Features

- Displays instantaneous flow rate, total and accumulated total.
- Two alarm values can be entered: low and high flow rate alarm.
- Ten point linearisation of the flowcurve - with interpolation.
- Selectable on-screen engineering units; volumetric or mass.
- Auto backup of settings and running totals.
- Operational temperature -30°C up to +80°C (-22°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 \( \text{II 1 GD EEx ia IIB/IIC T4 T100°C.} \)
- Explosion/flame proof \( \text{II 2 GD EEx d IIB T5.} \)
- Alarm, analog and pulse signal outputs.
- Full Modbus communication RS232/485/TTL.
- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC power supply.
- Sensor supply 3.2 / 8.2 / 12 / 24V DC.

Signal output

- Up to three free configurable alarm outputs.
- \((0)-20mA / 0 - 10V\) DC according to linearised flow rate.
- Up to three pulse outputs according to linearised accumulated total.

Signal input

Flow

- Reed-switch.
- NAMUR.
- NPN/PNP pulse.
- Sine wave (coil).
- Active pulse signals.
- \((0)-20mA.\)
- 0 - 10V DC.

Applications

- Liquid flow measurement with mechanical flowmeters where a precise calculation over the full measurement range is required.
- Also continuous flow rate monitoring is required. Alternative basic models: F013, F016, F112, F113.
**General information**

**Introduction**

The F118 provides very precise linearisation of the flowmeters signal. In addition to the average K-Factor or Span, ten linearisation points can be entered. The unit will interpolate between these points greatly enhancing accuracy in any flow-range. Moreover, continuous flow rate monitoring feature is available with low and high flow rate alarm values. A wide selection of options further enhance this models capabilities.

**Display**

The display has large 17mm (0.67”) and 8mm (0.31”) digits which can be set to show flow rate, totals and alarm values. 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.

**Configuration**

All configuration settings are accessed via a simple operator menu which can be pass-code protected. Each setting is clearly indicated with an alpha-numerical 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.

**Analog output signal**

The linearised flow rate is re-transmitted with the (0)4 - 20mA or 0 - 10V DC output signal. The output signal is updated ten times per second. The output value is user defined, e.g. 4mA equals to 15L/Hr and 20mA equals to 2000L/Hr. The output signal can be passive, active or isolated where the passive output type will loop power the F118 as well.

**Alarm outputs**

Up to three outputs are available to transmit the flow rate alarm condition and/or to generate a pulse in relation to total. All free configurable, in such a way that you can have e.g. one low alarm output, one high alarm output and one pulse output. A maximum of two outputs are available in Intrinsically Safe applications. The output signals can be a passive NPN, active PNP or an isolated electro-mechanical relay.

**Pulse output**

The scaleable pulse output, reflects the count on the accumulated display. The pulse length is user defined from 0.008 second up to 2 seconds. The maximum output frequency is 64Hz.

**Signal input**

The F118 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 or jumpers.

**Communication**

All process data and settings can be read and modified manually or through the Modbus communication link (RS232 / RS485). Full Modbus functionality remains available for the Intrinsically Safe version (TTL).

**Hazardous areas**

For hazardous area applications, this model has been ATEX certified Intrinsically Safe II 1 GD Ex ia IIB / IIC T4 T100°C with an allowed operational temperature of -30°C to +70°C (-22°F to +158°F). A flame proof enclosure is also available with the rating II 2 GD Ex d IIB T5.

**Enclosures**

Various types of enclosures can be selected, all ATEX approved. As standard the F118 is supplied in an GRP panel mount enclosure. Most popular is our rugged aluminum field mount enclosure with IP67 / NEMA 4X rating. Both European or U.S. cable gland entry threads are available.

**Overview application F118**
Dimensions enclosures
Aluminum & GRP panel mount enclosure

Aluminum & GRP field / wall mount enclosures

Terminal connections

Display example - 90 x 40mm (3.5" x 1.6")
**Typical wiring diagram F118-P-(AP)-CH-(OT)-PB**

**Typical wiring diagram F118-P-AP-CH-OT-PX**

---

**TERMINAL CONNECTORS**

**F100 - series**

- **Common ground**
- **Signal**
- **Supply**

**BATTERY POWERED**

- **Flowmeter input type: P**
- **Pulse**

**Circuit depends on type of signal**

- **Alarm / pulse output type OT:**
  - Passive transistor
  - (not used in this example)

**ANALOG OUTPUT TYPE AP:**

- **Passive 4 - 20mA**

**Alarm / cycle output type OT:**

- **Passive transistor**

**Please note:** AP may be used in combination with the battery!

**AP will power the unit (output loop powered); the battery will be disabled automatically until power is disconnected.**

