

## Pressure Indicator with very large digits



**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 IP67 (NEMA Type4X) field enclosure. It is so rugged, you can even stand on it!
- Intrinsically Safe available - ATEX, IECEx, FM and CSA 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 actual pressure and measuring unit.
- Very large 26mm (1") digits.
- Piegraph indication: ten segments.
- Number of digits for pressure: 5 ½.
- LED backlight option.
- Selectable on-screen engineering units: mBar - Bar - PSI.
- Pressure input signals: (0)4 - 20mA.
- Loop or battery powered, 8 - 30V DC or 115 - 230V AC power supply.
- Sensor supply 8.2 / 12 / 24V DC.
- Auto backup of all settings.
- Explosion/flame proof available.

## Introduction

The F050 is a straight forward pressure indicator. The measuring unit to be displayed is simply selected through an alphanumeric configuration menu. No adhesive labels have to be put on the outside of the enclosure: a weather proof and user friendly solution! The configuration of the Span, off-set and number of decimals is done through software functions, without any sensitive dip-switches or trimmers. A wide selection of options further enhances the capabilities of this model, including Intrinsic Safety for hazardous area applications.

## Configuration

All configuration settings are accessed via a simple operator menu which can be password protected. Each setting is clearly indicated with an alphanumeric description, which avoids confusing abbreviations. All settings are safely stored in EEPROM memory in the event of sudden power failure.

## Hazardous areas

For hazardous area applications, this model is ATEX, IECEx, FM and CSA certified as Intrinsically Safe for gas and dust applications, with an allowed ambient temperature of -40°C to +70°C (-40°F to +158°F). A flame proof Ex d enclosure with ATEX certification is also available.



## Display

The display has very large 26mm (1") digits which displays the pressure and measuring unit. As the F050 has been designed for field mounted applications, a smart display update function has been incorporated. Related to the lower temperature, the update frequency of the LCD is tuned automatically to achieve a readable display even at -40°C / -40°F.

## Backlight

For those applications where readability during day and night is an issue, a white backlight is available. The intensity can be adjusted from the keyboard. The display is a transfective type, which means that a high contrast reading is guaranteed in full sunlight as well as during the night. This backlight option is also available Intrinsically Safe.



All info  
at a glance



Easy  
to install



Easy  
to program



Know one  
know them all!



Reliable



User-friendly

## Overview application F050

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). Applications where a basic pressure measurement display is required without pressure monitoring. More sophisticated models: F053 and F190 or the D-Series DIN panel mount indicators.



## Signal input

The F050 accepts (0)4 - 20mA input signals from any type of pressure measurement device. Also a 4 - 20mA input loop powered model is available.

## Power requirements

Several power supply options are available to power the F050 and sensor. A battery powered version with a long life lithium battery which will last up to five years. A 4-20mA input loop powered version is available as well. A real sensor supply is offered with the 24V AC/DC or 115-230V AC power requirement options.

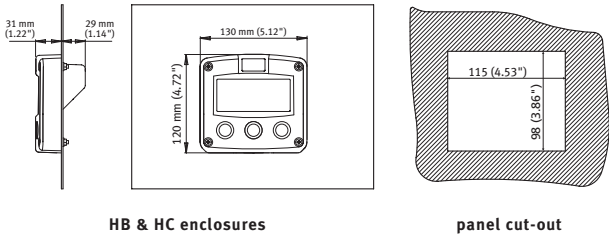


Enclosures

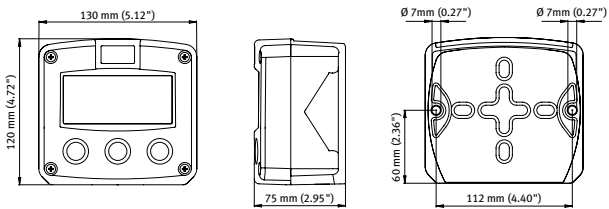
Various types of enclosures can be selected, all ATEX and IECEx approved. The F050 is supplied in an GRP panel mount enclosure as standard, which can be converted to an IP67 / NEMA Type4X GRP field mount enclosure by the addition of a back case. Most popular is our rugged aluminum field mount enclosure with IP67 / NEMA Type4X rating. Both EU or U.S. cable gland entry threads are available.

