

## Differential / Sum Flowcomputer

with analog and pulse signal outputs



Application examples: Salty Off-Shore conditions



Extreme cold weather at polar regions



Hot and sandy deserts

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

- Calculates differential flow rate (consumption) total and accumulated total of flow A and B or the sum.
- Precautions for pulsating flows and low consumption readings.
- 7 digit resettable total, 11 digit accumulated total.
- Large 17mm (0.67") digits for flow rate or total.
- Ability to process all types of signals: Sine wave (coil), NAMUR, NPN/PNP pulse, Reed-switch, Active pulse signals
- Scaled pulse output according to differential / sum accumulated total.
- Negative total value indication.
- Analog output according to differential / sum flow rate.
- 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 flowcomputer Model F116 has been developed to calculate differential or total volume. Typical applications are the measurement of fuel consumption or the calculation of total flow (sum) if - for costs reasons - two low cost flow meters can be used instead of one expensive flow meter. The usual difficulties encountered in such applications include: pulsating flows, very low consumption readings, vibration and high ambient temperatures. These are all well catered for in the design and operation of the F116.

## Display

The display has large 17mm (0.67") and 8mm (0.31") digits which can be set to show flow rate and total. 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. 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 loss.

## 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).



## Pulse output

The scaleable pulse output, reflects the count on the accumulated display. The pulse width is user defined and the maximum output frequency is 500Hz. The second output will be switched in case the total is counting down (negative consumption). The output signal can be a passive NPN, active PNP or an isolated electro-mechanical relay.

## 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).

## Analog output signal

The calculated 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 with a filter function being available to smoothen out the signal if desired. The output value is user defined in relation to the flow rate, 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 F116 as well.



All info  
at a glance



Easy  
to install



Easy  
to program



Know one  
know them all!



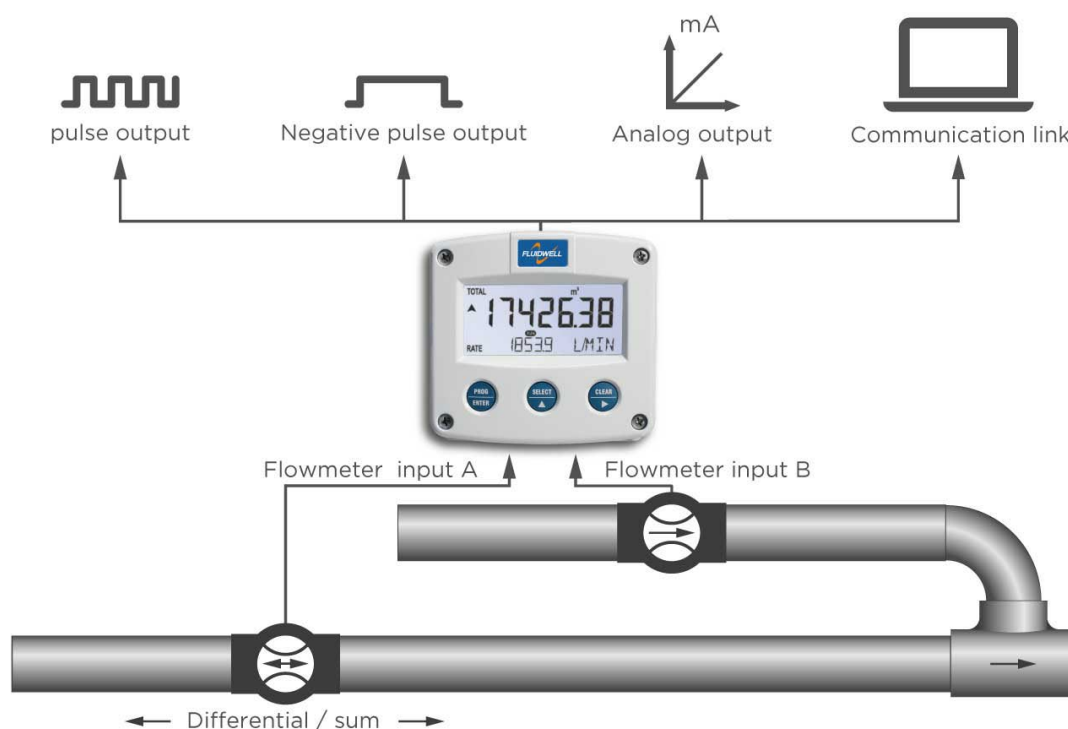
Reliable



User-friendly

## Overview application F116

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). Fuel consumption calculation for diesel engines on board of ships or locomotives. Sum function: where flows are split-up in two pipe-lines and total flow has to be calculated. More advanced model: F127.



