

## PP56

Fully welded pressure sensor with flush membrane and touch screen

PP56-2.B#####.D214.####11.#0#0

### Overview

- All market typical industrial connections available
- Condensate-proof measuring cell
- IO-Link dual channel output (in parallel to 4 ... 20 mA)
- Space-saving installations
- Absolute pressure, relative pressure and vacuum measurement
- Easy parameterization via display, IO-Link and FlexProgram
- Rotatable display with 28 steps over 315°



Picture similar



### Technical data

#### Performance characteristics

Pressure type	Absolute Relative (gauged)
Measuring range	-1 ... 60 bar Refer to section "Operating conditions"
Max. measuring span	60 bar , with standard configuration
Min. measuring span	0.4 bar , with standard configuration
Max. turndown ratio	5 : 1
Compensated temperature range	-20 ... 70 °C
Max. measuring error	± 0.3 % FSR , within compensated temperature range Including zero-point and span error, non-linearity (by terminal base line), hysteresis and non-repeatability (EN 61298-2) For turndown, multiply this value by the applied turndown ratio
Temperature coefficient	≤ 0.1 % FSR/10 K @ -40 ... -20 °C ≤ 0.1 % FSR/10 K @ > 70 °C Refer to section "Operating conditions"
Long term stability	≤ 0.2 % FSR/a
Standard error of measurement (BFSL)	± 0.15 % FSR , within compensated temperature range Including non-linearity, hysteresis and non-repeatability according BFSL For turndown, multiply this value by the applied turndown ratio
Step response time, T90	≤ 45 ms , 2-wire ≤ 25 ms , 3-wire

#### Process conditions

Process temperature	-40 ... 100 °C , without cooling neck -40 ... 150 °C , with cooling neck
Process pressure	Refer to section "Operating conditions"

#### Process connection

Connection variants	Refer to section "Dimensional drawings"
Wetted parts material	AISI 316L (1.4404)
Wetted parts material, membrane	AISI 316L (1.4435)

#### Surface roughness (in contact with medium)

Membrane	Ra ≤ 0.4 µm
Weld joint	Ra ≤ 0.8 µm

#### Ambient conditions

Operating temperature range	-30 ... 70 °C , with display -10 ... 70 °C , optimal display readability
Storage temperature range	-40 ... 85 °C
Degree of protection (EN 60529)	IP 67 IP 69 K , with appropriate mating connector
Humidity	< 100 % RH , condensing
Insulation resistance	> 100 MΩ , 500 V DC
Vibration (sinusoidal) (EN 60068-2-6)	1.6 mm (2 ... 25 Hz), 4 g (25 ... 100 Hz), 1 octave / min.
Shock (EN 61373)	300m/s² @ 15ms

#### Housing

Style	Compact transmitter, Ø50 mm
Overall size	Refer to section "Dimensional drawings"
Material	AISI 316L (1.4404)

#### Electrical connection

Connector	M12-A, 4-pin, stainless steel
Interface	IO-Link 1.1 FlexProgram

#### Power supply

Voltage supply range	15 ... 35 V DC 18 ... 30 V DC , with IO-Link
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## Technical data

### Power supply

Current consumption (no load)	3.5 mA ... 23 mA , 2-wire 16 mA typ., 25 mA max., 3-wire mode
Reverse polarity protection	Yes
Power-up time	< 600 ms @ 24 V

### Compliance and approvals

EMC	EN 61326-1 EN 61326-2-3 Deviation during immunity testing ≤ 0.2% FSR
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## Output signals

### Switching output

Output type	PNP NPN Push-pull
Switching logic	High-Active Low-Active
Voltage drop	< 2 VDC
Current rating	100 mA , max.
Off leak current	< 160 µA , max.
Short circuit protection	Yes
Damping	0 ... 60 s , programmable

### IO-Link interface

IO-Link version	1.1
Device profile	Smart Sensor Profile
IO-Link port type	Class A
Baud rate	38,4 kbaud (COM2)
Cycle time	≥ 4 ms
Process data length	48 bit
SIO-mode	Yes
Process data (cyclic)	Pressure Switch state State of alert
Diagnostic data (acyclic)	Measuring cell temperature CPU temperature Operation
Adjustable data (acyclic)	Offset settings Switch parameters Current output limit values Display configuration Tags Password for access
Dual Channel	IO-Link / SIO Mode
Dual Channel 2	Analogue / SIO Mode

