

PP20S industrial

Pressure sensor with ceramic cell and industrial connection

PP20S-1.####R.####.####00.004

Overview

- Suitable for all kind of industrial application
- Frontflush pressure connection available for requirements of water applications and high viscosity media
- Standard use from -1 to 400 bar
- High accuracy over a wide temperature range (-40 ... 125 °C) due to active compensated temperature compensation
- Robust and Compact stainless housing for harsh environment conditions
- Abrasive resistant due to ceramic measurement cell
- Relative pressure and vacuum measurement
- Programmable by the FlexProgrammer 9701



Picture similar



Technical data

Performance characteristics

Pressure type	Relative (gauged)
Compensated temperature range	-10 ... 60 °C
Long term stability	≤ 0.2 % FSR/a
Max. measuring error	± 0.3 % FSR ± 0.5 % FSR ± 1.0 % FSR ± 3.0 % FSR Including zero-point and span error, non-linearity (by terminal base line), hysteresis and non-repeatability (EN 61298-2)
Max. measuring span	400 bar
Max. turndown ratio	5 : 1
Measuring range	-1 ... 400 bar
Step response time	< 3 ms
Standard error of measurement (BFSL)	± 0.12 % FSR ± 0.2 % FSR ± 0.4 % FSR ± 1.2 % FSR Including non-linearity, hysteresis and non-repeatability according BFSL
Min. measuring span	0.25 bar
Power-up time	< 50 ms
Temperature coefficient	≤ 0.05 % FSR/10 K, measuring span ≤ 0.05 % FSR/10 K, zero point

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"
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Process connection

Wetted parts material	AISI 304 (1.4301) AISI 316L (1.4404) Ceramic, 96% AL ₂ O ₃ NBR, optional EPDM, optional FKM, optional, gaskets require a minimum ambient temperature of -20 °C and a minimum medium temperature of -25 °C FVMQ, optional
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Ambient conditions

Operating temperature range	Connector M12-A, 4-pin: -40 ... 105 °C, with voltage output -40 ... 115 °C, with current output @ voltage supply range 26.4 ... 35 V DC -40 ... 125 °C, with current output @ voltage supply range 11 ... 26.3 V DC Class OT6 (EN 50155) Connector DIN EN 175301-803 A (DIN 43650 A), 4-pin: -40 ... 90 °C
Storage temperature range	-40 ... 125 °C
Degree of protection (EN 60529)	IP65, with connector DIN EN 175301-803 A (DIN 43650 A), 4-pin IP67, with connector M12-A, 4-pin IP69K, with connector M12-A, 4-pin
Shock and vibration tests (EN 61373:1999, 2010)	Category 2 The respective most demanding severity levels of the issues 1999 and 2010 are applied in each Category 2

Output signal

Current output	4 ... 20 mA, 2-wire 20 ... 4 mA, 2-wire
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Output signal

 Voltage output
 0 ... 10 V
 1 ... 5 V
 0 ... 5 V
 0.5 ... 4.5 V

 Load resistance
 > 5 kΩ, with voltage output
 $R \leq (V_{DC} - 11 V) / 0.023 A$, with current output

Short circuit protection Yes

Housing

Style Compact transmitter

Overall size Refer to section "Dimensional drawings"

Material AISI 304 (1.4301)

Electrical connection

 Connector M12-A, 4-pin
 DIN EN 175301-803 A (DIN 43650 A), 4-pin

Power supply

 Voltage supply range
 11 ... 35 V DC, with current output
 14 ... 35 V DC, with 0 ... 10 V output signal
 9 ... 35 V DC, with 1 ... 5 V output signal
 9 ... 35 V DC, with 0 ... 5 V output signal
 9 ... 35 V DC, with 0.5 ... 4.5 V output signal

Current consumption (no load) 23 mA, max.