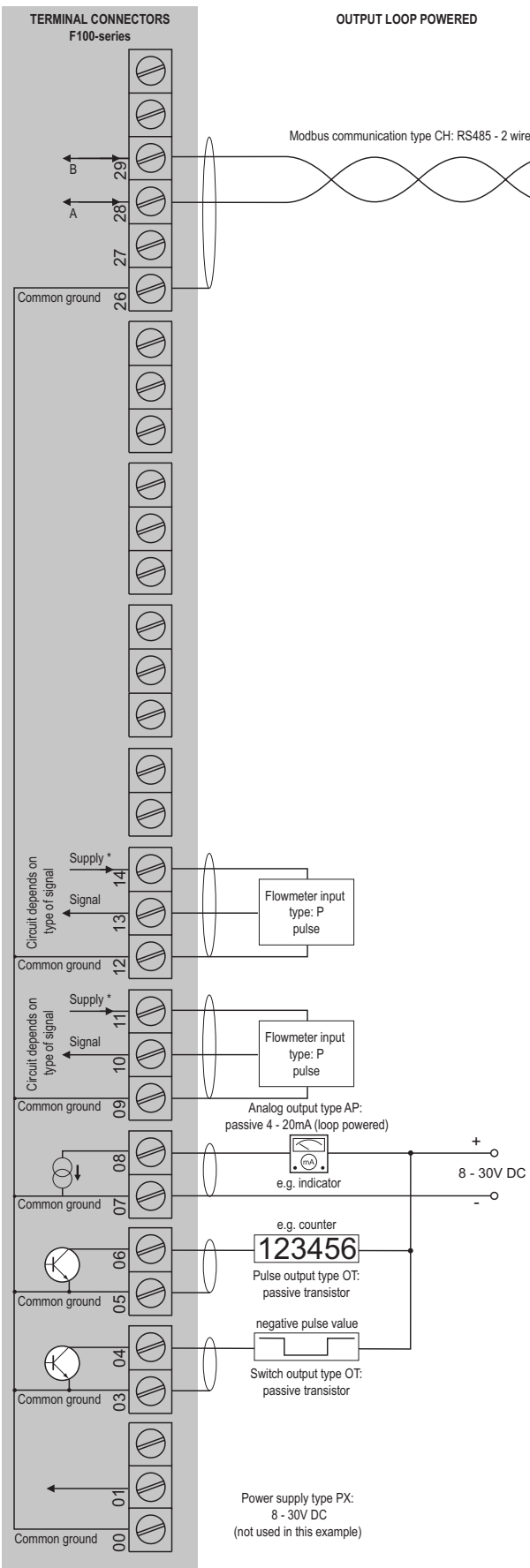
## Signal input

The F116 accepts most pulse and analog 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

