Features
• Displays instantaneous flow rate, total and accumulated total.
• Large 17mm (0.67") digit selection for flow rate or total.
• Selectable on-screen engineering units.
• Ability to process all types of flowmeter signals.
• Auto backup of settings and running totals.
• 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.
• Rugged aluminum field mount enclosure IP67/NEMA4X.
• Intrinsically Safe - ATEX, IECEEx and CSA approval for gas and dust applications.
• Explosion/flame proof II 2 GD EEx d IIB T5.
• Easy configuration with clear alphanumerical display.
• LED backlight option.
• Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC power supply.
• Sensor supply 3.2 / 8.2 / 12 / 24V DC.

Signal input
Flow
• Reed-switch.
• NAMUR.
• NPN/PNP pulse.
• Sine wave (coil).
• Active pulse signals.
• (0)4 - 20mA.
• 0 - 10V DC.

Applications
• Flow measurement where a local flow rate indication and totalizer function is required without re-transmission functionality. Alternative basic models F010 and F011 or more advanced F013 - F014 - F016 - F110 and higher.
General information
Introduction
The F012 is a local indicator to display the actual flow rate, total and accumulated total. The total can be reset to zero by pressing the CLEAR button twice. The eleven digit accumulated total however cannot be reset to zero. A wide selection of options further enhance this models capabilities, including Intrinsinc Safety for hazardous area applications.

Display
The display has large 17mm (0.67") and 8mm (0.31") digits which can be set to show flow rate and / or totals. On-screen engineering units are easily configured from a comprehensive selection. The accumulated total can register up to 11 digits and is backed-up in EEPROM memory every minute, just as the running total. As the F012 has been designed for field mounted applications, a smart display update function has been incorporated. Related to the lower temperatures, the update frequency of the LCD is tuned automatically to achieve a readable display even at -40°C / -40°F.

Backlight
For those applications where readability during day and night is an issue, a bi-color backlight is available. The background color can be set to green or amber and the intensity can be adjusted from the keyboard. The display is a transflective type, which means that a high contrast reading is guaranteed in full sunlight as well as during the night. This backlight option is also available Intrinsically Safe.

Configuration
All configuration settings are accessed via a simple operator menu which can be pass-code protected. Each setting is clearly indicated with an alphanumerical description, therefore avoiding confusing abbreviations and baffling codes. 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.

Signal input
The F012 will accept most pulse and analog input signals for flow or mass flow measurement. The input signal type can be selected by the user in the configuration menu without having to adjust any sensitive mechanical dip-switches, jumpers or trimmers. The analog input version is even available as 4 - 20mA input loop powered display.

Power supply
Several power supply options are available to power the F012 and sensor. Most popular is our battery powered version with a long life lithium battery which will last up to five years. For analog sensors, a 4 - 20mA loop powered version is available as well. A real sensor supply is offered with the 24V AC/DC or 115 - 230V AC power supply option.

Hazardous area
For hazardous area applications, this model has been ATEX, IECEx and CSA certified Intrinsically Safe for gas and dust applications, with an allowed operational temperature of -40°C to +70°C (-40°F to +158°F). FM certification is expected to be available in 2009. A flame proof enclosure with ATEX certification offers the rating II 2 GD EEx d IIB T5.

Enclosures
Various types of enclosures can be selected, all ATEX, IECEx and CSA approved. As standard the F012 is supplied in an GRP panel mount enclosure, which can be converted to an IP67 / NEMA 4X GRP field mount enclosure by the addition of a back case. Most popular is our aluminum field mount enclosure with IP67 / NEMA 4X rating. Both European or U.S. cable gland entry threads are available.