**Supply voltage:** 1.2 / 3.2V DC to sensor

---

**TERMINAL CONNECTORS**

**F100 - series**

- **Common ground**
- **Signal**
- **Supply**

**OUTPUT LOOP POWERED**

- **Flowmeter input type: P**
- **Pulse**

**Modbus communication type CH:**

- **RS485 - 2 wire**

**ANALOG OUTPUT TYPE AP:**

- **Passive 4 - 20mA**

**Alarm / pulse outputs type OT:**

- **Passive transistor**

**Switch output type OT:**

- **Passive transistor**

**Please note:** AP may be used in combination with the battery!

AP will power the unit (output loop powered); the battery will be disabled automatically until power is disconnected.

**Supply voltage:** 1.2 / 3.2V DC to sensor
**Typical wiring diagram F118-A-AA-CB-OA-PD**

**24V AC / DC POWER SUPPLY**

- **Modbus communication type CB: RS232**

**TERMINAL CONNECTORS**

- **F100 - series**

**Switch output type OA:**
- active 24V DC signal

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

**Analog output type AA:**
- passive isolated 4 - 20mA

**Switch output type OR:**
- mechanic relay

**Switch output type OT:**
- passive transistor

**Power supply type PD:**
- 8 - 24V AC / DC

**Supply:**
- 8 - 24V AC

**Signal:**
- 8 - 24V DC

**Common ground:**
- Common ground

*Supply voltage: 3.2 / 8.2 / 12 / 24V DC to sensor

**Typical wiring diagram F118-A-Al-CI-OR-PM**

**115 - 230V AC POWER SUPPLY**

- **Modbus communication type CI: RS485 - 4 wire**

**TERMINAL CONNECTORS**

- **F100 - series**

**Switch output type OT:**
- passive transistor

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

**Analog output type AI:**
- passive isolated 4 - 20mA

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

**Main supply:**
- 115 - 230V AC

**Common ground:**
- Earth

*Supply voltage: 3.2 / 8.2 / 12 / 24V DC to sensor
Hazardous area applications
The F118-XI has been ATEX approved by KEMA for use in Intrinsically Safe applications. It is approved according to II 1 GD EEx ia IIB/IIC T4 T100°C for gas and dust applications with an operational temperature range of -30°C to +70°C (-22°F to +158°F). Besides the two I.S. power supplies for the pulse and alarm outputs, it is allowed to connect up to three I.S. power supplies in IIB applications or one in IIC applications. Full functionality of the F118 remains available, including 4 - 20mA output, pulse and alarm outputs and Modbus communication (type CT). Power supply type PD-XI offers a 8.2V sensor supply e.g. for one Namur sensor. A 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 03ATEX1074 X

Configuration example IIB and IIC
F118-P-(AP)-(CT)-(OT)-PC-XI - Battery powered unit

TERMINAL CONNECTORS

<table>
<thead>
<tr>
<th>HAZARDOUS AREA</th>
<th>SAFE AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common ground</td>
<td>Common ground</td>
</tr>
<tr>
<td>Signal</td>
<td>Signal</td>
</tr>
<tr>
<td>Supply *</td>
<td>Power supply</td>
</tr>
</tbody>
</table>

* Note sensor supply voltage: 1.2V DC for coil sensors or 3.2V DC for other pulse sensors.

Flowmeter input type: P

Analog output type AP: passive 4 - 20mA (not used in this example).

Pulse output type OT: passive transistor (not used in this example).

Please note: type AP may be used in combination with the battery (type PC), but only in IIB applications!

AP will power the unit (output loop powered), the battery will be disabled automatically if power is disconnected.

Certificate of conformity KEMA 03ATEX1074 X
**Configuration example IIB and IIC - F118-P-AP-(CT)-OT-PX-XI - Output loop powered**

**TERMINAL CONNECTORS**

<table>
<thead>
<tr>
<th>Common ground</th>
<th>Supply*</th>
<th>Signal</th>
<th>Ci negligibly small</th>
<th>Flowmeter input type: P pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**HAZARDOUS AREA**

- Modbus communication type CT: TTL
  - Please note: communication type CT is not allowed in IIC applications.