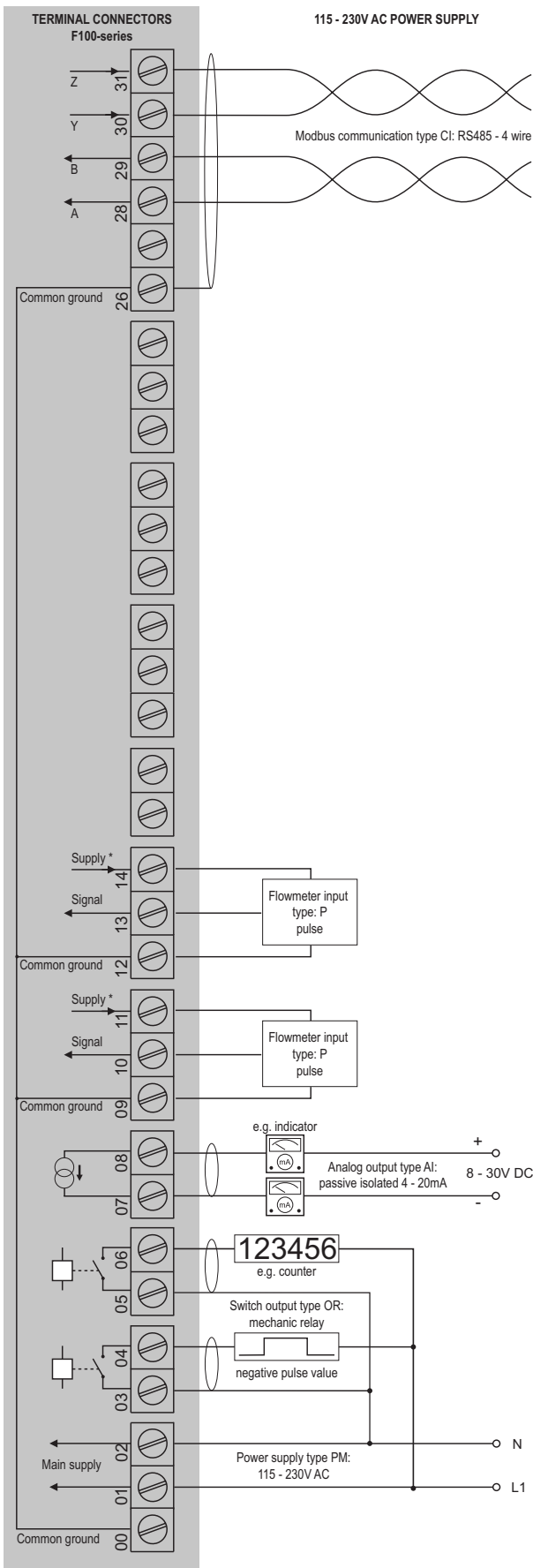


Configuration example F116-P-AP-CH-OT-(PX)-XX-ZX



\* 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 F116-P-AI-CI-OR-PM-XX-ZX





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



Hazardous area applications

The F116-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 outputs, it is allowed to connect up to four 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 F116 remains available, including 4 - 20mA output, pulse output and Modbus communication (type CT). Power supply type PD-XI offers a 8.2V sensor supply e.g. for two Namur sensors. 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 Atmosphere

Certificate No.: IECEx DEK 11.0042X Issue No. 2  
Status: **Current** Issue No. 2 (2014-04-22)  
Date of Issue: **2019-02-22** Issue No. 1 (2014-04-22)  
Applicant: **Fluidwell B.V.** Issue No. 2 (2014-04-22)  
Address: **Veldweg 23, 5446 AZ Vught, The Netherlands**  
Equipment: **Indicator Model F1 Series**  
Optional accessory:  
Type of Protection: **Ex ia**  
Marking: **Ex ia IIB/IIC T4 Ga**  
**Ex ia IIIC T<sub>200</sub> 100 °C Da**

Approved for issue on behalf of the IECEx Certification Body: **R. Schiller**  
Position: **Certification manager**  
Signature:   
Date: **2019-02-22**

1. This certificate and schedule may only be reproduced in full.  
2. This certificate is not transferable and remains the property of the issuing body.  
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 1091, 6825 NJ 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 F1 Series**  
(4) Manufacturer: **Fluidwell B.V.**  
(5) Address: **Veldweg 23, 5446 AZ Vught, The Netherlands**

