Features
- Large display shows preset value and running batch value simultaneously.
- Self-learning overrun correction.
- Easy operation to enter a batch value and to control the process.
- Count-up and count-down function available.
- Selectable on-screen engineering units; volumetric or mass.
- Ability to process all types of flowmeter signals.
- 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 II 1 GD EEx ia IIB/IIC T4 T100°C.
- Explosion/flame proof II 2 GD EEx d IIB T5.
- 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.
- No-flow monitoring.

Signal output
- Two configurable control outputs: for two-stage or one-stage control.
- Scaled pulse output according to accumulated total (one stage control only).

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

Status
- Remote control: start.
- Remote control: pause / stop.

Applications
- For batching small up to very large quantities. Single or repeating batches. Alternative basic model: F030 or more sophisticated models: F131, F136 and 300 series.
General information

Introduction
The F130 is a straightforward Batch controller offering exactly what is required for many applications. The operator can enter a batch quantity easily or execute repeating batches. During the batch, the preset value is displayed as well as the batched (or remaining) quantity and the units of measurement. The automatic self-learning overrun correction will ensure an accurate result each batch again. A wide selection of options further enhance this model's capabilities, including Intrinsically Safe and full Modbus communication.

Display
The display has large 17mm (0.67”) and 8mm (0.31”) digits which are used to display the batched quantity and the preset value simultaneously. On-screen engineering units are easily configured from a comprehensive selection. A seven digit resettable “day total” is available as well as an eleven digit non-resettable accumulated total. All are 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 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.

Control outputs
Two outputs are available which can be configured to operate as two stage control for large batch quantities or one stage control for smaller batches. In this case, the second output is available as a scaled pulse output according to accumulated total or batch total. The pulse output length is user defined from 0.008 second up to 2 seconds. The maximum output frequency is 64Hz. The output signals can be a passive NPN, active PNP or isolated electro-mechanical relays.

Signal input
The F130 will accept most pulse and analog input signals for flow or mass flow measurement. For remote control, two inputs are available to start, pause and stop the batch process.

No-flow
If there is a predefined time-out in the input signal, the no-flow alarm will be triggered. The F130 goes in pause-mode and the display will show: NO FLOW.

Communication
All process data and settings can be read and modified manually or through the Modbus communication link (RS232 / RS485). If desired, the batch process can even be started and stopped through communication.

Hazardous areas
For hazardous area applications, this model has been ATEX certified Intrinsically Safe II 1 GD EEx 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 EEx d IIB T5.

Enclosures
Various types of enclosures can be selected, all ATEX approved. The F130 is supplied in an GRP or rugged aluminum panel mount enclosure, which can be converted to an IP67 / NEMA 4X field mount enclosure. Both European or U.S. cable gland entry threads are available.

Overview application F130

Signal input
The F130 will accept most pulse and analog input signals for flow or mass flow measurement. For remote control, two inputs are available to start, pause and stop the batch process.

No-flow
If there is a predefined time-out in the input signal, the no-flow alarm will be triggered. The F130 goes in pause-mode and the display will show: NO FLOW.

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Overview application F130
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 F130-P-CH-OT-PB-(PX)**

- **BATTERY POWERED**
  - Modbus communication type CH: RS485 - 2 wire
  - Flowmeter input type: P pulse
  - Logic input: PAUSE / STOP
  - Logic input: START
  - Power supply type PX: 8 - 30V DC
    - (not used in this example)
  - Control or pulse output type OT: passive transistor
  - Please note: PX may be used in combination with the battery!
  - PX will power the unit; the battery will be disabled automatically until power is disconnected.

*Supply voltage: 1.2 / 3.2V DC to sensor

**Typical wiring diagram F130-P-CH-OT-PX**

- **8 - 24V AC/DC POWER SUPPLY (BASIC)**
  - Flowmeter input type: P pulse
  - Logic input: PAUSE / STOP
  - Logic input: START
  - Power supply PX: 8 - 30V DC

*Supply voltage: 1.2 / 3.2V DC to sensor
**Typical wiring diagram F130-A-CB-OA-PD**

TERMINAL CONNECTORS

F100-series

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TXD</td>
<td>Modbus communication type CB: RS232</td>
</tr>
<tr>
<td>RXD</td>
<td></td>
</tr>
<tr>
<td>DTR/12V</td>
<td></td>
</tr>
</tbody>
</table>

