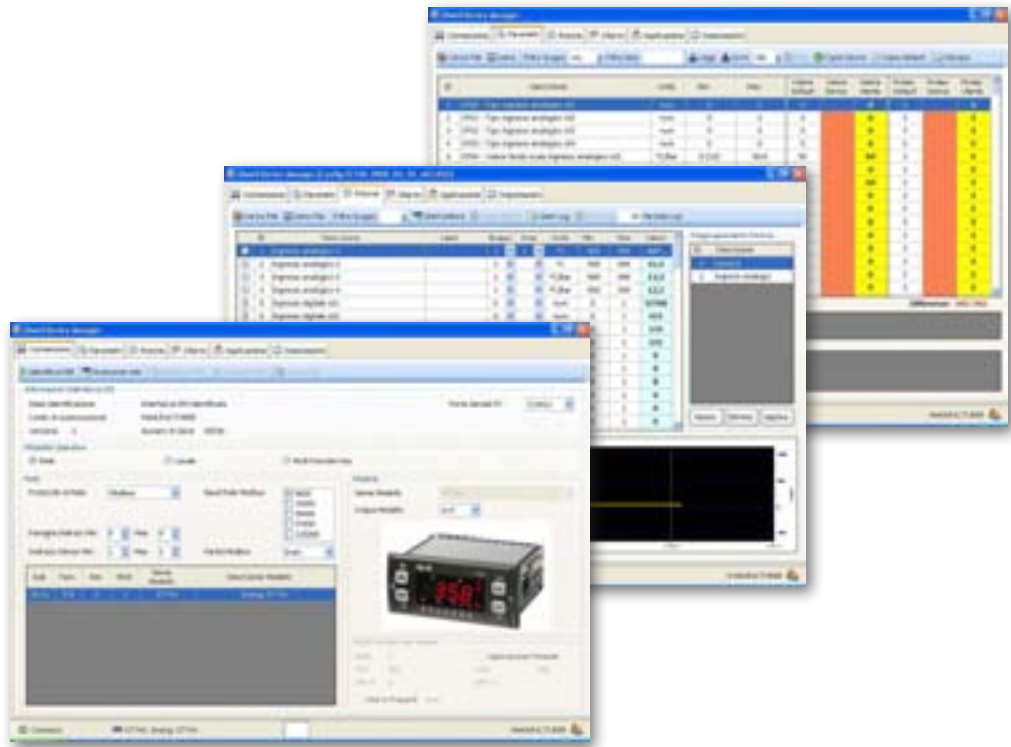
Main features

Graphic interface
Eliwell parameters devices management
Real-time monitoring and management variables

Device alarms records management
Firmware updating

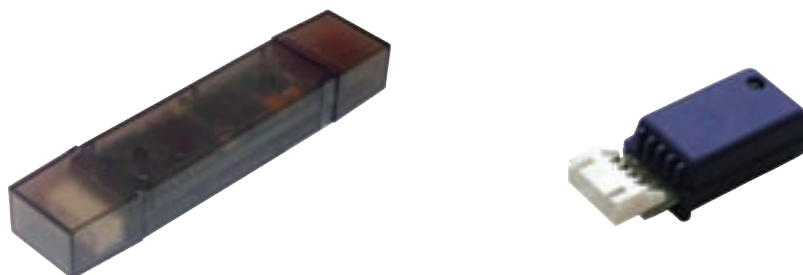
Minimum System Requirements DeviceManager

Operating Systems:	• Windows XP Pro SP2, Italian and English • Windows XP Home SP2, Italian and English • Windows 2000 Professional SP4, Italian and English
Software components required in addition to operating system:	• .NET Framework 2.0
Minimum hardware requirements:	• 1024x768 graphic resolution • 700MHz CPU • RAM 256MB • HD 1GB • Mouse or other pointing devices
Disk space required:	About 500 Mbyte for a typical installation (2 languages, 50 models)



Part number

DEVICE MANAGER 100...DMP1000002000



General description

DeviceManager Interface (DMI) is the USB/TTL-I2C hardware interface, used in association with the software package. MFK is a memory device.