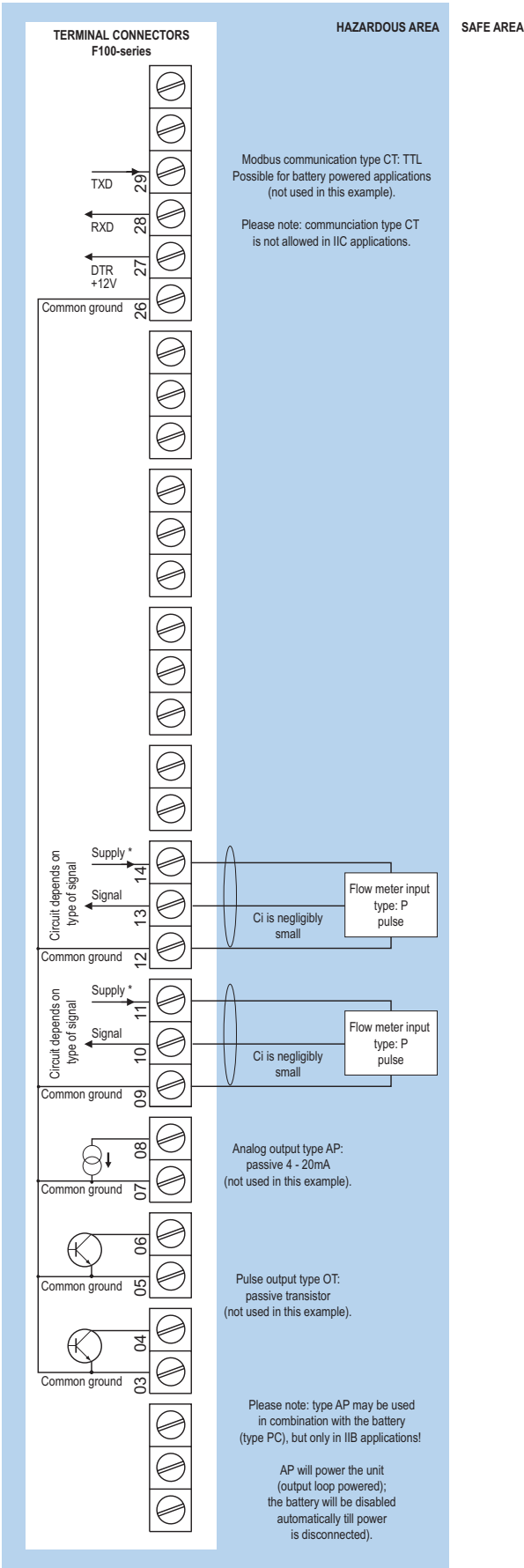
(6) This product and any acceptable variation thereto is specified in this certificate and the documents therein referred to.  
(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.  
(8) DEKRA Certification B.V., 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 3 to the Directive.  
The examination and test results are recorded in confidential test report number NL/DEKEX/7411/0033/02.  
(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
**EN IEC 60079-0 : 2015** **EX 60079-11 : 2012**  
except in respect of those requirements listed in Annex 15 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

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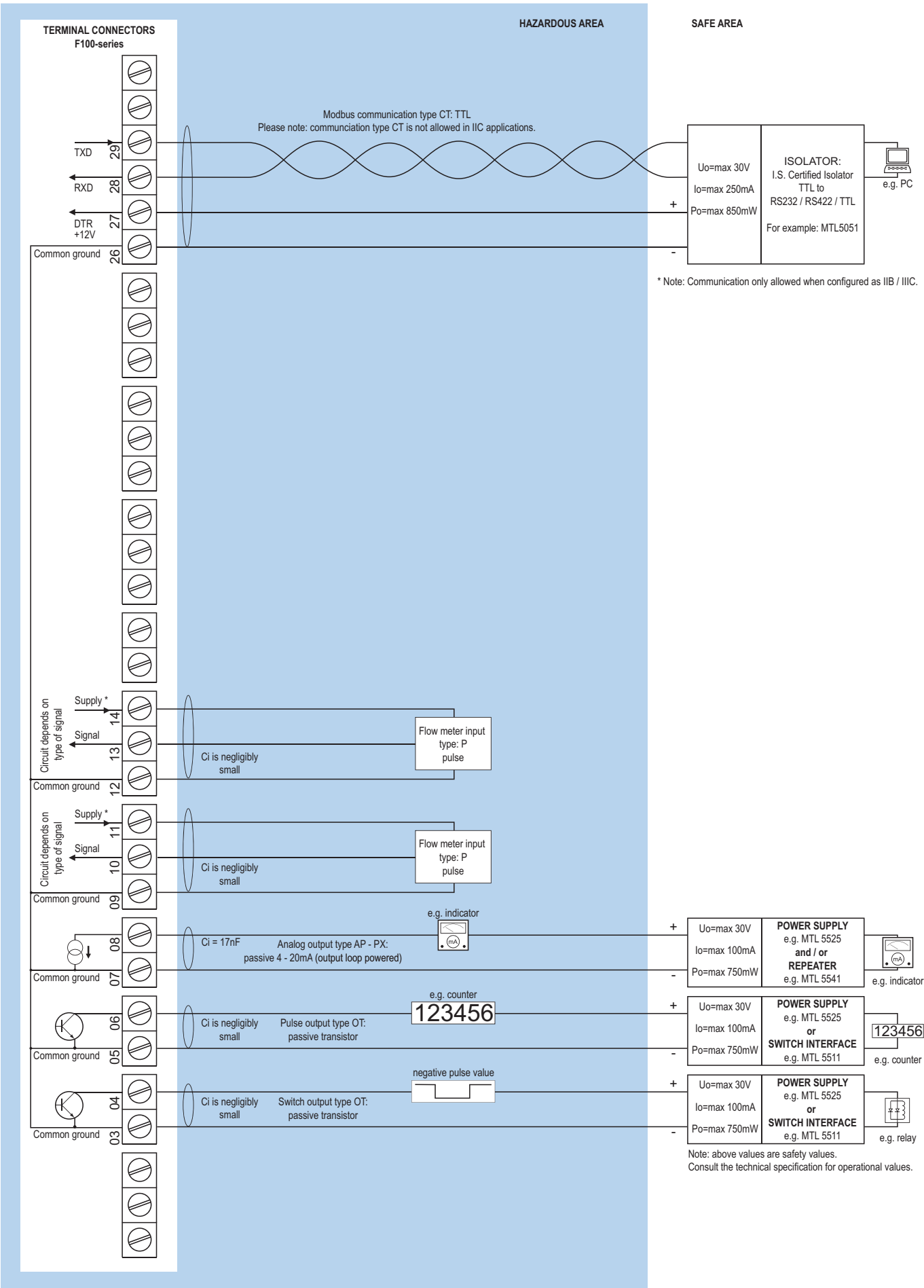
\* Single publication of this certificate and adjoining reports is allowed. This Certificate may only be reproduced in its entirety and without any change.  
DEKRA Certification B.V. | Steender 1051, 6825 NJ Arnhem | P.O. Box 5185, 6802 ED Arnhem, The Netherlands  
T +31 86 98 82000 | F +31 86 98 82100 | www.dekra-certification.com | Registration: Arnhem 020000050

