

# PRODUCT CATALOG

## F-SERIES

Indicators  
Totalizers  
Transmitters  
Flow Computers  
Batch Controllers  
Monitors  
Displays

Flow  
Level  
Pressure  
Temperature

FOR





# INTRODUCTION TO THE F-SERIES

The F-Series range offers you an extensive selection of indicators, controllers and monitoring systems for liquid and gas flow applications as well as for level, pressure and temperature measurement.



## Industrial applications

The F-Series range has been developed for typical industrial environments. It is sturdy and weather-proof through its aluminum or GRP IP67 / NEMA 4X field enclosure. The enclosure can be mounted directly onto sensors, walls or pipes, but is also suitable for panel mount applications, with one major advantage: it requires minimal depth clearance. The operational temperature specification of the product range is from -40°C to +80°C (-40°F to +178°F).

## Operational

Fluidwell is acutely aware of the excessive amount of equipment which today's technicians need to control. For this reason, a clear user-friendly menu structure was developed for programming all Fluidwell products a number of years ago: all models are programmed in the same logical manner. The configuration of the unit is completely menu-driven with understandable texts avoiding confusing abbreviations. There are no sensitive DIP-switches or trimmers, you simply select "Flowmeter" as main function, after which you can select "Coil-input" or "Span". The Operators main information is displayed in clear 17mm (0.7") or 26mm (1") and 8mm (0.3") alphanumeric characters. An adjustable bi-color backlight is available that will switch from green to red in case an alarm is triggered.



## Input features

- For flow measurement, the instrument accepts signals from most flowmeters, ranging from PD-meters with reed-switches or hall-effect sensors to turbine sine wave (coil) pick-ups and other NPN/PNP pulse outputs. NAMUR standard sensors and (o)4 - 20mA or 0 - 10V DC analog devices are also catered for.
- For level and pressure measurement, inputs are available for (o)4 - 20mA or 0 - 10V DC signals.
- For temperature measurement, the instrument accepts (o)4 - 20mA or 0 - 10V DC signals, also 2, 3 or 4 wire PT100 elements and thermocouple.

Linearization of the input signal, square root calculation and data filter functions are all available.



## Output features

Related to the functionality of the selected product, the following output features are available:

- Analog output proportional to the flow rate, level, differential, ratio, temperature, pressure position or control value. This turns the unit into a powerful transmitter with a local display. The output can also be used to control actuators, valves or pumps.
- Transistor or relay outputs for high and low alarms, pulse output as well as the control of valves / relays in batch control applications.
- The RS232, RS485 or TTL interface makes it possible to communicate remotely, even with the battery-powered unit. All software parameters can be monitored / modified in addition to the usual transfer of data using the Modbus protocol.

## Power Management

During the development of the F-Series products, ultra-low power consumption was a key-requirement. Thanks to recent advancements in CMOS technology, Fluidwell has extended the battery life significantly and introduced several smart power-management functions.

Result: a battery lifetime of seven years can be achieved. Additionally, several alternative means of powering the F-Series are available: loop-powered, 24V AC/DC and 115 - 230V AC.


Since all settings are stored in EEPROM memory, you won't lose information when replacing the battery or in the event of sudden power loss. A backup of the running totals is made every minute.

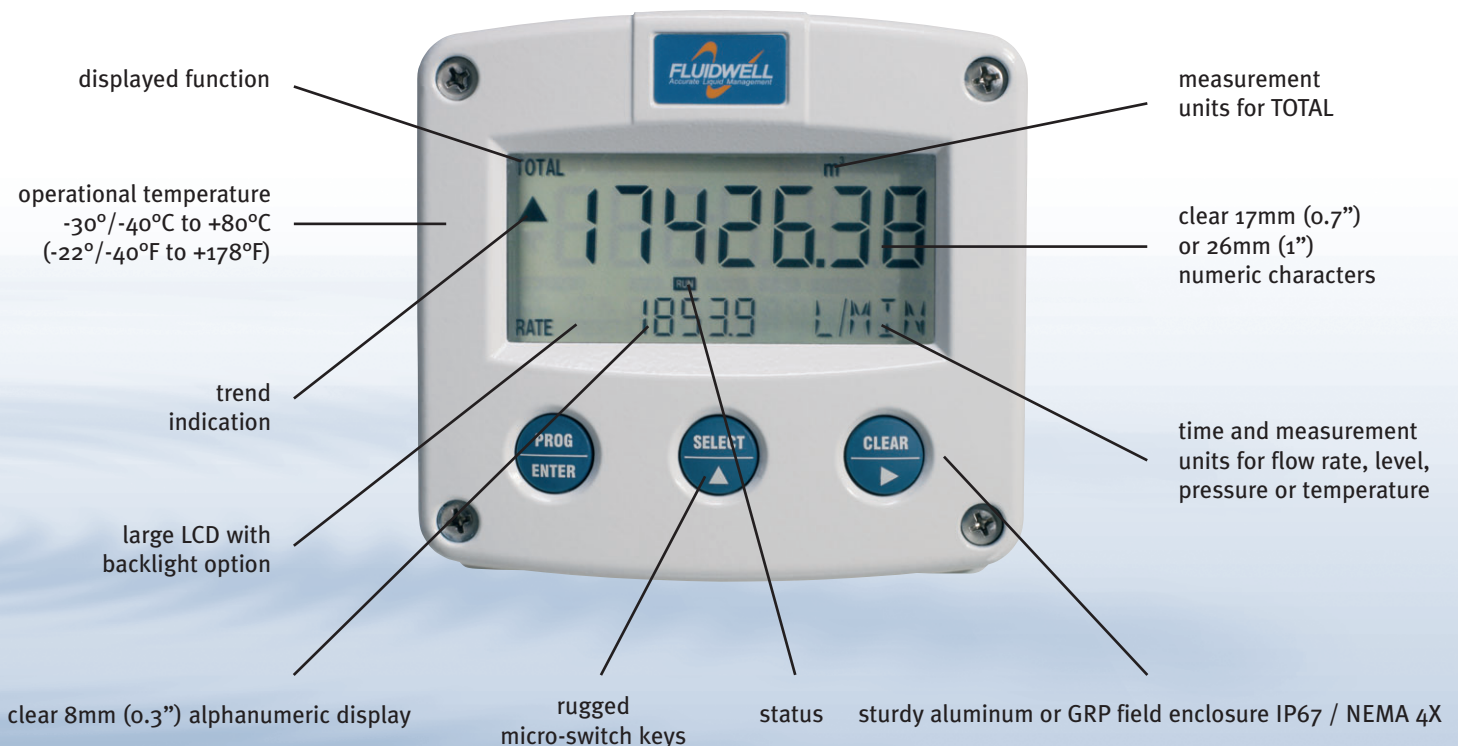
## Hazardous area installation

Both Fo- and F1-Series products can be supplied certified Intrinsically Safe to ATEX  II 1 GD EEx ia IIB/IIC T4.

For the basic Fo-Series products, certification to IECEx, FM, CSA and non-incendive is expected in the fourth quarter of 2006 with following specifications:

- Intrinsically Safe Class I, II, or III, Division 1, Groups A through G, Ex ia Class I, Zone 0 and 1, Group IIC.
- Non-Incendive Class I, II, or III, Division 2, Groups A through G, Ex nA Class I, Zone 2, Group II.

An explosion-proof enclosure is also available which has been certified in accordance to ATEX  II 2 GD EEx d IIB T5.





# FLOW RATE / TOTALIZERS, MONITORS AND TRANSMITTERS



## Introduction

This product group offers an extensive range of solutions from a basic totalizer up to a powerful flow rate monitor with flowcurve linearization, flow rate monitoring, signal re-transmitting, alarm and pulse outputs as well as full Modbus communication. All models are available for safe area and hazardous area applications. Moreover, wireless data re-transmitting and remote flow rate / totalizer monitoring is offered with our M-Series and ProcessMonitor.com products and services.

The functionality of these products is based on two main hardware platforms:

- F0 platform: these products offer one signal input and can have one pulse or alarm output. This is our basic product range.
- F1 platform: these products have one or more signal inputs, multiple outputs and communication option. This is our advanced product range.

Both platforms share the same technology, enclosures, display and options but are dedicated to their typical functionality.



## Common Flow rate / Totalizer features

- Clear operator information is a key feature of these products. Essential information is displayed as a clear text (e.g. “rate too high”) and not as mysterious abbreviations.
- The dedicated display shows two lines of information simultaneously along with text labels like “preset”, “actual” or “acc. total” so the operator understands the displayed information.
- The resettable total is displayed with seven 17mm (0.67”) high digits with its software selectable engineering unit. The following units can be selected through software: mL, L, m<sup>3</sup>, GAL, USGAL, kg, lb, bbl or no unit.
- Accumulated total is displayed with eleven 8mm (0.31”) digits and uses the same measuring units as total.
- Flow rate is normally displayed with 8mm (0.31”) digits at the bottom line of the display but can be set to 17mm (0.67”) digits if desired. The basic flow rate indicator F010 even has 26mm (1”) digits. The following engineering units can be selected: mL, L, m<sup>3</sup>, mg, g, kg, ton, GAL, bbl, lb, cf, REV, scf, Nm<sup>3</sup>, NL, P or no unit. The flow rate can be calculated per sec., min., hour or day. The trend indication shows an increase or decrease of the actual flow rate.

Further product specific features can be found on the following pages.



## Configuration menu

All configuration settings are accessed via a simple operator menu which can be password protected. Each setting is clearly indicated with an alphanumeric description, therefore avoiding confusing abbreviations and baffling codes. There are no sensitive DIP-switches or trimmers, you simply select “Flowmeter” as main function, after which you can select “NPN pulse” or “span” etc. Once familiar with one F-Series product, you will be able to program all models in the series without a manual. All settings are safely stored in EEPROM memory. The clear and easy structured configuration menu is one of the most appreciated features of the F-Series.

## Signal input type

For the flow rate / totalizers, three basic signal input types are available:

- Pulse signals: sine wave (coil) low sensitivity (80mV p-p), sine wave high sensitivity (20mV p-p), Namur, NPN, PNP, reed-switch or active pulses. For most signals a low pass filter can be enabled to ignore pulse bounce. The sine wave input can even be supplied with 10mV or 5mV p-p sensitivity (option ZF and ZG).

- Analog signal: (o)4 - 20mA or 4 - 20mA input loop powered version. The input signal can be tuned within this range (e.g. from 4.0mA to 18.0mA). To avoid counting at minimum signal, a low cut-off filter is available.
- Analog signal: 0 - 10V DC. The input signal can be tuned within this range (e.g. from 2.0 to 5.0V DC). A low cut-off filter is available here too, to avoid counting at minimum signal.

## Data protection

All settings and totals are stored in EEPROM memory ensuring that no information is lost in the event of power failure or battery exchange.

To reset total, the CLEAR key must be pressed twice to avoid undesired initialization. Accumulated total cannot be reset to zero. The configuration menu and alarm values can be password protected to prevent unauthorized access.

For an explanation of all the F-Series options such as analog and alarm outputs, communication, power supply and enclosures, please read the section “Ordering codes” in the back of this catalog.

## Product listing

- F010 Flow rate Indicator.
- F011 Totalizer with resettable total and accumulated total.
- F012 Flow rate Indicator / Totalizer with resettable total and accumulated total.
- F013 Flow rate Monitor / Totalizer with two high / low alarm values and one alarm output.
- F014 Flow rate Indicator / Totalizer with a scaled pulse output.
- F016 Flow rate Indicator / Totalizer with eight linearization points and a scaled pulse output.
- F110 Flow rate Indicator / Totalizer with analog output, scaled pulse output and communication option.
- F111 Dual Flow rate Indicator / Totalizer in one enclosure with two scaled pulse outputs and communication option.
- F112 Flow rate Indicator / Totalizer with fifteen linearization points, analog and scaled pulse output and communication option.
- F113 Flow rate Monitor / Totalizer with four high / low alarm values, max. four alarm or pulse outputs, analog output and communication option.
- F115 Bi-directional Flow rate Indicator / Totalizer with analog output, scaled pulse output and communication option.
- F117 Totalizer Monitor with high / low totalizer alarm, analog output and communication option.
- F118 Flow rate Monitor / Totalizer with ten linearization points, two high / low alarm values, max. three alarm or scaled pulse outputs, analog output and communication option.

## F010 Flow rate Indicator with very large digits

The F010 is a local indicator with large 26mm (1") high digits which displays the actual flow rate. The measuring and time unit to be displayed below the flow rate are simply selected through an alphanumeric configuration menu. No adhesive labels have to be put on the outside of the enclosure: a weather proof and user-friendly solution! The configuration of K-factors or Span and number of decimals is done through software functions as well, without any sensitive DIP-switches or trimmers. A wide range of options further enhance this model capabilities, including Intrinsic Safety for hazardous area applications.

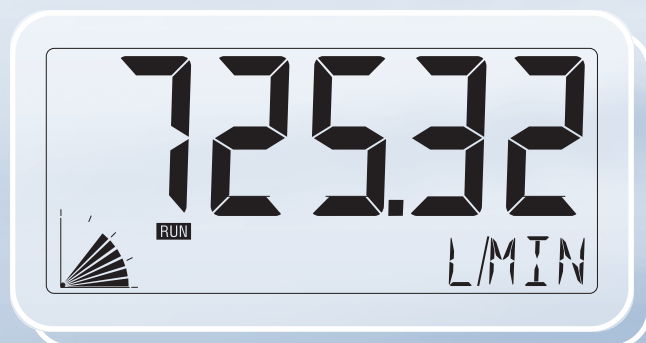
### Features

- Displays instantaneous flow rate, measuring and time unit.
- Very large 26mm (1") high digits for flow rate.
- Piegraph indication: ten segments.
- Selectable on-screen engineering units for flow rate: mL, L, m<sup>3</sup>, mg, g, kg, ton, GAL, bbl, lb, cf, REV, scf, Nm<sup>3</sup>, NL, P or no unit.
- Selectable on-screen time units for flow rate: /sec, /min, /hour or /day.
- Number of digits for flow rate: 5½.
- Green/amber LED backlight with adjustable intensity.
- Auto backup of settings in EEPROM memory.
- Operational temperature -40°C to +80°C (-40°F to 178°F).
- Easy configuration with clear alphanumeric display.
- Very compact design for panel mount, wall mount or field mount applications.

### Application

- Flow measurement where a local flow rate indication is required without signal re-transmitting or totalizer functionality. Alternative advanced models: F012, F013, F014, F016 or even more advanced F110 and higher.

### Display example



### Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active signal.
- Analog: (0)4 - 20mA, 0 - 10V DC.

### Pulse output

- No.

### Analog output

- No.

### Alarm output

- No.

### Communication

- No.

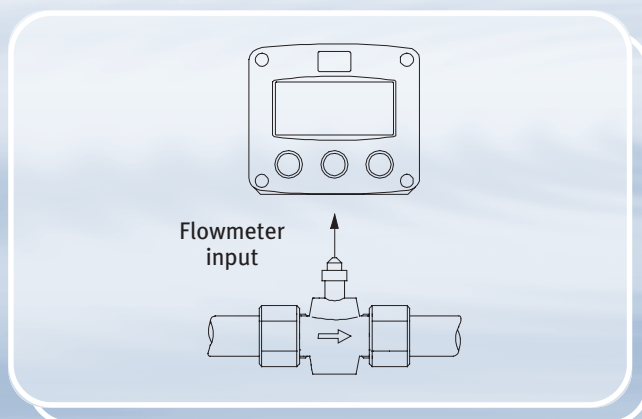
### Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

### Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

### Application overview





# F011 Totalizer with on-screen measuring units

The F011 is a local indicator which displays the running total and accumulated total simultaneously. Total can be reset to zero by pressing the CLEAR button twice. The accumulated total can register up to 11 digits and is backed-up in EEPROM memory every minute, just as the running total. The measuring unit to be displayed is simply selected through an alphanumeric configuration menu. No adhesive labels have to be put on the outside of the enclosure: a weather proof and user-friendly solution! A wide range of options further enhance this model capabilities, including Intrinsic Safety for hazardous area applications.

## Features

- Displays total and accumulated total simultaneously.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven 8mm (0.31") digits.
- Selectable on-screen engineering units: ml, L, m<sup>3</sup>, GAL, USGAL, kg, lb, bbl or no unit.
- Green/amber LED backlight with adjustable intensity.
- Auto backup of settings and running totals in EEPROM memory.
- Operational temperature -40°C to +80°C (-40°F to 178°F).
- Easy configuration with clear alphanumeric display.
- Very compact design for panel mount, wall mount or field mount applications.
- Rugged aluminum or polyamide field mount enclosure IP67 / NEMA 4X.

## Application

- Flow measurement where a local totalizer function is required without flow rate or signal re-transmitting functionality. Alternative advanced models: F012, F013, F014, F016 or even more advanced F110 and higher.

## Display example



## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active signal.
- Analog: (o)4 - 20mA, o - 10V DC.

## Pulse output

- No.

## Analog output

- No.

## Alarm output

- No.

## Communication

- No.

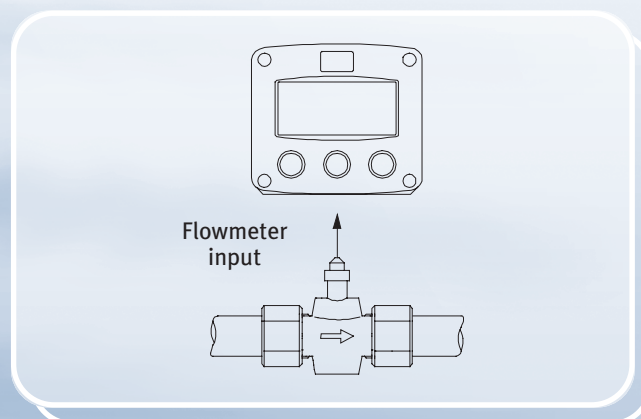
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

## Application overview



## F012 Flow rate Indicator / Totalizer displays flow rate and total simultaneously

The F012 is our most popular model. This local indicator displays the actual flow rate, total and accumulated total. Total can be reset to zero by pressing the CLEAR button twice. The accumulated total can register up to 11 digits and is backed-up in EEPROM memory every minute, just as the running total. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety for hazardous area applications.

### Features

- Displays total and flow rate simultaneously.
- Large digit selection for flow rate or total.
- Flow rate: seven 17mm (0.67") or 8mm (0.31") digits.
- Total - resettable: seven 17mm (0.67") digits.
- Acc. total - not resettable: eleven 8mm (0.31").
- Green/amber LED backlight with adjustable intensity.
- Auto backup of settings and running totals in EEPROM memory.
- Operational temperature -40°C to +80°C (-40°F to 178°F).
- Selectable on-screen engineering units for flow rate: mL, L, m<sup>3</sup>, mg, g, kg, ton, GAL, bbl, lb, cf, REV, scf, Nm<sup>3</sup>, NL, P or no unit.
- Selectable on-screen time units for flow rate: /sec, /min, /hour or /day.
- Selectable on-screen engineering units for total: ml, L, m<sup>3</sup>, GAL, USGAL, kg, lb, bbl or no unit.

### Application

- Flow measurement where a local flow rate indication and totalizer function is required without signal re-transmitting. Alternative basic models F010, F011 or more advanced F013, F014, F016, F110 and higher.

### Display example



### Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active signal.
- Analog: (o)4 - 20mA, o - 10V DC.

### Pulse output

- No.

### Analog output

- No.

### Alarm output

- No.

### Communication

- No.

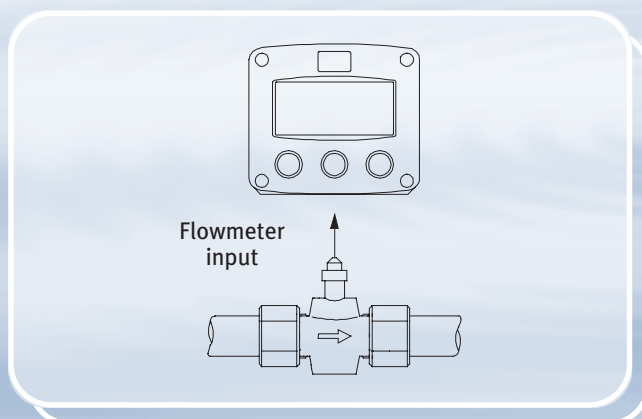
### Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

### Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

### Application overview





# F013 Flow rate Monitor / Totalizer with one high / low alarm output

The F013 is a versatile flow rate indicator and totalizer with continuous flow rate monitoring feature. It offers the ability to set one low flow rate and one high flow rate alarm value. If desired, an alarm ignore function can be set up to allow for an incorrect flow rate for a certain period of time. The display shows flow rate, total, accumulated total, alarm values and alarm messages. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety.