Dimensions enclosures

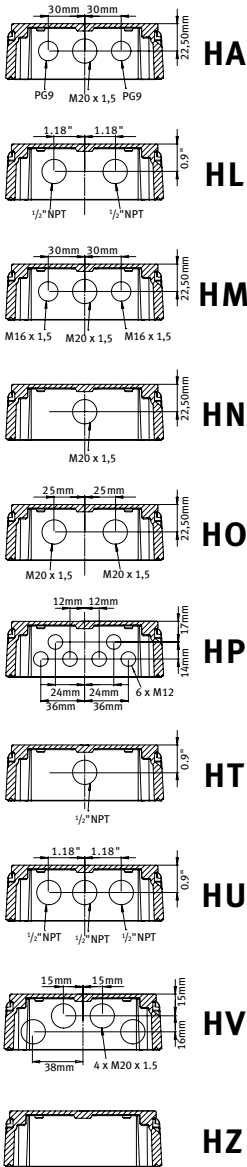
Aluminum & GRP panel mount enclosure



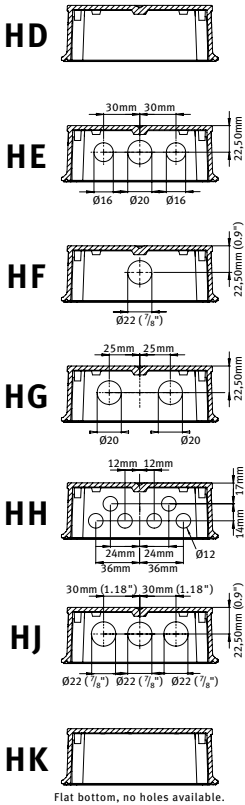
Aluminum & GRP field / wall mount enclosures