Compliance and approvals

 EMC
 EN 61326-1
 EN 61000-6-2
 EN 61000-6-3

Operating conditions

Measuring range (bar)			Proof pressure (bar)	Burst pressure (bar)
0 ... 0,25			1	2
0 ... 0,25 strengthened	0 ... 1			
-1 ... 0	-1 ... 0,6	0 ... 1,6	4	6
-1 ... 1	-1 ... 1,5	0 ... 2,5		
0 ... 4	-1 ... 3		10	15
0...6	-1 ... 5			
0 ... 10	-1 ... 9		15	25
0 ... 16	-1 ... 15		35	65
0 ... 25	-1 ... 24			
0 ... 40	-1 ... 39	0 ... 60	100	120
0 ... 100			150	200
0 ... 160			350	500
0 ... 250	0 ... 400		500	650
(PSI)			(PSI)	(PSI)
0 ... 5	0 ... 15	0 ... 30	58	87
0 ... 60			145	174
0 ... 100	0 ... 160		217	290
0 ... 200			507	725
0 ... 400	0 ... 600		1450	1740
0 ... 1000	0 ... 1500		2175	2900
0 ... 3000	0 ... 6000		7250	9425

Process temperature

Material	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 ≤ 400 bar	-10 ... 125 °C @ FSR ≤ 400 bar
FVMQ	-40 ... 125 °C @ FSR ≤ 160 bar	-40 ... 125 °C @ FSR ≤ 160 bar
EPDM	-40 ... 125 °C @ FSR ≤ 100 bar	-40 ... 125 °C @ FSR ≤ 100 bar
	-30 ... 100 °C @ 100 bar < FSR ≤ 400 bar	-30 ... 100 °C @ 100 bar < FSR ≤ 400 bar
NBR standard	-20 ... 100 °C @ FSR ≤ 100 bar	-20 ... 100 °C @ FSR ≤ 400 bar
	-10 ... 100 °C @ 100 bar < FSR ≤ 400 bar	
NBR low temperature	-30 ... 100 °C @ FSR ≤ 160 bar	-30 ... 100 °C @ FSR ≤ 160 bar

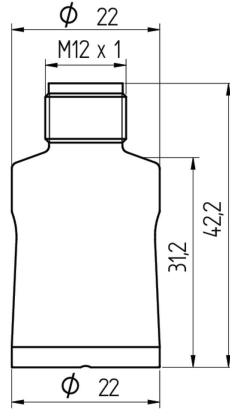
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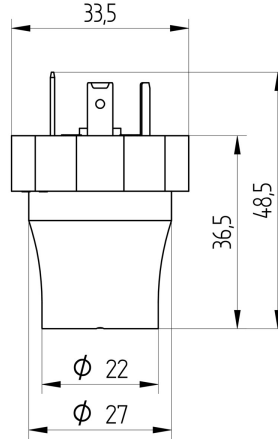
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Dimensional drawings (mm)

Housing

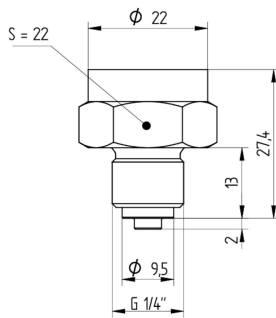


M12-A, 4-pin

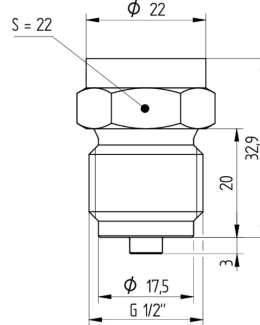


DIN EN 175301-803 A (DIN 43650 A), 4-pin

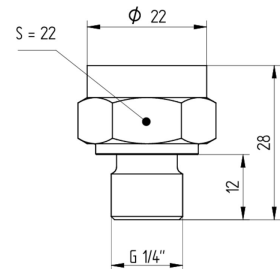
Process connection



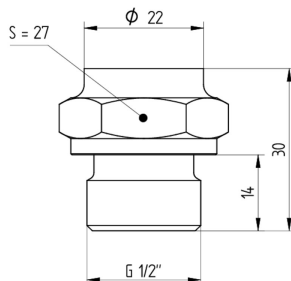
G 1/4 B EN 837-1 (G30)



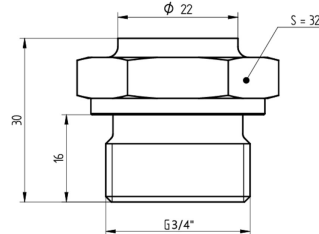
G 1/2 B EN 837-1 (G31)



