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 Ex I GD EEx ia IIC T4 T100°C.
- Explosion/flame proof Ex 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 can not be reset to zero. A wide selection of options further enhance this models capabilities, including Intrinsic 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 areas
For hazardous area applications, this model has been ATEX certified Intrinsically Safe II 1 GD EEx ia IIC T4 T100°C with an allowed operational temperature of -40°C to +70°C (-40°F to +158°F). IEC, CSA and FM certification is expected to be available in May 2006. 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 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
Dimensions enclosures
Aluminum & GRP panel mount enclosure

Aluminum & GRP field / wall mount enclosures

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

Backlight
FB: 20 - 30V DC

FLOWMETER INPUT
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
**Typical wiring diagram F012-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:**
- 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).

**Common ground**
- 0

**Typical wiring diagram F012-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 - 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.

**Common ground**
- 0

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

**Type PL:**
- **Input Loop Powered**

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

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

**Sensor supply:**
- Sensor is externally powered.

**Common ground**
- 0

**Typical wiring diagram F012-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**

**TERMINAL CONNECTORS**

F0 - series

**Type PF:**

24V AC / DC POWER SUPPLY

- Backlight option: type ZB
  - Internally powered.

- Supply *

- Signal

- Common ground

- Flowmeter input:
  - type P: pulse

- Main supply: 24V AC

- Power supply type PF:
  - 8 - 24V AC / DC

- Earth

* 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**

**TERMINAL CONNECTORS**

F0 - series

**Type PF:**

24V AC / DC POWER SUPPLY

- Backlight option: type ZB
  - Internally powered.

- Supply *

- Signal

- Common ground

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

- Main supply: 24V DC

- Power supply type PF:
  - 8 - 24V AC / DC

- Earth

* 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**

**TERMINAL CONNECTORS**

F0 - series

**Type PM:**

115 - 230V AC POWER SUPPLY

- Backlight option: type ZB
  - Internally powered.

- Supply *

- Signal

- Common ground

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

- Main supply: 115 - 230V AC

- Power supply type PM:
  - 115 - 230V AC

- Earth

* 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**

**TERMINAL CONNECTORS**

F0 - series

**Type PM:**

115 - 230V AC POWER SUPPLY

- Backlight option: type ZB
  - Internally powered.

- Supply *

- Signal

- Common ground

- Flowmeter input:
  - type P: pulse

- Main supply: 115 - 230V AC

- Power supply type PM:
  - 115 - 230V AC

- Earth

* 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 ATEX approved by KEMA for use in Intrinsically Safe applications. It is approved according to II 1 GD EEx ia IIC T4 T100°C for gas and dust applications with an operational temperature range of -40°C to +70°C (-40°F to +158°F). IEC, CSA and FM approvals are expected to become available in May 2006. 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

Configuration example IIA - IIB and IIC
F012-P-PC-(PX)-XI-(ZB) - Battery powered unit

* 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**

<table>
<thead>
<tr>
<th>F0 - series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common ground</td>
</tr>
<tr>
<td>Main supply</td>
</tr>
<tr>
<td>Common ground</td>
</tr>
</tbody>
</table>

**HAZARDOUS AREA**

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

**SAFE AREA**

Power supply type PX: 8 - 30V DC

- + Uc = max. 30V
- lo = max. 200mA
- Pu = max. 1,2W

Notes:
- 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.

*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**

<table>
<thead>
<tr>
<th>F0 - series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common ground</td>
</tr>
<tr>
<td>Main supply</td>
</tr>
<tr>
<td>Common ground</td>
</tr>
</tbody>
</table>

**HAZARDOUS AREA**

Backlight option: type ZB

**SAFE AREA**

Power supply type PX: 8 - 30V DC

- + Uc = max. 30V
- lo = max. 200mA
- Pu = max. 1,2W

Notes:
- 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.

*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**

**TERMINAL CONNECTORS**
- F0 - series

**HAZARDOUS AREA**
- Supply backlight
- Common ground
- Signal

**SAFE AREA**
- + Uo = max. 30V
- Io = max. 200mA
- Pu = max. 0.75W

For example MTL5025

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

*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**

**TERMINAL CONNECTORS**
- F0 - series

**HAZARDOUS AREA**
- Supply backlight
- Common ground
- Signal

**SAFE AREA**
- + Uo = max. 30V
- Io = max. 200mA
- Pu = max. 0.75W

For example MTL5025

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

- Power supply type PX: 8 - 30V DC
- I.S. flowmeter input - type A: (0)4 - 20mA
- Backlight option: type ZB