## Features

- Flow rate monitoring: two alarm values can be set: low and high flow rate alarm.
- Alarm values can be changed by the operator or they can be password protected.
- Red flashing LED backlight in case of a flow rate alarm; intensity adjustable.
- Displays clear alarm messages.
- Displays total and flow rate simultaneously.
- Large digit selection for flow rate or total.
- Flow rate: seven 17mm (0.67") or 8mm (0.31") digits.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven 8mm (0.31") digits.
- Separate engineering units for flow rate and total.
- Auto backup of settings and running totals in EEPROM memory.
- Operational temperature -40°C to +80°C (-40°F to 178°F).

## Application

- Flow measurement where continuous flow rate monitoring is important without signal re-transmitting. Alternative advanced model: F113 and F118.

## Display example



## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active signal.
- Analog: (o)4 - 20mA, 0 - 10V DC.

## Pulse output

- No.

## Analog output

- No.

## Alarm output

- One configurable alarm output for high, low or both alarms.

## Communication

- No.

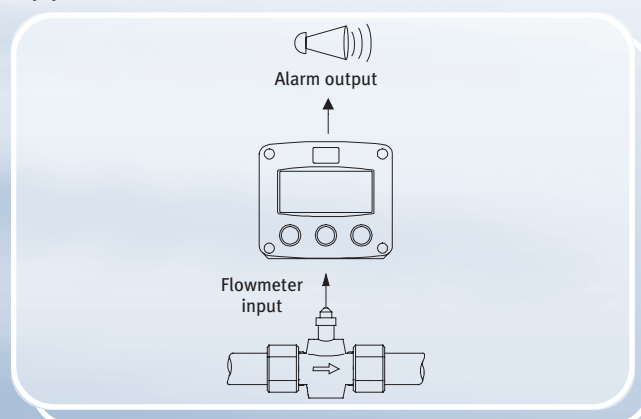
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

## Application overview



# F014 Flow rate Indicator / Totalizer with pulse output

The F014 is a local indicator which displays the actual flow rate, total and accumulated total. A scaled pulse, related to the accumulated total is generated for re-transmitting the count on the display. Total can be reset to zero by pressing the CLEAR button twice. The accumulated total can register up to 11 digits and is backed-up in EEPROM memory every minute, just as the running total. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety for hazardous area applications.

## Features

- Scaled pulse output reflecting accumulated total.
- Displays total and flow rate simultaneously.
- Large digit selection for flow rate or total.
- Flow rate: seven 17mm (0.67") or 8mm (0.31") digits.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven 8mm (0.31") digits.
- Separate engineering units for flow rate and total.
- Green/amber LED backlight with adjustable intensity.
- Auto backup of settings and running totals in EEPROM memory.
- Operational temperature -40°C to +80°C (-40°F to 178°F).
- Easy configuration with clear alphanumeric display.

## Application

- Flow measurement where re-transmitting of the totalizer function is required. Alternative more advanced models F016, F110 and higher.

## Communication

- No.

## Display example



## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active signal.
- Analog: (0)4 - 20mA, 0 - 10V DC.

## Pulse output

- One scaled pulse output according to accumulated total (e.g. one pulse every 3.25 gallons). Max. frequency 500Hz.

## Analog output

- No.

## Alarm output

- No.

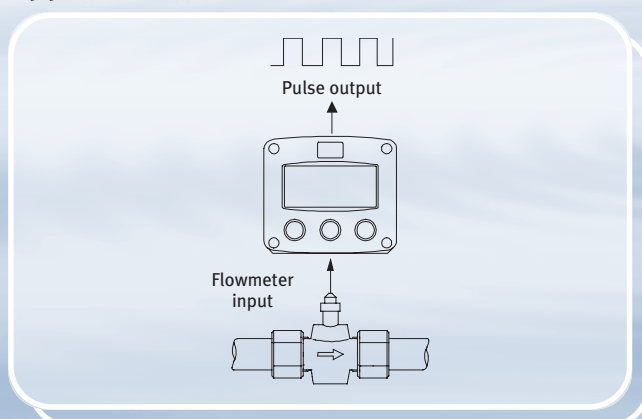
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

## Application overview



# F016 Flow rate Indicator / Totalizer with linearization and pulse output

The F016 is a local indicator which displays the actual flow rate, total and accumulated total. In addition to the average K-Factor or Span, eight linearization points can be entered with their frequencies or values. The unit will interpolate between these points greatly enhancing accuracy in any flow range, even for very low frequency applications. This linearization affects all displayed information as well as the pulse output. A wide range of options further enhance this model capabilities, including Intrinsic Safety.

## Features

- Eight point linearization of the flow curve - with interpolation.
- Displays total and flow rate simultaneously.
- Large digit selection for flow rate or total.
- Flow rate: seven 17mm (0.67") or 8mm (0.31") digits.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven 8mm (0.31") digits.
- Separate engineering units for flow rate and total.
- Green/amber LED backlight with adjustable intensity.
- Auto backup of settings and running totals in EEPROM memory.
- Operational temperature -40°C to +80°C (-40°F to 178°F).
- Easy configuration with clear alphanumeric display.

## Application

- Flow measurement with mechanic flowmeters where a precise calculation over the full measurement range is required. Alternative more advanced model: F112 and F118.

## Communication

- No.

## Display example



## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active signal.
- Analog: (o)4 - 20mA, 0 - 10V DC.

## Pulse output

- One scaled pulse output according to accumulated total (e.g. one pulse every 3.25 gallons).  
Max. frequency 500Hz.

## Analog output

- No.

## Alarm output

- No.

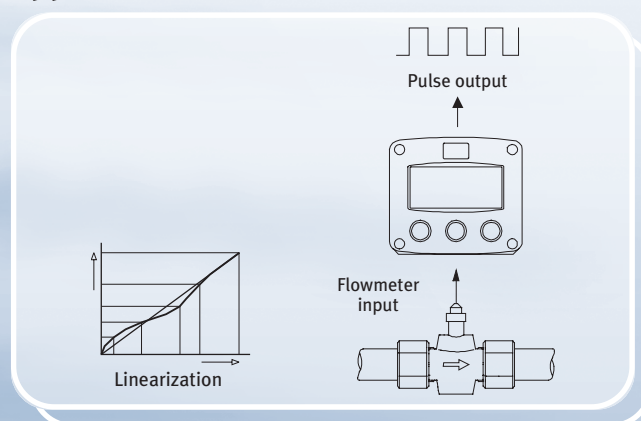
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

## Application overview





# F110 Flow rate Indicator / Totalizer with analog and pulse outputs

The F110 is the most popular model in our range of flow rate / totalizers, complete with pulse and analog output signals. Even demanding applications are catered for with our base unit configuration. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Analog and pulse outputs.
- Modbus communication option.
- Displays total and flow rate simultaneously.
- Large digit selection for flow rate or total.
- Separate engineering units for flow rate and total on the display.
- Flow rate: seven 17mm (0.67") or 8mm (0.31") digits.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven 8mm (0.31") digits.
- LED backlight available.

## Application

- Flow measurement where re-transmitting of the flow rate or serial communication is required. Alternative basic models: F010, F011, F012, F014. More advanced models F112, F113 and F118.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, o - 10V DC.

## Display example



## Pulse output

- One scaled pulse output according to the accumulated total (e.g. one pulse every 3.25 gallons). Max. frequency 64Hz.

## Analog output

- One (o)4 - 20mA / o - 10V DC output to transmit the flow rate. The signal can be scaled to any range, (e.g. from 200 L/min to 1200 L/min).

## Alarm output

- No.

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol. All process data and settings are accessible.

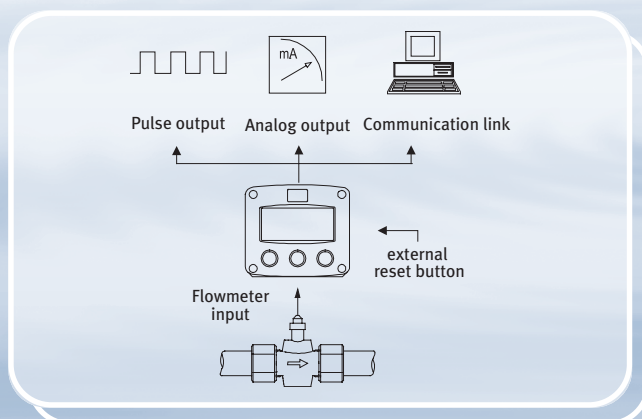
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# F111 Dual Input Flow rate Indicator / Totalizer with two pulse outputs

The F111 incorporates two flow rate / totalizers in one enclosure, including a pulse output for each flow. There is no relationship between the flows, even different pulse input types can be used. For each flow, on-screen engineering units are easily configured from a comprehensive selection. The F111 can be set to show the selected information manually or with an automatic toggle function. A wide range of options is available to further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Two flow rate indicators / totalizers.
- For each flow one scaled pulse output.
- Displays total, flow rate and product I.D. simultaneously.
- Large digit selection for flow rate or total.
- Flow rates: seven 17mm (0.67") or 8mm (0.31") digits.
- Totals - resettable: seven 17mm (0.67") digits.
- Accumulated totals - not resettable: eleven 8mm (0.31") digits.
- Separate engineering units for all flow rates and totals on the display.
- LED backlight available.

## Application

- For applications where two indicators are required but one single and compact enclosure is desired.
- Alternative basic model: two separate Fo14s.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, 0 - 10V DC.

## Display example



## Pulse outputs

- Two scaled pulse outputs according to the accumulated totalizers (e.g. one pulse every 3.25 gallons and a pulse every 50.0 liters).
- Max. frequency 64Hz.

## Analog output

- No.

## Alarm output

- No.

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol.
- All process data and settings are accessible.

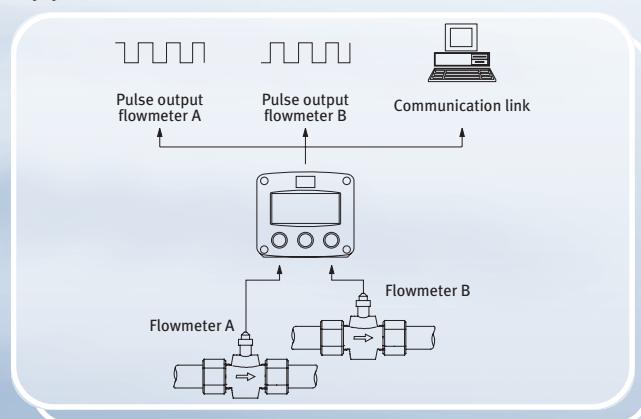
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# F112 Flow rate Indicator / Totalizer with linearization and analog / pulse outputs

The F112 provides very precise linearization of the flowmeter signal. In addition to the average K-Factor or Span, fifteen linearization points can be entered with their frequencies or values. The unit will interpolate between these points greatly enhancing accuracy in any flow range, even for very low frequency applications. This linearization affects all displayed information as well as the output signals. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Fifteen point linearization of the flow curve - with interpolation.
- Analog and pulse outputs.
- Displays total and flow rate simultaneously.
- Flow rate: seven 17mm (0.67") or 8mm (0.31") digits.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven 8mm (0.31") digits.
- Large display selection for flow rate or total.
- LED backlight available.

## Application

- Flow measurement with flowmeters where a precise calculation over the full measurement range is required as well as re-transmitting the flow rate or serial communication. Alternative basic model: F016 or more advanced model F118.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, o - 10V DC.

## Display example



## Pulse output

- One scaled pulse output according to the accumulated total (e.g. one pulse every 3.25 gallons). Max. frequency 64Hz.

## Analog output

- One (o)4 - 20mA / o - 10V DC output to transmit the flow rate. The signal can be scaled to any range (e.g. from 200 L/min to 1200 L/min).

## Alarm output

- No.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings are accessible.

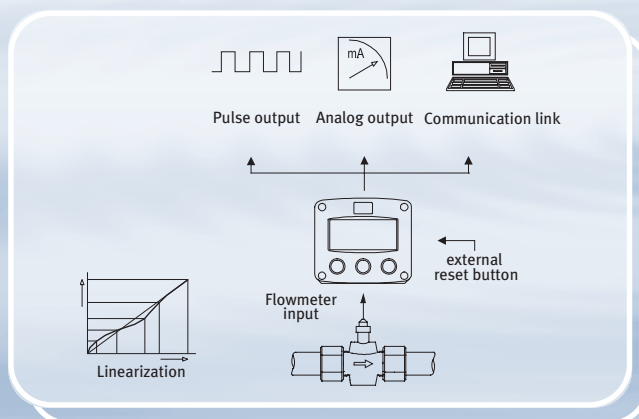
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview





# F113 Flow rate Monitor / Totalizer with high / low alarm, analog and pulse outputs

The F113 is a versatile flow rate indicator and totalizer with continuous flow rate monitoring feature. It offers the ability to set two low flow rate and two high flow rate alarm values. If desired, an alarm ignore function can be set up to allow for an incorrect flow rate for a certain period of time. Up to five outputs are available to transmit the flow rate, alarm conditions and accumulated total. The display shows flow rate, total, accumulated total, alarm values, alarm messages and status. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Flow rate monitoring: four alarm values can be set: low-low, low, high and high-high flow rate alarm.
- Alarm values can be changed by the operator or they can be password protected.
- Displays clear alarm messages.
- Up to four configurable alarm or scaled pulse outputs.
- Analog output related to the flow rate.
- Flow rate: seven 17mm (0.67") or 8mm (0.31") digits.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven digits.

## Application

- Liquid flow measurement where continuous flow rate monitoring is important. Also re-transmitting of the flow rate and/or totalizer functions or serial communication is required. Alternative basic model: Fo13 or more advanced model F118.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, 0 - 10V DC.

## Display example



## Pulse outputs

- Up to four scaled pulse outputs related to accumulated total: (e.g. one pulse every 3.25 gallons). Max. frequency 64Hz.

## Analog output

- One (o)4 - 20mA / 0 - 10V DC output to transmit the flow rate. The signal can be scaled to any range (e.g. from 200 L/min to 1200 L/min).

## Alarm outputs

- Up to four configurable alarm outputs for low-low, low, high, high-high or any combination.

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol. All process data and settings are accessible.

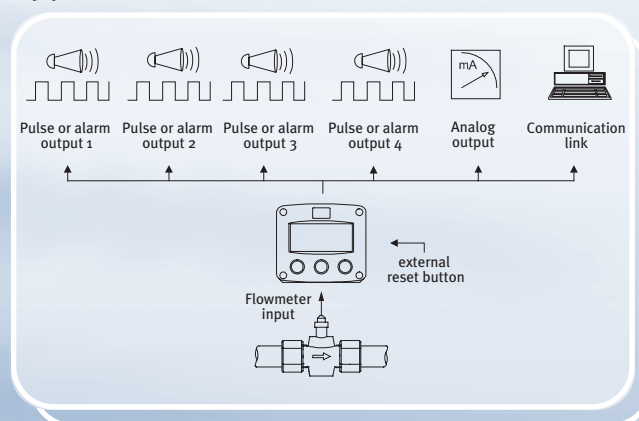
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# F115 Bi-Directional Flow rate Indicator / Totalizer with analog, pulse signal and flow direction outputs

The F115 has been developed for applications where the direction of flow is an issue. It is required to offer two pulse signals from the flowmeter which are 90° or 270° degrees out of phase. In case of a reverse flow, the flow rate will be displayed as a negative value, the totalizers will count down and a switch output will be set. The pulse and analog outputs reflect both flow directions. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Quadrature input to detect the direction of flow.
- Total and accumulated total count up and count down reflecting the direction of flow.
- Displays total and flow rate simultaneously.
- Flow rate: six 17mm (0.67") or 8mm (0.31") digits.
- Displays positive and negative flow rate reflecting the direction of flow.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven 8mm (0.31") digits.

## Application

- Bi-directional flow measurement applications (e.g. by loading / unloading of ships) or the correction for back-flow due to shocks in a pipeline caused by piston pumps.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol. All process data and settings are accessible.

## Display example



## Pulse outputs

- One scaled pulse output according to the bi-directional accumulated total (e.g. one pulse every 3.25 gallons). Max. frequency 64Hz. A second output is switched as soon as the pulse output reflects a "negative" quantity.

## Analog output

- One (o)4 - 20mA / o - 10V DC output to transmit the positive and/or negative flow rate (e.g. from +40 L/min to +600 L/min and from -40 L/min to -600 L/min) or positive flow rates only.

## Alarm output

- No.

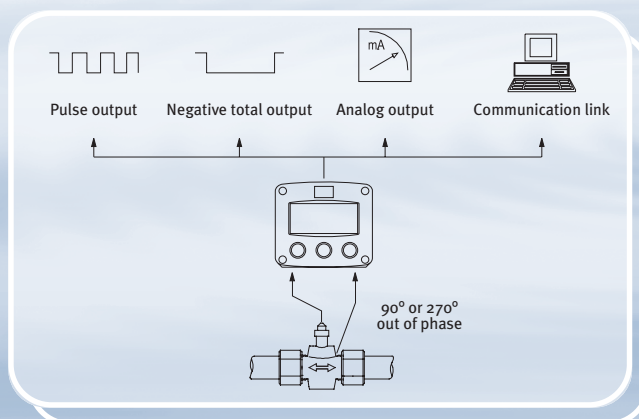
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# F117 Totalizer Monitor with high / low totalizer alarm and analog output

The F117 has been developed for applications where the totalized quantity has to be monitored and not the flow rate. When a start command is given, the totalizer is reset to zero. The amount of product measured from that moment is monitored continuously for high totalizer values. Monitoring for low totalizer values will commence after a stop command is given or after a pre-defined time. The display shows the preset and actual totalized value, percentage and flow rate. The totalizer alarms are clearly indicated and two outputs are available to transmit alarm conditions. The analog output value mirrors the measured quantity in relation to the preset value. For remote control, an external start and stop input is available as standard.

## Features

- The desired totalized (preset) quantity can be set by the operator
- Totalizer monitoring: two alarm values can be set; low and high totalizer alarm.
- Alarm values can be changed by the operator or they can be password protected.
- Displays total and preset value or percentage simultaneously.
- Displays clear alarm messages.
- Analog output related to the totalized value or flow rate.
- Quadrature input for bi-directional flow applications.
- Total - reset after a start-command: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven 8mm (0.31") digits.
- Flow rate: seven 17mm (0.67") digits (shown after stop command).
- LED backlight available.

## Application

- Automated processes where a minimum and / or a maximum dispensed quantity has to be monitored continuously.

## Display example



## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.

## Status input

- External control: start and stop signal.

## Analog output

- One (0)4 - 20mA / 0 - 10V output to transmit the flow rate or the totalized quantity in relation to the preset quantity (e.g. from 0.00 L to 2.50 L).

## Alarm outputs

- Two alarm outputs for low and high totalizer alarm.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings are accessible.

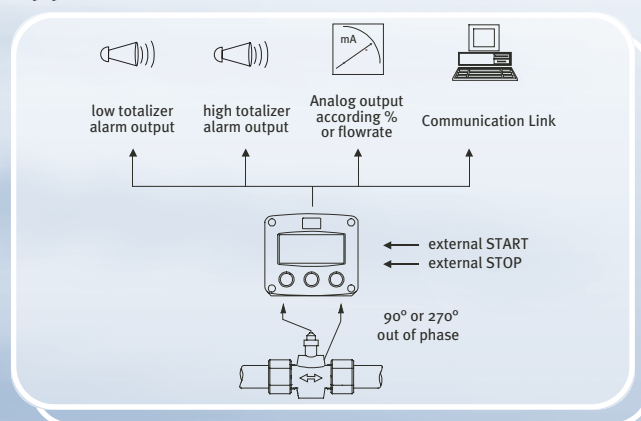
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview





# F118 Flow rate Monitor / Totalizer with linearization, high / low alarm and analog / pulse output

The F118 is a versatile flow rate indicator and totalizer with the ability to precisely linearize the flowmeter signal. In addition to the average K-Factor or Span, ten linearization points can be entered with their frequencies or values. The unit will interpolate between these points greatly enhancing accuracy in any flow range. Moreover, continuous flow rate monitoring feature is available with high and low flow rate alarm values and alarm outputs. Flow rate and total are transmitted with an analog and scaled pulse output. The display shows flow rate, total, accumulated total and alarm messages. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities.

## Features

- Ten point linearization of the flow curve - with interpolation.
- Flow rate monitoring: two alarm values can be set: low and high flow rate alarm.
- Alarm values can be changed by the operator or they can be password protected.
- Up to three configurable alarm or scaled pulse outputs.
- Analog output reflecting the flow rate.
- Displays total and flow rate simultaneously.
- Flow rate: seven 8mm (0.31") digits.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven digits.