Aluminum

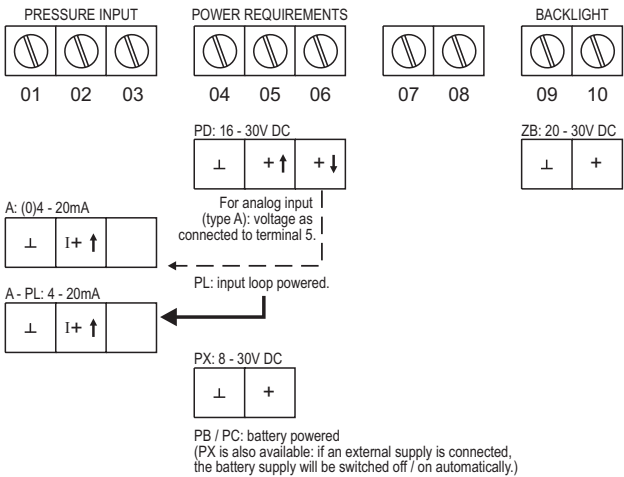


GRP



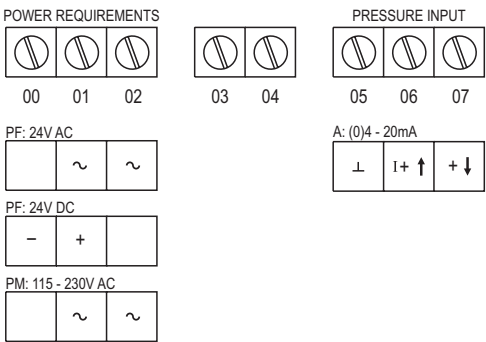
Terminal connections

PB/PC - PD - PL - PX

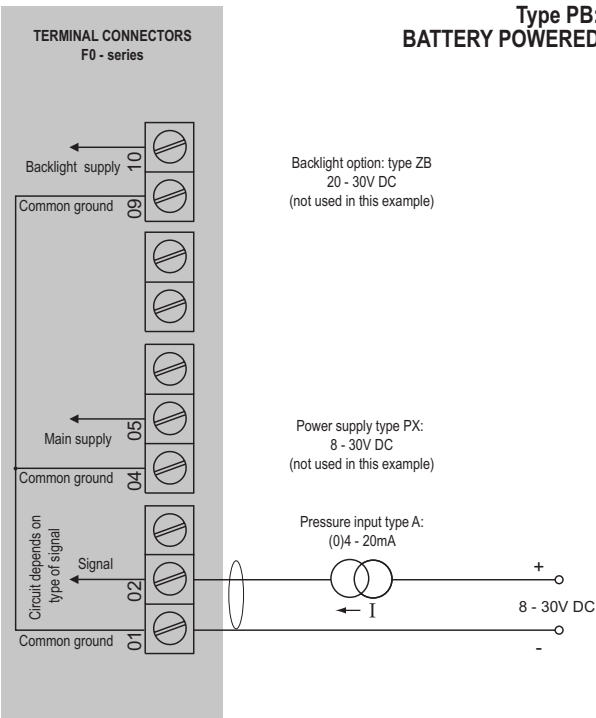


Terminal connections

PF - PM

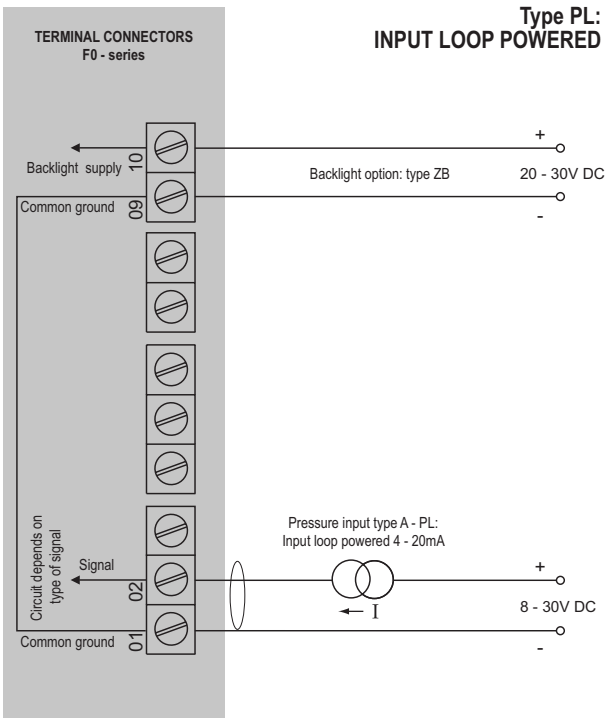


Configuration example F050-A-PB-(PX)-XX-(ZB)



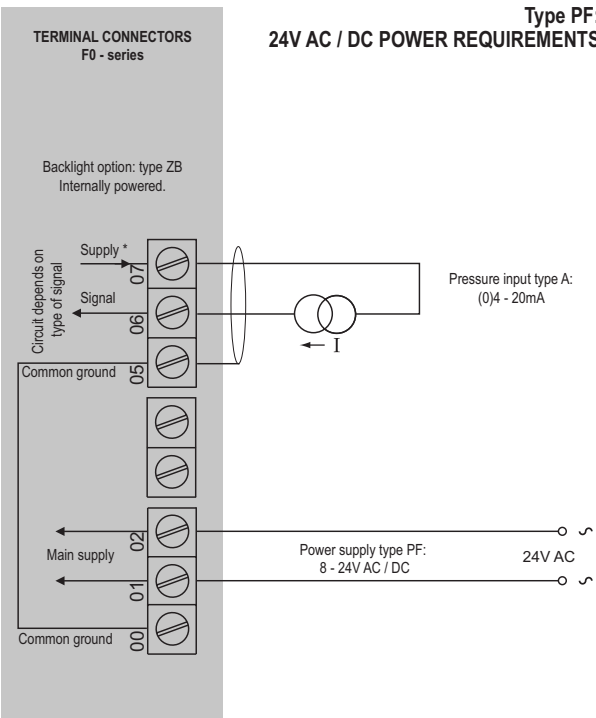
\* Sensor supply voltage: Terminal 3: not available.

