

## Flow rate Monitor / Totalizer

with linearization, high / low alarms  
and analog / pulse signal outputs



The F-Series is your first and safest choice for field mount indicators in safe and hazardous area applications. Especially in harsh weather conditions like rain, snow, salty atmospheres and temperatures between -40°C up to +80°C (-40°F up to 176°F).

### Advantages

- Robust aluminum or stainless steel 316L field enclosure (IP67 / NEMA Type4X). It is so rugged, a truck can even stand on it!
- Intrinsically Safe available - ATEX and IECEx approval for gas and dust applications.
- Programming can be done by your own crew, with the sensible menu-driven structure, saving cost and irritation. Know one, know them all!
- Very diverse mounting possibilities: walls, pipes, panels or directly onto outdoor sensors!

### Features

- Displays instantaneous flow rate, total and accumulated total.
- Two alarm values: low and high flow rate alarm.
- Ten point linearization of the flowcurve - with interpolation.
- LED backlight option.
- Selectable on-screen engineering units; volumetric or mass.
- Ability to process all types of signals: Sine wave (coil), NAMUR, NPN/PNP pulse, Reed-switch, Active pulse signals.
- Up to three free configurable alarm outputs.
- Analog output according to linearized flow rate.
- Up to three pulse outputs according to linearized accumulated total.
- Full Modbus communication RS232/485/TTL.
- Power requirements: Loop or battery powered, 8 - 30V DC, 8 - 24V AC/DC or 115 - 230V AC.
- Sensor supply 3 / 8.2 / 12 / 24V DC.

Introduction

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

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 menu. 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 password protected. Each setting is clearly indicated with an alphanumerical description, which avoids 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.

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).



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 width is user defined from 0.001 second up to 9.999 seconds. The maximum output frequency is 500Hz.

Analog output signal

The linearized flow rate is re-transmitted with the (0)4 - 20mA or 0 - 10V DC output signal. The output signal is updated eight 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.

Hazardous areas

This model is ATEX and IECEx certified as Intrinsically Safe for gas applications with an allowed ambient temperature of -40°C to +70°C (-40°F to +158°F) and dust applications with an allowed ambient temperature of -40°C to +50°C (-40°F to +122°F). A flame proof Ex d enclosure with ATEX/IECEx certification is also available.



All info at a glance



Easy to install



Easy to program



Know one know them all!



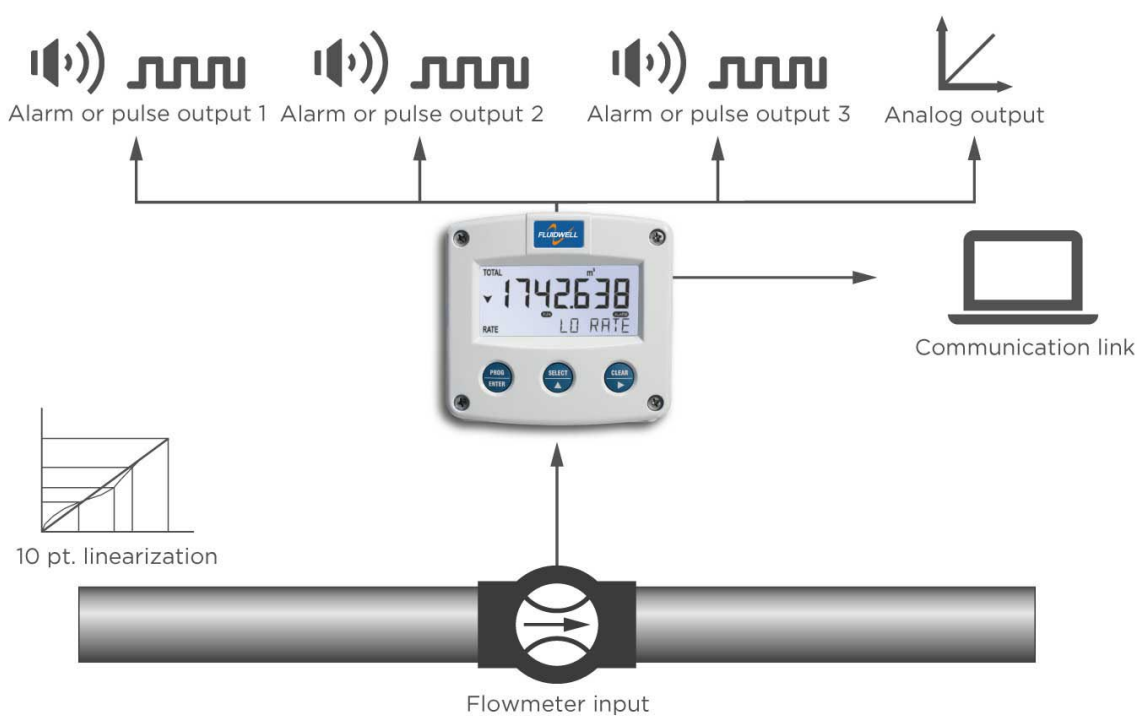
Reliable



User-friendly

Overview application F118

The F-Series is your first and safest choice for field mount indicators in safe and hazardous area applications. Especially in harsh weather conditions like rain, snow, salty atmospheres and temperatures between -40°C up to +80°C (-40°F up to 176°F). 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 or F018 with HART communication.



