

PP54

Pressure sensor with ceramic cell and touch screen

PP54-2.####R.D214.####01.#000

Preliminary

Overview

- All market typical industrial connections available
- IO-Link dual channel output (in parallel to 4 ... 20 mA)
- Space-saving installations
- 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	Relative (gauged)
Measuring range	-1 ... 200 bar Refer to section "Operating conditions"
Max. measuring span	200 bar , with standard configuration
Min. measuring span	0.4 bar , with standard configuration
Max. turndown ratio	5 : 1
Compensated temperature range	-10 ... 70 °C
Max. measuring error	± 0.3 % FSR ± 0.5 % 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 , within compensated temperature range ≤ 0.2 % FSR/10 K Refer to section "Operating conditions"
Long term stability	≤ 0.2 % FSR/a
Standard error of measurement (BFSL)	± 0.12 % FSR ± 0.2 % 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	Refer to section "Operating conditions"
Process pressure	Refer to section "Operating conditions"

Process connection

Connection variants	Refer to section "Dimensional drawings"
Wetted parts material	AISI 304 (1.4301) AISI 316L (1.4404) Ceramic, 96% AL2O3 NBR, optional EPDM, optional FKM, optional FVMQ, optional

Ambient conditions

Operating temperature range	-30 ... 70 °C , with display -10 ... 70 °C , optimal display readability Refer to section "Operating conditions"
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
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Power supply

Voltage supply range	15 ... 35 V DC 18 ... 30 V DC , with IO-Link
Current consumption (no load)	3.5 mA ... 23 mA , 2-wire 16 mA typ., 25 mA max., 3-wire mode

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Power supply

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

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 V _{rms} , 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

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

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Display

General information

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

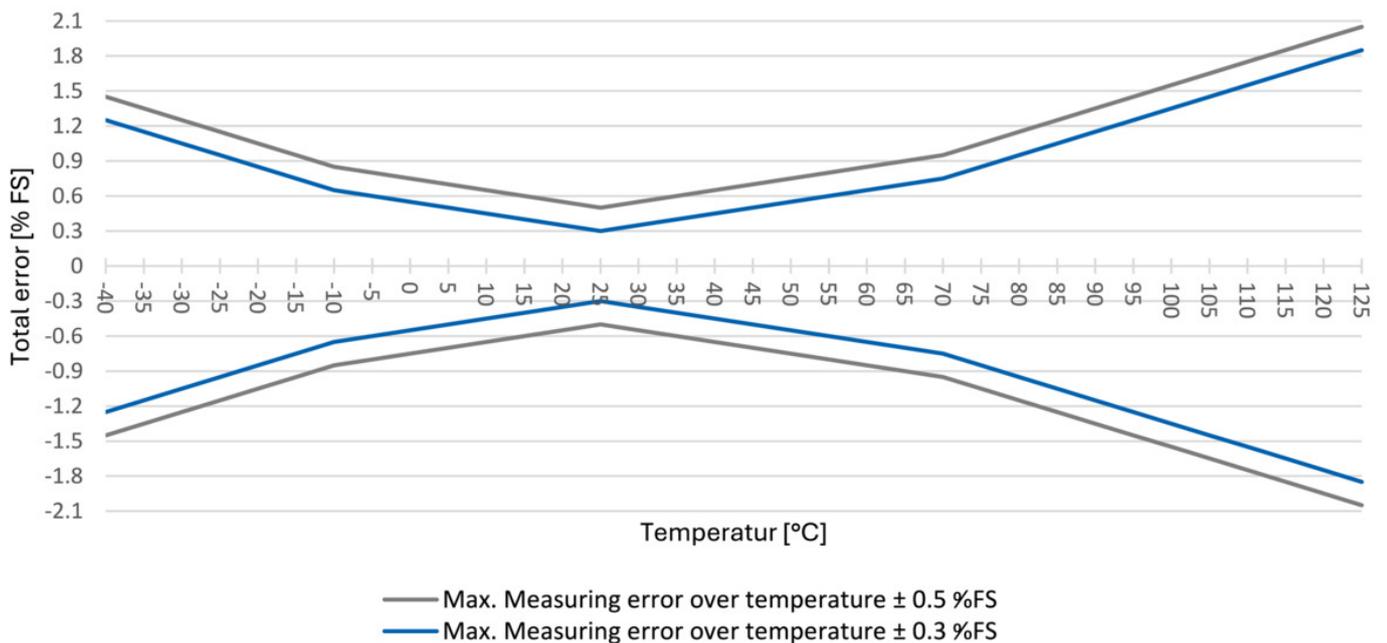
User configurable data

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 ... 2 -1 ... 1	4	6
0 ... 6 -1 ... 5	10	15
0 ... 10	15	25
0 ... 20	35	65
0 ... 25 -1 ... 24	100	120
0 ... 40	150	200
0 ... 100	350	500