Overview application F012

Flowmeter input

Flowmeter input

2
**Dimensions enclosures**  
*Aluminum & GRP panel mount enclosure*

- **HB & HC enclosures**
- **Panel cut-out**

**Aluminum & GRP field / wall mount enclosures**

**Terminal connections power supply**  
**PB/PC - PD - PL - PX**

<table>
<thead>
<tr>
<th>FLOWMETER INPUT</th>
<th>POWER SUPPLY</th>
<th>BACKLIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>P coil</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>P: reed switch / NPN</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>P: active signal</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>P: namur</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>A: (0)4 - 20mA</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>P: coil</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>P: active signal</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>U: 0 - 10V</td>
<td>~</td>
<td>~</td>
</tr>
</tbody>
</table>

- **POWER SUPPLY**
  - **PB/PC**: battery powered
  - **PX** is also available: if an external supply is connected, the battery supply will be switched off / on automatically.

**Terminal connections power supply**  
**PF - PM**

<table>
<thead>
<tr>
<th>POWER SUPPLY</th>
<th>FLOWMETER INPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>GND 1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>P coil</td>
<td>~</td>
</tr>
<tr>
<td>P: reed switch / NPN</td>
<td>~</td>
</tr>
<tr>
<td>P: active signal</td>
<td>~</td>
</tr>
<tr>
<td>A: (0)4 - 20mA</td>
<td>~</td>
</tr>
<tr>
<td>P: coil</td>
<td>~</td>
</tr>
<tr>
<td>P: PNP</td>
<td>~</td>
</tr>
<tr>
<td>P: active signal</td>
<td>~</td>
</tr>
<tr>
<td>A: (0)4 - 20mA</td>
<td>~</td>
</tr>
<tr>
<td>U: 0 - 10V</td>
<td>~</td>
</tr>
</tbody>
</table>

- **POWER SUPPLY**
  - **PF**: 24V AC
  - **PM**: 115 - 230V AC
  - **PF**: 24V DC

- **FLOWMETER INPUT**
  - **PF**: 24V AC
  - **PM**: 115 - 230V AC
  - **PF**: 24V DC

- **BACKLIT**
  - **PF**: 24V AC
  - **PM**: 115 - 230V AC

**铝制与GRP面板安装外壳**

- **HB & HC外壳**
- **面板切口**

**铝制与GRP场/墙安装外壳**

**终端连接电源供应**  
**PB/PC - PD - PL - PX**

<table>
<thead>
<tr>
<th>流量计输入</th>
<th>电源供应</th>
<th>背光</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>电源</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>P: 电位开关/PNP</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>P: 活动信号</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>P: namur</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>A: (0)4 - 20mA</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>电源</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>P: 电位开关/PNP</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>P: 活动信号</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>A: (0)4 - 20mA</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>电源</td>
<td>~</td>
<td>~</td>
</tr>
</tbody>
</table>

- **电源供应**
  - **PB/PC**: 电池供电
  - **PX** 也可用：如果连接外部电源，电池电源将自动切换关开。

**铝制与GRP场/墙安装外壳**

- **HA & HD**
- **HM & HE**
- **HN & HF**
- **HO & HG**
- **HP & HH**
- **HT & HJ**
- **HU & HK**
- **HZ**

- **铝制**
  - **HA**
  - **HM**
  - **HN**
  - **HP**
  - **HT**
  - **HU**

- **GRP**
  - **HD**
  - **HE**
  - **HF**
  - **HH**
  - **HJ**
  - **HK**

**铝制底座，无孔可用。**
**Typical wiring diagram Fo12-P-PB-(PX)-(ZB)**

- **Type PB:** BATTERY POWERED
- Backlight option: type ZB
  - 20 - 30V DC
  - (not used in this example)

- Power supply type PX:
  - 8 - 30V DC
  - (not used in this example)

- **Flowmeter input type P:** pulse

* Sensor supply voltage for pulse flowmeter type P:
  - Terminal 3: 1.2 / 3.2V DC.

* Sensor supply voltage for analog flowmeter type A / U:
  - Terminal 3: not available.

---

**Typical wiring diagram Fo12-A-PX-ZB**

- **Type PX:** BASIC 8 - 30V DC POWER SUPPLY (STANDARD)

- Backlight option: type ZB
  - 20 - 30V DC

- Power supply type PX:
  - 8 - 30V DC

- **Flowmeter input type A:**
  - (0)4 - 20mA

* Sensor supply voltage for pulse flowmeter type P:
  - Terminal 3: 1.2 / 3.2V DC.