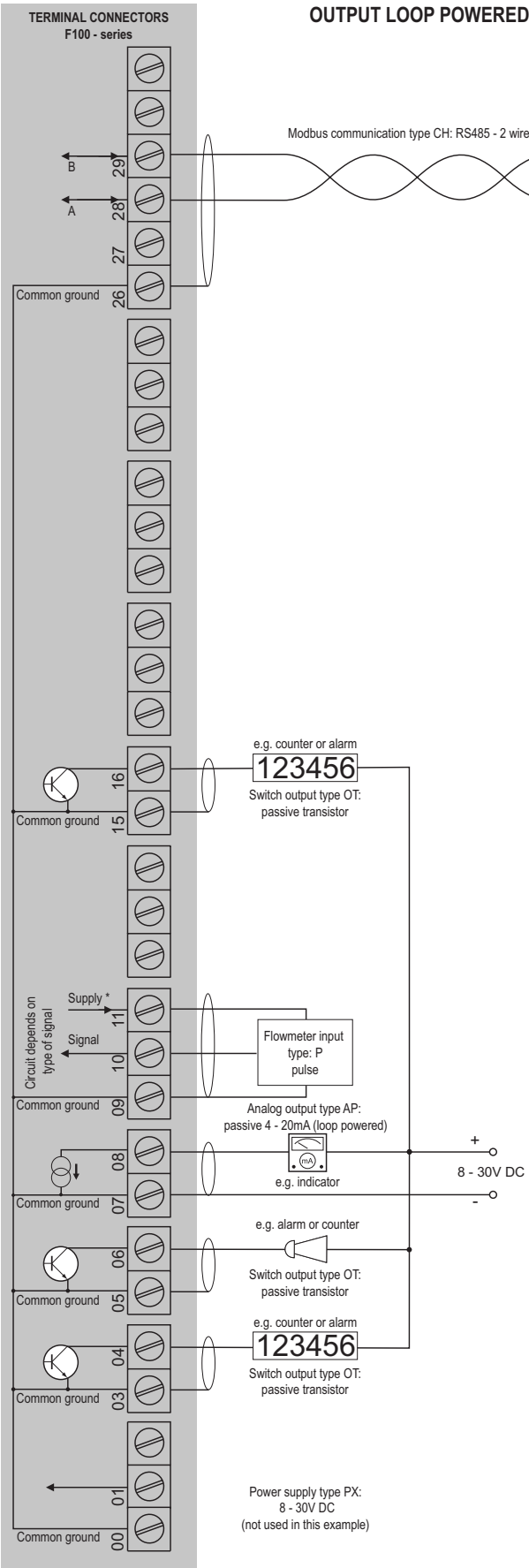
Signal input

The F118 accepts most pulse input signals for volumetric 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.

Type of signal	Resistance	Low Pass filter (LP)	Max. frequency	Max. frequency Low Pass filter (LP)	Min. amplitude p-p	Remark
NPN	100kΩ pull-up	100kΩ pull-up	6kHz Threshold 1.2V	1.2kHz		Open collector
REED	1MΩ pull-up	1MΩ pull-up	1.2kHz Threshold 1.2V	120Hz		
PNP	100KΩ pull-down	100KΩ pull-down	6kHz Threshold 1.2V	1.2kHz		
NAMUR	820Ω pull-down	-	4kHz	-		External power required
COIL LO	-	-		-	80mV <sub>pp</sub>	Default sensitivity
COIL-HI	-	-	-	-	20mV <sub>pp</sub>	Sensitive for interference!
COIL-HI (Type ZF)					10mV <sub>pp</sub>	
ACTIVE 8.2V DC	3K9Ω		10kHz Threshold 4V			External power required
ACTIVE 12V DC	4KΩ		10kHz Threshold 6V			External power required
ACTIVE 24V DC	3KΩ		10kHz Threshold 12V			External power required

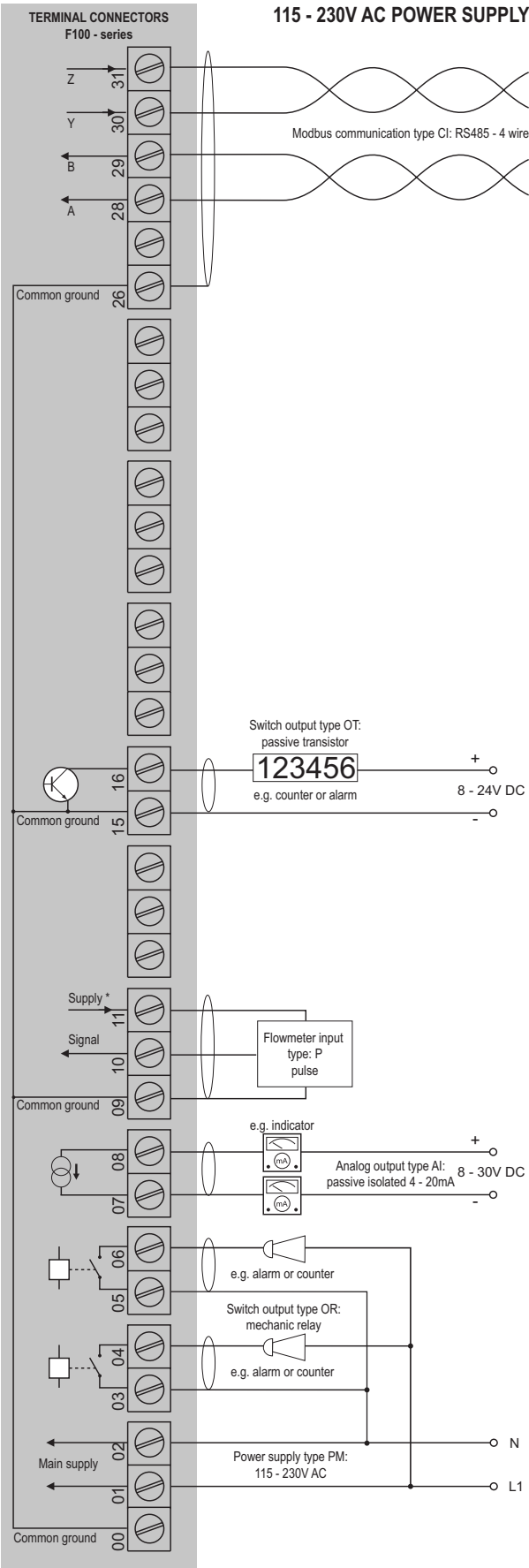


Configuration example F118-P-AP-CH-OT-(PX)-XX-ZX



\* For pulse type inputs:  $V_{ref}$ : 1.2V/3.0V available.- NO power output, available  $I_{supply}$ : <1mA.  
Note: using these ref. voltages at max. load, will reduce battery life significantly.

Configuration example F118-P-AI-CI-OR-PM-XX-ZX



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



Hazardous area applications

The F118-XI has been certified according to ATEX and IECEx by DEKRA for use in Intrinsically Safe applications with an ambient temperature of -40°C to +70°C (-40°F to +158°F). For equipment category Dust, zone 20 (1 D / EPL Da), the maximum ambient temperature is limited to 50°C (+122°F) and a maximum dust layer thickness of 200mm.

- The ATEX markings for gas and dust applications are:  
 Gas: **II 1 G Ex ia IIB/IIC T4 Ga.**  
 Dust: **II 1 D Ex ia IIIC T<sub>200</sub> 100 °C Da.**
- The IECEx markings for gas and dust applications are:  
Gas: **Ex ia IIC/IIB T4 Ga.**  
Dust: **Ex ia IIIC T<sub>200</sub> 100 °C Da.**

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/IIIC applications or one in IIC applications. Consult the certificate for the maximum input and output values of the circuits. 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. An ATEX/IECEx approved flame proof Ex d enclosure is available as well. Please contact your supplier for further details.