Configuration example F050-A-PL-XX-ZB



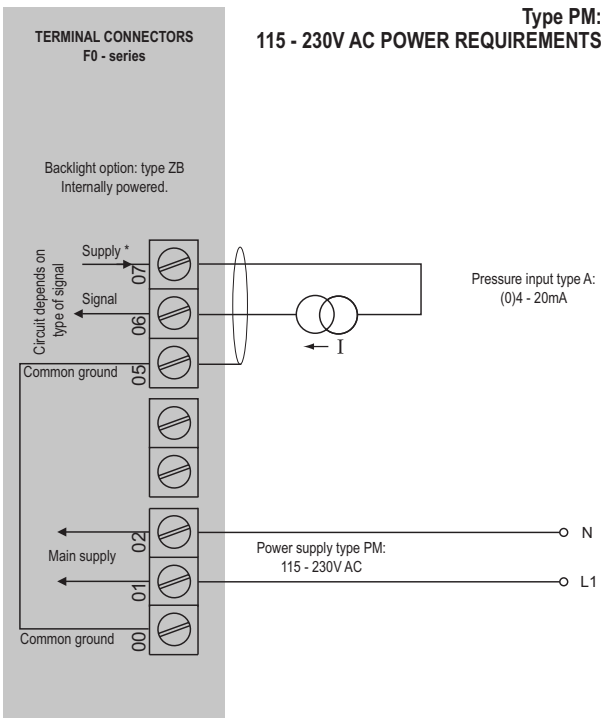
Sensor supply: sensor is externally powered.

Configuration example F050-A-PF-XX-ZB



\* Sensor supply voltage: Terminal 7: 8.2 / 12 / 24V DC.

Configuration example F050-A-PM-XX-ZB



\* Sensor supply voltage: Terminal 7: 8.2 / 12 / 24V DC.

Hazardous area applications

The F050-XI has been certified according to ATEX and IECEx by KEMA and according to CSA c-us and FM for use in Intrinsically Safe applications with an ambient temperature of -40°C to +70°C (-40°F to +158°F).

- The ATEX markings for gas and dust applications are:

**Gas: II 1 G Ex ia IIC T4 Ga.**  
**Dust: II 1 D Ex ia IIIC T100 °C Da.**

- The IECEx markings for gas and dust applications are:

**Gas: Ex ia IIC T4 Ga**  
**Dust: Ex ia IIIC T100 °C Da.**

- The CSA c-us markings are:

**IS Class I/II/III, Division 1, Groups A to G T4.**  
**Class 1 Zone 0 AEx ia IIC T4 Ga.**  
**Ex ia IIC T4 Ga.**

- The FM markings are:

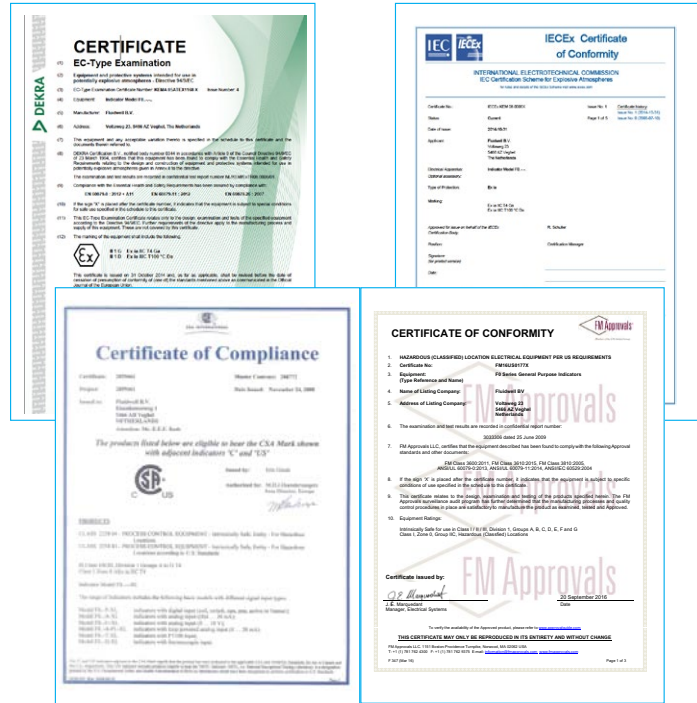
**IS, Class I, II, III, Division 1, Groups A to G T4.**  
**Class I, Zone 0, AEx ia IIC T4**

It is allowed to connect up to three I.S. power supplies to power the unit, sensor and backlight. Consult the certificate for the maximum input and output values of the circuits.