* Sensor supply voltage for analog flowmeter type A / U:
  - Terminal 3: not available.

---

**Typical wiring diagram Fo12-A-PL-ZB**

- **Type PL:** INPUT LOOP POWERED

- Backlight option: type ZB
  - 20 - 30V DC

- Power supply type PL:
  - 8 - 30V DC

- **Flowmeter input type A - PL:**
  - Input loop powered 4 - 20mA

Sensor supply: sensor is externally powered.

---

**Typical wiring diagram Fo12-P-PD-ZB**

- **Type PD:** 16 - 30V DC POWER SUPPLY

- Backlight option: type ZB
  - 20 - 30V DC

- Power supply type PD:
  - 16 - 30V DC

- **Flowmeter input type P:** pulse

* Sensor supply voltage for pulse flowmeter type P:
  - Terminal 3: 1.2 / 3.2V DC. Terminal 6 with type PD: 8.2V DC.

* Sensor supply voltage for analog flowmeter type A / U:
  - Terminal 3: not available. Terminal 6 with type PD: voltage as connected to terminal 5 (internally linked).
**Typical wiring diagram F012-P-PF-ZB**

**Type PF:**
24V AC / DC POWER SUPPLY

Backlight option: type ZB
Internally powered.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Main supply</td>
</tr>
<tr>
<td>2</td>
<td>Power supply type PF: 8 - 24V AC / DC</td>
</tr>
<tr>
<td>5</td>
<td>Earth</td>
</tr>
<tr>
<td>6</td>
<td>Supply</td>
</tr>
<tr>
<td>7</td>
<td>Flowmeter input type P: pulse</td>
</tr>
<tr>
<td>0</td>
<td>Common ground</td>
</tr>
</tbody>
</table>

* Sensor supply voltage for pulse flowmeter type P:
  Terminal 7: 1.2 / 3.2 / 8.2 / 12 / 24V DC.

* Sensor supply voltage for analog flowmeter type A / U:
  Terminal 7: 8.2 / 12 / 24V DC.

**Typical wiring diagram F012-A-PF-ZB**

**Type PF:**
24V AC / DC POWER SUPPLY

Backlight option: type ZB
Internally powered.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Main supply</td>
</tr>
<tr>
<td>2</td>
<td>Power supply type PF: 8 - 24V AC / DC</td>
</tr>
<tr>
<td>5</td>
<td>Earth</td>
</tr>
<tr>
<td>6</td>
<td>Supply</td>
</tr>
<tr>
<td>7</td>
<td>Flowmeter input type A: (0)4 - 20mA</td>
</tr>
<tr>
<td>0</td>
<td>Common ground</td>
</tr>
</tbody>
</table>

* Sensor supply voltage for pulse flowmeter type P:
  Terminal 7: 1.2 / 3.2 / 8.2 / 12 / 24V DC.

* Sensor supply voltage for analog flowmeter type A / U:
  Terminal 7: 8.2 / 12 / 24V DC.

**Typical wiring diagram F012-A-PM-ZB**

**Type PM:**
115 - 230V AC POWER SUPPLY

Backlight option: type ZB
Internally powered.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Main supply</td>
</tr>
<tr>
<td>2</td>
<td>Power supply type PM: 115 - 230V AC</td>
</tr>
<tr>
<td>5</td>
<td>Earth</td>
</tr>
<tr>
<td>6</td>
<td>Supply</td>
</tr>
<tr>
<td>7</td>
<td>Flowmeter input type P: pulse</td>
</tr>
<tr>
<td>0</td>
<td>Common ground</td>
</tr>
</tbody>
</table>

* Sensor supply voltage for pulse flowmeter type P:
  Terminal 7: 1.2 / 3.2 / 8.2 / 12 / 24V DC.

* Sensor supply voltage for analog flowmeter type A / U:
  Terminal 7: 8.2 / 12 / 24V DC.