Certificate of conformity KEMA 03ATEX1074 X

- IECEx DEK 11.0042X

**IECEx Certificate of Conformity**  
INTERNATIONAL ELECTROTECHNICAL COMMISSION  
IEC Certification Scheme for Explosive Atmospheres  
for use and details of the IECEx Scheme and www.iecex.org

Certificate No.: IECEx DEK 11.0042X	Issue No.: 2	Certificate history: Issue No. 1 (2018-04-22) Issue No. 2 (2019-01-22) Issue No. 3 (2021-04-22)
Status: <b>Current</b>	Page 1 of 4	
Date of Issue: <b>2019-01-22</b>		
Applicant: <b>Fluidwell B.V.</b> Vollweg 23 5486 AZ Vught The Netherlands		
Equipment category: <b>Indicator Model P1 Series</b>		
Type of Protection: <b>Ex i</b>		
Marking: <b>Ex ia IIC T<sub>200</sub> 100 °C Da</b>		
Approved for issue on behalf of the IECEx Certification Body: <b>R. Schiller</b>		
Signature:	Certification manager	
Date: <b>2019-01-22</b>		

1. This certificate and schedule may only be reproduced in full.  
2. This certificate is not valid and ceases to be valid if the marking is altered.  
3. The status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by: **DEKRA Certification B.V.**  
Member 1001  
5020 MJ Arnhem  
The Netherlands

**CERTIFICATE**  
**EU-Type Examination**

(1) Equipment or protective systems intended for use in potentially explosive atmospheres - Directive 2014/34/EU

(2) Ex-Type Examination Certificate Number: **KEMA 03ATEX1074 X** Issue Number: **6**

(3) Product: **Indicator Model P1 Series**

(4) Manufacturer: **Fluidwell B.V.**

(5) Address: **Vollweg 23, 5486 AZ Vught, The Netherlands**

(6) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(7) DEKRA Certification B.V., notified body number 0344 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

(8) The examination and test results are recorded in confidential test report number NL/DEKEX/7811/003/02.

(9) Compliance with the Essential Health and Safety Requirements has been assessed by comparison with:  
**EN IEC 60079-0 : 2018** **EN 60079-11 : 2012**  
except in respect of those requirements listed in item 10 of the Schedule

(10) If the sign "C" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

**II 1 G Ex ia IIB/IIC T4 Ga**  
**II 1 D Ex ia IIIC T<sub>200</sub> 100 °C Da**

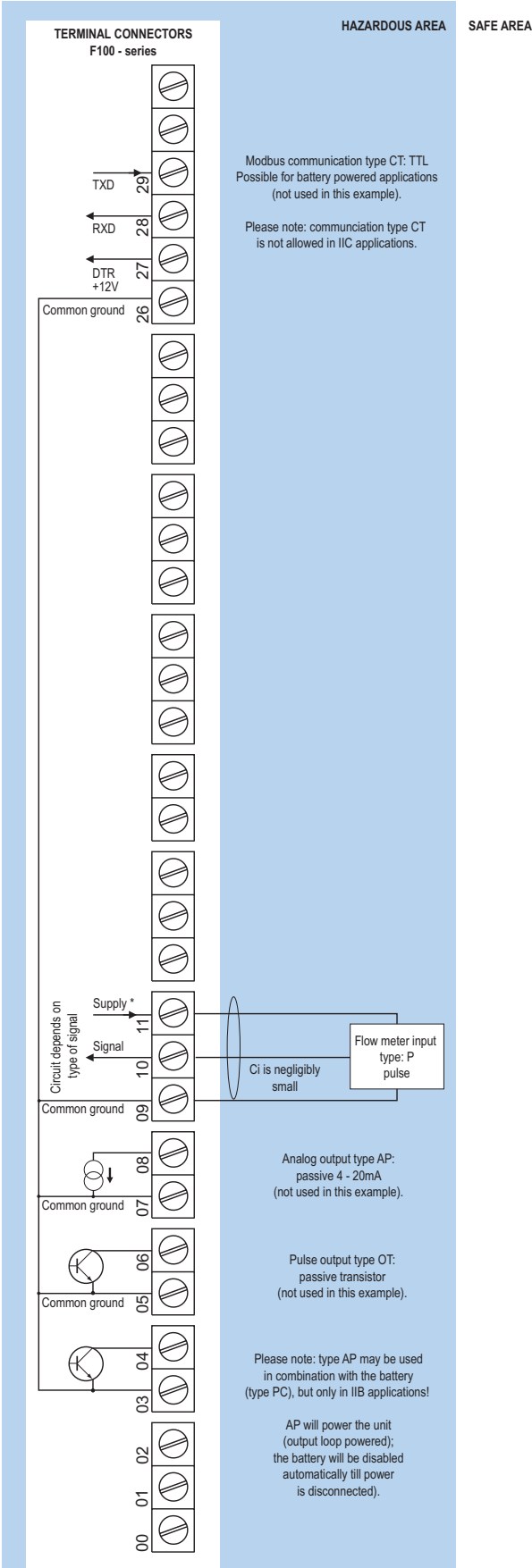
Date of certification: **22 February 2019**  
DEKRA Certification B.V.  
  
R. Schiller  
Certification Manager

\* Single publication of this certificate and adjoining reports is allowed. This Certificate may only be reproduced in printing and other no change

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T +31 86 98 82000 | F +31 86 98 82100 | www.dekra-certification.com | Registration: Arnhem 02000008