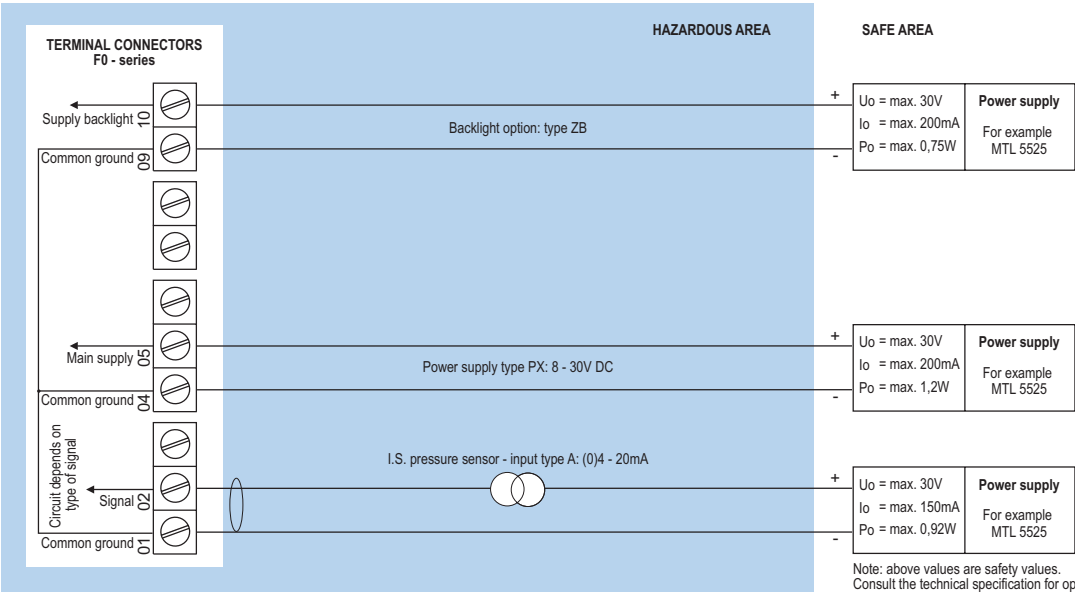
The F050-PD-XI offers the input voltage to power an analog sensor. An ATEX approved flame proof Ex d enclosure is available as well. Please contact your supplier for further details.

Certificate of conformity KEMA 05ATEX1168 X

• IECEx KEM 08.0006X • CSA.08.2059461 X



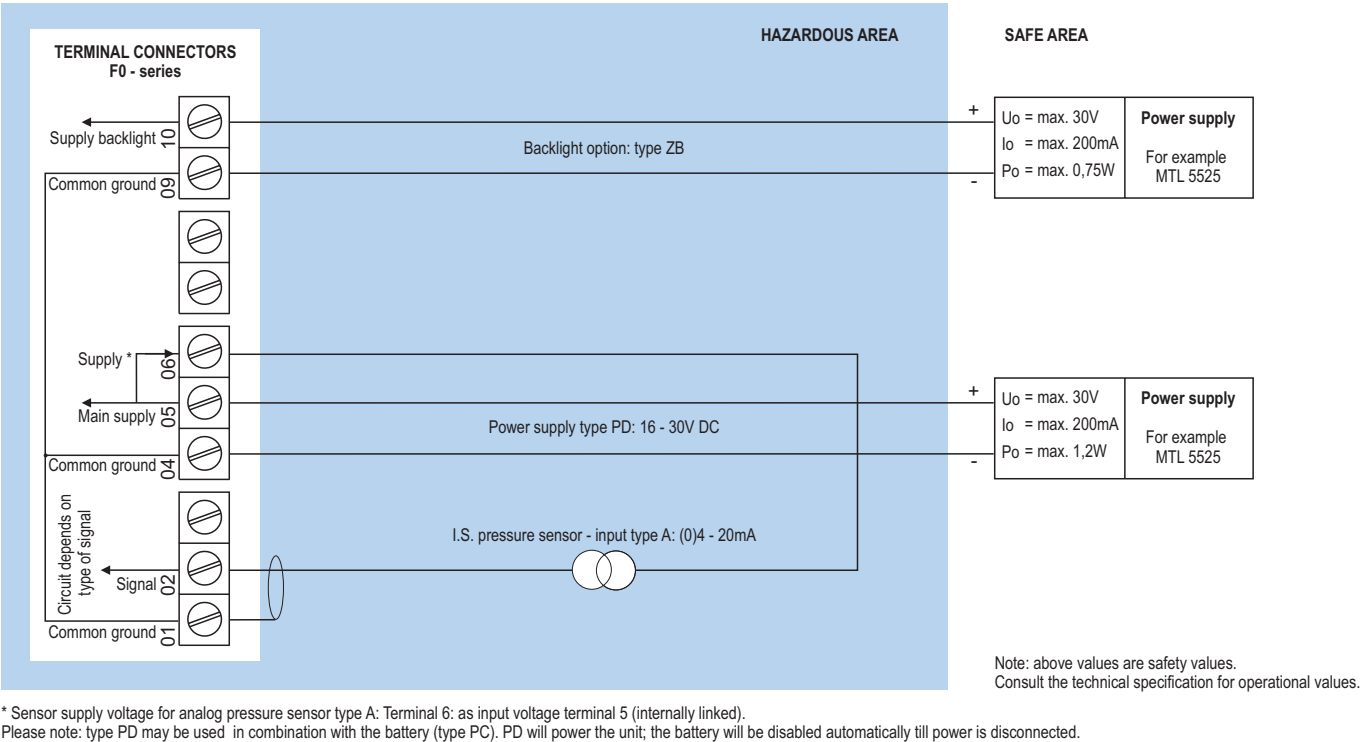
Configuration example IIA - IIB and IIC - F050-A-PX-XI-ZB - Battery powered unit