### 4 ... 20 mA

Output signal	4 ... 20 mA 20 ... 4 mA , programmable Following accuracy specifications to be added to the values in section "performance characteristics" if sensor is used in analog mode.
Accuracy	± 0.1 % FSR (± 16 µA)
Step response time, T90	≤ 25 ms
Load resistance	$R_s \leq (V_{DC} - 15 V) / 23 \text{ mA}$ , 2-wire mode $R_s \leq (V_{DC} - 10 V) / 23 \text{ mA}$ , 3- & 4-wire mode
Ripple immunity	< 1 % FSR (1 Vrms, 50Hz...10kHz)
Effect of variations in supply voltage	< 0.01 % FSR/V (± 1.6 µA/V), deviating from 24 VDC
Damping	0 ... 60 s , programmable

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## Display

### General information

Panel type	FSTN Graphical LCD
Display range	-9999 ... 99999
Max. digit height	21.8 mm
Material	Polycarbonate

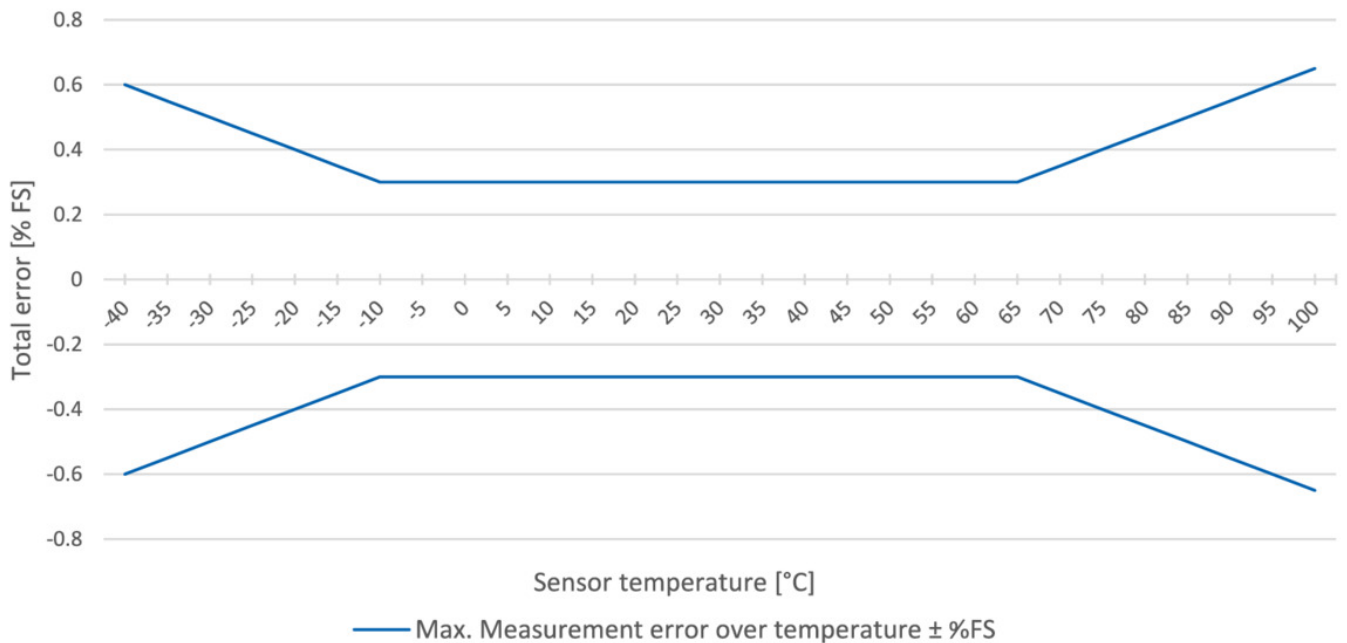
### User configurable data

Error- / Warning-indication	Individually configurable display and backlight indication in white, green or red colour, steady or flashing light. Configurable limits over the range
Measuring unit	bar Psi

## Operating conditions

Measuring range (bar)	Proof pressure (bar)	Burst pressure (bar)
0 ... 0,4	1	2
0 ... 1      -1 ... 1	3	6
0 ... 6      -1 ... 5	15	30
0 ... 10     -1 ... 15	60	120
0 ... 20	70	140
0 ... 25	70	140
0 ... 40	135	270
0 ... 60	135	270

## Temperature coefficient



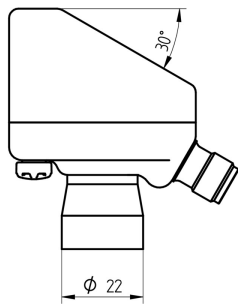
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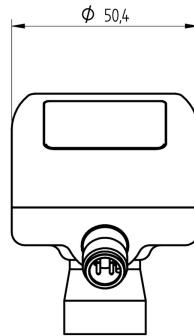
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## Dimensional drawings (mm)