Common ground

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main supply</td>
<td>8 - 24V AC</td>
</tr>
<tr>
<td>Power supply type PD: 8 - 24V AC / DC</td>
<td></td>
</tr>
<tr>
<td>Earth</td>
<td></td>
</tr>
</tbody>
</table>

**Typical wiring diagram F130-A-CI-OR-PM**

TERMINAL CONNECTORS

F100-series

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TXD</td>
<td>Modbus communication type CI: RS485 - 4 wire</td>
</tr>
<tr>
<td>RXD</td>
<td></td>
</tr>
<tr>
<td>DTR/12V</td>
<td></td>
</tr>
</tbody>
</table>

Common ground

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main supply</td>
<td>115 - 230V AC</td>
</tr>
<tr>
<td>Power supply type PM: 115 - 230V AC</td>
<td></td>
</tr>
<tr>
<td>L1</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Earth</td>
<td></td>
</tr>
</tbody>
</table>

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

**F130**

5
Hazardous area applications

The F130-XI has been ATEX approved by KEMA for use in Intrinsically Safe applications. It is approved according to II 1 GD Ex 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 I.S. power supplies for the control outputs, it is allowed to connect up to two I.S. power supplies in IIB applications or one in IIC applications. Full functionality of the F130 remains available, including two stage control, pulse output 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 Ex 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
F130-P-(CT)-OT-PC-(PX)-XI - Battery powered unit

Configuration diagram:

- +3.2V
- Logic Input: PAUSE / STOP
- Logic Input: START
- Flowmeter input type: P pulse
- Common ground
- Power supply type PX: 8 - 30V DC
- Main supply
- E.g. relay
- Control output type CT: passive transistor
- Control or pulse output type CT: passive transistor

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

Note: above values are safety values. Consult the technical specification for operational values.
Configuration example IIB and IIC - F130-P-(CT)-OT-PX-XI - Basic power supply 8 - 30V DC

**TERMINAL CONNECTORS**

<table>
<thead>
<tr>
<th>F100-series</th>
<th>HAZARDOUS AREA</th>
<th>SAFE AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAZARDOUS AREA</td>
<td></td>
<td>SAFE AREA</td>
</tr>
</tbody>
</table>

**TERMINAL CONNECTORS**

- **HAZARDOUS AREA**
  - **3 4 91 0 11**
    - Common ground
  - **Signal**
  - **Supply** *: Circuit depends on type of signal

- **SAFE AREA**
  - **RXD**
    - Common ground
  - **TXD**
    - 2826 29
  - **Flowmeter input**
    - Type: P pulse

**ISOLATOR**

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

**POWER SUPPLY**

- **e.g. MTL5025**
  - Uo= max 30V
  - Io= max 100mA
  - Po= max 750mW

**SWITCH INTERFACE**

- **e.g. MTL5011B**
  - Uo= max 30V
  - Io= max 100mA
  - Po= max 750mW

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

**Modbus communication type CT: TTL**

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

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

**Control or pulse output type OT: passive transistor**

- **Ci is negligibly small**
- **+ 3.2V low-pass filter**
- **Digital output: e.g. relay**
- **Control or pulse output type OT: passive transistor**
- **Ci is negligibly small**

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

---

* F130
Configuration example IIB and IIC - F130-A-(CT)-OT-PL-XI - Input loop powered

- **TERMINAL CONNECTORS**
  - F100-series
  - Modbus communication type CT: TTL
  - Please note: communication type TP is not allowed in IIC applications.

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

- **SAFE AREA**
  - **POWER SUPPLY**
    - For example: MTL5025
    - Uo=max 30V
    - Io=max 100mA
    - Po=max 750mW

- **SWITCH INTERFACE**
  - For example: MTL5011B
  - Uo=max 30V
  - Io=max 100mA
  - Po=max 750mW
  - e.g. relay

- **CONTROL OR PULSE OUTPUT TYPE OT: PASSIVE TRANSISTOR**
  - Uo=max 30V
  - Io=max 100mA
  - Po=max 750mW
  - e.g. counter

- **FLOWMETER INPUT TYPE: A-PL - INPUT LOOP POWERED 4-20mA**
  - Please note: communication type TP is not allowed in IIC applications.

