Features
- Displays instantaneous flow rate and measuring unit.
- Very large 26mm (1”) digits.
- Piegraph indication: ten segments.
- Selectable on-screen engineering units; volumetric or mass.
- Ability to process all types of flowmeter signals.
- Auto backup of all settings.
- Operational temperature -40°C up to +80°C (-40°F up to 178°F).
- Rugged aluminum field mount enclosure IP67/NEMA4X.
- Intrinsically Safe - ATEX, IECEx 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 is required without re-transmission or totalizer functionality. Alternative advanced models: F012 - F013 - F014 - F016 or even more advanced F110 and higher.
General information

Introduction
The F010 is a local indicator to display the actual flow rate. The measuring and time unit to be displayed are simply selected through an alfa-numerical 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, without any sensitive dip-switches or trimmers. A wide selection of options further enhance this model’s capabilities, including Intrinsically Safety for hazardous area applications.

Display
The display has very large 26mm (1”) digits which can be set to show the flow rate and the measuring and time units. As the F010 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 F010 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 F010 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 F010 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 F010
Dimensions enclosures

Aluminum & GRP panel mount enclosure

Aluminum & GRP field / wall mount enclosures

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

Terminal connections power supply PF - PM
Typical wiring diagram F010-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.

**COMMON GROUND**

**Signal**

**TERMINAL CONNECTORS**

F0 - series

Circuit depends on type of signal

Sensor supply: sensor is externally powered.

Typical wiring diagram F010-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: 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.

**COMMON GROUND**

**Signal**

**TERMINAL CONNECTORS**

F0 - series

Circuit depends on type of signal

Sensor supply: sensor is externally powered.

Typical wiring diagram F010-A-PL-ZB

**Type PL: INPUT LOOP POWERED**

Backlight option: type ZB
20 - 30V DC

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

8 - 30V DC

**COMMON GROUND**

**Signal**

**TERMINAL CONNECTORS**

F0 - series

Circuit depends on type of signal

Sensor supply: sensor is externally powered.

Typical wiring diagram F010-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 F010-P-PF-ZB

**TERMINAL CONNECTORS**

**F0 - series**

- **Type PF:**
  - 24V AC / DC POWER SUPPLY
  - Backlight option: type ZB
  - Internally powered.

- Circuit layout: see diagram

- Flowmeter input type P: pulse

- Main supply: 24V AC

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

- Common ground

* 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.

**TERMINAL CONNECTORS**

**F0 - series**

- **Type PM:**
  - 115 - 230V AC POWER SUPPLY
  - Backlight option: type ZB
  - Internally powered.

- Circuit layout: see diagram

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

- Main supply: L1

- Power supply type PM: 115 - 230V AC

- Common ground

* 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 F010-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 T 100 °C.

- The IECEx markings for gas and dust applications are:
  - Ga Ex ia IIC T4
  - 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 F010-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
F010-P-PC-(PX)-XI-(ZB) - Battery powered unit
Configuration example IIA - IIB and IIC - F010-P-PX-XI-(ZB) - Basic power supply 8 - 30V DC

TERMINAL CONNECTORS

**F0** - series

- Supply backlight
- Common ground
- Main supply
- Common ground
- Circuit decade on type of signal
- Signal
- Common ground

HAZARDOUS AREA

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

SAFE AREA

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

I.S. flowmeter

input type: P
pulse

TERMINAL CONNECTORS

**F0** - series

- Supply backlight
- Common ground
- Main supply
- Common ground
- Circuit decade on type of signal
- Signal
- Common ground

HAZARDOUS AREA

I.S. flowmeter

input type: P
pulse

SAFE AREA

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

For example MTL5025

= max. 30V
= max. 150mA
= max. 0.92W

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 - F010-P-PD-XI-ZB - Power supply 16 - 30V DC

TERMINAL CONNECTORS

F0 - series

HAZARDOUS AREA

Common ground

Supply

Common ground

Signal

Circuit depends on type of signal

Configuration example IIA - IIB and IIC - F010-A-PD-XI-ZB - Power supply 16 - 30V DC

TERMINAL CONNECTORS

F0 - series

HAZARDOUS AREA

Common ground

Supply

Common ground

Signal

Circuit depends on type of signal

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, 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.

* 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.