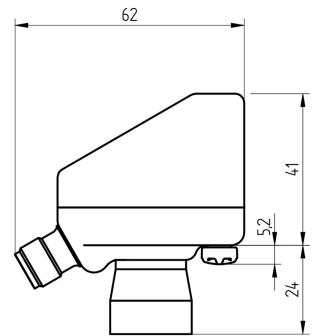
### Housing



Display housing left view

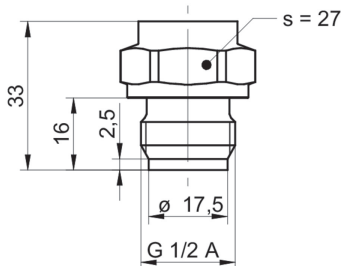


Display housing front view

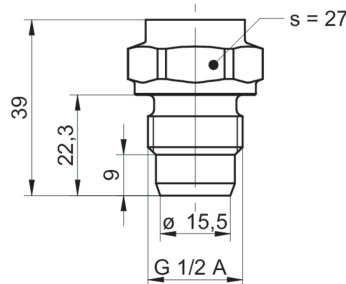


Display housing right view

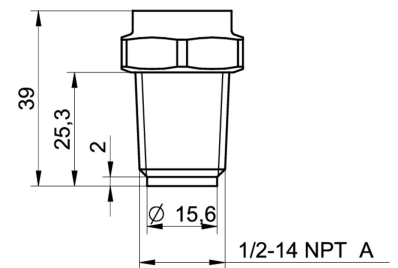
## Process connection



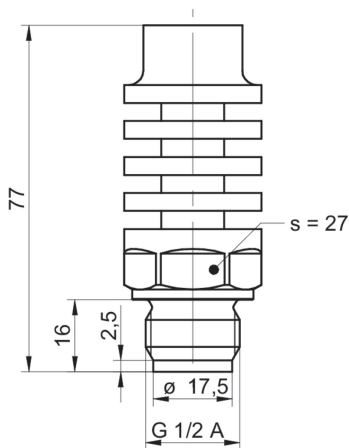
G51-41  
G 1/2 A DIN 3852-E (BCID: G51)



G08-42  
G 1/2 A ISO 228-1 with cone (BCID: G08)



N02-49  
1/2-14 NPT (BCID: N02)



G51-71  
G 1/2 A DIN 3852-E with cooling neck (BCID: G51)

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## Electrical connection

Equivalent circuit	Function	Pin assignment	Coding	Operating mode	Used pins
	+Vs	1		IO-Link / dual channel	1, 2, 3, 4
	Iout / SW2	2		analog 3-wire	1, 2, 3
	GND (0 V)	3		analog 2-wire	1, 2
	IO-Link / SW1	4			
	Frame Ground	Plug thread			

## Ordering information

Ordering key - Configuration possibilities see website

	PP56	-	2	.	B	###	#	.	D2	14	.	##	2	#	1	1	.	#	0	0	0
<b>Product</b>	PP56																				
<b>Housing material</b>	Stainless steel 1.4404 AISI 316L																				
<b>Accuracy</b>	±0.3 % FS					B															
<b>Measuring range</b>	0 ... 0.4 bar (EN)						B11														
	0 ... 1 bar (EN)						B15														
	-1 ... 1 bar (EN)						B73														
	0 ... 6 bar (EN)						B20														
	-1 ... 5 bar (EN)						B77														
	0 ... 10 bar (EN)						B22														
	-1 ... 15 bar (EN)						B81														
	0 ... 20 bar (EN)						B25														
	0 ... 25 bar (EN)						B26														
	0 ... 40 bar (EN)						B27														
	0 ... 60 bar (EN)						B29														
<b>Kind of pressure</b>	Relative (gauged)						R														
	Absolute						A														
<b>Output signal</b>	IO-Link and 4 ... 20 mA in parallel Extended functionality								D2												
<b>Output Connection</b>	M12-A, 4-pin									14											
<b>Process connection</b>	G 1/2 A FF DIN EN ISO 1179-2												41								
	G 1/2 A ISO 228-1 with cone (G08)												42								
	1/2-14 NPT flush (N02)												49								
	G 1/2 A DIN 3852-E with cooling neck (G51)												71								
<b>Process connection material</b>	Stainless steel 1.4404 AISI 316L																				2
<b>Seal</b>	None																				0
	NBR standard																				1
	EPDM																				2
	FKM																				3
<b>Oil filling</b>	Standard oil																				1

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## Ordering information

Ordering key - Configuration possibilities see website

	PP56	-	2	.	B	###	#	.	D2	14	.	##	2	#	1	1	.	#	0	0	0
<b>Display</b>																					
With display																					1
<b>Configuration</b>																					
Factory settings																					0
Customer-specific																					1
<b>Explosion protection</b>																					
Without																					0
<b>Approvals</b>																					
Standard approvals																					0
<b>Technology</b>																					
Silicon																					0

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