- **LOGIC INPUT:**
  - **PAUSE / STOP**
    - CI is negligibly small
  - Logic input: START
    - CI is negligibly small

- **LOW-PASS FILTER**
  - 1M
  - 3.2V

- **E.G. PC**
  - COMMON GROUND

- **123456**
  - e.g. counter

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

**Please note:**

- Isolated Isolator
- TTL to
- RS232 / RS422 / TTL
- For example: MTL5051

--power supply
- For example: MTL5025
- Uo=max 30V
- Io=max 100mA
- Po=max 750mW

- switch interface
- For example: MTL5011B
- Uo=max 30V
- Io=max 100mA
- Po=max 750mW
- e.g. relay

- logic input:
- pause / stop
  - CI is negligibly small
- logic input: start
  - CI is negligibly small

- low-pass filter
  - 1M
  - 3.2V

- e.g. PC
  - common ground

- 123456
  - e.g. counter

- Uo=max 30V
  - Io=max 250mA
  - Po=max 850mW
Configuration example IIB and IIC - F130-A-(CT)-OT-PD-XI - Power supply 16 - 30V DC

**TERMINAL CONNECTORS**

- **F100 - series**
  - HAZARDOUS AREA
    - RXD
    - TXD
    - Common ground
  - SAFE AREA
    - RXD
    - TXD
    - Common ground
- Supply
  - Signal
    - Flowmeter input type: A (0.4 - 20mA)
    - Logic input: PAUSE / STOP
    - Logic input: START
    - Power supply type PD: 16 - 30V DC
      (please note: PD and battery supply (type PC) is NOT allowed in IIC applications).
- Control output type OT: passive transistor
  - 4 g. relay
- 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.

**ISOLATOR:**

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

**POWER SUPPLY**

- e.g. MTL 5025
- Uo=max 30V
- Io=max 100mA
- Po=max 750mW
- e.g. MTL 5011B
- Switch Interface
- Note: above values are safety values. Consult the technical specification for operational values.

**Logic input:**

- PAUSE / STOP
- + 3.2V
- low-pass filter 1M
- Ci is negligibly small
- 1615

**Logic input:**

- START
- + 3.2V
- low-pass filter 1M
- Ci is negligibly small
- 1615

**Common ground**

- Common ground
- Common ground

---

* 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).
Technical specification

Display

**General**

- **Type**: High intensity reflective numeric and alphanumeric LCD, UV-resistant.
- **Dimensions**: 90 x 40mm (3.5” x 1.6”).
- **Digits**: Seven 17mm (0.67”) and eleven 8mm (0.31”) digits.
- **Various symbols and measuring units**.
- **Refresh rate**: User definable: 8 times/sec. - 30 secs.
- **Option ZB**: Transflective LCD with green LED backlight. Good readings in full sunlight and darkness.
- **Note ZB**: Only available for safe area applications.

Operating temperature

- **Operational**: -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 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**: 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 PM**: Input loop powered from sensor signal 4 - 20mA (type “A”) - requires type OT.
- **Type PX**: 8 - 30V DC. Power consumption max. 0.5 Watt.
- **Note PB/PF/PM**: 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. 50mA @ 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 T100°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**: approx. 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”). L 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 KN**: 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”). L 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: 1 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”). L 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.

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”). L 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.

- **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.

**Logic inputs**

- **Function**
  - Two terminal inputs to start, pause and stop the batch process.

- **Type**
  - Internally pulled-up switch contact - NPN.

- **Duration**
  - Minimum pulse duration 100msec.

**Signal outputs**

- **Control / pulse output**
  - **Function**
    - User defined: batch process one or two stage control - scaled pulse output according the running batch or according accumulated total (one stage only).
  - **Frequency**
    - Max. 64Hz. Pulse length user definable between 7.8 msec up to 2 seconds.
  - **Type OA**
    - Two active 24V DC transistor outputs (PNP); max. 50mA per output (requires PD, PF or PM).
  - **Type OR**
    - Two electro-mechanical relay outputs (N.O.) - isolated; max. switch power 230V AC - 0.5A per relay (requires PF or PM).
  - **Type OT**
    - Two passive transistor outputs (NPN) - not isolated. Max. 50V DC - 300mA per output.

**Communication option**

- **Function**
  - Reading display information, reading / writing preset value and all configuration settings. Start, pause and stop batch process.

- **Protocol**
  - Modbus ASCII / RTU.

- **Speed**
  - 1200 - 2400 - 4800 - 9600 baud.