## Application

- Liquid flow measurement with flowmeters where a precise calculation over the full measurement range and continuous flow rate monitoring is required. Alternative basic models: Fo16 and F112.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, o - 10V DC.

## Display example



## Pulse outputs

- Up to three scaled pulse outputs according to accumulated total (e.g. one pulse every 3.25 gallons). Max. frequency 64Hz.

## Analog output

- One (o)4 - 20mA / o - 10V DC output to transmit the flow rate. The signal can be scaled to any range (e.g. from 200 L/min to 1200 L/min).

## Alarm outputs

- Up to three configurable alarm outputs for low, high or any combination.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings are accessible.

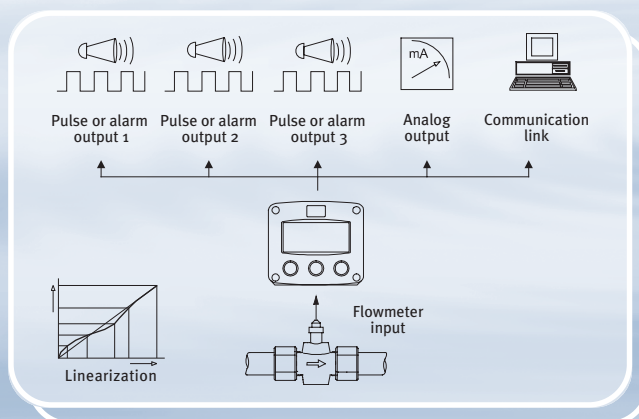
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# FLOW COMPUTERS



## Introduction

This product group offers a unique range of comprehensive solutions to calculate the consumption and net flow at standard conditions or the ratio between two flows. Typical applications are found on board of ships to calculate the fuel consumption, gas flow calculation in power plants and the monitoring of two component blending or the energy consumption calculation in cooling or heating applications.

All models are available for both safe area and hazardous area applications.

The functionality of these products is based on the F1 hardware platform as multiple inputs are required for flow, temperature and pressure measurement.

Following functions are offered:

- Ratio (A/B) - model F114.
- Sum (A+B) - model F116.
- Differential / consumption (A-B) - model F116.
- Differential / consumption (A-B) with temperature compensation - model F127.
- Liquid volume calculation with temperature compensation - model F126-EL.
- Gas volume calculation with temperature and pressure compensation - model F126-EG.
- Energy computer with energy consumption calculation - model F128.



A more detailed description of each flow computer and its typical features can be found on the following pages.

## Configuration menu

All configuration settings are accessed via a simple operator menu which can be password protected. Each setting is clearly indicated with an alphanumeric description, therefore avoiding confusing abbreviations and baffling codes. There are no sensitive DIP-switches or trimmers, you simply select “flowmeter” as main function, after which you can select “NPN pulse” or “span” etc. Once familiar with one F-Series product, you will be able to program all models in the series without a manual. All settings are safely stored in EEPROM memory.

The clear and easy structured configuration menu is one of the most appreciated features of the F-Series.



## Signal input type

For the flow computers, four basic signal input types are available:

- Pulse signals for flow measurement: sine wave (coil) low sensitivity (80mV p-p), sine wave high sensitivity (20mV p-p), Namur, NPN, PNP, reed-switch or active pulses. For most signals a low pass filter can be enabled to ignore pulse bounce. The sine wave input can even be supplied with 10mV or 5mV p-p sensitivity (option ZF and ZG).
- Analog signal: (o)4 - 20mA for flow, temperature and pressure measurement. The input signal can be tuned within this range (e.g. from 4.0mA to 18.0mA). To avoid incorrect signal processing at minimum signal, a low cut-off filter is available.
- Analog signal: 0 - 10V DC for flow, temperature and pressure measurement. The input signal can be tuned within this range (e.g. from 2.0 to 5.0V DC). A low cut-off filter is available here too, to avoid counting at minimum signal.
- PT100: 2 or 3 wire PRTD sensor for temperature measurement.

## Data protection

All settings and totals are stored in EEPROM memory ensuring that no information is lost in the event of power failure or battery exchange.

To reset total, the CLEAR key must be pressed twice to avoid undesired initialization. Accumulated total cannot be reset to zero. The configuration menu and alarm values can be password protected to prevent unauthorized access.

For an explanation of all the F-Series options such as analog and alarm outputs, communication, power supply and enclosures, please read the section "Ordering codes" in the back of this catalog.

## Product listing

- |         |   |
|---------|---|
| F114    | Ratio Monitor / Totalizer with high / low alarms, analog output and communication option.   |
| F116    | Differential / Sum Flow Computer with analog and pulse outputs and communication option.  |
| F126-EL | Flow Computer with temperature compensation for corrected liquid volume calculation, analog output and communication option.                              |
| F126-EG | Flow Computer with temperature and pressure compensation for corrected gas volume calculation, analog output and communication option.                    |
| F127-EL | Differential Flow Computer with temperature compensation for corrected liquid volume calculation, analog output and communication option.                 |
| F128    | Energy Computer for closed hot water heating and chilled water cooling systems with analog and pulse outputs, high / low alarms and communication option. |



# F114 Ratio Monitor / Totalizer with high / low alarms and analog output

The F114 flow computer calculates the actual ratio between two separate flows. It offers the ability to set one low ratio and one high ratio alarm value. Special precautions are taken to allow start-up problems and incorrect ratio readings for a certain period of time. Based on the location of the flowmeters, a selection can be made out of six different formulas. The display shows the ratio, alarm values, flow rate A, total A and flow rate B, total B. On-screen engineering units are easily configured from a comprehensive selection. The ratio can be displayed as a percentage or as a ratio. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Calculates ratio between flow A and B.
- Displays ratio, flow rate A and B, total A and B and high / low alarm values.
- Six ratio calculation formulas.
- Ratio monitoring: two alarm values can be set: low and high ratio alarm.
- Alarm values can be changed by the operator or they can be password protected.
- Ratio: seven 17mm (0.67") digits, displayed as a percentage or as a ratio.
- Flow rate A and B: seven 17mm (0.67") digits.
- Total A and B - resettable: seven 17mm (0.67") digits.
- LED backlight available.

## Application

- Mixing or blending of two components where continuous ratio displaying, monitoring and totalizing is important. For example in construction works, roof or wall insulation, gluing and coating.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, o - 10V DC.

## Display example



## Pulse output

- No.

## Analog output

- One (o)4 - 20mA / o - 10V DC output to transmit the ratio, flow rate A or flow rate B. The signal can be scaled to any range (e.g. from 1:5 to 1:100 or from 200 L/min to 1200 L/min).

## Alarm outputs

- Two alarm outputs: low and high ratio alarm.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings are accessible.

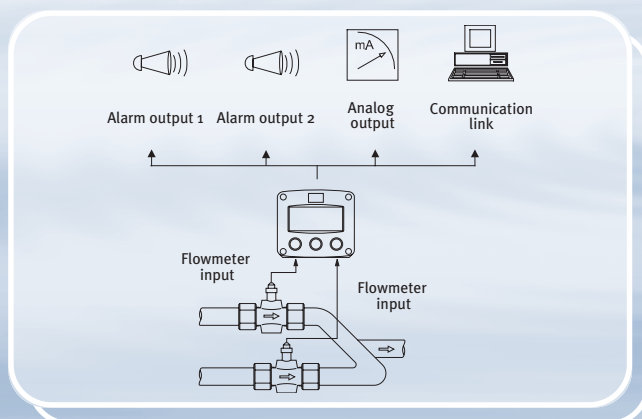
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# F116 Differential / Sum Flow Computer with analog and pulse outputs

The F116 flow computer has been developed to calculate differential / consumption or total volume. The usual difficulties encountered in such applications include: pulsating flows, very low consumption readings, vibration and high ambient temperatures. These are all well catered for in the design and operation of the F116. The pulse and analog outputs reflect the calculated differential or sum value. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Calculates differential flow rate (consumption), total and accumulated total of flow A and B.
- Calculates the sum flow rate, total and accumulated total of flow A and B.
- Precautions for pulsating flows and very low consumption readings.
- Displays total and flow rate simultaneously.
- Large digit selection for flow rate or total.
- Flow rate: seven 17mm (0.67") or 8mm (0.31") digits.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven 8mm (0.31") digits.

## Application

- Fuel consumption calculation for diesel engines on board of ships or locomotives. Sum function: where flows are split-up in two pipe-lines and total flow has to be calculated. More advanced model: F127.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, o - 10V DC.

## Display example



## Pulse outputs

- One scaled pulse output according to accumulated total (e.g. one pulse every 3.25 gallons). Max. frequency 64Hz. Second output reflects a "negative" differential.

## Analog output

- One (o)4 - 20mA / o - 10V DC output to transmit the differential or totalized flow rate. The signal can be scaled to any range (e.g. from 200 to 1200 L/min).

## Alarm output

- No.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings are accessible.

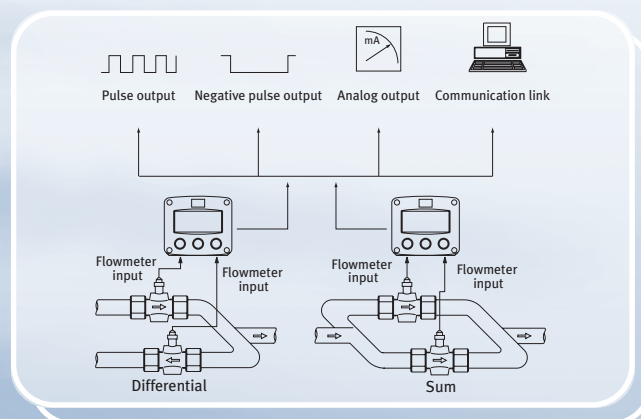
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# F126-EL Flow Computer with temperature compensation for corrected liquid volume

The F126-EL flow computer has been developed to calculate corrected liquid volume at normal conditions. The corrected volumetric flow is calculated by measuring the uncorrected volumetric flow and actual line temperature which is processed with the thermal expansion coefficient algorithm stored in the flow computer. The reference temperature can be defined as desired (e.g. 15°C, 20°C or 60°F). The display shows the compensated flow rate, total, accumulated total and the actual line temperature. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Calculates compensated flow rate, total and accumulated total based on a temperature / expansion relationship.
- Displays actual line temperature.
- Analog output reflecting compensated flow rate.
- Flow rate: seven 8mm (0.31") digits.
- Displays total and flow rate simultaneously.
- Temperature: six 17mm (0.67") digits.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven digits.
- LED backlight available.

## Application

- Applications where net flow calculation at base conditions is desired for liquids using the thermal expansion coefficient.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, o - 10V DC.

## Temperature input

- PT100 - 2 or 3 wire, (o)4 - 20mA, o - 10V DC.

## Display example



## Pulse output

- No.

## Analog output

- One (o)4 - 20mA / o - 10V DC output to transmit the compensated flow rate. The signal can be scaled to any range (e.g. from 200 L/min to 1200 L/min).

## Alarm output

- No

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings are accessible.

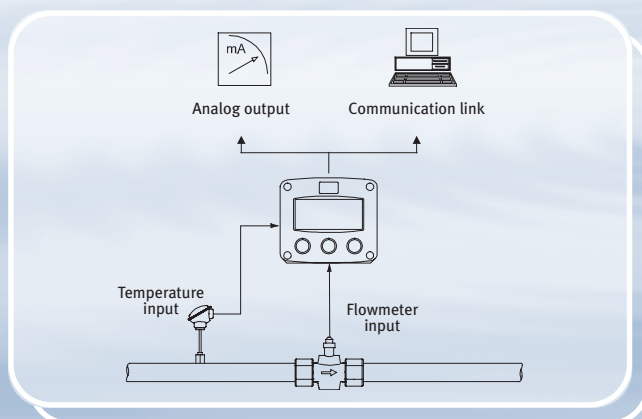
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview





# F126-EG Flow Computer with temperature and pressure compensation for corrected gas volume

The F126-EG flow computer has been developed to calculate corrected gas volume at normal conditions. The corrected volumetric flow is calculated by measuring the uncorrected volumetric flow, actual line temperature and pressure which are processed with the equations stored in the flow computer. A compressibility factor can be set to approach a real gas behavior. The reference conditions can be defined as desired (e.g. 15°C, 60°F or 1.013 bar). The display shows the compensated flow rate, total, accumulated total and the actual line temperature and pressure. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Calculates compensated flow rate, total and accumulated total.
- Displays actual line pressure and temperature.
- Analog output reflecting compensated flow rate.
- Flow rate: seven 8mm (0.31") digits.
- Displays total and flow rate simultaneously.
- Temperature: six 17mm (0.67") digits.
- Pressure: six 17mm (0.67") digits.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total: eleven 8mm (0.31") digits.
- LED backlight available.

## Application

- Applications where net gas flow calculation at base conditions is desired for generic gas products.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (0)4 - 20mA, 0 - 10V DC.

## Temperature input

- PT100 - 2 or 3 wire, (0)4 - 20mA, 0 - 10V DC.

## Pressure input

- Analog: (0)4 - 20mA, 0 - 10V DC.

## Pulse output

- No.

## Analog output

- One (0)4 - 20mA / 0 - 10V DC output to transmit the compensated flow rate. The signal can be scaled to any range (e.g. from 200 L/min to 1200 L/min).

## Alarm output

- No.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings are accessible.

## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

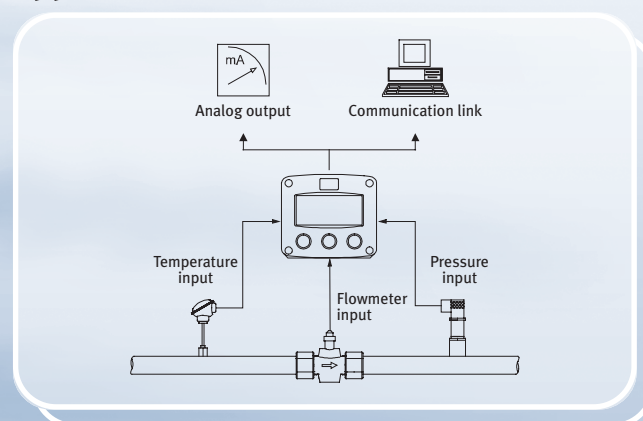
## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Display example



## Application overview



# F127 Differential Flow Computer with temperature compensation for corrected liquid volume

The F127-EL flow computer has been developed to calculate corrected differential liquid volume at normal conditions. This is calculated by measuring the uncorrected volumetric flow and actual line temperature in both the supply and return line. These signals are processed with the thermal expansion coefficient algorithm stored in the flow computer. The reference temperature can be defined as desired (e.g. 15°C, 20°C or 60°F). The usual difficulties encountered in such applications include: pulsating flows, very low consumption readings, vibration and high ambient temperatures. These are all well catered for in the design and operation of the F127.

## Features

- Displays compensated consumption (flow rate), total and accumulated total.
- Supply line: displays actual temperature and compensated flow rate.
- Return line: displays actual temperature and compensated flow rate.
- Flow rate: seven 17mm (0.67") or 8mm (0.31") digits.
- Large digit selection for flow rate or total.
- Displays total and flow rate simultaneously.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total: eleven 8mm (0.31") digits.
- Temperature: six 17mm (0.67") digits.
- LED backlight available.

## Application

- Fuel consumption calculation for diesel engines on board of ships or locomotives, generators or burners. Alternative basic model: F116.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.

## Temperature input

- PT100 - 2 or 3 wire, (0)4 - 20mA, 0 - 10V DC.

## Display example



## Pulse output

- No.

## Analog output

- One (0)4 - 20mA / 0 - 10V DC output to transmit the compensated differential flow rate (consumption). The signal can be scaled to any range (e.g. from 200 L/min to 1200 L/min).

## Alarm output

- No.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings are accessible.

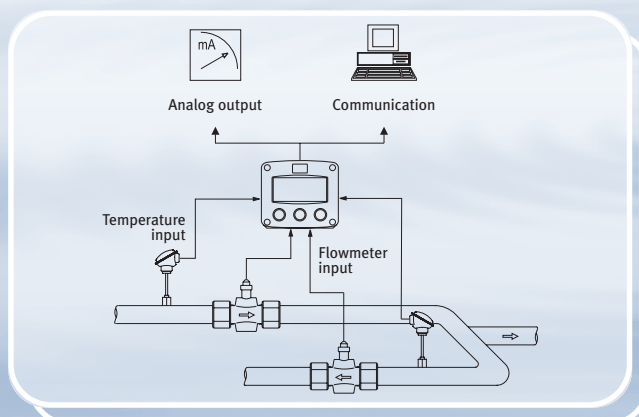
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# F128 Energy Computer for heating and cooling systems

The F128 energy computer calculates the energy consumption in closed hot water heating and chilled water cooling systems. By measuring the temperature in both the supply and return line as well as the actual flow, the transferred energy can be calculated using the energy equations stored in the energy computer. The data-logger is able to store actual energy readings at pre-defined times. Separate energy counters are available to register peak and non-peak transfers. The display shows the transferred energy, flow rate, temperatures and high / low alarm values. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Displays energy, flow rate, temperatures and alarm values.
- Several formulas for heating and/or cooling applications.
- Data-logger for registration per hour, 12 hours, day or week.
- Peak and non-peak registers.
- Analog, pulse and alarm outputs available as standard.
- Engineering units for energy, flow rate, total and temperature on the display.
- Operational temperature -30°C to +80°C (-22°F to 178°F).
- LED backlight available.

## Application

- Energy consumption calculation in heat transfer or cooling applications.

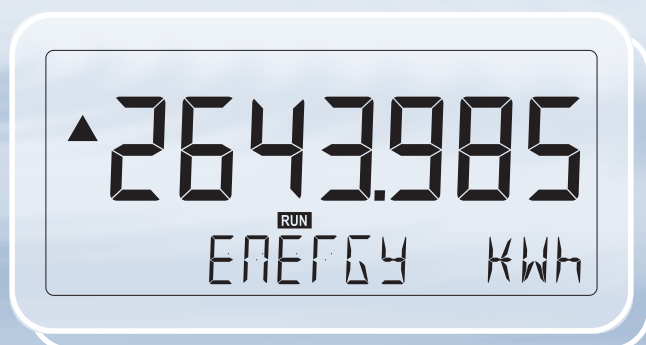
## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, o - 10V DC.

## Temperature input

- PT100 - 2 or 3 wire, (o)4 - 20mA, o - 10V DC.

## Display example



## Pulse output

- One scaled pulse output according to the energy consumption (e.g. one pulse every 1 W).  
Max. frequency. 64Hz.

## Analog output

- One (o)4 - 20mA / o - 10V output to transmit the energy consumption, flow rate or temperature. The signal can be scaled (e.g. 1 W/min to 100 W/min).

## Alarm output

- 2 configurable alarm outputs for low or high alarms: energy consumption, flow rate or temperatures.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol.  
All process data and settings are accessible.

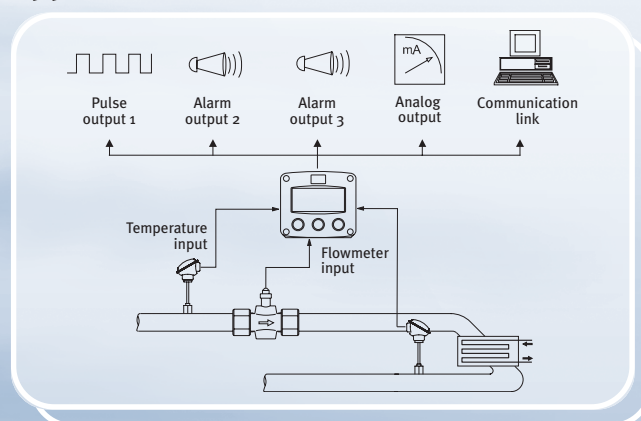
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview





# BATCH CONTROLLERS



## Introduction

The F-Series range offers five different batch controllers for the accurate dispensing of small amounts of liquids up to the loading of trucks with two-stage control or analog multi-stage control. The Delivery Controller is specially designed for the delivery of unknown quantities of product; it can be used for all kinds of products from gasoline and oil to windshield fluid. All F-Series batch controllers have a self-learning overrun correction for repeatable results under varying conditions. All models are available for safe area and hazardous area applications.



The functionality of the batch controllers is based on two main hardware platforms:

- Fo platform: these products offer one flowmeter input and one control output for one-stage control only. This is our basic product range.
- F1 platform: these products have one flowmeter input as well as external start / stop inputs, multiple outputs for two-stage control or scaled pulse output, analog output and communication option. This is our advanced product range.