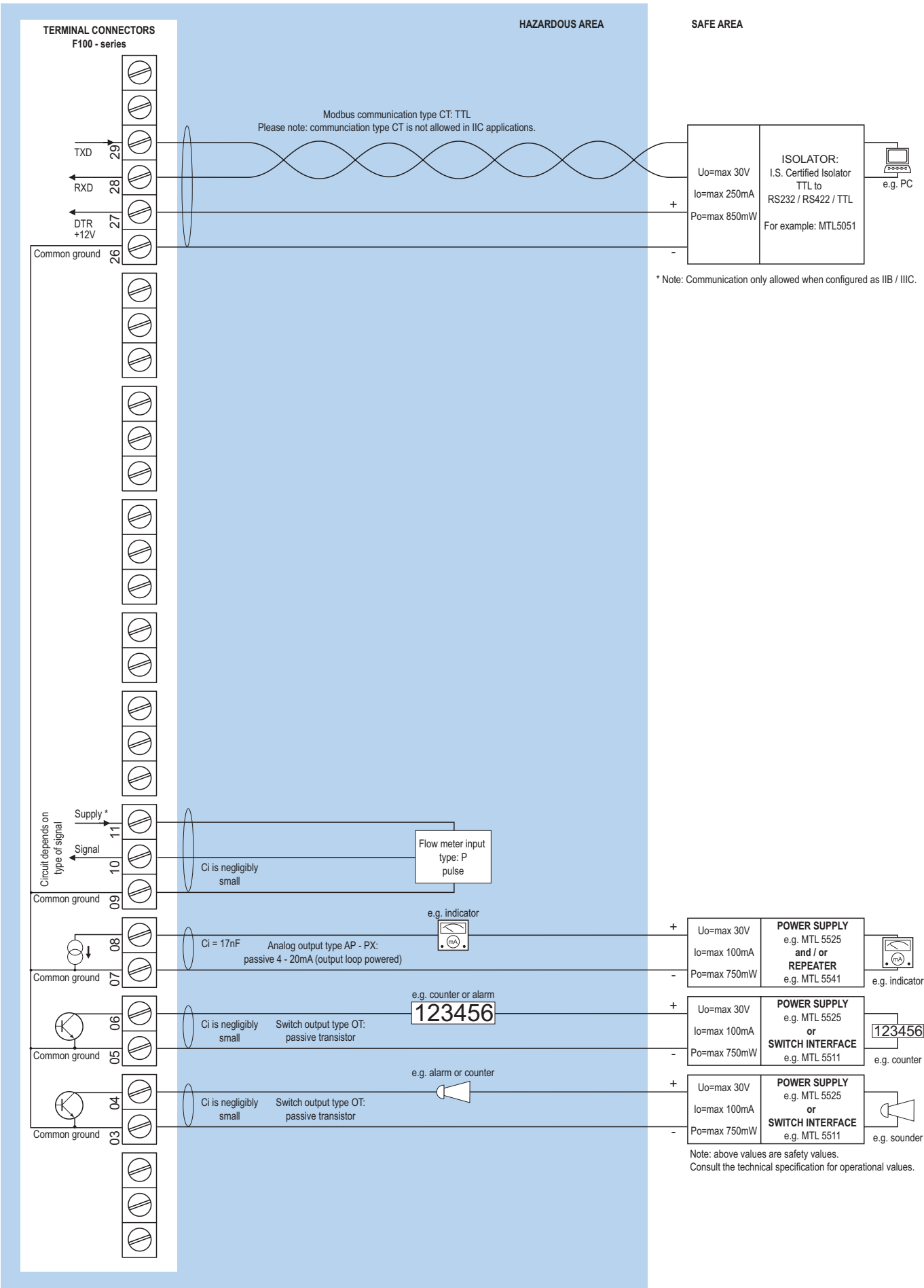
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Configuration example IIB / IIIC and IIC  
F118-P-(AP)-(CT)-(OT)-PC-XI - Battery powered unit



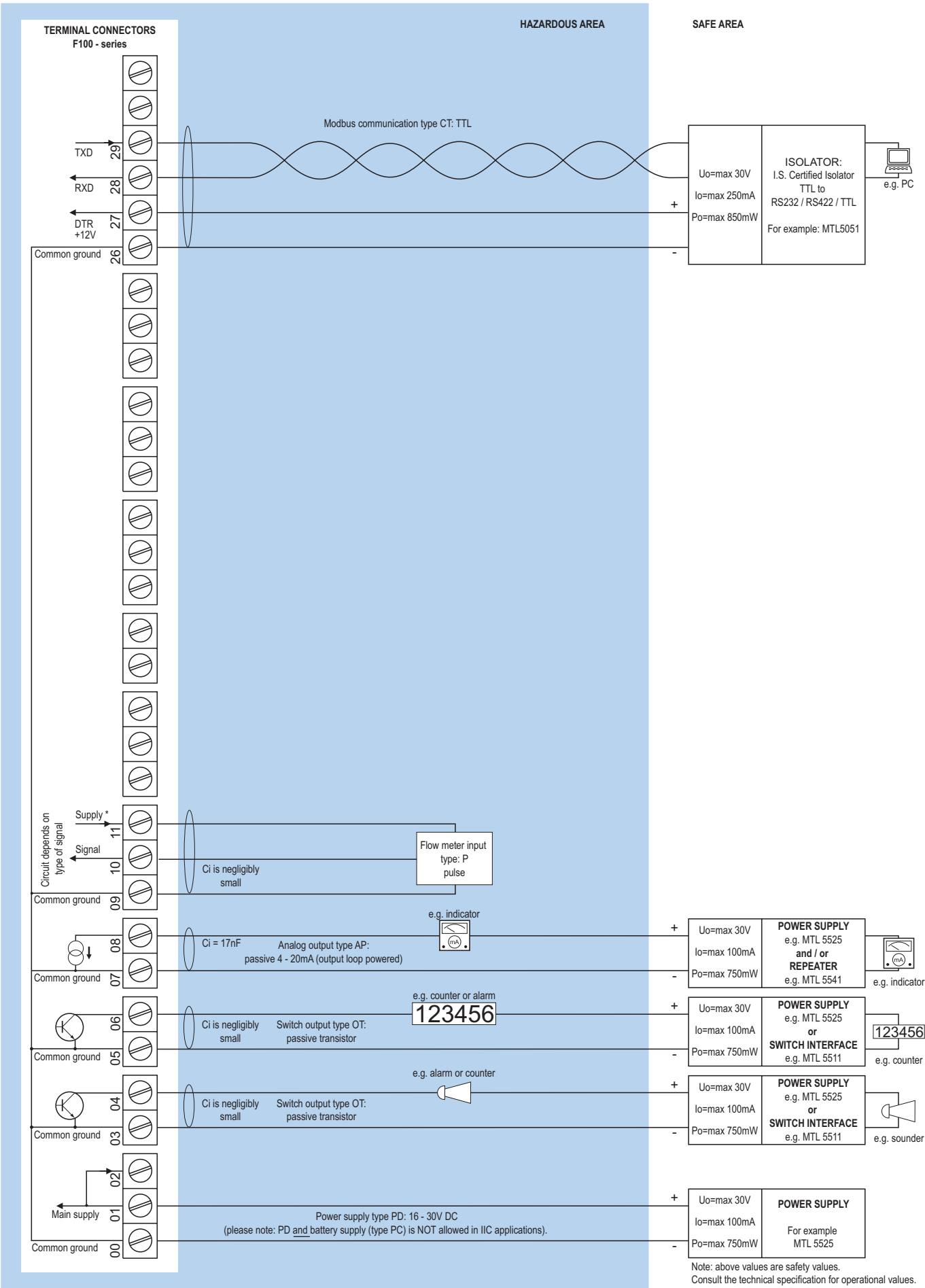
\* For pulse type inputs: V<sub>ref</sub>: 1.2V/3.0V available. - NO power output, available I<sub>supply</sub>: <1mA. Note: using these ref. voltages at max. load, will reduce battery life significantly.