**Typical wiring diagram F012-P-PM-ZB**

**Type PM:**
115 - 230V AC POWER SUPPLY

Backlight option: type ZB
Internally powered.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Main supply</td>
</tr>
<tr>
<td>2</td>
<td>Power supply type PM: 115 - 230V AC</td>
</tr>
<tr>
<td>5</td>
<td>Earth</td>
</tr>
<tr>
<td>6</td>
<td>Supply</td>
</tr>
<tr>
<td>7</td>
<td>Flowmeter input type P: pulse</td>
</tr>
<tr>
<td>0</td>
<td>Common ground</td>
</tr>
</tbody>
</table>

* Sensor supply voltage for pulse flowmeter type P:
  Terminal 7: 1.2 / 3.2 / 8.2 / 12 / 24V DC.

* Sensor supply voltage for analog flowmeter type A / U:
  Terminal 7: 8.2 / 12 / 24V DC.
**Hazardous area applications**

The F012-XI has been certified according ATEX and IECEx by KEMA and according CSA c-us for use in Intrinsically Safe applications with an ambient temperature of -40°C to +70°C (-40°F to +158°F).

- The ATEX markings for gas and dust applications are:
  - II 1 G Ex ia IIC T4
  - II 1 D Ex iaD 20 IP 65/67 T100 °C.
- The IECEx markings for gas and dust applications are: Ga Ex ia IIC T4 and Ex iaD 20 IP 65/67 T100 °C.
- The CSA c-us markings are: Class I/II/III, Division 1, Groups A, B, C, D, E, F, G, Temperature class T4 and Class I, Zone 0, AEx ia IIC T4.
- FM approval is expected to become available in 2009.

It is allowed to connect up to three I.S. power supplies to power the unit, sensor and backlight. The F012-PD-XI offers a 8.2V DC sensor supply to power e.g. a Namur sensor or the input voltage to power an analog sensor. An ATEX approved flame proof enclosure with rating II 2 GD EEx d IIB T5 is available as well. Please contact your supplier for further details.

**Certificate of conformity KEMA 05ATEX1168 X**
- IECEx KEM 08.0006X
- CSA.08.2059461 X

---

**Configuration example IIA - IIB and IIC**

Fo12-P-PC-(PX)-XI-(ZB) - Battery powered unit

---

**TERMINAL CONNECTORS**

<table>
<thead>
<tr>
<th>F0-series</th>
<th>Hazardous area</th>
<th>Safe area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Terminal 1</strong></td>
<td>Common ground</td>
<td>Supply backlight</td>
</tr>
<tr>
<td><strong>Terminal 2</strong></td>
<td>Common ground</td>
<td>Main supply</td>
</tr>
<tr>
<td><strong>Terminal 3</strong></td>
<td>Circuit depends on type of signal</td>
<td>Supply backlight</td>
</tr>
</tbody>
</table>

**Backlight option:** type ZB
- Not used in this example.

**Basic power supply type PX:**
- 8 - 30V DC
- Not used in this example.

**I.S. flowmeter input type:** P pulse

---

* Sensor supply voltage for pulse flowmeter type P: Terminal 3: 1.2 / 3.2V DC. Please note: type PX may be used in combination with the battery (type PC). PX will power the unit; the battery will be disabled automatically till power is disconnected.
**Configuration example IIA - IIB and IIC - F012-P-PX-XI-(ZB) - Basic power supply 8 - 30V DC**

```
TERMINAL CONNECTORS
F0 - series

Supply backlight

Common ground

Main supply

Power supply type PX: 8 - 30V DC

Backlight option: type ZB
(not used in this example).

HAZARDOUS AREA

SAFE AREA

I.S. flowmeter
input type: P

pulse

Circuit depends on
type of signal

Common ground

Common ground

Main supply

Power supply
For example
MTL5025

Uo = max. 30V
Io = max. 200mA
Po = max. 1.2W

Note: above values are safety values.
Consult the technical specification for operational values.

* Sensor supply voltage for pulse type P: Terminal 3: 1.2V / 3.2V DC.
Please note: type PX may be used in combination with the battery (type PC). PX will power the unit; the battery will be disabled automatically till power is disconnected.

**Configuration example IIA - IIB and IIC - F012-P-PX-XI-ZB - Basic power supply 8 - 30V DC**