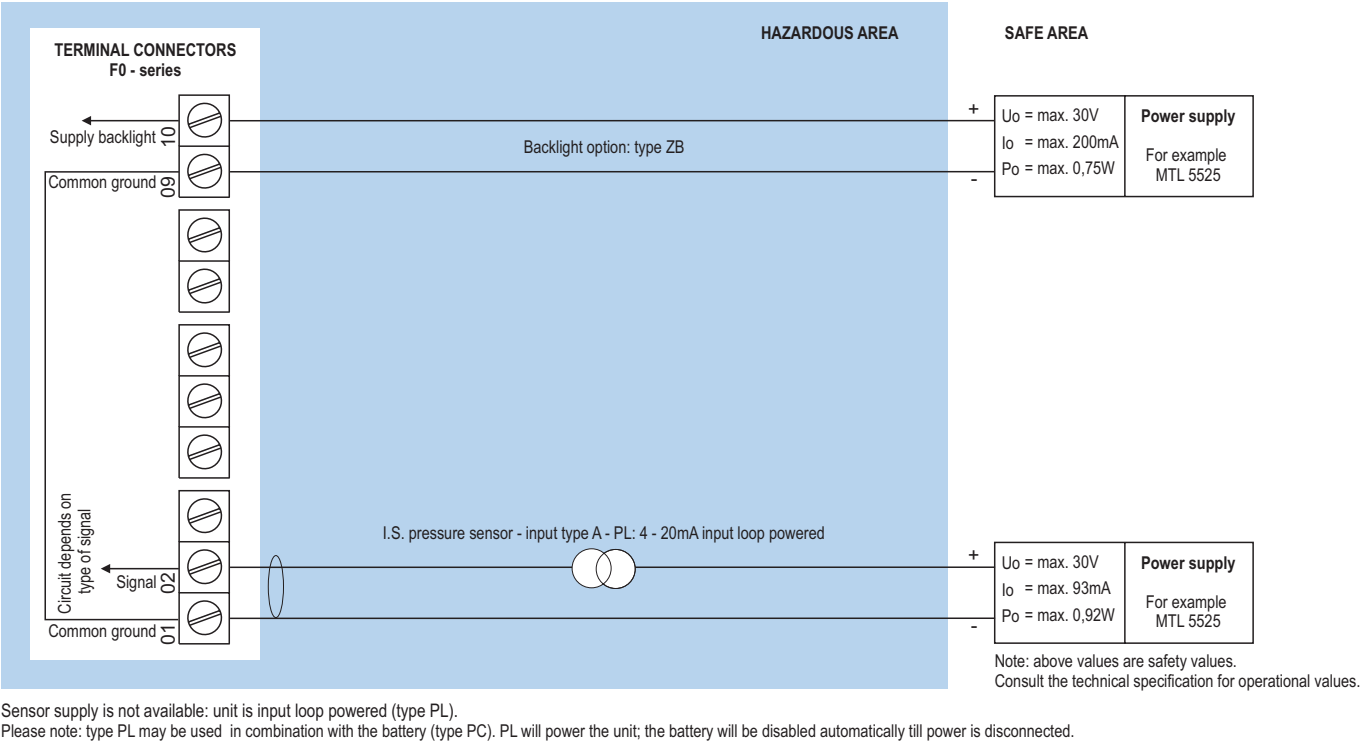
\* Sensor supply voltage for analog pressure sensor type A: not available in this example.  
Please note: type PX may be used in combination with the battery (type PC). PX will power the unit; the battery will be disabled automatically till power is disconnected.