Features

DMI:

Eliwell parameters devices management
Real-time monitoring and management variables
Device alarms records management
Firmware updating

MFK:

Device's parameter values update
Device's firmware/application update
Parameter values from the device download
Alarms records from the device download

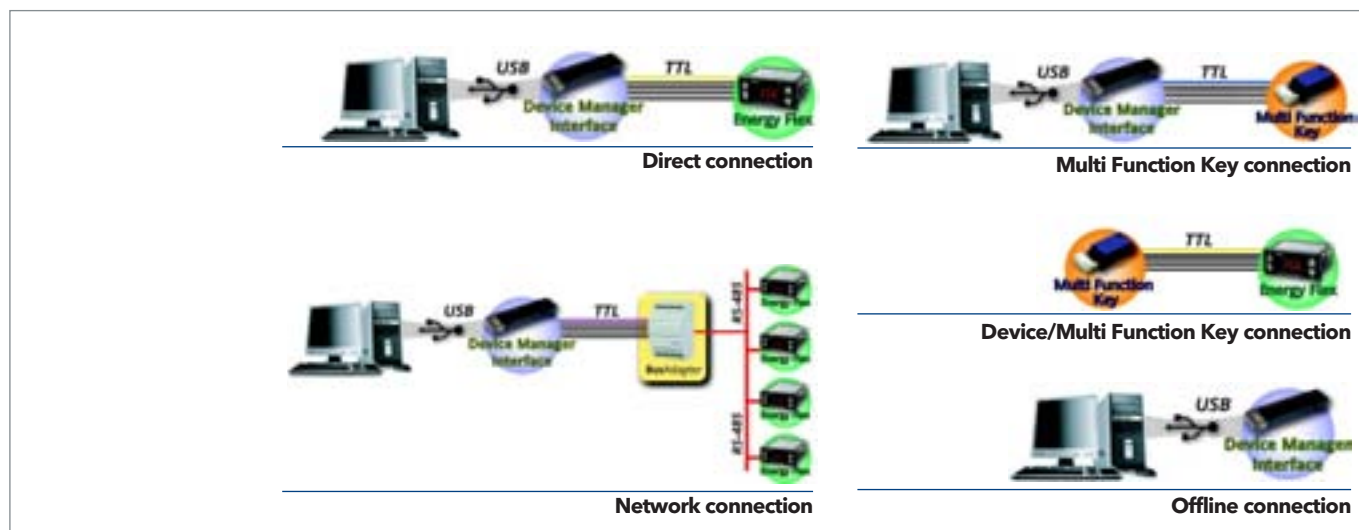
General Technical Data

Part number	Description	Programming/Management/Printing functions
DMI1001002000	DMI 100-1 End User	Contact Sales Dept. for specifications
DMI1002002000	DMI 100-2 Service	Contact Sales Dept. for specifications
DMI1003002000	DMI 100-3 Manufacturer	Contact Sales Dept. for specifications
Part number	Description	Updating/Download functions
MKF100T000000	Multi Function Key 100	Contact Sales Dept. for specifications

Accessories

Part number	Description
BA10000R3700	BusAdapter150
COLV000016200	USB-A/A 2MT extension lead

Available Connections





ISO 9001



Eliwell Controls Srl

Via dell' Industria, 15 Z. I. Paludi
32010 Pieve d' Alpago (BL) - Italy
Telephone +39 0437 986 111
Facsimile +39 0437 989 066

Sales:

+39 0437 986 100 (Italy)
+39 0437 986 200 (other countries)
saleseliwell@invensyscontrols.com

Technical helpline: +39 0437 986 300
techsuppeliwell@invensyscontrols.com

www.eliwell.it