Configuration example IIB / IIIC and IIC - F118-P-AP-(CT)-OT-(PX)-XI - Output loop powered



\* For pulse type inputs:  $V_{ref}$ : 1.2V/3.0V available.- NO power output, available I<sub>supply</sub>: <1mA.  
Note: using these ref. voltages at max. load, will reduce battery life significantly.

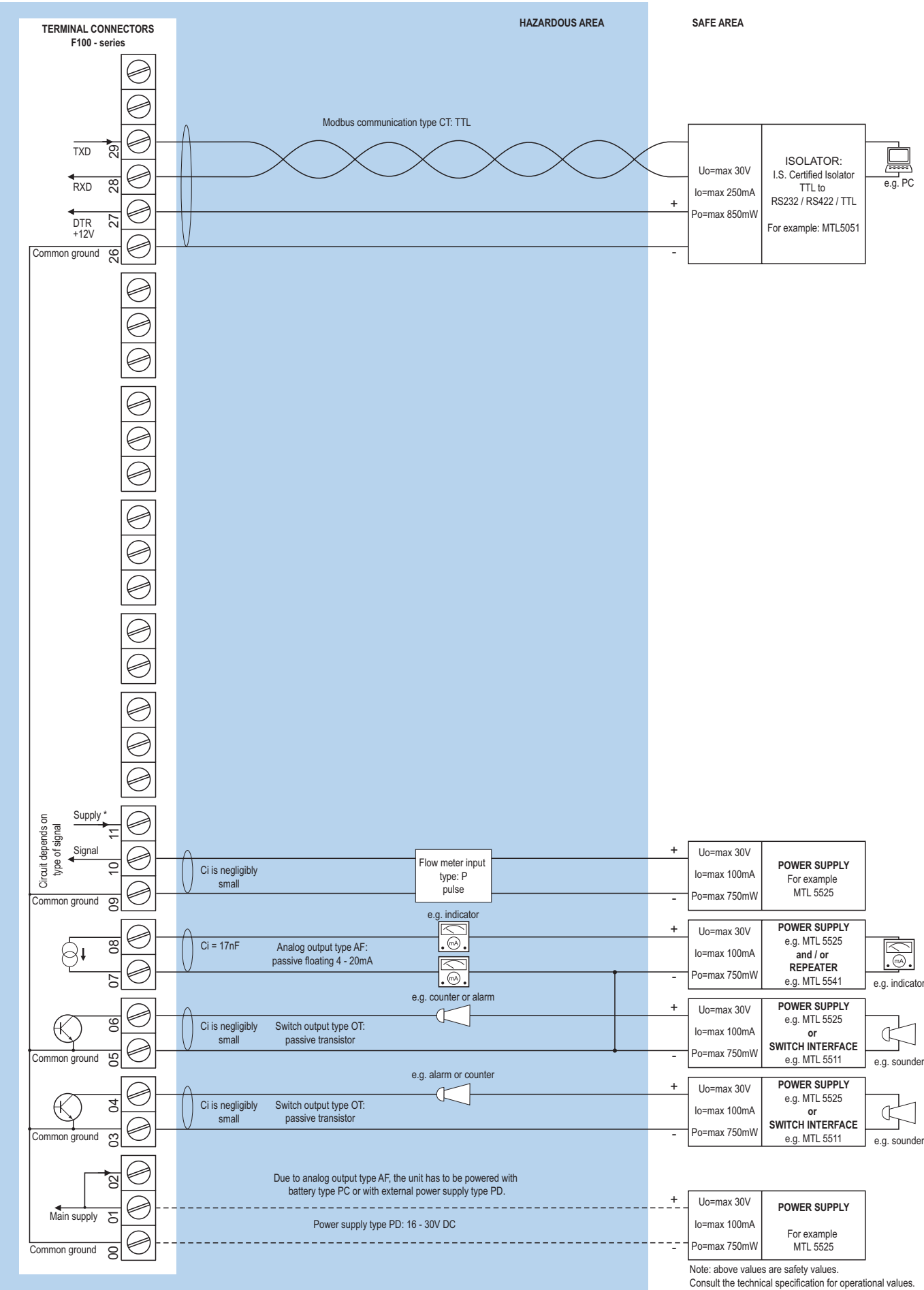
Configuration example IIB / IIC - F118-P-AP-CT-OT-PD-XI - Power requirement 16 - 30V DC



\* 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 / IIIC - F118-P-AF-CT-OT-(PC)-(PD)-XI - Power requirement 16 - 30V DC or battery powered



\* 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).

## Display

<b>Type</b>	High intensity reflective numeric and alphanumeric LCD, UV-resistant.
<b>Dimensions</b>	90 x 40mm (3.5" x 1.6").
<b>Digits</b>	Seven 17mm (0.67") and eleven 8mm (0.31") digits. Various symbols and measuring units.
<b>Refresh rate</b>	User definable: fast, 1sec, 3sec, 15sec, 30sec, off.
<b>Option ZB</b>	Transflective LCD with white LED-backlight. Intensity can be adjusted in the configuration menu. Good readings in full sunlight and darkness.
<b>Note ZB</b>	Only available for safe area applications.

## Ambient temperature

<b>Safe areas</b>	-40°C to +80°C (-40°F to +176°F).
<b>Intrinsically Safe</b>	-40°C to +70°C (-40°F to +158°F).
<b>Dust, zone 20</b>	-40°C to +50°C (-40°F to +122°F).

## Terminal connections

<b>Type</b>	Removable plug-in terminal strip. Wire max. 1.5mm <sup>2</sup> and 2.5mm <sup>2</sup> .
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## Data protection

<b>Type</b>	EEPROM backup of all settings. Backup of running totals every minute. Data retention at least 10 years.
<b>Password</b>	Configuration settings can be password protected.