Both platforms share the same technology, enclosures, display and options but are dedicated to their typical functionality.

## Common Batch Controller features

- Clear operator information is a key feature of these products. Essential information is displayed as a clear text (e.g. “press stop”) and not as mysterious abbreviations.
- The dedicated display shows two lines of information simultaneously along with its function like “preset” and “actual” or “accumulated total” so the operator understands the displayed information.
- The preset value and the actual value during the batch process is displayed with seven 17mm (0.67”) and seven 8mm (0.31”) high digits with their engineering unit. The following units can be selected through software: ml, L, m<sup>3</sup>, GAL, USGAL, kg, lb, bbl or no unit.
- Entering the preset value is a basic function, understandable for every operator. For repeatable batches it is not required to re-enter the preset value, simply press start.



- During batching, the displayed actual value can count up to display the batched quantity or count down to display the remaining quantity.
  - The active self learning overrun correction compensates the slowness of the control valve as well as unstable line pressure due to a decreasing stock level; a repeating and accurate batch quantity is the result.
  - A resettable totalizer is displayed with seven 17mm (0.67") high digits.
  - A non-resettable accumulated total is displayed with eleven 8mm (0.31") digits and uses the same measuring unit as total and preset value.
  - With the maximum preset value, the operator can be protected against incorrect entry of a batch size.
- Further product specific features are found on the following pages.

## Configuration menu

All configuration settings are accessed via a simple operator menu which can be password protected. Each setting is clearly indicated with an alphanumeric description, therefore avoiding confusing abbreviations and baffling codes. There are no sensitive DIP-switches or trimmers, you simply select "Flowmeter" as main function, after which you can select "NPN pulse" or "span" etc. Once familiar with one F-Series product, you will be able to program all models in the series without a manual. All settings are safely stored in EEPROM memory. The clear and easy structured configuration menu is one of the most appreciated features of the F-Series.

## Signal input type

For the batch controllers, three basic signal input types are available:

- Pulse signals: sine wave (coil) low sensitivity (80mV p-p), sine wave high sensitivity (20mV p-p), Namur, NPN, PNP, reed-switch or active pulses. For most signals a low pass filter can be enabled to ignore pulse bounce. The sine wave input can even be supplied with 10mV or 5mV p-p sensitivity (option ZF and ZG).
- Analog signal: (o)4 - 20mA or 4 - 20mA input loop powered version. The input signal can be tuned within this range (e.g. from 4.0mA to 18.0mA). To avoid counting at minimum signal, a low cut-off filter is available.
- Analog signal: 0 - 10V DC. The input signal can be tuned within this range (e.g. from 2.0 to 5.0V DC). A low cut-off filter is available here too, to avoid counting at minimum signal.

## Data protection

All settings and totals are stored in EEPROM memory ensuring that no information is lost in the event of power failure or battery exchange. To reset total, the program key and stop key must be pressed before resetting to zero to avoid undesired initialization. Accumulated cannot be reset to zero. The configuration menu can be password protected to prevent unauthorized access. For an explanation of all the F-Series options such as analog and control outputs, communication, power supply and enclosures, please read the section "Ordering codes" in the back of this catalog.

## Product listing

- F030 Batch Controller with one control output (one-stage control).
- F130 Batch Controller with two-stage control or one-stage control with a scaled pulse output, external start and stop inputs and communication option.
- F131 Batch Controller with analog output reflecting the flow rate, two-stage control or one-stage control with a scaled pulse output, external start and stop inputs and communication option.
- F133 Delivery Controller with pump start, valve control and other features for e.g. fuel dispensing.
- F134 Batch Controller with analog output for smooth multi-stage valve control, pump start and non-drip valve control, external start and stop inputs and communication option.
- F136 Batch Controller with analog output related to the process stage, two-stage control or one-stage control with a scaled pulse output, external start and stop inputs and communication option.

# F030 Batch Controller with one-stage control

The F030 is a straight forward but easy-to-use batch controller. The operator can easily enter a batch quantity or execute repeating batches. During the batch, the preset value is displayed as well as the batched or remaining quantity. The automatic self-learning overrun correction will ensure an accurate batch every time again. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety.

## Features

- Large display shows preset value and running batch value simultaneously.
- Self-learning overrun correction.
- One control output to drive a valve or pump.
- Easy operation to enter a batch value and to control the process.
- Count-up and count-down function available.
- Green/amber LED backlight with adjustable intensity.
- Actual batched quantity: seven 17mm (0.67") digits.
- Preset value: seven 17mm (0.67") digits during programming and 8mm (0.31") digits during process.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven digits.
- Auto backup of settings and running totals in EEPROM memory.

## Application

- For one-stage batch applications at low or medium flow rates. Alternative more advanced models: F130, F131, F134, F136 and 300-Series.

## Communication

- No.

## Display example



## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active signal.
- Analog: (o)4 - 20mA, o - 10V DC.

## Status input

- No.

## Pulse output

- No.

## Analog output

- No.

## Control output

- One control output for one-stage batching.

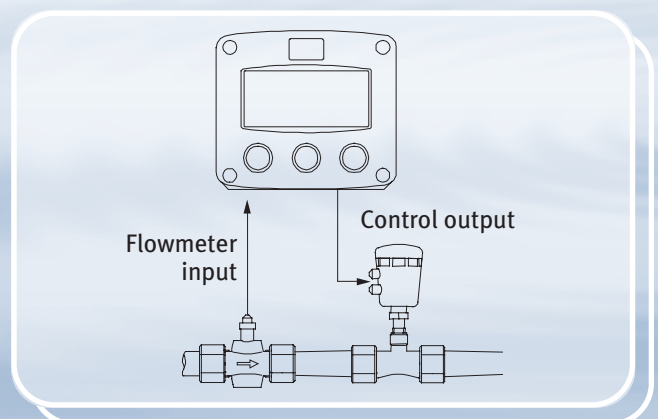
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

## Application overview





# F130 Batch Controller with two-stage control / pulse output

The F130 is a batch controller with two control outputs for two-stage batching or one-stage control with a scaled pulse output. The operator can enter a batch quantity easily or execute repeating batches. During the batch, the preset value is displayed simultaneously with the batched or remaining quantity. The automatic self-learning overrun correction will ensure an accurate result each batch again. A no-flow monitoring feature is available to detect a missing flow meter signal during batching. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Large display shows preset value and running batch value simultaneously.
- Self-learning overrun correction.
- Two-stage control for batching at high flow rates.
- Count-up and count-down function available.
- Scaled pulse output.
- Actual batched quantity: seven 17mm (0.67") digits.
- Preset value: seven digits.
- No-flow monitoring.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven digits.

## Application

- For batching at low, medium or high flow rates with two-stage control. Alternative basic model: F030 or more advanced models: F131, F134, F136 and 300-Series.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, 0 - 10V DC.

## Status input

- External control: start / pause / stop.

## Display example



## Pulse output

- Scaled pulse output according to accumulated or batched total (e.g. one pulse every 3.25 gallons).  
Max. frequency: 64Hz.

## Analog output

- No.

## Control outputs

- Two outputs for one or two-stage batching.  
Note: with two-stage control no pulse output available.

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol.  
All process data and settings can be read and modified as well as a batch can be started / stopped.

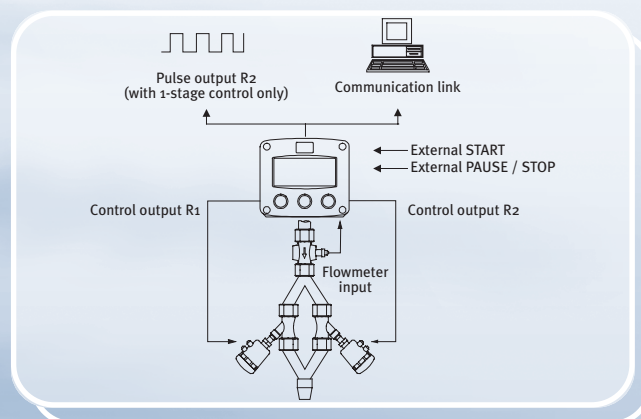
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# F131 Batch Controller with two-stage control / pulse and analog output in relation to the flow rate

The F131 offers in addition to the standard batch control functions an analog output in relation to the displayed flow rate. The operator can enter a batch quantity easily or execute repeating batches. During the batch, the preset value and flow rate are displayed simultaneously with the batched or remaining quantity. The automatic self-learning overrun correction will ensure an accurate result each batch again. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Large display shows running batch value together with preset value and flow rate.
- Flow rate indication: seven 8mm (0.31") digits.
- Two-stage control for batching at high flow rates.
- Self-learning overrun correction.
- Count-up and count-down function available.
- Actual batched quantity: seven 17mm (0.67") digits.
- Preset value: seven 17mm (0.67") digits during programming and 8mm (0.31") digits during process.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven digits.

## Application

- For batching at low, medium or high flow rates including flow rate indication and re-transmitting. Alternative basic model: F030, F130 or more advanced models: F134, F136 and 300-Series.

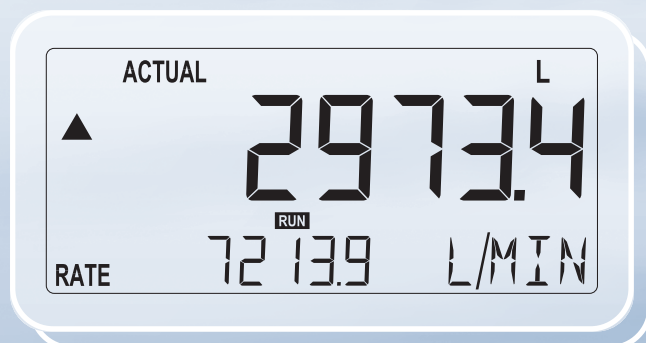
## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, o - 10V DC.

## Status input

- External control: start / pause / stop.

## Display example



## Pulse output

- One scaled pulse output reflecting acc. total (e.g. one pulse every 3.25 gallons). Max. frequency 64Hz.

## Analog output

- One (o)4 - 20mA / o - 10V DC output reflecting the flow rate. The signal can be scaled to any range (e.g. from 20 to 200 L/min).

## Control outputs

- Two outputs for one or two-stage batching. Note: with two-stage control no pulse output available.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings can be read and modified as well as a batch can be started / stopped.

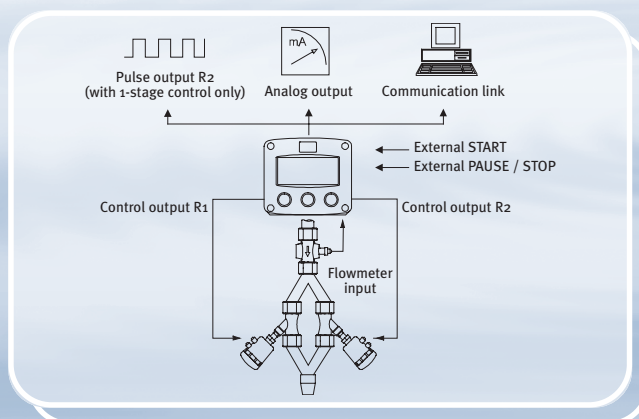
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# F133 Delivery Controller / Dispenser with pump start and valve control

The F133 is a unique product as it is especially designed for a controlled delivery of undefined quantities. It offers all the functionality known from gas stations to fill-up your car. The unit incorporates special functions with ignore times to start a pump first, control a valve and expect a flow within a certain period of time. Moreover, the flow rate and the allowed total dispensed quantity is monitored as well. If, for whatever reason, no pulses are coming in, the delivery will be terminated after a pre-defined time. Sub-deliveries are also catered for allowing you to fill-up more compartments within one and the same delivery. A wide range of options further enhance this model capabilities, incl. Intrinsic Safety and full Modbus communication.

## Features

- Large display shows delivered quantity, flow rate and status simultaneously.
- Suitable for filling-up multiple compartments.
- Control functions available for pump start, valve control and flow rate monitoring with flexible response times.
- Seven large 17mm (0.67") digits show the actual delivered quantity.
- Eleven 8mm (0.31") alphanumeric digits for operator instructions.
- Communication link for customized ticket printing.
- Flow rate: seven 8mm (0.31") digits.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven digits.
- Batchcounter registers numb. of executed deliveries.

## Application

- For delivery purposes, small gas stations or on board of trucks / ships for customer deliveries.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.

## Status input

- External control: start, stop or continuous signal.

## Display example



## Analog & pulse output

- No.

## Control outputs

- One output to control a pump and one output to control the valve. After a start-up-time, the valve control output will be switched allowing the pump to build up pressure.

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol. All process data and settings can be read and modified as well as a delivery can be started / stopped. After the delivery the unit can be locked out and the data can be used for ticket printing (B.O.L.).

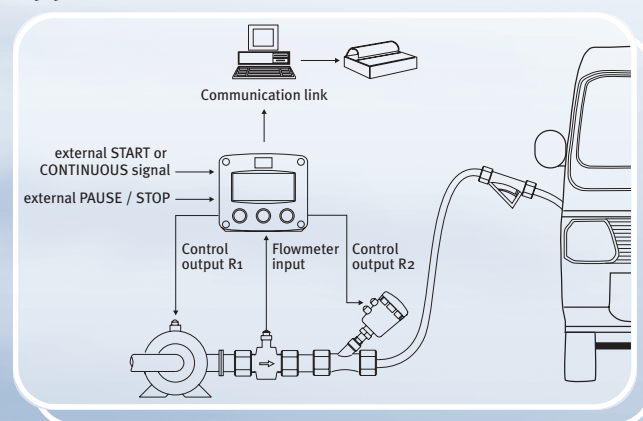
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview





# F134 Batch Controller with analog output for smooth multi-stage valve control

The F134 offers in addition to the standard batch controller functions an analog valve control output. This to achieve a smooth opening of a valve and a controlled multi-stage closing procedure with overrun correction. An accurate and controlled loading or batching of large amounts of product at high flow rates is the result. The operator can easily enter a batch quantity or execute repeating batches. During the batch, the preset value is displayed as well as the batched or remaining quantity. The automatic self-learning overrun correction will ensure an accurate batch every time. A wide range of options further enhances this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- The analog output controls a valve for smooth start-up and multi-stage shut-down.
- Large display shows preset value and running batch value simultaneously.
- Non-drip valve control available.
- No-flow monitoring.
- Self-learning overrun correction.
- Actual batched quantity: seven 17mm (0.67") digits.
- Preset value: seven 17mm (0.67") digits during programming and 8mm (0.31") digits during process.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven digits.

## Application

- For batch and loading applications of large quantities at high flow rates where shocks in pipe lines have to be avoided. Alternative more advanced model: 326.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.

## Status input

- External control: start / pause / stop.

## Display example



## Pulse output

- No.

## Analog output

- One (o)4 - 20mA or 0 - 10V DC output to control e.g. butterfly or ball valve smoothly. Opening: first from 4 to 20mA e.g. in ten seconds. Closing in maximum eight pre-defined steps related to the remaining quantity.

## Control outputs

- One time based non-drip valve control output. One pump or batch control output.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings can be read and modified.

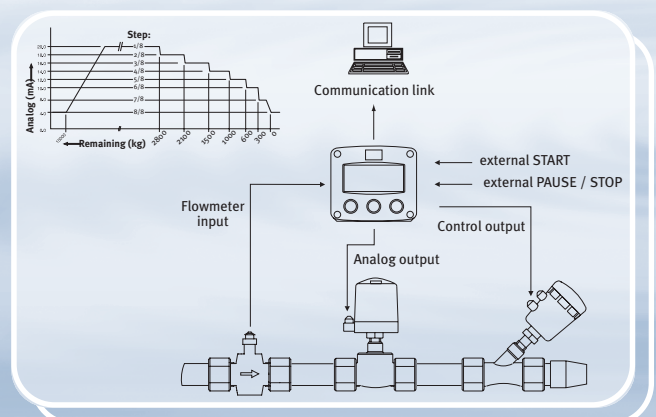
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# F136 Batch Controller with analog output related to the batch process

The F136 offers, in addition to the standard batch control functions, an analog output in relation to the batched quantity. This to transmit the course of the process. For example, 4mA will be generated when START has been pressed. Following the totalized quantity, the analog value will increase smoothly to 18.5mA: the moment that the valve will be closed. After the overrun time, the analog value will jump to the maximum value: 20mA. To mirror the course, a selection can be made out of 14 different profiles with increasing or decreasing analog values. A wide range of options further enhance this models capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Large display shows preset value and running batch value.
- The analog output value reflects the course of the process; fourteen different profiles are available.
- Two-stage control for batching at high flow rates.
- Self-learning overrun correction.
- Scaled pulse output reflecting the accumulated or batched total.
- Actual batched quantity: seven 17mm (0.67") digits.
- Preset value: seven 17mm (0.67") digits during programming and 8mm (0.31") digits during process.
- Total - resettable: seven 17mm (0.67") digits.
- Accumulated total - not resettable: eleven digits.

## Application

- For batch applications where re-transmitting the course of the process is required.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, 0 - 10V DC.

## Status input

- External control: start / pause / stop.

## Display example



## Pulse output

- One scaled pulse output according to the accumulated total (e.g. one pulse every 3.25 gallons). Max. frequency 64Hz.

## Analog output

- One (o)4 - 20mA / 0 - 10V DC output to transmit the batch process.

## Control outputs

- Two control outputs for one or two-stage batching. Note: with two-stage no pulse output available.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings can be read and modified as well as a batch can be started / stopped.

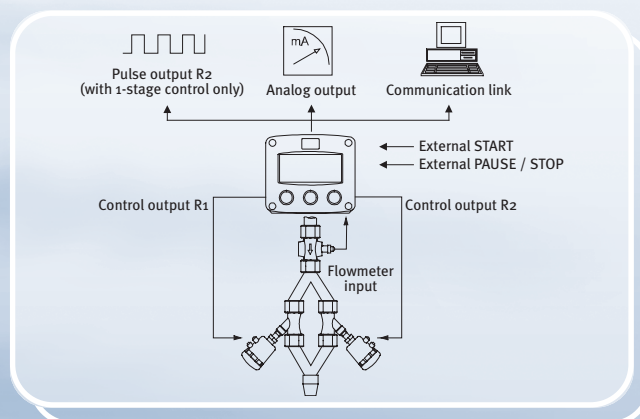
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# TEMPERATURE INDICATORS, MONITORS AND TRANSMITTERS



## Introduction

This product group offers several solutions from a basic temperature indicator up to a full temperature monitor with signal re-transmitting, high / low temperature monitoring, four alarm outputs as well as full Modbus communication. All models are available for safe area and hazardous area applications. Moreover, wireless data transmission and remote temperature monitoring is offered with our M-Series and ProcessMonitor.com products and services.

The functionality of these products is based on two main hardware platforms:

- Fo platform: these products offer one signal input and can have one alarm output. This is our basic product range.
- F1 platform: these products have one or more signal inputs, multiple outputs and communication option. This is our advanced product range.

Both platforms share the same technology, enclosures, display and options but are dedicated to their typical functionality.



## Common Temperature Indicator features

- Clear operator information is a key feature of these products. Essential information is displayed as a clear text (e.g. “alarm: low temp”).
- The dedicated display shows two lines of information at the same time, so the actual temperature is displayed simultaneously with the measuring unit or alarm message.
- The actual temperature is displayed with six 17mm (0.67”) high digits or even with 26mm (1”) high digits (Fo40).
- The measuring unit is displayed with 8mm (0.31”) digits. The following units can be selected through software: °C, °F, K or no unit.

Further product specific features are found on the following pages.





## Configuration menu

All configuration settings are accessed via a simple operator menu which can be password protected. Each setting is clearly indicated with an alphanumeric description, therefore avoiding confusing abbreviations and baffling codes. There are no sensitive DIP-switches or trimmers, you simply select “Sensor” as main function, after which you can select “span” or “offset” etc. Once familiar with one F-Series product, you will be able to program all models in the series without a manual. All settings are safely stored in EEPROM memory. The clear and easy structured configuration menu is one of the most appreciated features of the F-Series.

## Signal input type

For the temperature indicators, four basic signal input types are available:

- Analog signal: (o)4 - 20mA or 4 - 20mA input loop powered version. The input signal can be tuned within this range (e.g. from 4.0mA to 18.0mA). To avoid signal processing at minimum signal, a low cut-off filter is available.

- Analog signal: 0 - 10V DC. The input signal can be tuned within this range (e.g. from 2.0 to 5.0V DC). A low cut-off filter is available here too.
- PT100: 2, 3 or 4 wire PRTD sensor.
- Thermocouple (Fo-Series only).