```
TERMINAL CONNECTORS
F0 - series

Supply backlight

Common ground

Main supply

Power supply type PX: 8 - 30V DC

Backlight option: type ZB

HAZARDOUS AREA

SAFE AREA

I.S. flowmeter
input type: P

pulse

Circuit depends on
type of signal

Common ground

Common ground

Main supply

Power supply
For example
MTL5025

Uo = max. 30V
Io = max. 200mA
Po = max. 0.75W

Note: above values are safety values.
Consult the technical specification for operational values.

* Sensor supply voltage for pulse type P: Terminal 3: 1.2V / 3.2V DC.
Please note: type PX may be used in combination with the battery (type PC). PX will power the unit; the battery will be disabled automatically till power is disconnected.
Configuration example IIA - IIB and IIC - F012-P-PD-XI-ZB - Power supply 16 - 30V DC

- Sensor supply voltage for pulse type P: Terminal 3: 1.2V / 3.2V DC, Terminal 6: 8.2V DC.
- Please note: type PD may be used in combination with the battery (type PC). PD will power the unit; the battery will be disabled automatically till power is disconnected.

Configuration example IIA - IIB and IIC - F012-A-PD-XI-ZB - Power supply 16 - 30V DC

- Sensor supply voltage for analog flowmeter type A / U: Terminal 6: as input voltage terminal 5 (internally linked).
- Please note: type PD may be used in combination with the battery (type PC). PD will power the unit; the battery will be disabled automatically till power is disconnected.
**Configuration example IIA - IIB and IIC - F012-A-PL-XI-ZB - Input loop powered**

*Sensor supply is not available: unit is input loop powered (type PL). Please note: type PL may be used in combination with the battery (type PC). PL will power the unit; the battery will be disabled automatically till power is disconnected.*

**Configuration example IIA - IIB and IIC - F012-A-PX-XI-ZB - Basic power supply 8 - 30V DC**

*Sensor supply voltage for analog flowmeter type A / U: not available in this example. Please note: type PX may be used in combination with the battery (type PC). PX will power the unit; the battery will be disabled automatically till power is disconnected.*
### Technical specification

#### Display

**General**

<table>
<thead>
<tr>
<th>Type</th>
<th>High intensity reflective numeric and alphanumeric LCD, UV-resistant.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>90 x 40mm (3.5” x 1.6”).</td>
</tr>
<tr>
<td>Digits</td>
<td>Seven 17mm (0.67”) and eleven 8mm (0.31”) digits. Various symbols and measuring units.</td>
</tr>
<tr>
<td>Refresh rate</td>
<td>User definable: 8 times/sec. - 30 secs - off.</td>
</tr>
<tr>
<td>Option ZB</td>
<td>Transflective LCD with bi-color LED-backlight; green / amber. Intensity and color selected through the keyboard. Good readings in full sunlight and darkness. Also available Intrinsically Safe.</td>
</tr>
</tbody>
</table>

#### Operating temperature

| Standard unit | -40°C to +80°C (-40°F to +178°F). |
| Intrinsically Safe | -40°C to +70°C (-40°F to +158°F). |

#### Power requirements

| Type PB | Long life Lithium battery - life-time depends upon settings and configuration - up to 5 years. |
| Type PC | Intrinsically Safe long life lithium battery - life-time depends upon settings and configuration - up to 5 years. |
| Type PD | 16 - 30V DC. Power consumption max. 1 Watt. |
| Type PF | 24V AC / DC ± 10%. Power consumption max. 15 Watt. |
| Type PL | Input loop powered from sensor signal 4 - 20mA (type A). |
| Type PM | 115 - 230V AC ± 10%. Power consumption max. 15 Watt. |
| Type PX | 8 - 30V DC. Power consumption max. 0.3 Watt. |
| Type ZB | 20 - 30V DC. Power consumption max. 1 Watt. |
| Note PB/PC/PM | The total consumption of the sensor and backlight type ZB may not exceed 400mA @ 24V DC. |
| Note PF/PM | For Intrinsically Safe applications, consult the safety values in the certificate. |