Temperature coefficient



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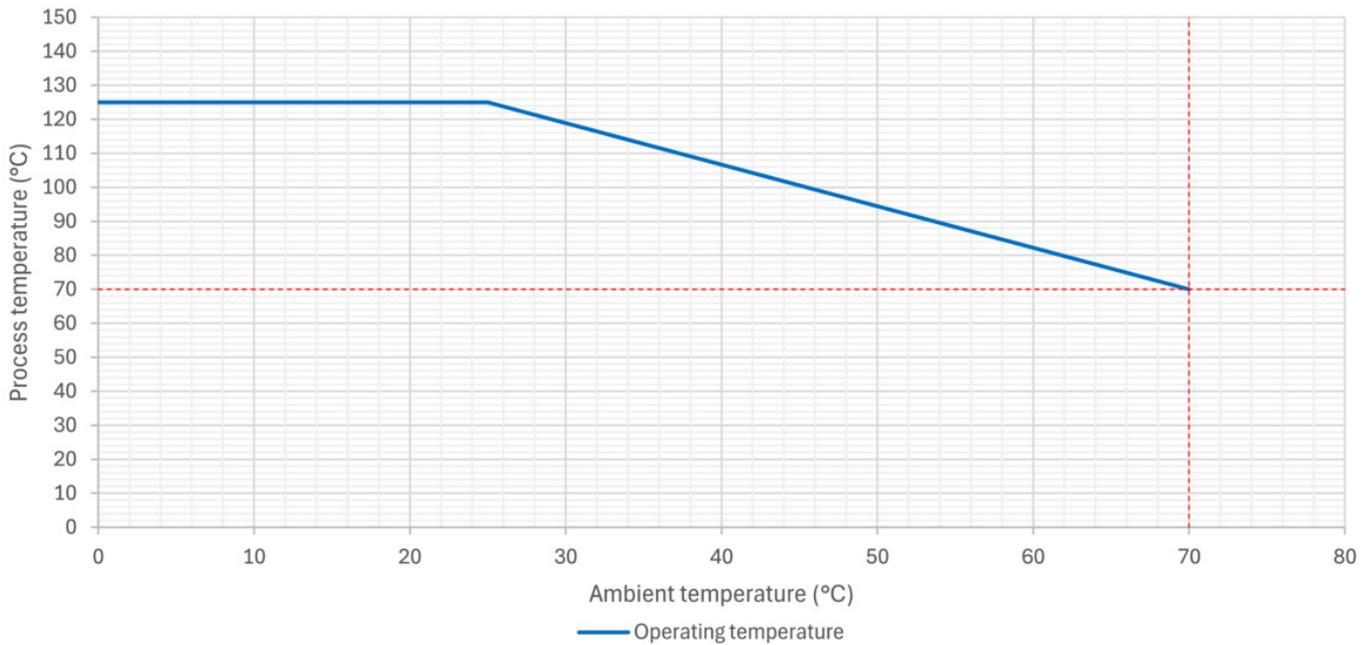
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Operating conditions

Material	Process temperature	
	Air	Liquids (water or more viscous)
	Full scale range FSR refers to upper limit of pressure measuring range of the sensor	
FKM	-5 ... 125 °C @ FSR ≤ 200 bar	-10 ... 125 °C @ FSR ≤ 200 bar
FVMQ	-40 ... 125 °C @ FSR ≤ 100 bar	-40 ... 125 °C @ FSR ≤ 100 bar
EPDM	-40 ... 125 °C @ FSR ≤ 100 bar	-40 ... 125 °C @ FSR ≤ 100 bar
	-30 ... 100 °C @ 100 bar < FSR ≤ 200 bar	-30 ... 100 °C @ 100 bar < FSR ≤ 200 bar
NBR standard	-20 ... 100 °C @ FSR ≤ 100 bar	-20 ... 100 °C @ FSR ≤ 200 bar
	-10 ... 100 °C @ 100 bar < FSR ≤ 200 bar	
NBR low temperature	-30 ... 100 °C @ FSR ≤ 100 bar	-30 ... 100 °C @ FSR ≤ 100 bar

Operating temperature range



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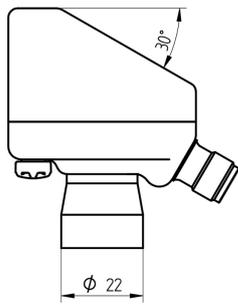
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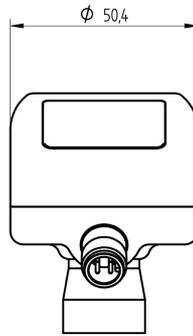
Preliminary

Dimensional drawings (mm)