Configuration example IIB / IIIC and IIC  
F116-P-(AP)-(CT)-(OT)-PC-XI - Battery powered unit



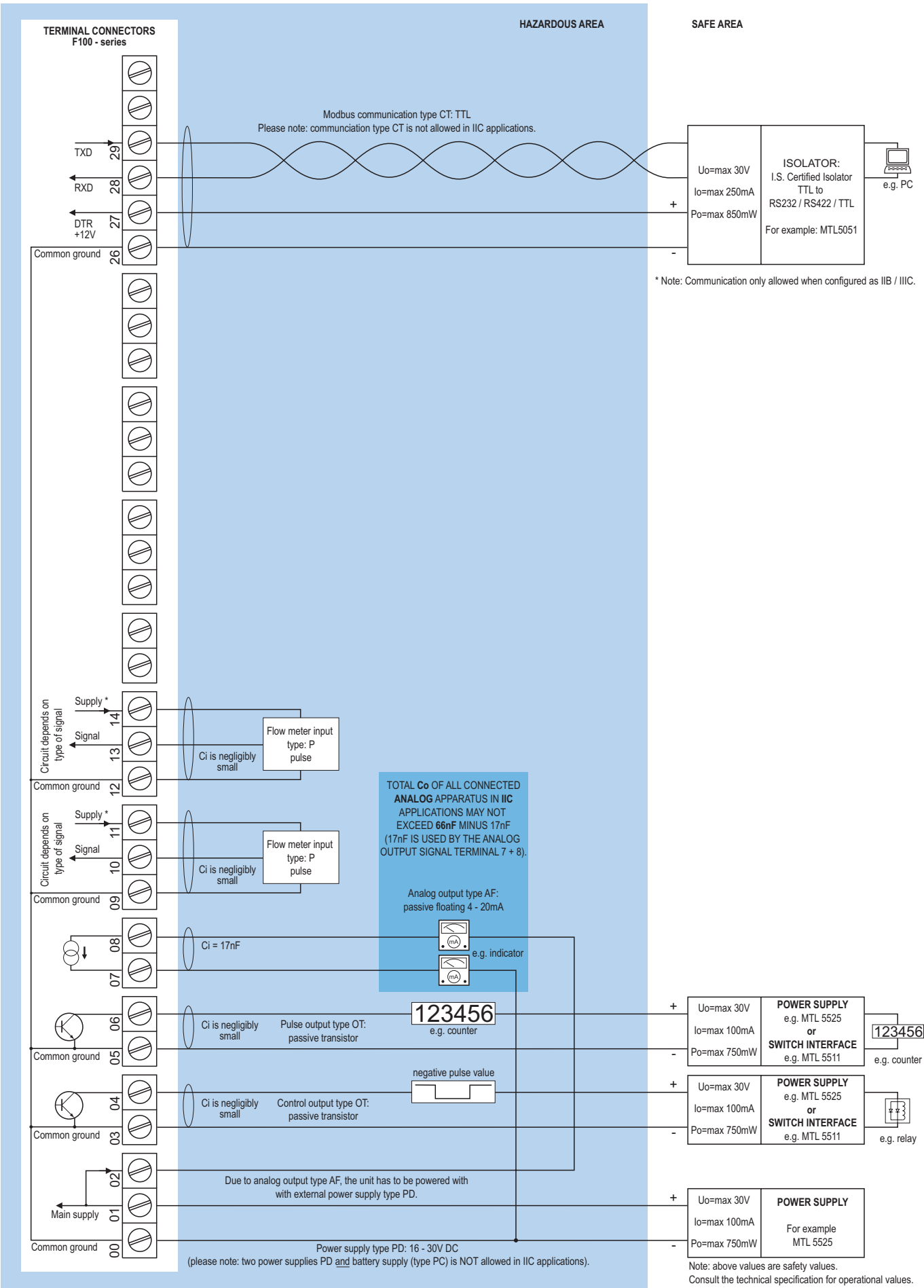
\* For pulse type inputs: V<sub>ref</sub>: 1.2V/3.0V available. - NO power output, available I<sub>supply</sub>: <1mA.  
Note: using these ref. voltages at max. load, will reduce battery life significantly.