## Directives & Standards

<b>EMC</b>	Directive 2014/30/EU, FCC 47 CFR part 15.
<b>Low voltage</b>	Directive 2014/35/EU
<b>RoHS</b>	Directive 2011/65/EU
<b>ATEX / IECEx</b>	Directive 2014/34/EU, IEC 600079-0, IEC 60079-11.
<b>IP &amp; NEMA</b>	EN 60529 & NEMA 250

## Intrinsically Safe (Type XI)

<b>ATEX</b>	Gas: II 1 G Ex ia IIB/IIC T4 Ga. Dust: II 1 D Ex ia IIIC T <sub>200</sub> 100 °C Da.
<b>IECEx</b>	Gas: Ex ia IIC/IIB T4 Ga. Dust: Ex ia IIIC T <sub>200</sub> 100 °C Da.
<b>Ambient Ta</b>	-40°C to +70°C (-40°F to +158°F).
<b>Dust, zone 20</b>	-40°C to +50°C (-40°F to +122°F).

## Explosion proof (Type XF)

<b>ATEX/IECEx</b>	Gas: II 2 G Ex db IIB+H2 T5 Gb. Dust: II 2 D Ex tb IIIC T80°C.
<b>Protection</b>	IP66
<b>Type XF</b>	Dimensions of enclosure: 300 x 250 x 200mm (11.8" x 9.9" x 7.9") L x H x D.
<b>Weight</b>	Appr. 15kg.

## Enclosure

<b>Window</b>	Polycarbonate window.
<b>Sealing</b>	Silicone.
<b>Control keys</b>	Three industrial micro-switch keys. UV-resistant silicone keypad.

## Panel mount enclosures

<b>Dimensions</b>	130 x 120 x 60mm (5.12" x 4.72" x 2.36") - W x H x D.
<b>Panel cut-out</b>	115 x 98mm (4.53" x 3.86") L x H.
<b>Type HB</b>	Die-cast aluminum panel mount enclosure IP65 / NEMA Type4X.
<b>Weight</b>	600 gr.
<b>Type HC</b>	GRP panel mount enclosure IP65 / NEMA Type4X, UV-resistant and flame retardant.
<b>Weight</b>	450 gr.
<b>Type HSB</b>	Die-cast stainless steel 316L IP67 / NEMA Type4X.
<b>Weight</b>	1150gr.

## GRP wall / field mount enclosures

<b>General</b>	GRP wall/field mount enclosure IP67 / NEMA Type4X, UV-resistant and flame retardant.
<b>Dimensions</b>	130 x 120 x 75mm (5.12" x 4.72" x 2.95") - W x H x D.
<b>Weight</b>	600 gr.
<b>Type HD</b>	Cable entry: no holes.
<b>Type HE</b>	Cable entry: 2 x Ø 16mm and 1 x Ø 20mm.
<b>Type HF</b>	Cable entry: 1 x Ø 22mm (7/8").
<b>Type HG</b>	Cable entry: 2 x Ø 20mm.
<b>Type HH</b>	Cable entry: 6 x Ø 12mm.
<b>Type HJ</b>	Cable entry: 3 x Ø 22mm (7/8").
<b>Type HK</b>	Flat bottom, cable entry: no holes.
<b>Type HQ</b>	Cable entry: 2 x Ø 16mm & 3 x Ø 12mm.

## Aluminum wall / field mount enclosures

<b>General</b>	Die-cast aluminum wall/field mount enclosure IP67 / NEMA Type4X with 2-component UV-resistant coating. Extended back cover available with undrilled preparation for direct meter mounting.
<b>Dimensions</b>	130 x 120 x 75mm (5.12" x 4.72" x 2.95") - W x H x D. 130 x 120 x 90mm (5.12" x 4.72" x 3.54") - W x H x D.
<b>Weight</b>	1100 gr. / extended enclosure: 1310 gr.
<b>Type HA</b>	Cable entry: 2 x PG9 and 1 x M20.
<b>Type HL</b>	Cable entry: 2 x 1/2" NPT.
<b>Type HM/HBM</b>	Cable entry: 2 x M16 and 1 x M20.
<b>Type HN</b>	Cable entry: 1 x M20.
<b>Type HO/HBO</b>	Cable entry: 2 x M20.
<b>Type HP</b>	Cable entry: 6 x M12.
<b>Type HT</b>	Cable entry: 1 x 1/2" NPT.
<b>Type HU/HBU</b>	Cable entry: 3 x 1/2" NPT.
<b>Type HV</b>	Cable entry: 4 x M20.
<b>Type HZ</b>	Cable entry: no holes.

## Stainless steel 316L wall / field mount enclosures

<b>General</b>	Die-cast stainless steel 316L wall / field mount enclosure with flat bottom. IP67 / NEMA Type4X.
<b>Dimensions</b>	130 x 120 x 75mm (5.12" x 4.72" x 2.95") - W x H x D.
<b>Weight</b>	2700 gr.
<b>Type HSM</b>	Cable entry: 2 x M16 + 1 x M20.
<b>Type HSO</b>	Cable entry: 2 x M20.
<b>Type HSU</b>	Cable entry: 3 x 1/2" NPT.

## Signal inputs - Flowmeter

<b>Type P</b>	Coil / sine wave (HI: 20mVpp or LO: 80mVpp - sensitivity selectable), NPN/PNP, open collector, reed switch, Namur, active pulse signals 8 - 12 and 24V DC.
<b>Frequency</b>	Minimum 0Hz - maximum 6kHz 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.
<b>K-Factor</b>	0.000010 - 9,999,999 with variable decimal position.
<b>Low-pass filter</b>	Available for all pulse signals.
<b>Option ZF</b>	coil sensitivity 10mVpp.

## Signal outputs - Digital output

<b>Function</b>	All outputs are user defined: pulse output, low or high alarm output or all alarm outputs.
<b>Frequency</b>	Max. 500Hz. Pulse width user definable between 0.001 second up to 9.999 seconds.
<b>Type OA</b>	Three active 24V DC transistor outputs (PNP); max. 50mA per output (requires -PD, PF, PM or PX). Requires min. 24V power supply
<b>Type OR</b>	Two electro-mechanical relay outputs isolated max. switch power 230V AC (N.O.) - 0.5A per relay (requires PF or PM) and one transistor output OT.
<b>Type OT</b>	Three passive transistor outputs (NPN) - not isolated. Max. 50V DC - 300mA per output.
<b>Note</b>	Intrinsically Safe applications: only two transistor outputs type OT available.