#### Sensor excitation

| Type PB/PC/PX | 3.2V DC for pulse signals and 1.2V DC for coil pick-up. |
| Note | This is not a real sensor supply. Only suitable for sensors with a very low power consumption like coils (sine wave) and reed-switches. |
| Type PD | for pulse signals: 1.2 / 3.2 / 8.2V DC - max. 5mA@8.2V DC. For analog signals, the sensor supply voltage is according to the power supply voltage connected. |
| Type PF / PM | With pulse input: 1.2 / 3.2 / 8.2 / 12 / 24V DC - max. 400mA @ 24V DC. |
| With analog input: 8.2 / 12 / 24V DC - max. 400mA @ 24V DC. |

#### Terminal connections

| Type | Removable plug-in terminal strip. Wire max. 1.5mm² and 2.5mm². |

#### Data protection

| Type | EEPROM backup of all settings. Backup of running totals every minute. Data retention at least 10 years. |
| Pass-code | Configuration settings can be pass-code protected. |

### Casing

#### General

| Window | Polycarbonate window. |
| Sealing | Silicone. |
| Control keys | Three industrial micro-switch keys. UV-resistant silicone keypad. |

#### Aluminum wall / field mount enclosures

**General**

| Die-cast aluminum wall/field mount enclosure IP67 / NEMA 4X, UV-resistant coating. |
| Dimensions | 130 x 120 x 75mm (5.12” x 4.72” x 2.95”) - W x H x D. |
| Weight | 1100 gr. |
| Type HA | Cable entry: 2 x PG9 and 1 x M20. |
| Type HM | Cable entry: 2 x M16 and 1 x M20. |
| Type HN | Cable entry: 1 x M20. |
| Type HT | Cable entry: 1 x 1/2” NPT. |
| Type HU | Cable entry: 3 x 1/2” NPT. |
| Type HZ | Cable entry: no holes. |

#### GRP wall / field mount enclosures

**General**

| GRP wall/field mount enclosure IP67 / NEMA 4X, UV-resistant and flame retardant. |
| Dimensions | 130 x 120 x 75mm (5.12” x 4.72” x 2.95”) - W x H x D. |
| Weight | 600 gr. |
| Type HD | Cable entry: no holes. |
| Type HE | Cable entry: 2 x Ø 16mm and 1 x Ø 20mm. |
| Type HF | Cable entry: 1 x Ø 22mm (7/8”). |
| Type HG | Cable entry: 2 x Ø 20mm. |
| Type HH | Cable entry: 6 x Ø 12mm. |
| Type HJ | Cable entry: 3 x Ø 22mm (7/8”). |
| Type HK | Flat bottom, cable entry: no holes. |

#### Panel mount enclosures

**General**

| Die-cast aluminum panel mount enclosure IP65 / NEMA 4. |
| Dimensions | 130 x 120 x 60mm (5.12” x 4.72” x 2.36”) - W x H x D. |
| Panel cut-out | 115 x 98mm (4.53” x 3.86”) L x H. |
| Type HB | Cable entry: no holes. |
| Type HC | GRP panel mount enclosure IP65 / NEMA 4, UV-resistant and flame retardant. |
| Weight | 450 gr. |

#### ABS wall / field mount enclosures

**General**

| Silicone free ABS wall/field mount enclosure IP65 with EPDM and PE sealings. UV-resistant polyester keypad (old HD enclosure). |
| Dimensions | 130 x 114 x 71mm (5.1” x 4.5” x 2.8”) - W x H x D. |
| Weight | 450 gr. |
| Type HS | Cable entry: no holes. |

### Hazardous area

#### Intrinsically Safe

| ATEX certification | II 1 G Ex ia IIC T4. |
| IECEx certification | Ex iaD 20 IP 65 / 67 T 100 °C. |
| CSA c-us certification | Intrinsically Safe for Class I/II/III, Div. 1, Group A, B, C, D, E, F, G, Temp. class T4 US and Class I, Zone 0. |
| Ambient | -40°C to +70°C / -40°F to +158°F. |
**Explosion proof**

ATEX certification [II 2 GD Ex d IIB T5.]