- RXD
- TXD

**SAFE AREA**

**ISOLATOR:** I.S. Certified Isolator
- TTL to RS232 / RS422 / TTL
- For example: MTL5051

**Power Supply**
- e.g. MTL 5025
- or
- Switch Interface
  - e.g. MTL 5011B

- Uo = max 30V
- Io = max 100mA
- Po = max 750mW

**POWER SUPPLY**
- e.g. MTL 5025
  - and/or
  - Switch Interface
  - e.g. MTL 5011B

- Uo = max 30V
- Io = max 100mA
- Po = max 750mW

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

- ISOLATOR: I.S. Certified Isolator
  - TTL to RS232 / RS422 / TTL
  - For example: MTL5051

**Flowmeter Input**
- Type: P pulse

**Ci** is negligibly small

**Power Supply**
- e.g. MTL 5025
  - or
  - Switch Interface
  - e.g. MTL 5011B

- Uo = max 30V
- Io = max 250mA
- Po = max 850mW

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

*Note sensor supply voltage: 1.2V DC for coil sensors or 3.2V DC for other pulse sensors.*
Configuration example IIB - F118-A-AP-CT-OT-PD-XI - Power supply 16 - 30V DC

TERMINAL CONNECTORS
F188 - series

HAZARDOUS AREA

SAFE AREA

Modbus communication type CT: TTL

TERMINAL CONNECTORS
F188 - series

Common ground

Supply *

CI is negligibly small

Flowmeter input type: A (0 - 20mA)

Common ground

DTR +12V

Analog output type AP:
passive 4 - 20mA (output loop powered)

Common ground

CI = 17nF

Switch output type OT:
passive transistor

Common ground

CI is negligibly small

Switch output type OT:
passive transistor

Power supply type PD: 16 - 30V DC

(please note: PD and battery supply (type PC) is NOT allowed in IIC applications).

Analog output type AP:
passive 4 - 20mA (output loop powered)

CI is negligibly small

Signal

Common ground

Power supply type PD: 16 - 30V DC

For example: MTL5051

Power supply type PD: 16 - 30V DC

For example: MTL5025

Switch output type OT:
passive transistor

CI is negligibly small

E.g. Indicator

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

Power supply type PD: 16 - 30V DC

(please note: PD and battery supply (type PC) is NOT allowed in IIC applications).

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

* Note power supply type PD: the supply voltage to pulse sensors is maximum 8.7V (Uo=max 8.7V Io=max 25mA Po=max 150mW) and to analog sensors as connected to terminal 1 (internally linked).
Configuration example IIB - F118-A-CT-OT-(PC)-(PD)-(PL)-XI - Power supply 16 - 30V DC, battery or loop powered

TERMINAL CONNECTORS
F100 - series

HAZARDOUS AREA

SAFE AREA

Modbus communication type CT: TTL

IN: Modbus communication type CT: TTL

OUT: Modbus communication type CT: TTL

CI = 17nF

CI is negligibly small

Power supply input type: A (04 - 20mA)

Analog output type AF: passive floating 4 - 20mA

Switch output type OT: passive transistor

Switch output type OT: passive transistor

Due to analog output type AF, the unit has to be powered with battery type PC, with external power supply type PD or input loop powered type PL.

Power supply type PD: 16 - 30V DC

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

* Note power supply type PD: the supply voltage to pulse sensors is maximum 8.7V (Uo max 8.7V Io max 25mA Po max 150mW) and to analog sensors as connected to terminal 1 (internally linked).

POWER SUPPLY
For example MTL5025

Uo max 30V
Io max 100mA
Po max 750mW

POWER SUPPLY
For example MTL5025

Uo max 30V
Io max 100mA
Po max 750mW

POWER SUPPLY
For example MTL5025

Uo max 30V
Io max 100mA
Po max 750mW

POWER SUPPLY
For example MTL5025

Uo max 30V
Io max 100mA
Po max 750mW

POWER SUPPLY
For example MTL5025

Uo max 30V
Io max 100mA
Po max 750mW

POWER SUPPLY
For example MTL5025

Uo max 30V
Io max 100mA
Po max 750mW

POWER SUPPLY
For example MTL5025

Uo max 30V
Io max 100mA
Po max 750mW

ISOLATOR:
I.S. Certified Isolator TTL to
RS485 / RS422 / TTL
For example: MTL5051

Note: above values are safety values.
Consult the technical specification for operational values.
## 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.</td>
</tr>
<tr>
<td><strong>Option ZB</strong></td>
<td>Transflective LCD with green LED backlight. Good readings in full sunlight and darkness.</td>
</tr>
<tr>
<td><strong>Note ZB</strong></td>
<td>Only available for safe area applications.</td>
</tr>
</tbody>
</table>

### Operating temperature

**General**

-30°C to +80°C (-22°F to +178°F).  
Intrinsically Safe -30°C to +70°C (-22°F to +158°F).  