Configuration example IIA - IIB and IIC - F050-A-PD-XI-ZB - Power requirement 16 - 30V DC



Configuration example IIA - IIB and IIC - F050-A-PL-XI-ZB - Input loop powered



## 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>	5 ½ very large 26mm (1") digits. Various symbols and measuring units.
<b>Piegraph</b>	Ten segments - related to the input signal.
<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. Also available Intrinsically Safe.

## 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).

## Power requirements

<b>Type PB</b>	Long life Lithium battery - life-time depends upon settings and configuration - up to 5 years. (requires PD, PL 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, PL or PX)
<b>Type PD</b>	16 - 30V DC. power consumption max. 1W.
<b>Type PF</b>	24V AC / DC ± 10%. Power consumption max. 15W.
<b>Type PL</b>	Input loop powered from sensor signal 4 - 20mA (type "A").
<b>Type PM</b>	115 - 230V AC ± 10%. Power consumption max. 15W.
<b>Type PX</b>	8 - 30V DC. Power consumption max. 0.3W.
<b>Type ZB</b>	20 - 30V DC ± 10%. Power consumption max. 1W. With type PF / PM: internally powered.
<b>Note PB/PF/PM</b>	Not available Intrinsically Safe.
<b>Note PF/PM</b>	The total consumption of the sensor and backlight type ZB may not exceed 400mA @ 24V DC.
<b>Note XI</b>	For Intrinsically Safe applications, consult the safety values in the certificate.

## Sensor excitation

<b>Type PB/PC/PX</b>	Not available.
<b>Type PD</b>	The sensor supply voltage will be according to power supply voltage (as connected to terminal 5).
<b>Type PF / PM</b>	8.2 / 12 / 24V DC - max. 400mA @ 24V DC.

## Terminal connections

<b>Type</b>	Removable plug-in terminal strip. Wire max. 1.5mm² and 2.5mm².
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## Data protection

<b>Type</b>	EEPROM backup of all settings. 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. IP & NEMA EN 60529 & NEMA 250
<b>FM</b>	FM Class No. 3600, FM Class No. 3610.
<b>CSA</b>	CSA 22.2 No. 157-92.
<b>IP &amp; NEMA</b>	EN 60529 & NEMA 250.

## Enclosure

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

## Aluminum wall / field mount enclosures

<b>General</b>	Die-cast aluminum wall/field mount enclosure IP67 / NEMA Type4X with 2-component UV-resistant coating.
<b>Dimensions</b>	130 x 120 x 75mm (5.12" x 4.72" x 2.95") - W x H x D.
<b>Weight</b>	1100 gr.
<b>Type HA</b>	Cable entry: 2 x PG9 and 1 x M20.
<b>Type HL</b>	Cable entry: 2 x ½ NPT.
<b>Type HM</b>	Cable entry: 2 x M16 and 1 x M20.
<b>Type HN</b>	Cable entry: 1 x M20.
<b>Type HO</b>	Cable entry: 2 x M20.
<b>Type HP</b>	Cable entry: 6 x M12.
<b>Type HT</b>	Cable entry: 1 x ½" NPT.
<b>Type HU</b>	Cable entry: 3 x ½" NPT.
<b>Type HV</b>	Cable entry: 4 x M20.
<b>Type HZ</b>	Cable entry: no holes.

## 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.

## 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.



## Intrinsically Safe (Type XI)

<b>ATEX</b>	Gas: II 1 G Ex ia IIC T4 Ga. Dust: II 1 D Ex ia IIIC T100 °C Da.
<b>IECEX</b>	Gas: Ex ia IIC T4 Ga. Dust: Ex ia IIIC T100 °C Da.
<b>CSA c-us</b>	IS Class I/II/III, Division 1, Groups A to G T4. Class 1 Zone 0 AEx ia IIC T4 Ga. Ex ia IIC T4 Ga.
<b>FM</b>	IS, Class I, II, III, Division 1, Groups A to G T4. Class I, Zone 0, AEx ia IIC T4
<b>Ambient Ta</b>	-40°C to +70°C (-40°F to +158°F).