*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><strong>Dimensions</strong></td>
<td>90 x 40mm (3.5&quot; x 1.6&quot;).</td>
</tr>
<tr>
<td><strong>Digits</strong></td>
<td>Seven 17mm (0.67&quot;) and eleven 8mm (0.31&quot;) digits. Various symbols and measuring units.</td>
</tr>
<tr>
<td><strong>Refresh rate</strong></td>
<td>User definable: 8 times/sec. - 30 secs - off.</td>
</tr>
<tr>
<td><strong>Option ZB</strong></td>
<td>Transflective LCD with bi-color LED-backlight; green / amber. Intensitiy and color selected trough 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. With type PF / PM: internally powered. |
| **Note** | Not available Intrinsically Safe. |
| **Note** | The total consumption of the sensor and backlight type ZB may not exceed 400mA @ 24V DC. |
| **Note** | 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 and 24V DC - max. 400mA @ 24V DC. With analog input: 8.2 - 12 and 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. |
| **Option ZS** | Silicone free ABS enclosure with EPDM and PE sealings. UV-resistant polyester keypad. |
| **Note** | This option comes with type HD only. |

### Aluminum wall / field mount enclosures

**General**

| Die-cast aluminum wall/field mount enclosure IP67 / NEMA 4X with 2-component UV-resistant coating. |
| **Dimensions** | 130 x 120 x 75mm (5.12" x 4.72" x 2.95") - W x H x D. |
| **Weight** | 1064 gr. |
| **Type HA** | Cable entry: 2 x PG9 and 1 x M20. |
| **Type HM** | Cable entry: 2 x M16 and 1 x M20. |
| **Type MN** | Cable entry: 1 x M20. |
| **Type MO** | Cable entry: 2 x M20. |
| **Type HP** | Cable entry: 6 x M12. |
| **Type HT** | Cable entry: 1 x 1½” NPT. |
| **Type HU** | Cable entry: 3 x 1½” 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** | 566 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 (0.866”). |
| **Type HG** | Cable entry: 2 x Ø 20mm. |
| **Type HH** | Cable entry: 6 x Ø 12mm. |

### Panel mount enclosures

**Dimensions**

| Die-cast aluminum panel mount enclosure IP65 / NEMA 4. |
| **Panel cut-out** | 115 x 98mm (4.53” x 3.86”) - L x H. |
| **Type HB** | Die-cast aluminum panel mount enclosure IP65 / NEMA 4. |
| **Weight** | 570 gr. |
| **Type HC** | GRP panel mount enclosure IP65 / NEMA 4, UV-resistant and flame retardant. |
| **Weight** | 422 gr. |
### Hazardous area

**Intrinsically Safe**

<table>
<thead>
<tr>
<th>ATEX certification</th>
<th>CSA C-US/IECEx certification</th>
<th>Ambient</th>
</tr>
</thead>
<tbody>
<tr>
<td>II 1 GD EEx ia IIC T4 T100°C</td>
<td>IEC, CSA and FM approvals are expected to become available in May 2006.</td>
<td>-40°C to +70°C / -40° to +158°F.</td>
</tr>
</tbody>
</table>

**Explosion proof**

<table>
<thead>
<tr>
<th>ATEX certification</th>
<th>Type XF</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>II 2 GD EEx d IIB T5.</td>
<td>Dimensions of enclosure: 300 x 250 x 200mm (11.8&quot; x 9.9&quot; x 7.9&quot;) L x H x D.</td>
<td>Appr. 15kg.</td>
</tr>
</tbody>
</table>

**Environment**


### Signal input

**Flowmeter sensor**

<table>
<thead>
<tr>
<th>Type</th>
<th>Coil / sine wave (minimum 20mVpp or 80mVpp - sensitivity selectable), NPN/PNP, open collector, reed-switch, Namur, active pulse signals 8 - 12 and 24V DC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>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.</td>
</tr>
</tbody>
</table>

**K-Factor**

| Option ZF | coil sensitivity 1omVpp. |
| Option ZG | coil sensitivity 5mVpp. |
| Type A | (n)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. |
| 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**

<table>
<thead>
<tr>
<th>Displayed functions</th>
<th>Total and accumulated total.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total can be reset to zero by pressing the CLEAR-key twice.</td>
<td></td>
</tr>
</tbody>
</table>

**Total**

| Digits | 7 digits. |
| Units | L, m³, GAL, USGAL, KG, lb, bbl, no unit. |
| Decimals | 0 - 1 - 2 or 3. |
| Note | Can not 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. |

**Display example - 90 x 40mm (3.5" x 1.6")**

```
TOTAL 1397853 m³
R L/MIN 1853.9
```

**Error**

<0.01mA /
± 0.05% FS.
Ordering information

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

**Ordering information:**

<table>
<thead>
<tr>
<th>F012</th>
<th>-</th>
<th>H</th>
<th>-</th>
<th>P</th>
<th>-</th>
<th>X</th>
<th>-</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 16mm + 1 x 20mm.
- **HF** Cable entry: 1 x 22mm (0.866").
- **HG** Cable entry: 2 x 20mm.
- **HH** Cable entry: 6 x 12mm.

**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 1/2"NPT.
- **HU** Cable entry: 3 x 1/2"NPT.
- **HZ** Cable entry: no holes.

**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.

**Safe area only.**

**Other options**

- **ZB** Backlight.
- **ZF** Coil input 10mVpp.
- **ZG** Coil input 5mVpp.
- **ZS** Silicone free ABS enclosure with EPDM and PE sealings (type HD only).
- **ZX** No options.

The bold marked text contains the standard configuration.

Available Intrinsically Safe.