### Power requirements

| Type | 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 | 8 - 24V AC / DC ± 10%. Power consumption max. 10 Watt. Intrinsically Safe: 16 - 30V DC; power consumption max. 0.75 Watt.  
Type PF | 24V AC / DC ± 10%. Power consumption max. 15 Watt.  
Type PL | Input loop powered from sensor signal 4 - 20mA (type “A”) - requires types AI or AF and OT.  
Type PM | 115 - 230V AC ± 10%, Power consumption max. 15 Watt.  
Type PX | 8 - 30V DC, Power consumption max. 0.5 Watt.  
Type ZB | 12 - 24V DC ± 10% or type PD / PF / PM. Power consumption max. 1 Watt.  
**Note PB/PC/PX** | Not available Intrinsically Safe.  
**Note PF/PM** | The total consumption of the sensors and outputs may not exceed 400mA @ 24V.  
**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** 1.2 / 3.2 / 8.2 / 12 / 24V DC - max. 500mA @ 24V DC.  
**Type PD-XI** 1.2 / 3.2 / 8.2V DC - max. 7mA @ 8.2V DC and mains power supply voltage (as connected to terminal 1).  
**Note** In case PD-XI and signal A or U: the sensor supply voltage is according to the power supply voltage connected to terminal 1. Also terminal 2 offers the same voltage.  
**Type PF / PM** 1.2 / 3.2 / 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. |

### Hazardous area

**Intrinsically Safe** ATEX approval ref.: II 1 GD EEx ia IIB/IIC T4 T50°C.  
**Type XI** Maximum ambient +70°C (158°F).  
**Explosion proof** ATEX approval ref.: 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. 15 Kg.  

### Environment


### 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** 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 HO** Cable entry: 2 x M20.  
**Type HP** Cable entry: 6 x M12.  
**Type HT** Cable entry: 1 x ½” NPT.  
**Type HU** Cable entry: 3 x ½” 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 (½”).  
**Type HG** Cable entry: 2 x Ø 20mm.  
**Type HH** Cable entry: 6 x Ø 12mm.  
**Type HJ** Cable entry: 3 x Ø 22mm (½”).  
**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.
**Signal inputs**

**Flowmeter**

- **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**
  - 0.000010 - 9,999,999 with variable decimal position.
- **Low-pass filter**
  - Available for all pulse signals.
- **Option ZF**
  - coil sensitivity 10mVpp.
- **Type U**
  - 0 - 10V DC. Analog input signal can be scaled to any desired range within 0 - 20mA.
- **Accuracy**
  - Resolution: 14 bit. Error < 0.025mA / ± 0.125% FS.
  - Low level cut-off programmable.
- **Span**
  - 0.000010 - 9,999,999 with variable decimal position.
- **Update time**
  - Four times per second.
- **Voltage drop**
  - Type A: 2.5V @ 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.

**Analog output**

- **Function**
  - Transmitting linearised flow rate.
- **Accuracy**
  - 10 bit. Error < 0.05%. Analog output signal can be scaled to any desired range.
- **Update time**
  - Ten times per second.
- **Type AA**
  - Active 4 - 20mA output (requires OA + PD, PF or PM).
- **Type AB**
  - Active 0 - 20mA output (requires OA + PD, PF or PM).
- **Type AF**
  - Passive floating 4 - 20mA output for Intrinsically Safe applications (requires PC, PD or PL).
- **Type AI**
  - Passive galvanically isolated 4 - 20mA output - also available for battery powered models (requires PB, PD, PF, PL or PM).
- **Type AP**
  - Passive 4 - 20mA output - not isolated. Unit will be loop powered.
- **Type AU**
  - Active 0 - 10V DC output (requires OA + PD, PF or PM).

**Alarm / pulse output**

- **Function**
  - All outputs are user defined: pulse output, low or high alarm outputs.
- **Frequency**
  - Max. 64Hz. Pulse length user definable between 7.8 msec up to 2 seconds.
- **Type OA**
  - Three active 24V DC transistor outputs (PNP); max. 50mA per output (requires AA + PD, PF or PM).
- **Type OR**
  - Two electro-mechanical relay outputs isolated (N.O.) - max. switch power 230V AC - 0.5A (requires PF or PM) and one transistor output OT or OA (OA in combination with AA only).
- **Type OT**
  - Three passive transistor outputs (NPN) - not isolated. Max. 50V DC - 300mA per output.
- **Note**
  - Intrinsically Safe applications: only two transistor outputs type OT available.

**Communication option**

- **Function**
  - Reading display information, reading / writing all configuration settings.
- **Protocol**
  - Modbus RTU.
- **Speed**
  - 1200 - 2400 - 4800 - 9600 baud.
- **Addressing**
  - Maximum 255 addresses.
- **Type CB**
  - RS232.
- **Type CH**
  - Rs85 2-wire.
- **Type CI**
  - Rs85 4-wire.
- **Type CT**
  - TTL Intrinsically Safe.