Type XF Dimensions of enclosure: 300 x 250 x 200mm (11.8" x 9.9" x 7.9") L x H x D.

Weight Appr. 15kg.

**Environment**


**Signal input**

**Flowmeter sensor**

Type P Coil / sine wave (minimum 20mVpp or 80mVpp - sensitivity selectable), NPN/PNP, open collector, reed-switch, Namur, active pulse signals 8 - 12 and 24V DC.

Frequency Minimum 0Hz - maximum 7kHz for total and flow rate. Maximum frequency depends on signal type and internal low-pass filter. E.g. reed switch with low-pass filter: max. frequency 120Hz.

K-Factor 0.000000 - 9,999,999 with variable decimal position.

Low-pass filter Available for all pulse signals.

Option ZF coil sensitivity 10mVpp.

Option ZG coil sensitivity 5mVpp.

Type A (0)4 - 20mA. Analog input signal can be scaled to any desired range within 0 - 20mA.

Type U 0 - 10V DC. Analog input signal can be scaled to any desired range within 0 - 10V DC.

Accuracy Resolution: 16 bit. Error < 0.01mA / ± 0.05% FS. Low level cut-off programmable.

Span 0.001 / 999,999 with variable decimal position.

Update time Four times per second.

Voltage drop Type A: max. 2V DC @ 20mA.

Voltage drop Type A - PL (loop powered): max. 2.6V DC @ 20mA.

Load impedance Type U: 3kΩ.

Relationship Linear and square root calculation.

Note For signal type A and U: external power to sensor is required; e.g. type PD.

**Operational**

**Operator functions**

Displayed • Flow rate and / or total.

functions • Total and accumulated total.

• Total can be reset to zero by pressing the CLEAR-key twice.

**Total**

Digits 7 digits.

Units L, m³, GAL, USGAL, KG, lb, bbl, no unit.

Decimals 0 - 1 - 2 or 3.

Note Total can be reset to zero.

**Accumulated total**

Digits 11 digits.

Units / decimals According to selection for total.

Note Can not be reset to zero.

**Flow rate**

Digits 7 digits.

Units mL, L, m³, Gallons, KG, Ton, lb, bl, cf, RND, ft³, scf, Nm³, NL, igal - no units.

Decimals 0 - 1 - 2 or 3.

Time units /sec - /min - /hr - /day.

**Accessories**

**Mounting accessories**

ACF02 Stainless steel wall mounting kit.

ACF05 Stainless steel pipe mounting kit (worm gear clamps not included).

ACF06 Two stainless steel worm gear clamps Ø 44 - 56mm.

ACF07 Two stainless steel worm gear clamps Ø 58 - 75mm.

ACF08 Two stainless steel worm gear clamps Ø 77 - 95mm.

ACF09 Two stainless steel worm gear clamps Ø 106 - 138mm.

ACF10 Customized Grevopal tagplates for ACF02 and ACF05, including stainless steel screws. Dimension: 95mm x 12.5mm (3.75" x 0.50").

**Cable gland accessories**

ACF20 For HA enclosure, includes O-rings.

ACF25 For HE enclosure, includes locknuts and O-rings.

ACF26 For HF enclosure, includes locknuts and O-rings.

ACF27 For HG enclosure, includes locknuts and O-rings.

ACF28 For HH enclosure, includes locknuts and O-rings.

ACF29 For HJ enclosure, includes locknuts and O-rings.

ACF32 For HM enclosure, includes O-rings.