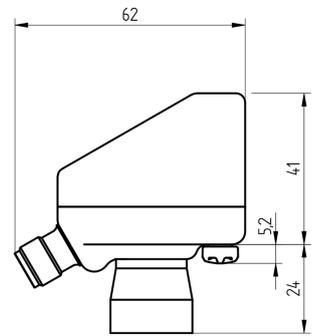
Housing



Display housing left view

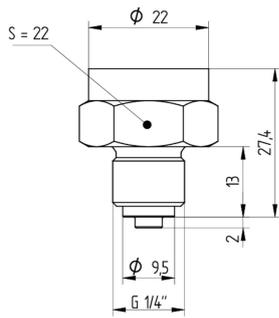


Display housing front view

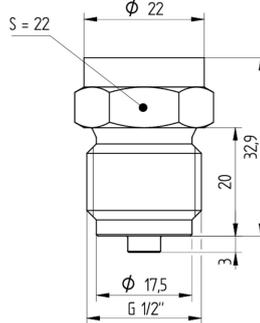


Display housing right view

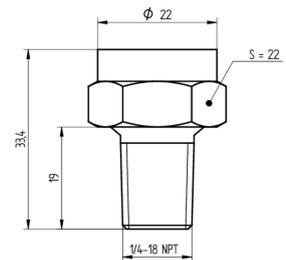
Process connection



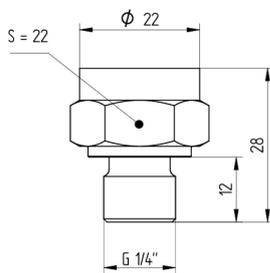
G 1/4 B EN 837-1 (G30)



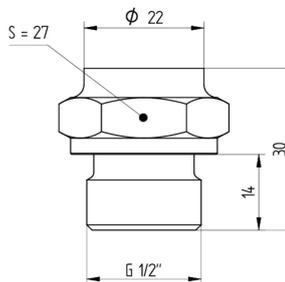
G 1/2 B EN 837-1 (G31)



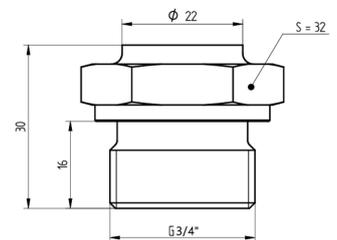
1/4 - 18 NPT (N01)



G 1/4 A DIN EN ISO 1179-2 (3852-E) (G50)



G 1/2 A DIN EN ISO 1179-2 (3852-E) (G51)



G 3/4 A DIN EN ISO 1179-2 front flush (3852-E) (G57)

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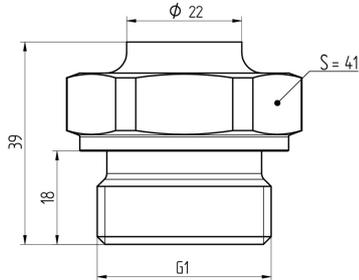
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Dimensional drawings (mm)

Process connection



G 1 A DIN EN ISO 1179-2 front flush (3852-E)
(G54)

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			
	IOOUT / SW2				
	Frame Ground	Plug thread			

Ordering information

Ordering key - Configuration possibilities see website

	PP54	-	2	.	#	###	R	.	D2	14	.	##	#	#	0	1	.	#	0	0	4
Product	PP54																				
Housing material																					
Stainless steel 1.4404 AISI 316L																					
Accuracy																					
±0.3 % FS																					B
±0.5 % FS																					3
Measuring range																					
0 ... 0.4 bar (EN)																					B11
-1 ... 1 bar (EN)																					B73
0 ... 2 bar (EN)																					B17
0 ... 6 bar (EN)																					B20
-1 ... 5 bar (EN)																					B77
0 ... 10 bar (EN)																					B22
0 ... 20 bar (EN)																					B25
-1 ... 24 bar (EN)																					B82
0 ... 25 bar (EN)																					B26
0 ... 40 bar (EN)																					B27
0 ... 100 bar (EN)																					B31
0 ... 200 bar (EN)																					B34

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Ordering information

Ordering key - Configuration possibilities see website

	PP54	-	2	.	#	###	R	.	D2	14	.	##	#	#	0	1	.	#	0	0	4
Kind of pressure							R														
Relative (gauged)							R														
Output signal									D2												
IO-Link and 4...20 mA in parallel									D2												
Extended functionality									D2												
Output Connection										14											
M12-A, 4-pin										14											
Process connection																					
G 1/4 B EN 837-1 (G30)																					02
G 1/2 B EN 837-1 (G31)																					03
1/4-18 NPT (N01)																					04
G 1/4 A DIN EN ISO 1179-2 (3852-E) (G50)																					06
G 1/2 A DIN EN ISO 1179-2 (3852-E)(G51)																					09
G 3/4 A DIN EN ISO 1179-2 (3852-E)																					47
Front flush membrane (G57)																					
G 1 A DIN EN ISO 1179-2 (3852-E)																					45
Front flush membrane (G54) ⁽¹⁾																					
Process connection material																					
Stainless steel 1.4404 AISI 316L																					2
Stainless steel 1.4301 AISI 304																					4
Seal																					
NBR standard																					1
EPDM																					2
FKM																					3
FVMQ																					6
Oil filling																					
Without																					0
Display																					
With display																					1
Configuration																					
Factory settings																					0
Customer-specific																					1
Explosion protection																					
Without																					0
Approvals																					
Standard approvals																					0
Technology																					
Ceramic																					4

(1) (not UL-certified)