**Operator functions**

- **Displayed**
  - Linearised flow rate and / or total.
  - Linearised total and accumulated total.
  - Low flow rate alarm value.
  - High flow rate alarm value.
  - Total can be reset to zero by pressing the CLEAR-key twice.
  - Alarm values can be set (or only displayed).
- **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, NI, gal - no units.
  - Decimals: 0 - 1 - 2 or 3.
  - Time units: /sec - /min - /hr - /day.
- **Alarm values**
  - Digits: 7 digits.
  - Units: According to selection for flow rate.
  - Decimals: According to selection for flow rate.
  - Time units: According to selection for flow rate.
  - Type of alarm: Low and high flow rate alarm. Includes alarm delay time and configurable alarm outputs.

**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").
### Ordering information

**Standard configuration:** F118-P-AP-CX-IX-EX-OT-TX-XX-ZX.

| Flowmeter input signal | F118 | - | - | A | - | C | - | EX | - | H | - | I | - | O | - | P | - | TX | - | X | - | Z |
| A | 0 | (-) | 4 | - | 20mA | input. |
| P | Pulse | input: | coil, | npn, | pnp, | namur, | reed-switch. |
| U | - | 0 | - | 10V | DC | input. |

**Analog output signal**

| AA | Active | 4 | - | 20mA | output | requires | OA | + | PD | or | PF | or | PM. |
| AB | Active | 0 | - | 20mA | output | requires | OA | + | PD | or | PF | or | PM. |
| AF | I.S. | floating | 4 | - | 20mA | output | requires | PC | or | PD | or | PL. |
| AI | Isolated | 4 | - | 20mA | output | requires | PB | or | PD | or | PL | or | PM. |
| AP | Passive | 4 | - | 20mA | output | loop | powered | unit. |
| AU | Active | 0 | - | 10V | DC | output | requires | OA | + | PD | or | PF | or | PM. |

**Communication**

| CB | Communication | RS232 | - | Modbus | RTU. |
| CH | Communication | RS485 | 2 | wire | - | Modbus | RTU. |
| CI | Communication | RS485 | 4 | wire | - | Modbus | RTU. |
| CT | Intrinsically | Safe | TTL | - | Modbus | RTU. |
| CX | No | communication. |

**Flow equations**

| EX | No | flow equations. |

**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 | (\“\\prime\\”). |
| HG | Cable | entry: | 2 | x | Ø | 20mm. |
| HH | Cable | entry: | 6 | x | Ø | 12mm. |
| HJ | Cable | entry: | 3 | x | Ø | 22mm | (\“\\prime\\”). |
| 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 | \“\\prime\\”/NPT. |
| HU | Cable | entry: | 3 | x | \“\\prime\\”/NPT. |
| HZ | Cable | entry: | no | holes. |
| HS | Silicone | free | ABS | field | enclosure | IP65 | – | Cable | entry: | no | holes | (old | HD | enclosure). |

**ABS field / wall mount enclosures**

| IX | No | additional | input. |

### Outputs

| OA | Three | active | transistor | outputs | requires | AA |, | AB | or | AU | and | PD |, | PF | or | PM. |
| OR | Two | mechanical | relay | outputs | + | one | OT | or | OA | - | requires | PF | or | PM. |
| OT | Three | passive | transistor | outputs | - | standard | configuration. |

### Power supply

| PB | Lithium | battery | powered. |
| PC | Lithium | battery | powered | - | Intrinsically | Safe. |
| PD | 8 | - | 24V | AC |/DC | + | sensor | supply | - | with | XI |: | 16 | - | 30V | DC. |
| PF | 24V | AC |/DC | + | sensor | supply. |
| PL | Input | loop | powered | from | sensor | signal | type | “A” | - | requires | AI | or | AF | or | OT. |
| PM | 115 | - | 230V | AC | + | sensor | supply. |
| PX | Basic | power | supply | 8 | - | 30V | DC | (no | real | sensor | supply). | Unit | requires | external | loop | AP. |

**Temperature input signal**

| TX | No | temperature | input | signal. |

### Hazardous area

| XI | Intrinsically | Safe. |
| XF | EExd | enclosure | - | 3 | keys. |
| XX | Safe | area | only. |

### Other options

| ZB | Backlight. |
| ZF | Coil | input | 10mVpp. |
| ZX | No | options. |

The bold marked text contains the standard configuration.

Available Intrinsically Safe.