## Signal outputs - Analog output

<b>Function</b>	Transmitting linearized flow rate.
<b>Accuracy</b>	10 bit. Error < 0.05%. Analog output signal can be scaled to any desired range.
<b>Update time</b>	Eight times per second.
<b>Type AA</b>	Active 4 - 20mA output (requires PD, PF, PM or PX).
<b>Type AB</b>	Active 0 - 20mA output (requires PD, PF, PM or PX).
<b>Type AF</b>	Passive floating 4 - 20mA output for Intrinsically Safe applications (requires XI + PD).
<b>Type AI</b>	Passive galvanically isolated 4 - 20mA output - also available for battery powered models.
<b>Type AP</b>	Passive 4 - 20mA output - not isolated. Unit will be loop powered.
<b>Type AU</b>	Active 0 - 10V DC output (requires PD, PF, PM or PX). Requires min. 12V power supply.

## Signal outputs - Communication option

<b>Function</b>	Reading display information, reading / writing all configuration settings.
<b>Protocol</b>	Modbus ASCII / RTU.
<b>Speed</b>	1200 - 2400 - 4800 - 9600 baud.
<b>Addressing</b>	Maximum 255 addresses.
<b>Type CB</b>	RS232
<b>Type CH</b>	RS485 2-wire
<b>Type CI</b>	RS485 4-wire
<b>Type CT</b>	TTL Intrinsically Safe.

## Mounting accessories

<b>ACF02</b>	Stainless steel wall mounting kit.
<b>ACF05</b>	Stainless steel pipe mounting kit (worm gear clamps not included).
<b>ACF06</b>	Two stainless steel worm gear clamps Ø 44 - 56mm.
<b>ACF07</b>	Two stainless steel worm gear clamps Ø 58 - 75mm.
<b>ACF08</b>	Two stainless steel worm gear clamps Ø 77 - 95mm.
<b>ACF09</b>	Two stainless steel worm gear clamps Ø 106 - 138mm.
<b>ACF11</b>	Swivel with 25° movement from center axis for direct flowmeter mounting: 1" NPT to 1/2" NPT.

## Cable glands

<b>ACF20</b>	For HA enclosure, includes O-rings.
<b>ACF25</b>	For HE enclosure, includes locknuts and O-rings.
<b>ACF26</b>	For HF enclosure, includes locknuts and O-rings.
<b>ACF27</b>	For HG enclosure, includes locknuts and O-rings.
<b>ACF28</b>	For HH enclosure, includes locknuts and O-rings.
<b>ACF29</b>	For HJ enclosure, includes locknuts and O-rings.
<b>ACF30</b>	For HQ enclosure, includes O-rings.
<b>ACF32</b>	For HM enclosure, includes O-rings.
<b>ACF33</b>	For HN enclosure, includes O-rings.
<b>ACF34</b>	For HO enclosure, includes O-rings.
<b>ACF35</b>	For HP enclosure, includes O-rings.
<b>ACF39</b>	For HT enclosure, includes O-rings.
<b>ACF40</b>	For HU enclosure, includes O-rings.

## Blind plugs

<b>ACF50</b>	For HA enclosure, includes O-rings.
<b>ACF55</b>	For HE enclosure, includes locknuts and O-rings.
<b>ACF56</b>	For HF enclosure, includes locknuts and O-rings.
<b>ACF57</b>	For HG enclosure, includes locknuts and O-rings.
<b>ACF58</b>	For HH enclosure, includes locknuts and O-rings.
<b>ACF59</b>	For HJ enclosure, includes locknuts and O-rings.
<b>ACF60</b>	For HQ enclosure, includes O-rings.
<b>ACF62</b>	For HM enclosure, includes O-rings.
<b>ACF63</b>	For HN enclosure, includes O-rings.
<b>ACF64</b>	For HO enclosure, includes O-rings.
<b>ACF65</b>	For HP enclosure, includes O-rings.
<b>ACF69</b>	For HT enclosure, includes O-rings.
<b>ACF70</b>	For HU enclosure, includes O-rings.

## Intrinsically Safe isolators

<b>ACG01</b>	MTL5511 - One channel pulse or switch output transfer from hazardous area to safe area.
<b>ACG02</b>	MTL5525 - 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).
<b>ACG03</b>	MTL5541 - One channel 4 - 20mA repeater from hazardous area to safe area.
<b>ACG04</b>	MTL 5051 - Bi-direction serial-data-isolator (for Modbus communication).
<b>ACG05</b>	MTL5516C - Two channel pulse or switch output transfer from hazardous area to safe area.
<b>ACG06</b>	MTL5513 - One channel pulse or switch output transfer from hazardous area to safe area.
<b>ACG07</b>	MTL5546Y - One channel isolated driver bringing 4 - 20mA from safe area to hazardous area, HART transparent, OCD.

## Power requirements

<b>Type AP</b>	Analog output loop powered, 8 - 30V DC. Power consumption max 0.5 Watt.
<b>Type PB</b>	Long life Lithium battery - life-time depends upon settings and configuration - up to 5 years. (requires PD or PX)
<b>Type PC</b>	Intrinsically Safe long life lithium battery life-time depends upon settings and configuration - up to 5 years. (requires XI and PD or PX)
<b>Type PD</b>	8 - 24V AC / DC $\pm$ 10%. Power consumption max. 5W.
<b>Type PD-XI</b>	16 - 30V DC power consumption max. 1W.
<b>Type PD-OS</b>	20 - 30V DC / 15 - 24V AC power consumption max. 1W.
<b>Type PF</b>	24V AC / DC $\pm$ 10%. Power consumption max. 15W.
<b>Type PM</b>	115 - 230V AC $\pm$ 10%. Power consumption max. 15W.
<b>Type PX</b>	8 - 30V DC. Power consumption max. 0.75W.
<b>Type ZB</b>	12 - 30V DC $\pm$ 10%. Power consumption max. 1.5W.
<b>Note PB/PF/PM</b>	Not available Intrinsically Safe.
<b>Note PF/PM</b>	The total consumption of the sensors and outputs may not exceed 400mA @ 24V.
<b>Note XI</b>	For Intrinsically Safe applications, consult the safety values in the certificate.

## Sensor excitation

<b>Type PB/PC/PX</b>	3V DC for pulse signals and 1.2V DC for coil pick-up.
<b>Note PB/PC/PX</b>	This is not a real sensor supply. Only suitable for sensors with a very low power consumption like coils (sine wave) and reed-switches.
<b>Type PD</b>	1.2 / 3 / 8.2 / 12 / 24V DC - max. 50mA @ 24V DC. $U_{\text{max}}$ sensor is 2V below $U_{\text{supply}}$
<b>Type PD-XI</b>	1.2 / 3 / 8.2V DC - max. 7mA @ 8.2V DC and mains power supply voltage (as connected to terminal 1).
<b>Type PF / PM</b>	1.2 / 3 / 8.2 / 12 / 24V DC - max. 400mA @ 24V DC.