Further, a digital filter can be set to a desired value to stabilize the temperature measurement reading. The offset function allows the indicator to be operational within any desired range (e.g. from -80°F to 640°F).

## Data protection

All settings are stored in EEPROM memory ensuring that information is not lost in the event of power failure or battery exchange. The configuration menu and alarm values can be password protected to prevent unauthorized access.

For an explanation of all the F-Series options such as analog and alarm outputs, communication, power supply and enclosures, please read the section “Ordering codes” in the back of this catalog.

## Product listing

- |      |   |
|------|---|
| Fo40 | Temperature Indicator.  |
| Fo43 | Temperature Monitor with two high / low alarm values and one alarm output.  |
| F141 | Dual Input Temperature Indicator in one enclosure with communication option.  |
| F143 | Temperature Monitor with four high / low alarm values, max. four alarm outputs, analog output and communication option. |

# F040 Temperature Indicator with very large digits

The Fo40 is a straight forward temperature indicator with large 26mm (1") high digits. The measuring unit to be displayed below the temperature is simply selected through an alphanumeric configuration menu. No adhesive labels have to be put on the outside of the enclosure: a weather proof and user-friendly solution! The configuration of the Span, off-set and number of decimals is done through software functions, without any sensitive DIP-switches or trimmers. A wide range of options further enhance this model capabilities, including Intrinsic Safety for hazardous area applications.

## Features

- Displays actual temperature and measuring unit.
- Very large 26mm (1") high digits for temperature.
- Piegraph indication: ten segments.
- Selectable on-screen engineering units: °C, °F or K.
- Number of digits for temperature: 5<sup>1</sup>/<sub>2</sub>.
- Green/amber LED backlight with adjustable intensity.
- Auto backup of settings in EEPROM memory.
- Operational temperature -40°C to +80°C (-40°F to 178°F).
- Easy configuration with clear alphanumeric display.
- Very compact design for panel mount, wall mount or field mount applications.
- Rugged aluminum or polyamide field mount enclosure IP67 / NEMA 4X.

## Applications

- Applications where a basic temperature measurement display is required without temperature monitoring or signal re-transmitting.
- More advanced models: Fo43, F141 and F143.

## Temperature input

- PT100 - 2, 3 or 4 wire.
- Analog: (0)4 - 20mA, 0 - 10V DC.
- Thermocouple.

## Analog output

- No.

## Alarm output

- No.

## Communication

- No.

## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

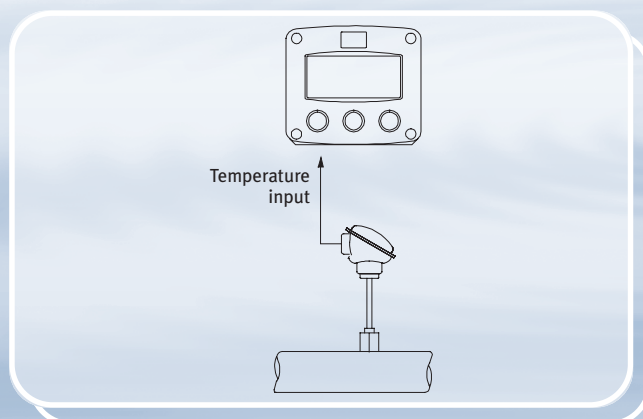
## Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

## Display example



## Application overview



# F043 Temperature Monitor with one high / low alarm output

The F043 is a versatile temperature indicator with continuous temperature monitoring feature. It offers the ability to set one low temperature and one high temperature alarm value. If desired, an alarm ignore function can be set up to allow for an incorrect temperature for a certain period of time. The configuration of the Span, off-set and number of decimals is done through software functions, without any sensitive DIP-switches or trimmers. The display shows the actual temperature, alarm values, alarm messages and status. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety.

## Features

- Temperature monitoring: two alarm values can be set: low and high temperature alarm.
- Alarm values can be changed by the operator or they can be password protected.
- One alarm output for high, low or both alarms.
- Temperature: six large 17mm (0.67") digits.
- Selectable on-screen engineering units: °C, °F or K.
- Red flashing LED backlight in case of a temperature alarm; intensity adjustable.
- Displays clear alarm messages.
- Auto backup of settings in EEPROM memory.
- Operational temperature -40°C to +80°C (-40°F to 178°F).

## Applications

- For applications where continuous temperature measurement and monitoring is important without signal re-transmitting. Alternative basic model: F040, F141 or more advanced model F143.

## Temperature input

- PT100 - 2, 3 or 4 wire.
- Analog: (o)4 - 20mA, 0 - 10V DC.
- Thermocouple.

## Analog output

- No.

## Alarm output

- One configurable alarm output for high, low or both temperature alarms.

## Communication

- No.

## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

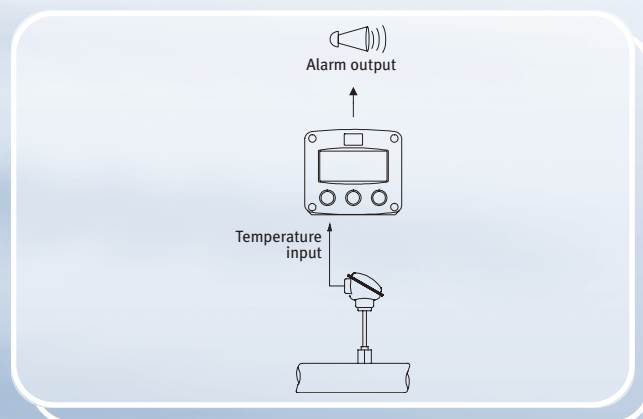
## Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

## Display example



## Application overview





# F141 Dual Input Temperature Indicator

The F141 incorporates two temperature indicators in one enclosure. There is no relationship between the inputs, even different measuring units can be used. The measuring unit is displayed together with the input channel information A or B. The F141 can be set to show the selected information manually or with an automatic toggle function. A wide range of options is available to further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Two temperature indicators.
- Displays actual temperature, measuring unit and product I.D. simultaneously.
- Temperature: six 17mm (0.67") digits.
- Separate engineering units for each input.
- Backup of settings in EEPROM memory.
- Operational temperature -30°C to +80°C (-22°F to 178°F).
- Very compact design for panel mount, wall mount or field mount applications.
- Rugged aluminum or polyamide field mount enclosure IP67 / NEMA 4X.
- LED backlight available.

## Application

- For applications where two indicators are required but one single and compact enclosure is desired.
- Alternative basic model: two separate Fo40s.

## Temperature input

- PT100 - 2 or 3 wire.
- Analog: (0)4 - 20mA, 0 - 10V DC.

## Analog output

- No.

## Alarm outputs

- No.

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol.
- All process data and settings are accessible.

## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

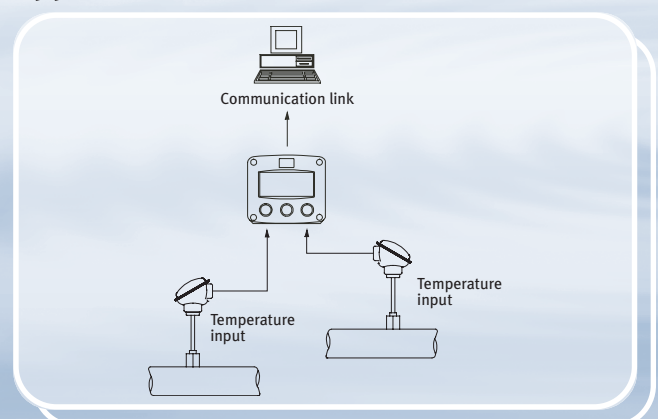
## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Display example



## Application overview



# F143 Temperature Monitor with analog and high / low alarm outputs

The F143 is a versatile temperature indicator with continuous temperature monitoring feature. It offers the ability to set two low temperature and two high temperature alarm values. Alarm ignore function allows an incorrect temperature for a certain period of time. Up to five outputs are available to transmit the alarm condition and actual temperature. The display shows the actual temperature, alarm values, alarm messages and status. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Temperature monitoring: four alarm values can be set: low-low, low, high and high-high temperature alarm.
- Alarm values can be changed by the operator or they can be password protected.
- Analog output to transmit the actual temperature.
- Up to four configurable alarm outputs.
- Displays temperature, measuring unit and alarm messages simultaneously.
- Temperature and alarm values: six large 17mm (0.67") digits.
- Alarm ignore function allows an incorrect temperature for a certain period of time.
- Selectable on-screen engineering units °C, °F or K.

## Application

- Temperature measurement where continuous temperature monitoring and re-transmitting is important, or serial communication is required.
- Alternative basic model: Fo40 or Fo43.

## Temperature input

- PT100 - 2, 3 or 4 wire.
- Analog: (o)4 - 20mA, 0 - 10V DC.

## Display example



## Analog output

- One (o)4 - 20mA / 0 - 10V DC output to transmit the temperature. The signal can be scaled to any range (e.g. from -20°C to +200°C).

## Alarm outputs

- Up to four configurable alarm outputs for low-low, low, high, high-high or any combination.

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol. All process data and settings are accessible.

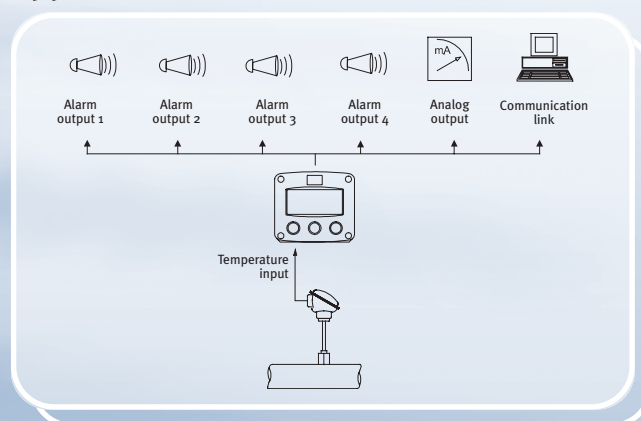
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# PRESSURE INDICATORS, MONITORS AND TRANSMITTERS



## Introduction

This product group offers several solutions from a basic pressure indicator up to a full pressure monitor with signal re-transmitting, high / low pressure monitoring, four alarm outputs as well as full Modbus communication. All being available for both safe area and hazardous area applications. Moreover, wireless data re-transmitting and remote pressure monitoring is offered with our M-series and ProcessMonitor.com products and services.

The functionality of these products is based on two main hardware platforms:

- F0 platform: these products offer one signal input and can have one alarm output. This is our basic product range.
- F1 platform: these products have one or more signal inputs, multiple outputs and communication option. This is our advanced product range.

Both platforms share the same technology, enclosures, display and options but are dedicated to their typical functionality.



## Common Pressure Indicator features

- Clear operator information is a key feature of these products. Essential information is displayed as a clear text (e.g. “low pressure”) and not as mysterious abbreviations.
- The dedicated display shows two lines of information at the same time, so the actual pressure is displayed simultaneously with the measuring unit or alarm message.
- The actual pressure is displayed with six 17mm (0.67”) high digits or even with 26mm (1”) high digits (F050).
- The measuring unit is displayed with 8mm (0.31”) digits. The following units can be selected through software: mbar, bar, psi or no unit.

Further product specific features are found on the following pages.





## Configuration menu

All configuration settings are accessed via a simple operator menu which can be password protected. Each setting is clearly indicated with an alphanumeric description, therefore avoiding confusing abbreviations and baffling codes. There are no sensitive DIP-switches or trimmers, you simply select “Sensor” as main function, after which you can select “span” or “offset” etc. Once familiar with one F-Series product, you will be able to program all models in the series without a manual. All settings are safely stored in EEPROM memory. The clear and easy structured configuration menu is one of the most appreciated features of the F-Series.

## Signal input type

For the pressure indicators, two basic signal input types are available:

- Analog signal: (o)4 - 20mA or 4 - 20mA input loop powered version. The input signal can be tuned within this range (e.g. from 4.0mA to 18.0mA). To avoid signal processing at minimum signal, a low cut-off filter is available.

- Analog signal: 0 - 10V DC. The input signal can be tuned within this range (e.g. from 2.0 to 5.0V DC). A low cut-off filter is available here too, to avoid counting at minimum signal.

Further, a digital filter can be set to a desired value to stabilize the pressure measurement reading. The offset function allows the indicator to be operational within any desired range (e.g. from 10 bar to 100 bar).

## Data protection

All settings are stored in EEPROM memory ensuring that information is not lost in the event of power failure or battery exchange. The configuration menu and alarm values can be password protected to prevent unauthorized access.

For an explanation of all the F-Series options such as analog and alarm outputs, communication, power supply and enclosures, please read the section “Ordering codes” in the back of this catalog.

## Product listing

- |      |  |
|------|--|
| F050 | Pressure Indicator.  |
| F053 | Pressure Monitor with two high / low alarm values and one alarm output.  |
| F151 | Dual Input Pressure Indicator in one enclosure with communication option.  |
| F153 | Pressure Monitor with four high / low alarm values, max. four alarm outputs, analog output and communication option. |

# F050

## Pressure Indicator with very large digits

The F050 is a straight forward pressure indicator with large 26mm (1") high digits. The measuring unit to be displayed below the pressure is simply selected through an alphanumeric configuration menu. No adhesive labels have to be put on the outside of the enclosure: a weather proof and user-friendly solution! The configuration of the Span, off-set and number of decimals is done through software functions, without any sensitive DIP-switches or trimmers. A wide range of options further enhance this model capabilities, including Intrinsic Safety for hazardous area applications.

### Features

- Displays actual pressure and measuring unit.
- Very large 26mm (1") high digits for pressure.
- Piegraph indication: ten segments.
- Selectable on-screen engineering units: mBar, Bar or PSI.
- Number of digits for pressure: 5 $\frac{1}{2}$ .
- Green/amber LED backlight with adjustable intensity.
- Auto backup of settings in EEPROM memory.
- Operational temperature -40°C to +80°C (-40°F to 178°F).
- Easy configuration with clear alphanumeric display.
- Very compact design for panel mount, wall mount or field mount applications.
- Rugged aluminum or polyamide field mount enclosure IP67 / NEMA 4X.

### Applications

- Applications where a basic pressure measurement display is required without pressure monitoring or signal re-transmitting. More advanced models: F053, F151 and F153.

### Pressure input

- Analog: (0)4 - 20mA, 0 - 10V DC.

### Analog output

- No.

### Alarm output

- No.

### Communication

- No.

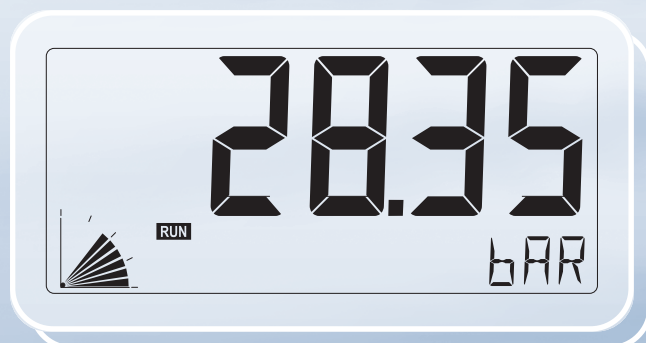
### Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

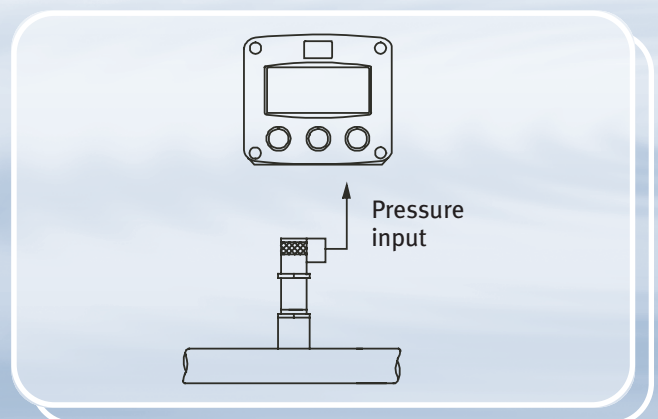
### Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

### Display example



### Application overview



# F053 Pressure Monitor with one high / low alarm output

The F053 is a versatile pressure indicator with continuous pressure monitoring feature. It offers the ability to set one low pressure and one high pressure alarm value. If desired, an alarm ignore function can be set up to allow for an incorrect pressure for a certain period of time. The configuration of the Span, off-set and number of decimals is done through software functions, without any sensitive DIP-switches or trimmers. The display shows the actual pressure, alarm values, alarm messages and status. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety.

## Features

- Pressure monitoring: two alarm values can be set: low and high pressure alarm.
- Alarm values can be changed by the operator or they can be password protected.
- One alarm output for high, low or both pressure alarms.
- Pressure: six large 17mm (0.67") digits.
- Selectable on-screen engineering units: mBar, Bar, PSI.
- Red flashing LED backlight in case of a pressure alarm; intensity adjustable.
- Displays clear alarm messages.
- Auto backup of settings in EEPROM memory.
- Operational temperature -40°C to +80°C (-40°F to 178°F).
- Very compact design for panel mount, wall mount or field mount applications.

## Applications

- For applications where continuous pressure measurement and monitoring is important without signal re-transmitting. Alternative basic model: F050 or more advanced models F151 and F153.

## Display example



## Pressure input

- Analog: (0)4 - 20mA, 0 - 10V DC.

## Analog output

- No.

## Alarm output

- One configurable alarm output for high, low or both pressure alarms.

## Communication

- No.

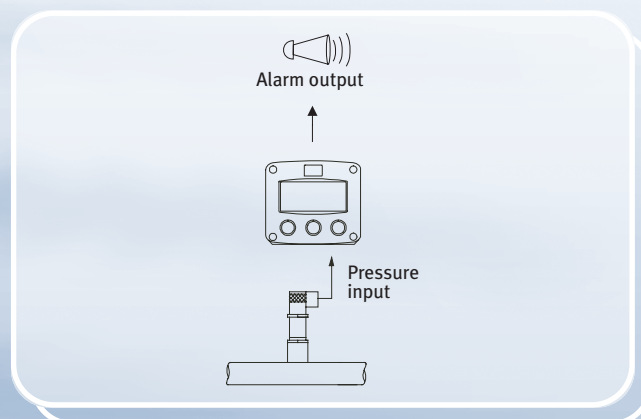
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

## Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

## Application overview



# F151 Dual Input Pressure Indicator

The F151 incorporates two pressure indicators in one enclosure. There is no relationship between the inputs, even different measuring units can be used. The measuring unit is displayed together with the input channel information A or B. The F151 can be set to show the selected information manually or with an automatic toggle function. A wide range of options is available to further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Two pressure indicators.
- Displays actual pressure, measuring unit and product I.D. simultaneously.
- Pressure: six 17mm (0.67") digits.
- Separate engineering units for each input.
- Backup of settings in EEPROM memory.
- Operational temperature -30°C to +80°C (-22°F to 178°F).
- Very compact design for panel mount, wall mount or field mount applications.
- Rugged aluminum or polyamide field mount enclosure IP67 / NEMA 4X.
- LED backlight available.

## Applications

- For applications where two indicators are required but one single and compact enclosure is desired.
- Alternative basic model: two separate F050s.

## Pressure input

- Analog: (0)4 - 20mA, 0 - 10V DC.

## Analog output

- No.

## Alarm output

- No.

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol.
- All process data and settings are accessible.

## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

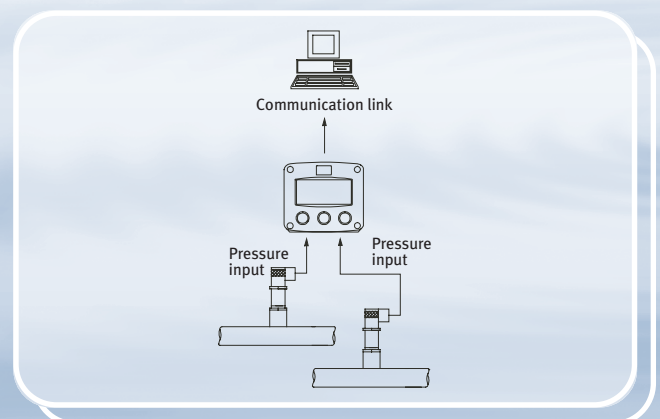
## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Display example



## Application overview





# F153 Pressure Monitor with analog and high / low alarm outputs

The F153 is a versatile pressure indicator with continuous pressure monitoring feature. It offers the ability to set two low pressure and two high pressure alarm values. If desired, an alarm ignore function can be set up to allow for an incorrect pressure for a certain period of time. Up to five outputs are available to transmit the alarm condition and actual pressure. The display shows the actual pressure, alarm values, alarm messages and status. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Pressure monitoring: four alarm values can be set: low-low, low, high and high-high pressure alarm.
- Alarm values can be changed by the operator or they can be password protected.
- Analog output to transmit the actual pressure.
- Up to four configurable alarm outputs.
- Displays pressure, measuring unit and alarm messages simultaneously.
- Pressure and alarm values: six large 17mm (0.67") digits.
- Alarm ignore function allows an incorrect pressure for a certain period of time.
- Selectable on-screen engineering units: mBar, Bar and PSI.
- LED backlight available.