Configuration example IIB / IIIC and IIC - F116-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.

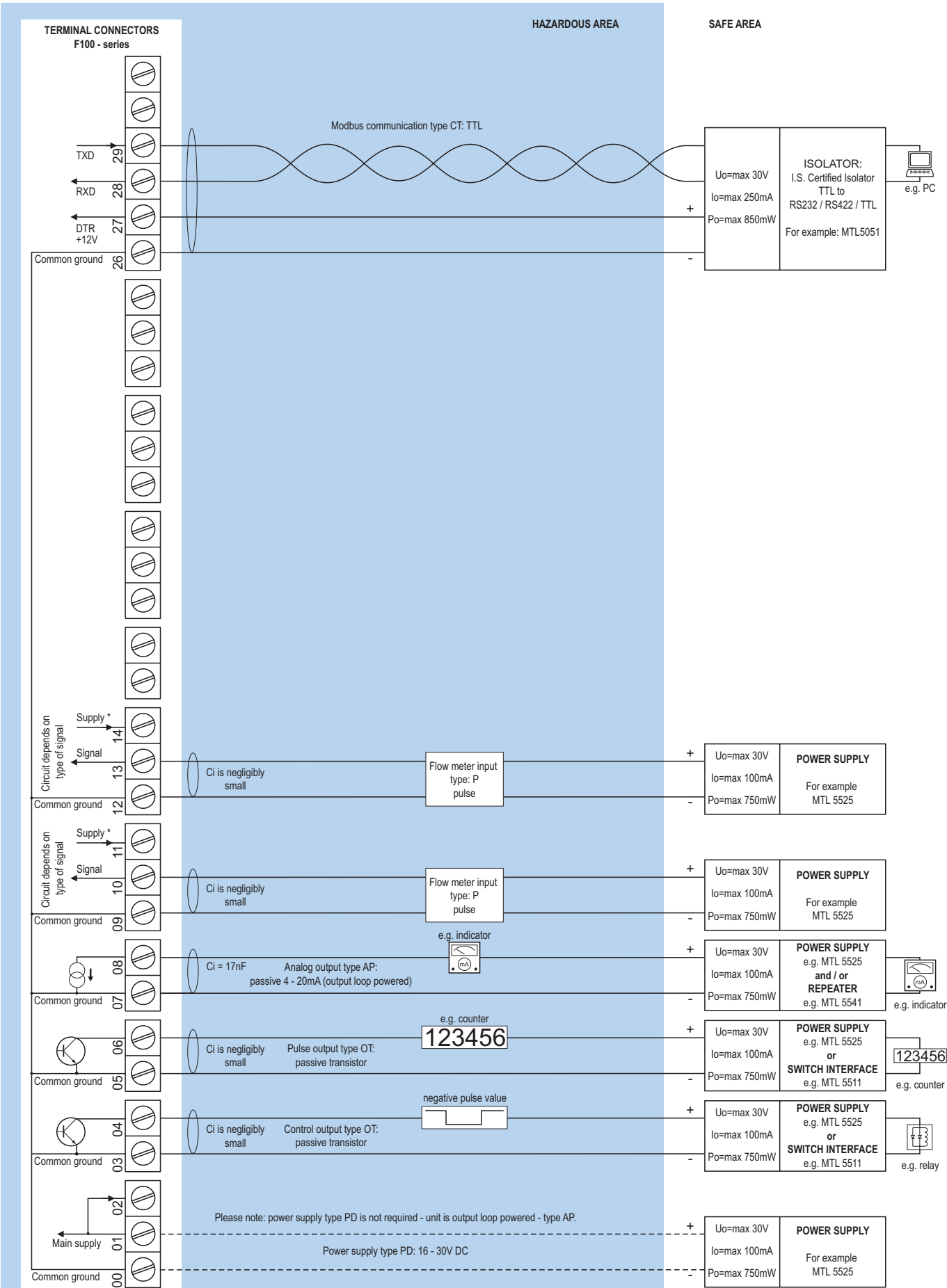
Configuration example IIB / IIIC and IIC - F116-P-AF-(CT)-OT-PD-XI - Power supply 16 - 30V DC