## Operator functions

<b>Displayed info</b>	<ul style="list-style-type: none"> <li>• Linearized flow rate and / or total.</li> <li>• Linearized total and accumulated total.</li> <li>• Low flow rate alarm value.</li> <li>• High flow rate alarm value.</li> <li>• Alarm values can be set (or only displayed).</li> <li>• Total can be reset to zero by pressing the CLEAR-key twice.</li> </ul>
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## Total

<b>Digits</b>	7 digits.
<b>Units</b>	L, m <sup>3</sup> , GAL, USGAL, kg, lb, bbl, no unit.
<b>Decimals</b>	0 - 1 - 2 or 3.
<b>Note</b>	Total can be reset to zero.

## Accumulated total

<b>Digits</b>	11 digits.
<b>Units / decimals</b>	According to selection for total.
<b>Note</b>	Can not be reset to zero.

## Flow rate

<b>Digits</b>	7 digits.
<b>Units</b>	mL, L, m <sup>3</sup> , Gallons, kg, Ton, lb, bl, cf, RND, ft <sup>3</sup> , scf, Nm <sup>3</sup> , NI, igal - no units.
<b>Decimals</b>	0 - 1 - 2 or 3.
<b>Time units</b>	/sec - /min - /hr - /day.

## Alarm values

<b>Digits</b>	7 digits.
<b>Units</b>	According to selection for flow rate.
<b>Decimals</b>	According to selection for flow rate.
<b>Time units</b>	According to selection for flow rate.
<b>Type of alarm</b>	Low and high flow rate alarm. Includes alarm delay time and configurable alarm outputs.

	Description	
Model	<b>F118</b>	<b>Flow rate monitor / totalizer with linearization, high / low alarms and analog / pulse signal outputs.</b>
Input	<b>P</b>	<b>Pulse input, e.g., coil, npn, pnp, namur, reed-switch.</b>
Analog output	AA	Active 4 - 20mA output - requires XX and PD, PF, PM or PX.
	AB	Active 0 - 20mA output - requires XX and PD, PF, PM or PX.
	AF	I.S. floating 4 - 20mA output - requires XI + PD.
	AI	Isolated 4 - 20 mA output - requires XX.
	<b>AP</b>	<b>Passive 4 - 20mA output, loop powered unit.</b>
	AU	Active 0 - 10V DC output - requires XX and PD, PF, PM or PX.
Communication	CB	Communication RS 232 - Modbus ASCII / RTU - requires XX.
	CH	Communication RS 485 - 2wire - Modbus ASCII / RTU - requires XX.
	CI	Communication RS 485 - 4wire - Modbus ASCII / RTU - requires XX.
	CT	Intrinsically Safe TTL - Modbus ASCII / RTU - requires XI.
	<b>CX</b>	<b>No communication.</b>
Enclosures	HB	Aluminum panel mount enclosure.
	<b>HC</b>	<b>GRP panel mount enclosure.</b>
	HSB	Stainless steel 316L panel mount enclosure.
	HD	GRP field mount - Cable entry: no holes.
	HE	GRP field mount - Cable entry: 2 x Ø 16mm & 1 x Ø 20mm.
	HF	GRP field mount - Cable entry: 1 x Ø 22mm ( $\frac{7}{8}$ ").
	HG	GRP field mount - Cable entry: 2 x Ø 20mm.
	HH	GRP field mount -Cable entry: 6 x Ø 12mm.
	HJ	GRP field mount - Cable entry: 3 x Ø 22mm ( $\frac{7}{8}$ ").
	HK	GRP field mount - Flat bottom, cable entry: no holes.
	HQ	GRP field mount - Cable entry: 2 x Ø 16mm & 3 x Ø 12mm.
	HA	Aluminum field mount - Cable entry: 2 x PG9 + 1 x M20.
	HL	Aluminum field mount - Cable entry: 2 x $\frac{1}{2}$ "NPT.
	HM	Aluminum field mount - Cable entry: 2 x M16 + 1 x M20.
	HN	Aluminum field mount - Cable entry: 1 x M20.
	HO	Aluminum field mount - Cable entry: 2 x M20.
	HP	Aluminum field mount - Cable entry: 6 x M12.
	HT	Aluminum field mount - Cable entry: 1 x $\frac{1}{2}$ "NPT.
	HU	Aluminum field mount - Cable entry: 3 x $\frac{1}{2}$ "NPT.
	HV	Aluminum field mount - Cable entry: 4 x M20.
	HZ	Aluminum field mount - Cable entry: no holes.
	HBM	Extended Alu. field/meter mount - Cable entry: 2 x M16 + 1 x M20.
	HBO	Extended Alu. field/meter mount - Cable entry: 2 x M20.
	HBU	Extended Alu. field/meter mount - Cable entry: 3 x $\frac{1}{2}$ "NPT.
	HSM	Stainless steel 316L field mount - Cable entry: 2 x M16 + 1 x M20.
	HSO	Stainless steel 316L field mount - Cable entry: 2 x M20.
	HSU	Stainless steel 316L field mount - Cable entry: 3 x $\frac{1}{2}$ "NPT.
Digital output	OA	Three active transistor outputs - requires XX and PD, PF, PM or PX.
	OR	Two mechanical relay outputs + one OT or OA - requires XX and PF or PM.
	<b>OT</b>	<b>Three passive transistor outputs.</b>
Power	PD	8 - 24V AC/DC + sensor supply - with XI: 16 - 30V DC.
	PF	24V AC/DC + sensor supply - requires XX.
	PM	115 - 230V AC + sensor supply - requires XX.
	<b>PX</b>	<b>Basic power supply 8 - 30V DC.</b>
Battery	PB	Additional lithium battery powered (optional) - requires XX and PD or PX.
	PC	Additional lithium battery powered (optional) - Intrinsically safe - requires XI, and PD or PX.
Hazardous	XI	Intrinsically safe, according ATEX and IECEx.
	XF	Ex d enclosure - 3 keys according ATEX and IECEx.
	<b>XX</b>	<b>Safe area only, according CE / UKCA.</b>
Options	ZB	Backlight - requires XX.
	ZF	Coil input 10mVpp.
	<b>ZX</b>	<b>No options.</b>

The **bold** marked text contains the standard configuration: F118-P-P-AP-CX-HC-OT-PX-XX-ZX.