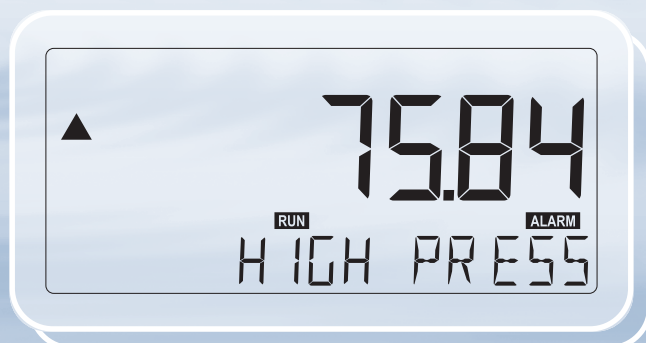
## Applications

- Pressure measurement where continuous pressure monitoring and re-transmitting is important, or serial communication is required. Alternative basic model: F050 or F053.

## Pressure input

- Analog: (0)4 - 20mA, 0 - 10V DC.

## Display example



## Analog output

- One (0)4 - 20mA / 0 - 10V DC output to transmit the pressure. The signal can be scaled to any range (e.g. from 100 PSI to +1100 PSI).

## Alarm output

- Up to four configurable alarm outputs for low-low, low, high, high-high or any combination.

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol. All process data and settings are accessible.

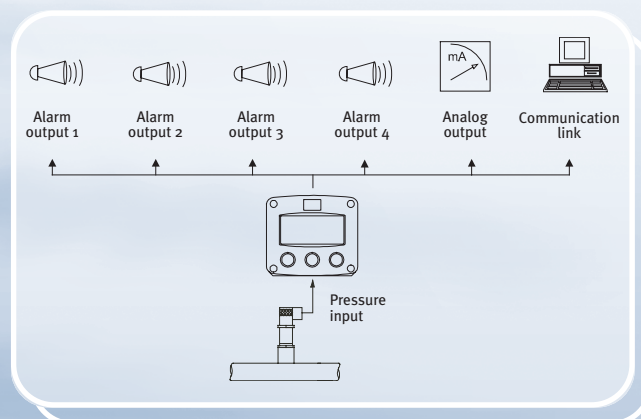
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# LEVEL INDICATORS, MONITORS AND TRANSMITTERS



## Introduction

This product group offers a range of solutions from a basic level indicator up to a powerful level monitor with tank-shape linearization, high / low level monitoring, signal re-transmitting, four alarm outputs as well as full Modbus communication. All being available for both safe area and hazardous area applications. Moreover, wireless data re-transmitting, remote level monitoring and vendor managed inventory - VMI - is offered with our M-series and ProcessMonitor.com products and services.

The functionality of these products is based on two main hardware platforms:

- F0 platform: these products offer one signal input and can have one alarm or control output. This is our basic product range.
- F1 platform: these products have one or more signal inputs, multiple outputs and communication option. This is our advanced product range.

Both platforms share the same technology, enclosures, display and options but are dedicated to their typical functionality.



## Common Level Indicator features

- Clear operator information is a key feature of these products. Essential information is displayed as a clear text (e.g. “low level”) and not as mysterious abbreviations.
- The dedicated display shows two lines of information at the same time, so the actual level is displayed simultaneously with the height, percentage or alarm message.
- The level is displayed with six 17mm (0.67”) high digits or even with 26mm (1”) high digits (F070) with its engineering unit. Following units can be selected through software: ml, L, m<sup>3</sup>, GAL, USGAL, kg, lb, bbl or no unit.
- The height or percentage filled is displayed with 8mm (0.31”) digits. Following engineering units can be selected: mm, cm, m, mtr, inch, ft, mmwk, mmwc, cmwk, cmwc, mwk, mwc, inwc, ftwc, mbar, bar, psi or no unit.

Further product specific features are found on the following pages.



## Configuration menu

All configuration settings are accessed via a simple operator menu which can be password protected. Each setting is clearly indicated with an alphanumeric description, therefore avoiding confusing abbreviations and baffling codes. There are no sensitive DIP-switches or trimmers, you simply select “Sensor” as main function, after which you can select “span” or “offset” etc. Once familiar with one F-Series product, you will be able to program all models in the series without a manual. All settings are safely stored in EEPROM memory. The clear and easy structured configuration menu is one of the most appreciated features of the F-Series.

## Signal input type

For the level indicators, two basic signal input types are available:

- Analog signal: (o)4 - 20mA or 4 - 20mA input loop powered version. The input signal can be tuned within this range (e.g. from 4.0mA to 18.0mA). To avoid signal processing at minimum signal, a low cut-off filter is available.

- Analog signal: 0 - 10V DC. The input signal can be tuned within this range (e.g. from 2.0 to 5.0V DC). A low cut-off filter is available here too, to avoid counting at minimum signal.

Further, a digital filter can be set to a desired value to stabilize the level measurement reading. The offset function allows the sensor to be mounted above a not measured quantity (e.g. from 230 L). With the span, the indicator can be set to be operational within any desired range (e.g. from 230 L to 10,000 L).

## Data protection

All settings are stored in EEPROM memory ensuring that information is not lost in the event of power failure or battery exchange. The configuration menu and alarm values can be password protected to prevent unauthorized access.

For an explanation of all the F-Series options such as analog and alarm outputs, communication, power supply and enclosures, please read the section “Ordering codes” in the back of this catalog.

## Product listing

- |      |   |
|------|---|
| F070 | Level Indicator.  |
| F073 | Level Monitor with two high / low alarm values and one alarm output.  |
| F074 | Level Controller with one control output.   |
| F077 | Level Monitor with two high / low alarm values, eight point tank-shape linearization and one alarm output.  |
| F170 | Level Monitor / Totalizer with four high / low alarm values, max. four alarm outputs, analog output and communication option.                               |
| F173 | Level Monitor / Totalizer with four high / low alarm values, fifteen linearization points, max. four alarm outputs, analog output and communication option. |

# F070

## Level Indicator with very large digits

The F070 is a straight forward level indicator with large 26mm (1") high digits. It can be set to display the level as a quantity, height or as a percentage. The measuring unit to be displayed is simply selected through an alphanumeric configuration menu. No adhesive labels have to be put on the outside of the enclosure: a weather proof and user-friendly solution!

The configuration of the Span, off-set and number of decimals is done through software functions, without any sensitive DIP-switches or trimmers. A wide range of options further enhance this model capabilities, including Intrinsic Safety for hazardous area applications.

### Features

- Displays level and height or percentage filled.
- Very large 26mm (1") high digits for level.
- Piegraph indication: ten segments.
- Selectable on-screen engineering units for level: ml, L, m<sup>3</sup>, GAL, USGAL, kg, lb, bbl or no unit.
- Selectable on-screen units for height: mm, cm, m, mtr, inch, ft, mmwk, mmwc, cmwk, cmwc, mwk, mwc, inwc, ftwc, mbar, bar, psi or no unit.
- Number of digits for level: 5½.
- Green/amber LED backlight with adjustable intensity.
- Auto backup of settings in EEPROM memory.
- Operational temperature -40°C to +80°C (-40°F to 178°F).
- Easy configuration with clear alphanumeric display.
- Very compact design for panel mount, wall mount or field mount applications.

### Applications

- Applications where a basic level measurement display is required without level monitoring, linearization or signal re-transmitting. More advanced models: F073, F077, F170 and F173.

### Level input

- Analog: (0)4 - 20mA, 0 - 10V DC.

### Analog output

- No.

### Alarm output

- No.

### Communication

- No.

### Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

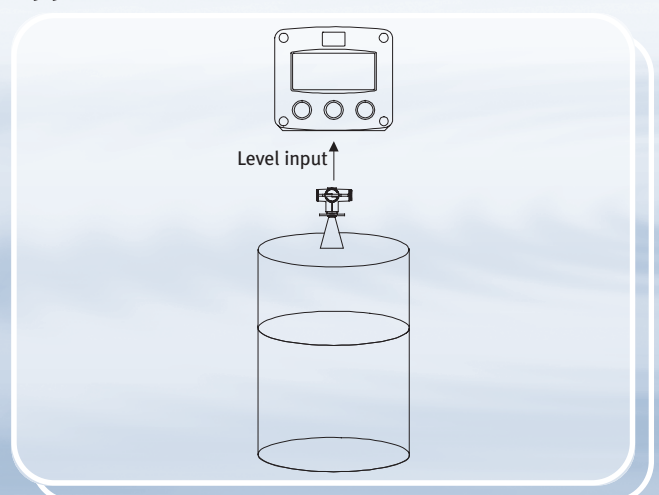
### Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

### Display example



### Application overview





# F073 Level Monitor with one high / low alarm output

The F073 is a versatile level indicator with continuous level monitoring feature. It offers the ability to set one low level and one high level alarm value. If desired, an alarm ignore function can be set up to allow for an incorrect level for a certain period of time. The configuration of the Span, off-set and number of decimals is done through software functions, without any sensitive DIP-switches or trimmers. The display shows the actual level, height or percentage, alarm values, alarm messages and status. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety for hazardous area applications.

## Features

- Displays level and height or percentage filled simultaneously.
- Level monitoring: two alarm values can be set: low and high level alarm.
- Alarm values can be changed by the operator or they can be password protected.
- One alarm output for high, low or both level alarms.
- Level: six large 17mm (0.67") digits.
- Selectable on-screen engineering units: ml, L, m<sup>3</sup>, GAL, USGAL, kg, lb, bbl or no unit.
- Selectable on-screen units for height: mm, cm, m, mtr, inch, ft, mmwk, mmwc, cmwk, cmwc, mwk, mwc, inwc, ftwc, mbar, bar, psi or no unit.
- Red flashing LED backlight in case of a level alarm; intensity adjustable.
- Displays clear alarm messages.
- Auto backup of settings in EEPROM memory.

## Applications

- Level measurement where continuous level monitoring is important without signal re-transmitting. Alternative advanced models: F077 and F173.

## Display example



## Level input

- Analog: (0)4 - 20mA, 0 - 10V DC.

## Analog output

- No.

## Alarm output

- One configurable alarm output for high, low or both level alarms.

## Communication

- No.

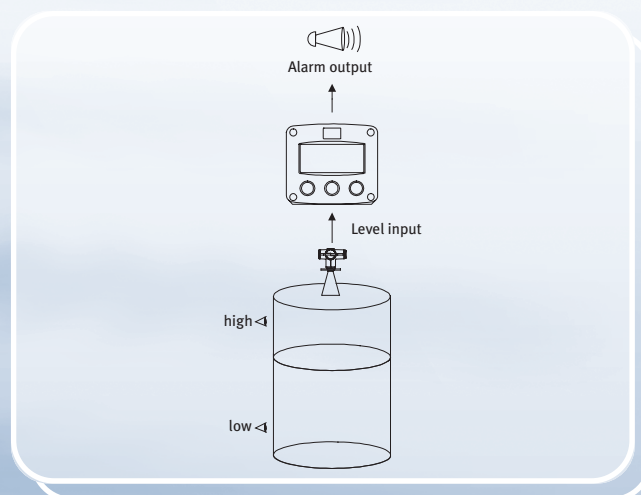
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

## Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

## Application overview



# F074 Level / Pump Controller with one control output

The F074 is a basic level / pump controller that works with a preset value and two switch points to control a pump or valve. The low and high level switch points are entered as a percentage of the preset value to switch the device on / off. For pump control applications, the function can be inverted to empty a well. A stable level within a band around the preset value is the result. The display shows the actual level, preset value, high / low switch points and status. On-screen engineering units are easily configured from a comprehensive selection. The configuration of the Span, off-set and number of decimals is done through software functions, without any sensitive DIP-switches or trimmers.

## Features

- Level control: high / low switch points and a preset value can be set.
- Displays actual level and preset value.
- Switch points and preset value can be set by the operator or being password protected.
- One control output for on / off pump or valve control.
- Functions for filling-up a container or emptying a well or tank.
- Level: six large 17mm (0.67") digits.
- Selectable on-screen engineering units: ml, L, m<sup>3</sup>, GAL, USGAL, kg, lb, bbl or no unit.
- Green/amber LED backlight with adjustable intensity.
- Auto backup of settings in EEPROM memory.
- Operational temperature -40°C up to +80°C (-40°F up to 178°F).
- Very compact design for panel mount, wall mount or field mount applications.

## Applications

- Basic on / off level control applications without PI(D) control. Also very suitable for applications where the required level changes frequently.

## Display example



## Level input

- Analog: (0)4 - 20mA, 0 - 10V DC.

## Analog output

- No.

## Control output

- One on / off control output (e.g. for pump or valve control) with the high / low level values.

## Communication

- No.

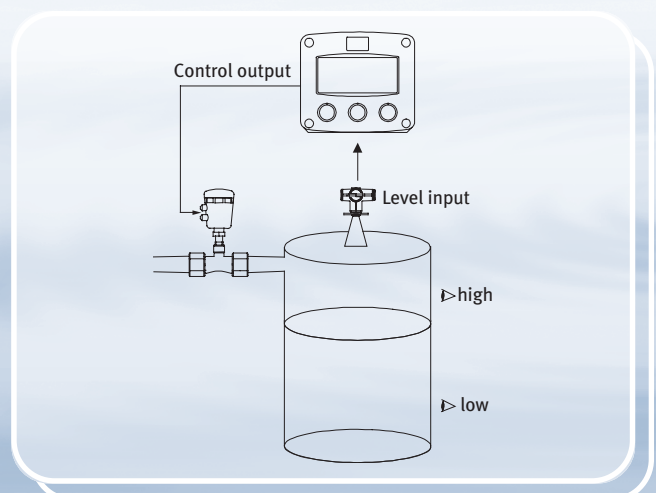
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

## Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

## Application overview



# F077 Level Monitor with linearization and one high / low alarm output

The F077 is a versatile level indicator with linearization and continuous level monitoring feature. In addition to the average Span, eight linearization points can be entered to compensate for the tank-shape. The unit will interpolate between these points to increase the accuracy. With the level monitoring feature, one low level and one high level alarm value can be set. The configuration of the Span, off-set and number of decimals is done through software functions, without any sensitive DIP-switches or trimmers. The display shows the actual level, height or percentage, alarm values, alarm messages and status. On-screen engineering units are easily configured from a comprehensive selection.

## Features

- Eight point linearization of the tank-shape - with interpolation.
- Level monitoring: two alarm values can be set: low and high level alarm.
- Displays level and height or percentage filled simultaneously.
- Alarm values can be changed by the operator or they can be password protected.
- Level: six large 17mm (0.67") digits.
- Selectable on-screen engineering units: ml, L, m<sup>3</sup>, GAL, USGAL, kg, lb, bbl or no unit.
- Selectable on-screen units for height: mm, cm, m, mtr, inch, ft, mmwk, mmwc, cmwk, cmwc, mwk, mwc, inwc, ftwc, mbar, bar, psi or no unit.
- Red flashing LED backlight in case of a level alarm; intensity adjustable.

## Applications

- Level measurement where continuous level monitoring and linearization of the tank-shape is important without signal re-transmitting. Alternative basic models F070 and F073 or more advanced F170 and F173.

## Display example



## Level input

- Analog: (0)4 - 20mA, 0 - 10V DC.

## Analog output

- No.

## Alarm output

- One configurable alarm output for high, low or both level alarms.

## Communication

- No.

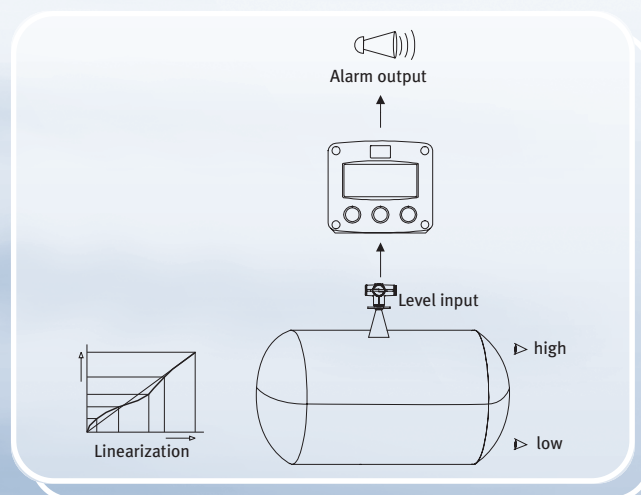
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

## Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

## Application overview



# F170 Level Monitor with analog and high / low alarm outputs

The F170 is a versatile level indicator with continuous level monitoring feature. It offers the ability to set two low level and two high level alarm values. If desired, an alarm ignore function can be set up to allow for an incorrect level for a certain period of time. Up to five outputs are available to transmit the actual level and alarm condition. The display shows the actual level, height or percentage, alarm values, alarm messages and status. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Level monitoring: four alarm values can be set: low-low, low, high and high-high level alarm.
- Alarm values can be changed by the operator or they can be password protected.
- Analog output to transmit the actual level.
- Up to four configurable alarm outputs.
- Level: six large 17mm (0.67") digits.
- Displays level, height or percentage and measuring unit simultaneously.
- Alarm ignore function allows an incorrect level for a certain period of time.
- Displays clear alarm messages.
- LED backlight available.

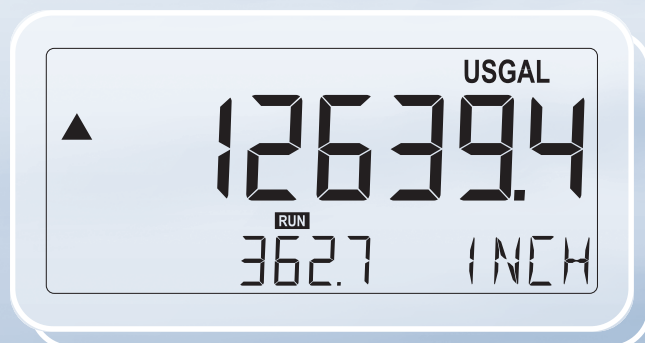
## Applications

- Level measurement where continuous level monitoring and re-transmitting is important or serial communication is required. Alternative basic model: F070, F073, F077 or more advanced model F173.

## Level input

- Analog: (0)4 - 20mA, 0 - 10V DC.

## Display example



## Analog output

- One (0)4 - 20mA / 0 - 10V DC output to transmit the level. The signal can be scaled to any range (e.g. from 2.5m³ to 1400.0m³).

## Alarm outputs

- Up to four configurable alarm outputs for low-low, low, high, high-high or any combination.

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol. All process data and settings are accessible.

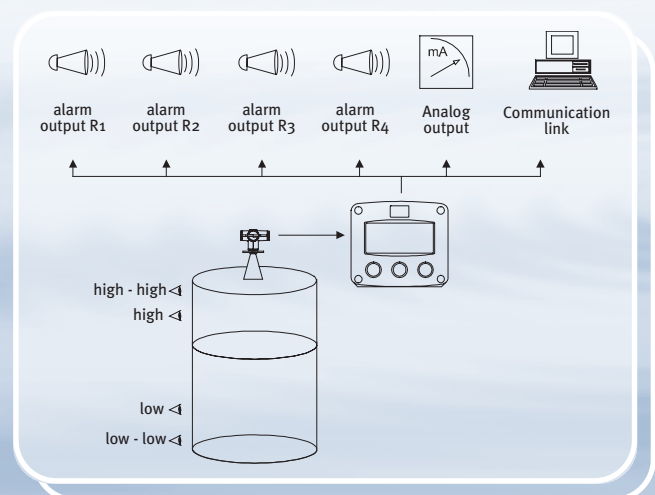
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview





# F173 Level Monitor with linearization, analog and high / low alarm outputs

The F173 is a versatile level monitor with linearization and continuous level monitoring feature. In addition to the average Span, fifteen linearization points can be entered to compensate for the tank-shape. The unit will interpolate between these points to increase the accuracy. With the level monitoring feature, one low level and one high level alarm value can be set. It offers the ability to set two low level and two high level alarm values. If desired, an alarm ignore function can be set up to allow for an incorrect level for a certain period of time. Up to five outputs are available to transmit the alarm condition and actual level. The display shows the actual level, height or percentage, alarm values, alarm messages and status.