\* 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 - F116-A-AF-CT-OT-(PC)-(PD)-XI - Power supply 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.

## 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>	Pulse output according to differential or sum accumulated total and indication negative pulse output.
<b>Frequency</b>	Max. 500Hz. Pulse width user definable between 0.001 second up to 9.999 seconds.
<b>Type OA</b>	Two 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).
<b>Type OT</b>	Two passive transistor outputs (NPN) - not isolated. Max. 50V DC - 300mA per output.

## Signal outputs - Analog output

<b>Function</b>	Transmitting differential / sum 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.

## 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. Intrinsically Safe: 16 - 30V DC; power consumption max. 1 W.
<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. $U_{max}$ sensor is 2V below $U_{supply}$
<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>Differential flow rate (consumption) or the sum of both flow rates.</li> <li>Differential / sum total and accumulated total.</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, ical - no units.
<b>Decimals</b>	0 - 1 - 2 or 3.
<b>Time units</b>	/sec - /min - /hr - /day.

## 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.

	Description	
Model	<b>F116</b>	<b>Differential / sum flowcomputer with analog and 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 PD, PF, PM or PX - Safe area only
	AB	Active 0 - 20mA output - requires PD, PF, PM or PX - Safe area only
	AF	I.S. floating 4 - 20mA output - requires XI + PC or PD
	AI	Isolated 4 - 20 mA output - Safe area only
	<b>AP</b>	<b>Passive 4 - 20mA output, loop powered unit</b>
	AU	Active 0 - 10V DC output - requires PD, PF, PM or PX - Safe area only
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
	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	Two active transistor outputs- requires and PD, PF, PM or PX - Safe area only
	OR	Two mechanical relay outputs - requires PF or PM - Safe area only
	<b>OT</b>	<b>Two passive transistor outputs</b>
Power	PD	8 - 24V AC/DC + sensor supply - with XI: 16 - 30V DC
	PF	24V AC/DC + sensor supply - Safe area only
	PM	115 - 230V AC + sensor supply - Safe area only
	<b>PX</b>	<b>Basic power supply 8 - 30V DC</b>
Battery	PB	Additional lithium battery powered (optional) - requires PD or PX - Safe area only
	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</b>
Options	ZB	Backlight - Safe area only
	ZF	Coil input 10mVpp
	<b>ZX</b>	<b>No options</b>

The **bold** marked text contains the standard configuration: F116-P-AP-CX-HC-OT-PX-XX-ZX.