ACF33 For HN enclosure, includes O-rings.

ACF34 For HO enclosure, includes O-rings.

ACF35 For HP enclosure, includes O-rings.

ACF39 For HJ enclosure, includes locknuts and O-rings.

ACF40 For HU enclosure, includes O-rings.

**Blind plug accessories**

ACF50 For HA enclosure, includes O-rings.

ACF55 For HE enclosure, includes locknuts and O-rings.

ACF56 For HF enclosure, includes locknuts and O-rings.

ACF57 For HG enclosure, includes locknuts and O-rings.

ACF58 For HH enclosure, includes locknuts and O-rings.

ACF59 For HJ enclosure, includes locknuts and O-rings.

ACF62 For HM enclosure, includes O-rings.

ACF63 For HN enclosure, includes O-rings.

ACF64 For HO enclosure, includes O-rings.

ACF65 For HP enclosure, includes O-rings.

ACF69 For HJ enclosure, includes locknuts and O-rings.

ACF70 For HU enclosure, includes O-rings.

**Display example - 90 x 40mm (3.5” x 1.6”)**
### Ordering information

**Standard configuration:** F012-P-HC-PX-XX-ZX.

<table>
<thead>
<tr>
<th>Ordering information:</th>
<th>F012</th>
<th>-</th>
<th>-H</th>
<th>-P</th>
<th>-X</th>
<th>-Z</th>
</tr>
</thead>
</table>

#### Flowmeter Sensor input signal
- **A**: $(0)4 - 20mA$ input.
- **P**: Pulse input: coil, npn, pnp, namur, reed-switch.
- **U**: 0 - 10V DC input.

#### Panel mount enclosures - IP65 / NEMA4
- **HB**: Aluminum enclosure.
- **HC**: GRP enclosure.

#### GRP field / wall mount enclosures - IP67 / NEMA4X
- **HD**: Cable entry: no holes.
- **HE**: Cable entry: 2 x $\varnothing$ 16mm & 1 x $\varnothing$ 20mm.
- **HF**: Cable entry: 1 x $\varnothing$ 22mm ($7/8")$.
- **HG**: Cable entry: 2 x $\varnothing$ 20mm.
- **HH**: Cable entry: 6 x $\varnothing$ 12mm.
- **HJ**: Cable entry: 3 x $\varnothing$ 22mm ($7/8")$.
- **HK**: Flat bottom, cable entry: no holes.

#### Aluminum field / wall mount enclosures - IP67 / NEMA4X
- **HA**: Cable entry: 2 x PG9 + 1 x M20.
- **HM**: Cable entry: 2 x M16 + 1 x M20.
- **HN**: Cable entry: 1 x M20.
- **HO**: Cable entry: 2 x M20.
- **HP**: Cable entry: 6 x M12.
- **HT**: Cable entry: 1 x $\frac{1}{2}$"NPT.
- **HU**: Cable entry: 3 x $\frac{1}{2}$"NPT.
- **HZ**: Cable entry: no holes.

#### ABS field / wall mount enclosures
- **HS**: Silicone free ABS field enclosure IP65 – Cable entry: no holes (old HD enclosure).

#### Power supply
- **PB**: Lithium battery powered.
- **PC**: Lithium battery powered - Intrinsically Safe.
- **PD**: 16 - 30V DC + sensor supply.
- **PF**: 24V AC / DC + sensor supply.
- **PL**: Input loop powered from sensor signal 4 - 20mA (type A).
- **PM**: 115 - 230V AC + sensor supply.
- **PX**: Basic power supply 8 - 30V DC (no real sensor supply).

#### Hazardous area
- **XI**: Intrinsically Safe.
- **XF**: EExd enclosure - 3 keys.
- **XX**: Safe area only.

#### Other options
- **ZB**: Backlight.
- **ZF**: Coil input 10mVpp.
- **ZG**: Coil input 5mVpp.
- **ZX**: No options.

The bold marked text contains the standard configuration.

@ Available Intrinsically Safe.