## Features

- Fifteen point linearization of the tank-shape - with interpolation.
- Level monitoring: four alarm values can be set: low-low, low, high and high-high level alarm.
- Alarm values can be changed by the operator or they can be password protected.
- Analog output to transmit the actual level.
- Up to four configurable alarm outputs.
- Level: six large 17mm (0.67") digits.
- Displays level, height or percentage and measuring unit simultaneously.
- Alarm ignore function allows an incorrect level for a certain period of time.
- Displays clear alarm messages.

## Application

- Level measurement where linearization of the tank-shape and continuous level monitoring and re-transmitting is important or serial communication is required. Alternative basic model: F070, F073, F077 and F170.

## Level input

- Analog: (0)4 - 20mA, 0 - 10V DC.

## Display example



## Analog output

- One (0)4 - 20mA / 0 - 10V DC output to transmit the level. The signal can be scaled to any range (e.g. from 2.5m<sup>3</sup> to 1400.0m<sup>3</sup>).

## Alarm outputs

- Up to four configurable alarm outputs for low-low, low, high, high-high or any combination.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings are accessible.

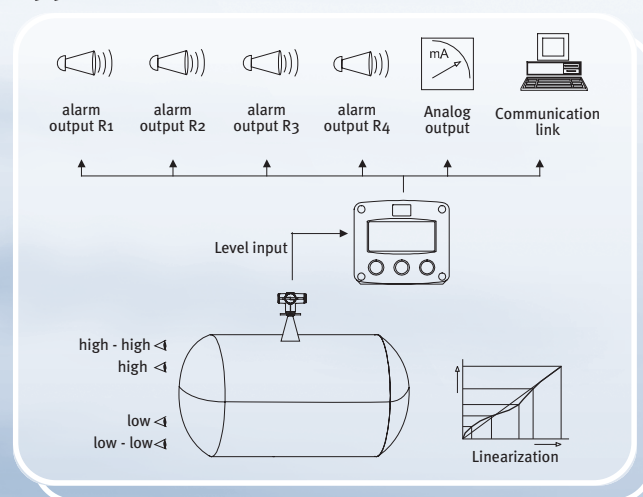
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# GENERAL PURPOSE DISPLAYS



## Introduction

This new product group offers several models which can be used for all kinds of applications. All models are available for both safe area and hazardous area applications.

The functionality of these products is based on two main hardware platforms:

- Fo platform: these products offer one signal input and can have one alarm output. This is our basic product range.
- F1 platform: these products have one or more signal inputs, multiple outputs and communication option. This is our advanced product range.

Both platforms share the same technology, enclosures, display and options but are dedicated to their typical functionality.

A detailed description of each display and its typical features are found on the following pages.



## Configuration menu

All configuration settings are accessed via a simple operator menu which can be password protected. Each setting is clearly indicated with an alphanumeric description. There are no sensitive DIP-switches or trimmers, you simply select “sensor” as main function, after which you can select “span” or “unit” etc. Once familiar with one F-Series product, you will be able to program all models in the series without a manual. All settings are safely stored in EEPROM memory in the event of sudden power failure. The clear and easy structured configuration menu is one of the most appreciated features of the F-Series.

## Data protection

All settings are stored in EEPROM memory ensuring that information is not lost in the event of power failure or battery exchange.



For an explanation of all the F-Series options such as analog and control outputs, communication, power supply and enclosures, please read the section “Ordering codes” in the back of this catalog.

## Product listing

F090-A-PL	General Purpose Indicator, loop powered with very large digits.
F193	General Purpose Modbus display with analog and control outputs.
F195	General Purpose Valve Position Indicator VPI, monitor and transmitter for hydraulic systems.
F197	General Purpose Setpoint Generator with an analog (0)4 - 20mA or 0 - 10V DC output signal.



# F090 General Purpose Indicator loop powered with very large digits

The F090-A-PL is an economical loop powered general purpose indicator with large 26mm (1") high digits. The measuring unit to be displayed is simply selected through an alphanumeric configuration menu. No adhesive labels have to be put on the outside of the enclosure: a weather proof and user-friendly solution! The configuration of the Span, off-set and number of decimals is done through software functions, without any sensitive DIP-switches or trimmers. A wide range of options further enhance this model capabilities, including Intrinsic Safety for hazardous area applications.

## Features

- Displays the actual value, measuring unit and loop current.
- Very large 26mm (1") high digits.
- Piegraph indication: ten segments.
- Selectable on-screen engineering units: %, PPM, meter, m, cm, mm, ft, sqft, ML, L, NL, M<sup>3</sup>, nM<sup>3</sup>, GAL, USGAL, IGAL, bbl, CUFT, mg, g, kg, ton, lb, psi, psig, mbar, bar, barg, °C, °F, K, P, RPM, K, KPA, /sec, /min, /hr, /day or no unit (others on request).
- Number of digits: 5½.
- Green/amber LED backlight with adjustable intensity.
- Auto backup of settings in EEPROM memory.
- Operational temperature -40°C to +80°C (-40°F to 178°F).
- Easy configuration with clear alphanumeric display.
- Very compact design for panel mount, wall mount or field mount applications.

## Applications

- Applications where a local general purpose display is required without monitoring function or signal re-transmitting.

## Signal input

- Analog: 4 - 20mA input loop powered.

## Analog output

- No.

## Alarm output

- No.

## Communication

- No.

## Power supply

- Input loop powered through 4 - 20mA signal.

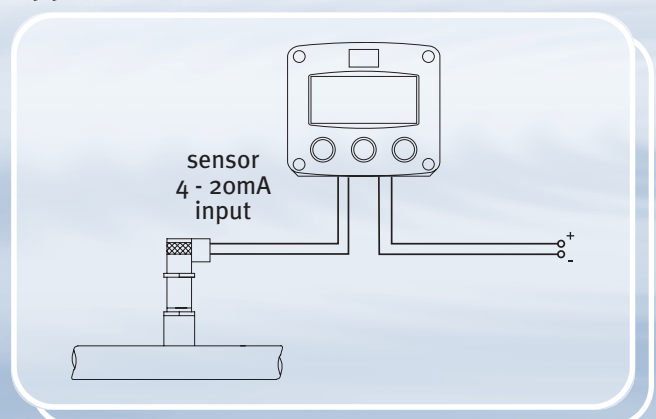
## Hazardous area

- ATEX, IECEx, CSA and FM approvals available for Intrinsically Safe and non-incendive applications.
- ATEX approval available for explosion proof enclosure.

## Display example



## Application overview





# F193 Modbus Display

The F193 is a versatile large digit Modbus display. All displayed information and signal outputs are controlled through the Modbus ASCII / RTU communication protocol. Information of nine different tanks or products can be displayed. This information can be selected by the operator or with an automatic toggle function. Off-course, the displayed information can also be selected and locked through communication. Further, four control or alarm outputs can be controlled or being linked to an alarm status of the nine products: an alarm message will be displayed and the related relay(s) switched. Also available is one analog output, controlled through the communication. The display shows the actual value, product / tank ID, measuring unit, alarm messages and status.

## Features

- Fully driven through Modbus communication link.
- One up to and including nine different products or tank values can be displayed
- Displays actual value, product or tank I.D., measuring unit and alarm messages.
- Actual values are operator selectable or being displayed with the automatic toggle function but can also be locked.
- Alarm values per product or tank can be assigned to an alarm output
- Alarms can be terminated through communication or after operator interaction
- Up to four alarm outputs can be controlled through communication or related to actual product values.
- One analog output value controlled through communication.
- Actual value: six large 17mm (0.67") digits.
- LED backlight.

## Applications

- Local indication of process parameter(s) where the actual information is provided through a Modbus communication link and not a sensor.

## Display example



## Signal input

- No.

## Analog output

- One (0)4 - 20mA / 0 - 10V output to transmit any value. The signal is scaled through communication.

## Alarm output

- Up to four configurable outputs controlled through communication or as alarm output related to the actual product / tank values.

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol. All values and settings can be read and are set through this communication link, but can also be manually changed through the display itself.

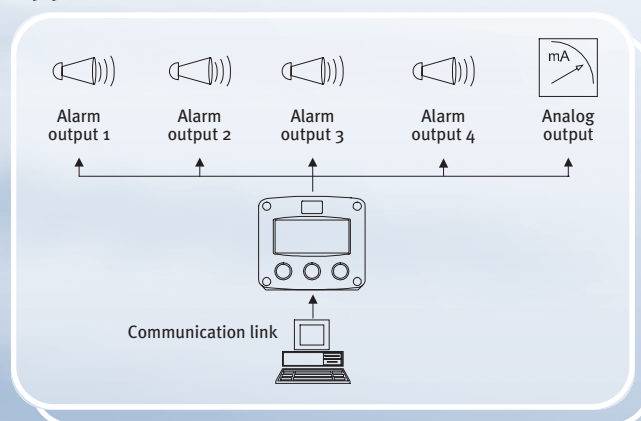
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# F195 Valve Position Indicator VPI for hydraulic systems

The F195 has been developed for the valve position indication and monitoring in hydraulic systems. By using a bi-directional flowmeter to measure the volume displaced by the actuator, an accurate position of the system is calculated. The display does show the position as a percentage as well as with the text “open” and “closed” for the minimum and maximum positions. As standard, the analog output mirrors the percentage displayed which can be used to transmit the valve position. The usual difficulties encountered in such applications include: very low flows, vibration, thermal expansion of the oil and high ambient temperatures. These are all well catered for in the design and operation of the F195.

## Features

- Valve position calculated through bi-directional flow measurement.
- Displays the position as 0 - 100%, the moved volume and “open / closed” texts.
- Analog output mirrors the position of the valve.
- Modbus communication link for remote monitoring.
- Re-calibration feature.
- Service counter displays the number of full strokes.
- Auto backup of settings in EEPROM memory.
- Operational temperature -30°C to +80°C (-22°F to 178°F).
- Easy configuration with clear alphanumeric display.
- Very compact design for panel mount, wall mount or field mount applications.
- LED backlight available.

## Applications

- Valve position indication and monitoring in hydraulic systems. For example as valve position indicator VPI for ballast tanks in ships.

## Flowmeter input

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active signal.

## Display example



## Pulse output

- One scaled pulse output according to the bi-directional accumulated total (e.g. one pulse every 3.25 gallons). Max. frequency 64Hz. A second output is switched as soon as the pulse output reflects a “negative” quantity.

## Analog output

- One (0)4 - 20mA / 0 - 10V output to transmit the position of the hydraulic systems (e.g. from 0% to 110%).

## Communication

- RS232 / RS485 / TTL. Modbus ASCII / RTU protocol. All process data and settings are accessible.

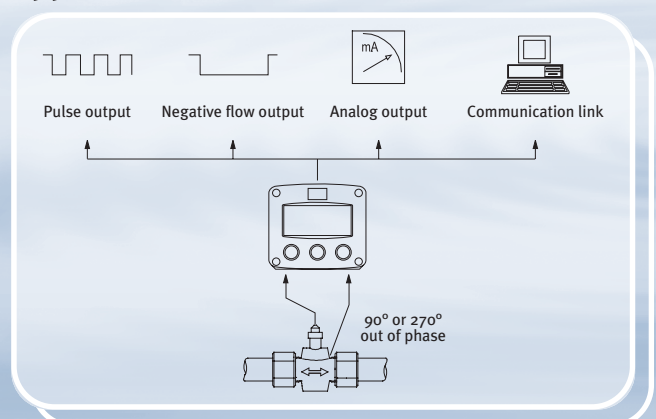
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview



# F197 Setpoint Generator

The F197 is a manual set-point generator. The operator enters an analog or a scaled output value or a percentage which will be transmitted as a (o)4 - 20mA / 0 - 10V DC signal to a control device. If available, the F197 can also display the measured actual process value, however, there is no direct control relationship between the input and output value. Further, one low and one high alarm value can be set with an alarm ignore function to monitor the process. The display shows the preset value, actual value and status simultaneously. On-screen engineering units are easily configured from a comprehensive selection. A wide range of options further enhance this model capabilities, including Intrinsic Safety and full Modbus communication.

## Features

- Manual (o)4 - 20mA / 0 - 10V DC control output.
- Preset value can be entered as a scaled value (e.g. 415°C), analog value (e.g. 15,3mA) or as percentage.
- Displays the actual process value and transmitted value simultaneously.
- One low and one high alarm value can be set with alarm ignore time function.
- Preset value: seven 17mm (0.67") digits during programming and 8mm (0.31") digits during process.
- Actual value: seven 17mm (0.67") digits.
- Modbus communication link for remote control.
- LED backlight available.
- Auto backup of settings in EEPROM memory.
- Operational temperature -30°C to +80°C (-22°F to 178°F).

## Applications

- Manual set-point control of process variables requiring a (o)4 - 20mA or 0 - 10V input value. For example to tune temperature or flow rate manually.

## Communication

- RS232 / RS485 / TTL. Modbus RTU protocol. All process data and settings are accessible.

## Display example



## Signal inputs (not required)

- Pulse: sine wave (coil), reed-switch, NPN, PNP, Namur, active pulse signal.
- Analog: (o)4 - 20mA, 0 - 10V DC.

### Temperature input

- PT100 - 2 or 3 wire.

## Analog output

- One (o)4 - 20mA / 0 - 10V output to transmit any value. The signal is scaled manually by the operator or through Modbus communication.

## Alarm output

- One low alarm and one high alarm output.

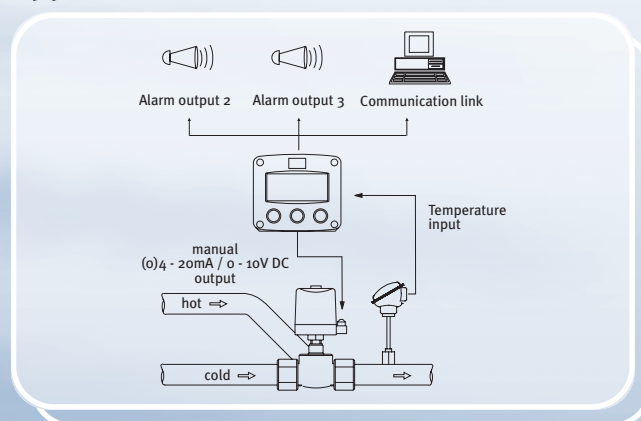
## Power supply

- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC. Sensor supply 3.2, 8.2, 12 or 24V DC.

## Hazardous area

- ATEX approval available for Intrinsically Safe and explosion proof applications.

## Application overview






# ORDERING CODES







This section describes the options and ordering codes of all F-Series products.



The  symbol indicates if the function is available Intrinsically Safe. The table on the following pages shows which options are available for each product. As it is our policy to improve our products continuously, it is advised to check the datasheets on our website [www.fluidwell.com](http://www.fluidwell.com) for up-to-date information about the latest options available.

## Sensor input signal




This is the primary signal input type of the device. The configuration menu of each product allows you to select and adjust the signal parameters, without any sensitive mechanical DIP-switches, jumpers or trimmers. The analog input version “type A” is also available as 4 - 20mA input loop powered display (power supply type PL).

A		(o)4 - 20mA sensor input for flow, level, pressure and temperature measurement.
H		Thermocouple input for temperature measurement. Available types: check the latest datasheets.
P		Pulse input for flow applications. Signal types: sine wave (coil), NPN, PNP, reed switch, Namur and active signals. For most signals a low pass filter can be enabled.
T		PT100 (PRTD) input for temperature measurement, suitable for 2 or 3 wire (Fo: 4 wire as well).
U		0 - 10V DC sensor input for flow, level, pressure and temperature measurement.
X		No primary signal input (model F193 only).



## Analog output signal

Available for the F1-Series only: related to the actual flow, level, height, pressure, temperature, percentage, ratio, consumption, differential or sum, position, energy or as control output. *Note: an active analog output comes with an active transistor output type OA and requires a power supply option type PD, PF or PM.*

AA		Active 4 - 20mA analog output - requires OA + PD, PF or PM.
AB		Active 0 - 20mA analog output - requires OA + PD, PF or PM.
AF		Passive floating 4 - 20mA analog output for Intrinsically Safe applications - requires PC, PD or PL.
AI		Passive isolated 4 - 20mA analog output - requires PB, PD, PF, PL or PM.
AP		Passive 4 - 20mA analog output signal. Output loop powered which means that the unit will be powered through this loop (comes with type PX as standard).
AU		Active analog output 0 - 10V DC - requires OA + PD, PF or PM.
AX		No analog output.





## Communication

Available for the F1-Series only: all process data, settings and functions can be read, modified and controlled through the Modbus RTU / ASCII communication link. The selectable communication speed is 1200, 2400, 4800 or 9600 baud and 255 addresses can be assigned. Full Modbus functionality remains available for the Intrinsically Safe version (TTL). *Note: some models do not support Modbus ASCII.*

<b>CB</b>	RS232 - Modbus communication. Maximum cable length 15 meters (50 feet), no multi drop (1:1).
<b>CH</b>	RS485 - 2 wire - Modbus communication. Maximum cable length 1200 meters (3,937 feet), multi drop (1:n).
<b>CI</b>	RS485 - 4 wire (RS422) - Modbus communication. Maximum cable length 1200 meters (3,937 feet), multi drop (1:n).
<b>CT</b>	TTL (RS232 compatible) - Modbus communication, Intrinsically Safe only. No multi drop (1:1). Cable length: the normal RS232 limitations of bandwidth versus cable length are applicable. As a rule of thumb, speed (baud) x length (meters) < 15,000.
<b>CX</b>	No communication option.

## Flow equations

The flow computers F126 and F127 use generic formulas for corrected gas and liquid volume.

<b>EG</b>	Formula for gas applications with temperature and pressure compensation.
<b>EL</b>	Formula for liquid applications with temperature compensation.
<b>EX</b>	No flow equations option.





## Enclosures

Various types of enclosures are available for hazardous and safe area applications. The enclosures have recently been redesigned with a new keyboard and sealing to make them suitable for even the most harsh environments and to improve the operation. All enclosures have stainless steel screws. The aluminum enclosures are painted with a high quality UV stabilized two component industrial paint. The GRP enclosures (Glass-fiber Reinforced Polyamide) are UV stabilized and offer Vo acc. to UL94. New stainless steel accessories are available for wall and pipe mounting of the field enclosures (see section Accessories).

<b>HA</b>	Field / wall mount enclosure	IP67 / NEMA 4X	Aluminum	Cable entry: 2 x PG9 and 1 x M20.
<b>HB</b>	Panel mount enclosure	IP65 / NEMA 4	Aluminum	
<b>HC</b>	Panel mount enclosure	IP65 / NEMA 4	GRP	
<b>HD</b>	Field / wall mount enclosure	IP67 / NEMA 4X	GRP	Cable entry: no holes.
<b>HE</b>	Field / wall mount enclosure	IP67 / NEMA 4X	GRP	Cable entry: 2 x 16mm and 1 x 20mm.
<b>HF</b>	Field / wall mount enclosure	IP67 / NEMA 4X	GRP	Cable entry: 1 x 22mm (0.866").
<b>HG</b>	Field / wall mount enclosure	IP67 / NEMA 4X	GRP	Cable entry: 2 x 20mm.
<b>HH</b>	Field / wall mount enclosure	IP67 / NEMA 4X	GRP	Cable entry: 6 x 12mm.
<b>HM</b>	Field / wall mount enclosure	IP67 / NEMA 4X	Aluminum	Cable entry: 2 x M16 and 1 x M20.
<b>HN</b>	Field / wall mount enclosure	IP67 / NEMA 4X	Aluminum	Cable entry: 1 x M20.
<b>HO</b>	Field / wall mount enclosure	IP67 / NEMA 4X	Aluminum	Cable entry: 2 x M20.
<b>HP</b>	Field / wall mount enclosure	IP67 / NEMA 4X	Aluminum	Cable entry: 6 x M12.
<b>HT</b>	Field / wall mount enclosure	IP67 / NEMA 4X	Aluminum	Cable entry: 1 x 1/2" NPT.
<b>HU</b>	Field / wall mount enclosure	IP67 / NEMA 4X	Aluminum	Cable entry: 3 x 1/2" NPT.
<b>HZ</b>	Field / wall mount enclosure	IP67 / NEMA 4X	Aluminum	Cable entry: no holes.



## Inputs - additional pressure or switch input

Available for the F1-Series only: several products offer or require additional inputs with following functionality:

IA		(o)4 - 20mA input for pressure measurement.
IB		Additional reset input to zero the totalizer.
IU		0 - 10V DC input for pressure measurement.
IX		No additional input.