## Explosion proof (Type XF)

<b>ATEX</b>	II 2 G / Ex d IIB T5 Gb. II 2 D / Ex t IIB T100 °C Db.
<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.
<b>Note XF</b>	IECEX available on request.

## Signal inputs - Pressure

<b>Type A</b>	(0)4 - 20mA. Analog input signal can be scaled to any desired range within 0 - 20mA.
<b>Type U</b>	0 - 10V DC. Contact factory.
<b>Accuracy</b>	Resolution: 16 bit. Error < 0.01mA / ± 0.05% FS. Low level cut-off programmable.
<b>Span</b>	0.00001 - 199,999 with variable decimal position.
<b>Offset</b>	-99,999 / +199,999 units.
<b>Update time</b>	Four times per second.
<b>Voltage drop</b>	Type A: max. 1V DC @ 20mA.
<b>Voltage drop</b>	Type A - PL (loop powered): max. 2.6V DC @ 20mA.
<b>Relationship</b>	Linear and square root calculation.
<b>Note A</b>	For signal type A: external power to sensor is required; e.g. type PD.

## Operator functions

<b>Displayed info</b>	<ul style="list-style-type: none"> <li>Actual pressure.</li> <li>Measuring unit.</li> </ul>
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## Total

<b>Digits</b>	5 ½ digits.
<b>Units</b>	mbar, bar, PSI, no-unit.
<b>Decimals</b>	0 - 1 - 2 - 3 - 4 or 5.

## 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>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.

## 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	F050	Pressure indicator with very large digits.						
Input	A	(0)4 - 20mA input.			-A			
Enclosures	HB	Aluminum panel mount enclosure.				-HB		
	HC	GRP panel mount enclosure.				-HC		
	HD	GRP field mount - Cable entry: no holes.				-HD		
	HE	GRP field mount - Cable entry: 2 x Ø 16mm & 1 x Ø 20mm.				-HE		
	HF	GRP field mount - Cable entry: 1 x Ø 22mm ( $\frac{7}{8}$ ").				-HF		
	HG	GRP field mount - Cable entry: 2 x Ø 20mm.				-HG		
	HH	GRP field mount - Cable entry: 6 x Ø 12mm.				-HH		
	HJ	GRP field mount - Cable entry: 3 x Ø 22mm ( $\frac{7}{8}$ ").				-HJ		
	HK	GRP field mount, flat bottom - Cable entry: no holes.				-HK		
	HA	Aluminum field mount - Cable entry: 2 x PG9 + 1 x M20.				-HA		
	HL	Aluminum field mount - Cable entry: 2 x $\frac{1}{2}$ "NPT.				-HL		
	HM	Aluminum field mount - Cable entry: 2 x M16 + 1 x M20.				-HM		
	HN	Aluminum field mount - Cable entry: 1 x M20.				-HN		
	HO	Aluminum field mount - Cable entry: 2 x M20.				-HO		
	HP	Aluminum field mount - Cable entry: 6 x M12.				-HP		
	HT	Aluminum field mount - Cable entry: 1 x $\frac{1}{2}$ "NPT.				-HT		
	HU	Aluminum field mount - Cable entry: 3 x $\frac{1}{2}$ "NPT.				-HU		
	HV	Aluminum field mount - Cable entry: 4 x M20.				-HV		
	HZ	Aluminum field mount - Cable entry: no holes.				-HZ		
Power	PD	16 - 30 V DC + sensor supply.					-PD	
	PF	24V AC/DC + sensor supply - requires XX.					-PF	
	PL	Input loop powered from sensor signal type "A".					-PL	
	PM	115 - 230V AC + sensor supply - requires XX.					-PM	
	PX	Basic power supply 8 - 30V DC.					-PX	
Battery	PB	Additional lithium battery powered (opt.) - requires XX and PD or PX.					-PB -P_	
	PC	Additional lithium battery powered (opt.) - Intrins. safe - requires XI and PD or PX.					-PC -P_	
Hazardous	XI	Intrinsically safe, according ATEX, IECEx, CSA c-us and FM.					-XI	
	XF	Ex d enclosure - 3 keys according ATEX.					-XF	
	XX	Safe area only.					-XX	
Options	ZB	Backlight.						-ZB
	ZX	No options.						-ZX
		F050	-A	-H_	-P_	-X_	-Z_	

The **bold** marked text contains the standard configuration: F050-A-HC-PX-XX-ZX.