- **Addressing**
  - Maximum 255 addresses.

- **Type CB**
  - RS232.

- **Type CH**
  - RS485 2-wire.

- **Type CI**
  - RS485 4-wire.

- **Type CT**
  - TTL Intrinsically Safe.

**Operational**

**Operator functions**

- **Displayed functions**
  - Preset value - can be entered by the operator.
  - Batched quantity or remaining quantity.
  - Total and accumulated total.
  - Total can be reset to zero by pressing the STOP-key twice.
  - No-flow alarm.

**Preset and 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.

**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 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.

- **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 HT enclosure, includes O-rings.

- **ACF70**
  - For HU enclosure, includes O-rings.
### Ordering information

**Standard configuration:** F130-P-AX-CX-EX-IX-OT-PX-XX-ZX.

<table>
<thead>
<tr>
<th>Ordering information</th>
<th>F130</th>
<th>P</th>
<th>AX</th>
<th>C</th>
<th>EX</th>
<th>H</th>
<th>IX</th>
<th>O</th>
<th>P</th>
<th>TX</th>
<th>X</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flowmeter input signal</strong></td>
<td>A</td>
<td>(0)-20mA input.</td>
<td>P</td>
<td>Pulse input: coil, npn, pnp, namur, reed-switch.</td>
<td>U</td>
<td>0-10V DC input.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Analog output signal</strong></td>
<td>AX</td>
<td>No analog output.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>CB</td>
<td>Communication RS232 - Modbus ASCII / RTU.</td>
<td>CH</td>
<td>Communication RS485 - 2-wire - Modbus ASCII / RTU.</td>
<td>CI</td>
<td>Communication RS485 - 4-wire - Modbus ASCII / RTU.</td>
<td>CT</td>
<td>Intrinsically Safe TTL - Modbus ASCII / RTU.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Flow equations</strong></td>
<td>EX</td>
<td>No flow equations.</td>
<td></td>
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</tr>
<tr>
<td><strong>Panel mount enclosures - IP65 / NEMA4</strong></td>
<td>HB</td>
<td>Aluminum enclosure.</td>
<td>HC</td>
<td>GRP enclosure.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>GRP field / wall mount enclosures - IP67 / NEMA4X</strong></td>
<td>HD</td>
<td>Cable entry: no holes.</td>
<td>HE</td>
<td>Cable entry: 2 x Ø 16mm &amp; 1 x Ø 20mm.</td>
<td>HF</td>
<td>Cable entry: 1 x Ø 22mm (1/8”).</td>
<td>HG</td>
<td>Cable entry: 2 x Ø 20mm.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aluminum field / wall mount enclosures - IP67 / NEMA4X</strong></td>
<td>HA</td>
<td>Cable entry: 2 x PG9 + 1 x M20.</td>
<td>HM</td>
<td>Cable entry: 2 x M16 + 1 x M20.</td>
<td>HN</td>
<td>Cable entry: 1 x M20.</td>
<td>HO</td>
<td>Cable entry: 2 x M20.</td>
<td>HP</td>
<td>Cable entry: 6 x M12.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ABS field / wall mount enclosures</strong></td>
<td>HS</td>
<td>Silicone free ABS field enclosure IP65 – Cable entry: no holes (old HD enclosure).</td>
<td></td>
<td></td>
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<tr>
<td><strong>Additional inputs</strong></td>
<td>IX</td>
<td>No additional input.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Outputs</strong></td>
<td>OA</td>
<td>Two active transistor outputs - requires PD, PF or PM.</td>
<td>OR</td>
<td>Two mechanical relay outputs - requires PF or PM.</td>
<td></td>
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</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>PB</td>
<td>Lithium battery powered.</td>
<td>PC</td>
<td>Lithium battery powered - Intrinsically Safe.</td>
<td></td>
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<tr>
<td><strong>Temperature input signal</strong></td>
<td>TX</td>
<td>No temperature input signal.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Hazardous area</strong></td>
<td>XI</td>
<td>Intrinsically Safe.</td>
<td>XF</td>
<td>EExd enclosure - 3 keys.</td>
<td>XX</td>
<td>Safe area only.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Other options</strong></td>
<td>ZB</td>
<td>Backlight.</td>
<td>ZF</td>
<td>Coil input 10mVpp.</td>
<td>ZX</td>
<td>No options.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

The bold marked text contains the standard configuration.

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