## Outputs - alarm / pulse / control

Following switch output(s) are related to the totalizer (scaled pulse or alarm output), high / low alarms for flow, level, pressure or temperature or control outputs for the batch controllers. The Fo-Series offers maximum one output. The F1-Series maximum of four outputs, however in case of an Intrinsically Safe application a maximum of two outputs are available. Except the passive transistor (type OT), all output types require a power supply option type PD, PF or PM. For detailed information please consult the product datasheet.

OA		Active 24V transistor output(s), requires type PD, PF or PM. (F1-Series also: AA, AB or AU), max load: 50mA @ 24V DC.
OR		Mechanical SPST relays - isolated, requires type PF or PM, max. load 1A - 230V AC.
OS		Four mechanical SPST relays - isolated, requires type PD, max. load 1A - 230V AC.
OT		Passive transistor output(s), max. load 300mA @ 50V DC, (Intrinsically Safe max. 30V DC 100mA) per output.
OX		No output.





## Power supply

To power the F-Series, several power supply options are available. For detailed information please consult the datasheet of the product.

PB		Long life lithium battery - only one battery required.
PC		Intrinsically Safe lithium battery - only one battery required.
PD		16 - 24V DC power supply with limited sensor supply capabilities.
PF		24V AC / DC power supply with full sensor supply.
PL		Input loop powered, the unit is powered through the 4 - 20mA signal input.
PM		115 - 230V AC power supply with full sensor supply.
		Sensor supply not available.
PX		Fo-Series can be powered with 8 - 30V DC. F1-Series can be powered by output loop (type AP), voltage: 8 - 30V DC.

## Temperature - additional inputs






Available for the F1-Series only: several products require additional inputs with following functionality.

TA		(o)4 - 20mA input for temperature measurement.
TP		PT100 input for temperature measurement - 2 or 3 wire.
TU		0 - 10V DC input for temperature measurement.
TX		No additional input.








## Hazardous area

All models can be supplied Intrinsically Safe with ATEX Certification. For the Fo-Series IECEx, CSA and FM approval as well as non-incendive approval are expected to become available during 2006. For detailed information and latest information, please consult the datasheet and certificate of the product.

<b>XF</b>		ATEX - EExd flameproof enclosure  II 2 GD EEx d IIB T <sub>5</sub> .
<b>XI</b>		ATEX - Intrinsically Safe:  II 1 GD EEx ia IIB/IIC T <sub>4</sub> T <sub>100</sub> °C.
<b>XN</b>		Non incendive: Expected fourth quarter 2006.
<b>XX</b>		Safe area application.

## Other options

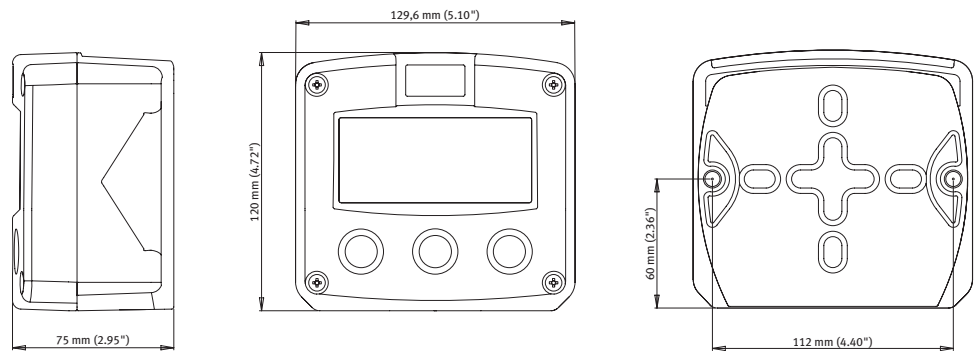
Several other options are listed below. Please be aware that more than one of these options can be selected.

<b>ZB</b>		Bi-color backlight green/amber. In case of a monitoring application, the backlight can be set to switch to red in case of an alarm condition. <i>Note: for the F1-Series, only a green backlight for safe area applications is available at this moment.</i>
<b>ZF</b>		Extra high sensitivity for the sine wave (coil) input 10mV p-p.
<b>ZG</b>		Very high sensitivity for the sine wave (coil) input 5mV p-p.
<b>ZV</b>		PT100 (PRTD) range -200°C to +800°C (-328°F to +1472°F).
<b>ZX</b>		No additional option.

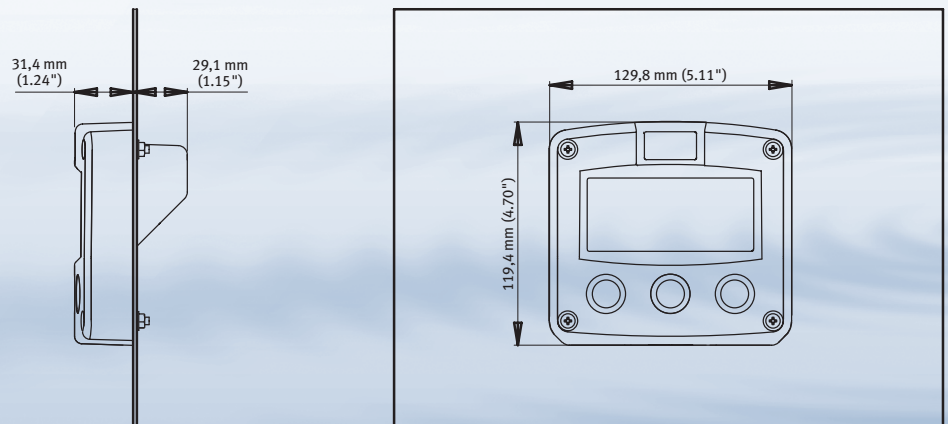


# ENCLOSURES

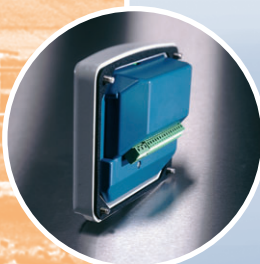
The following pages contain dimensional drawings of the F-Series enclosures and mounting accessories.



*Field / wall mount enclosures, IP67 / NEMA4X*



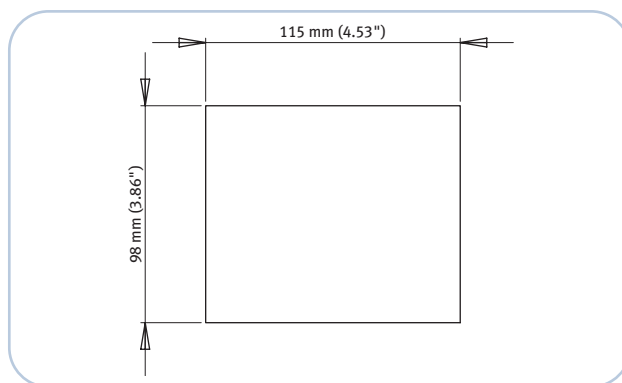
*Panel mount enclosures, IP65 / NEMA4*





## Panel mounting

A major advantage of using the F-Series as a panel mount unit is the minimum depth clearance required. This allows a small box being used compared to many other panel mount devices.



*Panel mount cut-out dimensions*

## Panel cut-out

The panel cut-out can be rectangle where the four bolts will be located in the corners.



## Mounting the enclosure in a panel

The enclosure is supplied with four stainless steel bolts, O-rings, washers and nuts.



## F-Series mounted in the cabinet

After installing the unit, the thick silicon gasket does assure a proper sealing.

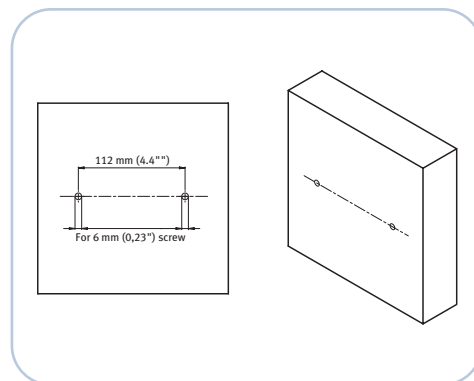


## Wall mounting

The F-Series enclosures can be mounted onto the wall in two ways: with and without a mounting plate. Proper screws or bolts have to be used as the weight of the aluminum enclosure is about 1kg and the GRP enclosure about 0.5 kg.

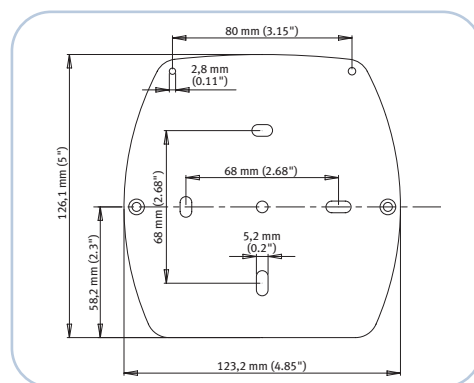
### Mounting without a mounting plate;

Two holes have to be drilled horizontally to place 6mm (0.23") screws or bolts.



## Mounting with a mounting plate

The stainless steel mounting plate does make the installation easier. It includes two proper fixed M6 stainless steel bolts with nuts and a large position to fix a tagplate with 3mm (0.11") screws.



## Placing the mounting plate

Two or four holes have to be drilled horizontally and/or vertically, suitable for 5mm (0.2") screws or bolts.



## Placing the wall mount enclosure

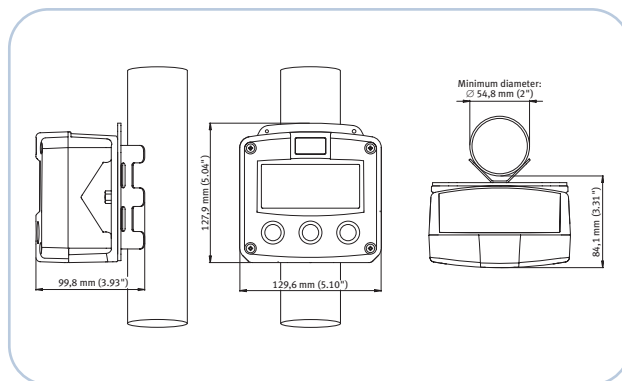
Simply place the unit and fix it with the two stainless steel washers and M6 nuts provided.





## Pipe mounting

The F-Series enclosures can be mounted on any horizontal or vertical pipe from 54,8mm (2") diameter with the stainless steel pipe mounting kit. Proper clamps have to be used as the total weight including the aluminum enclosure is about 1,4 kg and including the GRP enclosure about 0,9 kg. On the top of the mounting plate, a space is provided to place a proper tagplate with 3mm (0.11") screws.



## Assembling the pipe mounting kit

The mounting kit includes three stainless steel M5 bolts to fix the pipe mounting bracket horizontally or vertically on the mounting plate. When assembled, the part can easily be fixed on the pipe with the stainless steel worm gear clamps.



## Placing the field mount enclosure

Simply place the unit and fix it with the two stainless steel washers and M6 nuts provided.



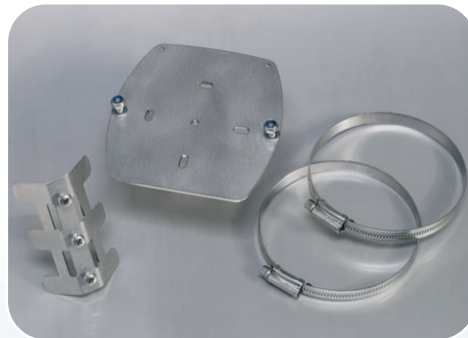
# ACCESSORIES

The following pages contain several accessories, which are available for the F-Series.

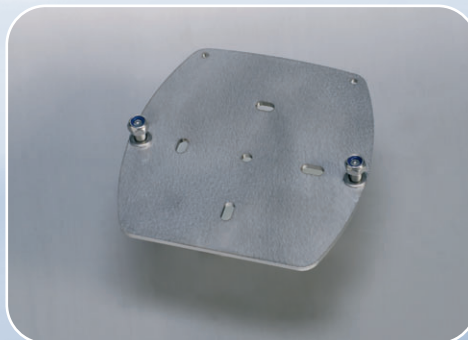


## Mounting accessories

<b>ACF02</b>	Stainless steel wall mounting kit includes screws and plugs.
<b>ACF05</b>	Stainless steel pipe mounting kit (worm gear clamps not included).
<b>ACF06</b>	Two stainless steel worm gear clamps Ø 44 - 56mm (1.73" - 2.20").
<b>ACF07</b>	Two stainless steel worm gear clamps Ø 58 - 75mm (2.29" - 2.95").
<b>ACF08</b>	Two stainless steel worm gear clamps Ø 77 - 95mm (3.04" - 3.74").
<b>ACF09</b>	Two stainless steel worm gear clamps Ø 106 - 138mm (4.18" - 5.43").
<b>ACF10</b>	Customized Grevopal tagplates for ACF02 and ACF05, including stainless steel screws. Dimension: 95mm x 12.5mm (3.75" x 0.5").



*Stainless steel pipe mounting kit*



*Stainless steel wall mounting kit*



## Cable gland accessories

<b>ACF20</b>	for HA enclosure: 2 x PG9, 1 x M20 includes O-rings - IP67 / NEMA 4X.
<b>ACF25</b>	for HE enclosure: 2 x M16, 1 x M20 includes locknuts and O-rings - IP67 / NEMA 4X.
<b>ACF26</b>	for HF enclosure: 1 x M20 includes locknut and O-ring - IP67 / NEMA 4X.
<b>ACF27</b>	for HG enclosure: 2 x M20 includes locknuts and O-rings - IP67 / NEMA 4X.
<b>ACF28</b>	for HH enclosure: 6 x M12 includes locknuts and O-rings - IP67 / NEMA 4X.
<b>ACF32</b>	for HM enclosure: 2 x M16, 1 x M20 - includes O-rings - IP67 / NEMA 4X.
<b>ACF33</b>	for HN enclosure: 1 x M20 - includes O-ring - IP67 / NEMA 4X.
<b>ACF34</b>	for HO enclosure: 2 x M20 - includes O-rings - IP67 / NEMA 4X.
<b>ACF35</b>	for HP enclosure: 6 x M12 - includes O-rings - IP67 / NEMA 4X.
<b>ACF39</b>	for HT enclosure: 1 x 1/2" NPT - includes O-ring - IP67 / NEMA 4X.
<b>ACF40</b>	for HU enclosure: 3 x 1/2" NPT - includes O-rings - IP67 / NEMA 4X.



Cable glands

## Blind plug accessories

<b>ACF50</b>	for HA enclosure: 2 x PG9, 1 x M20 includes O-rings - IP67 / NEMA 4X.
<b>ACF55</b>	for HE enclosure: 2 x M16, 1 x M20 includes locknuts and O-rings - IP67 / NEMA 4X.
<b>ACF56</b>	for HF enclosure: 1 x M20 includes locknut and O-ring - IP67 / NEMA 4X.
<b>ACF57</b>	for HG enclosure: 2 x M20 includes locknuts and O-rings - IP67 / NEMA 4X.
<b>ACF58</b>	for HH enclosure: 6 x M12 includes locknuts and O-rings - IP67 / NEMA 4X.
<b>ACF62</b>	for HM enclosure: 2 x M16, 1 x M20 - includes O-rings - IP67 / NEMA 4X.
<b>ACF63</b>	for HN enclosure: 1 x M20 - includes O-ring - IP67 / NEMA 4X.
<b>ACF64</b>	for HO enclosure: 2 x M20 - includes O-rings - IP67 / NEMA 4X.
<b>ACF65</b>	for HP enclosure: 6 x M12 - includes O-rings - IP67 / NEMA 4X.
<b>ACF69</b>	for HT enclosure: 1 x 1/2" NPT - includes O-rings - IP67 / NEMA 4X.
<b>ACF70</b>	for HU enclosure: 3 x 1/2" NPT - includes O-rings - IP67 / NEMA 4X.



Blind plugs

## Intrinsically Safe isolators accessories

Ordering code		Description	Hazardous area	Safe area
ACG01	MTL5011B	One channel pulse or switch output transfer from hazardous area to safe area, including power supply.	type OT: passive transistor	1 mechanic make-and-break relay
ACG02	MTL5025	One channel power supply from safe area to hazardous area (e.g. to power the unit with type PD or to power a switching or analog device in hazardous area).	device to be powered	20 - 35V DC
ACG03	MTL5042	One channel 4 - 20mA repeater from hazardous area to safe area, including power supply.	type AP / AF: passive analog output	floating 4 - 20mA
ACG04	MTL5051	Bi-direction serial-data isolator (for Modbus communication).	type CT: TTL	RS232, RS422 or TTL
ACG05	MTL5018	Two channel pulse or switch output transfer from hazardous area to safe area, including power supply.	type OT: transistor	2 mechanic make-and-break relays
ACG06	MTL5012	One channel pulse or switch output transfer from hazardous area to safe area, including power supply.	type OT: passive transistor	floating solid state
ACG07	MTL5045	One channel isolated driver bringing 4 - 20mA from safe area to hazardous area, including power supply.	active 4 - 20mA	4 - 20mA



MTL isolators

Ordering overview

		Sensor input signal						Analog output signal						Communication					Flow equations			Enclosures		Additional inputs				Switch outputs					Power supply							Temperature input signal				Hazardous area				Other options							
		A	H	P	T	U	X	AA	AB	AF	AI	AP	AU	AX	CB	CH	CI	CT	CX	EG	EL	EX	from HA to HZ	IA	IB	IU	IX	OA	OR	OS	OT	OX	PB	PC	PD	PF	PL	PM	PX	TA	TP	TU	TX	XF	XI	XN	XX	ZB	ZF	ZG	ZV	ZX			
Flow rate Indicators / Totalizers	F010	●		●		●								●					●			●	●				●					●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●				
	F011	●		●		●								●					●			●	●				●					●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●				
	F012	●		●		●								●					●			●	●				●					●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●				
	F013	●		●		●								●					●			●	●				●		●			●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●			
	F014	●		●		●								●					●			●	●				●		●			●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●				
	F016	●		●		●								●					●			●	●				●		●			●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●				
	F110	●		●		●		●	●	●	●	●	●		●	●	●	●	●			●	●	●			●		●			●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●				
	F111	●		●		●								●	●	●	●	●	●			●	●				●		●			●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●			
	F112	●		●		●		●	●	●	●	●	●		●	●	●	●	●			●	●				●		●			●	●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●			
F113	●		●		●		●	●	●	●	●	●		●	●	●	●	●			●	●				●		●		●		●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●			
F115			●				●	●	●	●	●	●			●	●	●	●	●			●	●				●		●		●		●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●			
F117			●				●	●	●	●	●	●			●	●	●	●	●			●	●				●		●			●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●			
F118	●		●		●		●	●	●	●	●	●		●	●	●	●	●			●	●				●		●			●	●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●	●	●	●
Flow Computers	F114	●		●		●		●	●	●	●	●	●		●	●	●	●	●			●	●				●		●			●		●	●	●	●	●	●					●	●	●	●	●	●	●	●	●	●		
	F116	●		●		●		●	●	●	●	●	●		●	●	●	●	●			●	●				●		●			●		●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●		
	F126-EL	●		●		●		●	●	●	●	●	●		●	●	●	●	●		●		●			●							●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	F126-EG	●		●		●		●	●	●	●	●	●		●	●	●	●	●	●			●		●								●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	F127-EL	●		●		●		●	●	●	●	●	●		●	●	●	●	●		●		●				●						●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	F128	●		●		●		●	●	●	●	●	●		●	●	●	●	●			●	●				●		●			●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Batch Controllers	F030	●		●		●								●					●			●	●				●		●			●		●	●	●	●	●	●					●	●	●	●	●	●	●	●	●	●		
	F130	●		●		●								●	●	●	●	●	●			●	●				●		●			●		●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●		
	F131	●		●		●		●	●	●	●	●	●		●	●	●	●	●			●	●				●		●			●		●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●	●
	F133			●		●								●	●	●	●	●	●			●	●				●		●			●		●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●		
	F134	●		●		●		●	●	●	●	●	●		●	●	●	●	●			●	●				●		●			●		●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●		
	F136	●		●		●		●	●	●	●	●	●		●	●	●	●	●			●	●				●		●			●		●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●	
Temperature Indicators	F040	●	●		●	●								●					●			●	●				●					●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●	●		
	F043	●	●		●	●								●					●			●	●				●		●			●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●			
	F141	●			●	●								●	●	●	●	●	●			●	●				●					●	●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●		
	F143	●			●	●		●	●	●	●	●	●		●	●	●	●	●			●	●				●		●		●		●	●	●	●	●	●	●	●	●					●	●	●	●	●	●	●	●	●	



## Functional product overview

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