Power supply type PD: 16 - 30V DC

Backlight option: type ZB

I.S. flowmeter input type: P pulse

Power supply type PD: 16 - 30V DC

For example MTL5025

Power supply

For example MTL5025

Note: above values are safety values. Consult the technical specification for operational values.
**Configuration example IIA - IIB and IIC - F010-A-PL-XI-ZB - Input loop powered**

**TERMINAL CONNECTORS**

<table>
<thead>
<tr>
<th>Common ground</th>
<th>Supply backlight</th>
<th>Signal circuit depends on type of signal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**HAZARDOUS AREA**

- I.S. flowmeter input - type A-PL: 4 - 20mA input loop powered.
- **Backlight option: type ZB**

**SAFE AREA**

- **Power supply**
  - $U_0 = \text{max. 30V}$
  - $I_0 = \text{max. 200mA}$
  - $P_0 = \text{max. 0.75W}$

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 - F010-A-PX-XI-ZB - Basic power supply 8 - 30V DC**

**TERMINAL CONNECTORS**

<table>
<thead>
<tr>
<th>Common ground</th>
<th>Supply backlight</th>
<th>Main supply</th>
<th>Signal circuit depends on type of signal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

**HAZARDOUS AREA**

- I.S. flowmeter input - type A-PL: 4 - 20mA input loop powered.
- **Power supply**
  - $U_0 = \text{max. 30V}$
  - $I_0 = \text{max. 200mA}$
  - $P_0 = \text{max. 1.2W}$

For example MTL5025

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

*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” x 1.6”).</td>
</tr>
<tr>
<td><strong>Digits</strong></td>
<td>5½ very large 26mm (1”) digits. Various symbols and measuring units.</td>
</tr>
<tr>
<td><strong>Piegraph</strong></td>
<td>Ten segments - related to the input signal.</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>Transreflective 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. With type PF / PM: internally powered.

**Note PB/PF/PM**: Not available Intrinsically Safe.

**Note PF/PM**: 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.

### Terminal connections

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

### Data protection

- **Type**: EEPROM backup of all settings. 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 with 2-component UV-resistant coating.**

| Dimensions | 330 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 HP** | Cable entry: 6 x M12. |
| **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 | 330 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

| 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** | Die-cast aluminum panel mount enclosure IP65 / NEMA 4. |
| Weight | 600 gr. |
| **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. |

### Display example

- **90 x 40mm (3.5” x 1.6”)**

![Display Example Image]
Hazardous area

Intrinsically Safe

ATEX certification II 1 G Ex ia IIC T4, II 1 D Ex iaD 20 IP 65 / 67 T 100 °C.

IECEx certification Ex iaD 20 IP 65 / 67 T 100 °C.

CSA c-us Intrinsically Safe for Class I/II/III, Div. 1, Groups A, B, C, D, E, F, G, Temp. class T4 and Class I, Zone 0, AEx ia IIC T4.

Ambient -40°C to +70°C / -40° to +158°F.

Explosion proof

ATEX certification II 2 GD EEx 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 0.00001 - 199,999 with variable decimal position.

Low-pass filter Available for all pulse signals. Option ZF coil sensitivity 0.001mVpp.

Type A (o)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 0.00001 - 199,999 with variable decimal position. Update time Four times per second.

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

Voltage drop Type U: 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.

Flow rate

Digits 5½ 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.

Operational

Operator functions

Displayed functions • Flow rate.

• Measuring and time units.

Intrinsically Safe isolators accessories

ACG01 MTL5011B - One channel pulse or switch output transfer from hazardous area to safe area, including power supply.

ACG02 MTL5025 - One channel power supply from safe area to hazardous area (e.g. to power the unit with PD or to power a switching or analog device in hazardous area).

ACG03 MTL5042 - One channel 4 - 20mA repeater from hazardous area to safe area, including power supply.

ACG04 MTL 5051 - Bi-direction serial-data-isolator (for Modbus communication).

ACG05 MTL5018 - Two channel pulse or switch output transfer from hazardous area to safe area, including power supply.

ACG06 MTL5012 - One channel pulse or switch output transfer from hazardous area to safe area, including power supply.

ACG07 MTL5045 - One channel isolated driver bringing 4 - 20mA from safe area to hazardous area, including power supply.

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. Dimensions: 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 HT enclosure, includes 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.

ACF64 For HO enclosure, includes O-rings.

ACF65 For HP enclosure, includes O-rings.

ACF69 For HT enclosure, includes O-rings.

ACF70 For HU enclosure, includes O-rings.

ACG07 MTL5045 - One channel isolated driver bringing 4 - 20mA from safe area to hazardous area, including power supply.
Ordering information

Standard configuration: F010-P-HC-PX-XX-ZX.

<table>
<thead>
<tr>
<th>Ordering information:</th>
<th>F010</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 Ø 16mm & 1 x Ø 20mm.
- HF  Cable entry: 1 x Ø 22mm (1/8”).
- HG  Cable entry: 2 x Ø 20mm.
- HH  Cable entry: 6 x Ø 12mm.
- HJ  Cable entry: 3 x Ø 22mm (1/8”).
- 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 1/2”NPT.
- HU  Cable entry: 3 x 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.