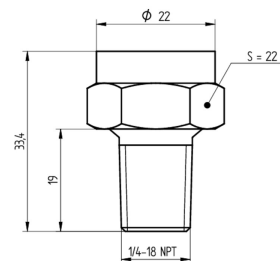
G 1/4 A DIN EN ISO 1179-2 (3852-E) (G50)



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



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



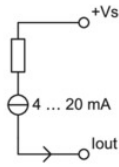
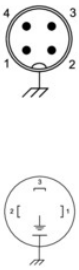
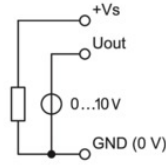
1/4 - 18 NPT (N01)

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Electrical connection

Output signal	Equivalent circuit	Electrical connection	Function	Pin assignment
4 ... 20 mA (2-wire)			+Vs	1
			Iout	3
			Frame Ground	Plug thread
			n.c.	2, 4
			+Vs	1
			Iout	2
0 ... 10 V (3-wire)			+Vs	1
			Uout	2, 4
			GND (0 V)	3
			Frame Ground	Plug thread
			+Vs	1
			Uout	3
			GND (0 V)	2
			Frame Ground	Grounding lug

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Ordering information

Ordering key - Configuration possibilities see website

	PP20S	-	1	.	#	###	R	.	##	##	.	##	#	#	0	0	.	0	0	4
Product	PP20S																			
Housing material																				
SS 1.4301 AISI 304							1													
Accuracy																				
±1.0 % FS							1													
±0.5 % FS							3													
±0.3 % FS							B													
±3.0 % FS							E													
Measuring range																				
0 ... 0.25 bar (EN)							B10													
0 ... 0.25 bar (EN), strengthened							BA1													
0 ... 1 bar (EN)							B15													
0 ... 1,6 bar (EN)							B16													
0 ... 2.5 bar (EN)							B18													
0 ... 4 bar (EN)							B19													
0 ... 6 bar (EN)							B20													
0 ... 10 bar (EN)							B22													
0 ... 16 bar (EN)							B24													
0 ... 25 bar (EN)							B26													
0 ... 40 bar (EN)							B27													
0 ... 60 bar (EN)							B29													
0 ... 100 bar (EN)							B31													
0 ... 160 bar (EN)							B33													
0 ... 250 bar (EN)							B35													
0 ... 400 bar (EN)							B38													
-1 ... 0 bar (EN)							B59													
-1 ... 0,6 bar (EN)							B72													
-1 ... 1 bar (EN)							B73													
-1 ... 1,5 bar (EN)							B74													
-1 ... 3 bar (EN)							B76													
-1 ... 5 bar (EN)							B77													
-1 ... 9 bar (EN)							B79													
-1 ... 15 bar (EN)							B81													
-1 ... 24 bar (EN)							B82													
-1 ... 39 bar (EN)							B1L													
0...5 psi (ANSI)							H2N													
0...15 psi (ANSI)							H15													
0...30 psi (ANSI)							H17													
0...60 psi (ANSI)							H19													
0...100 psi (ANSI)							H21													
0...160 psi (ANSI)							H22													
0...200 psi (ANSI)							H23													
0...400 psi (ANSI)							H26													
0...600 psi (ANSI)							H27													
0...1000 psi (ANSI)							H30													
0...1500 psi (ANSI)							H31													
0...3000 psi (ANSI)							H34													
0...6000 psi (ANSI)							H38													

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Ordering information

Ordering key - Configuration possibilities see website

	PP20S	-	1	.	#	###	R	.	##	##	.	##	#	#	0	0	.	0	0	4
Kind of pressure																				
Relative (gauged)							R													
Output signal																				
20...4 mA									A0											
4...20 mA									A1											
0...10 V									A2											
1...5 V									A3											
0...5 V									A4											
0.5...4.5 V									A5											
Output Connection																				
M12-A, 4-pin										14										
DIN EN 175301-803 A (DIN 43650 A), 4-pin ⁽¹⁾										44										
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(G50)															06					
G 1/2 A DIN EN ISO 1179-2(G51)															09					
G 3/4 A DIN EN ISO 1179-2 (3852-E)															47					
Front flush membrane (G57)																				
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			
NBR low temperature																	N			
Oil filling																				
Without																	0			
Configuration																				
No configuration																		0		
ATEX																				
Without																			0	
Approvals																				
Standard approvals																				0
Technology																				
Ceramic																				4

(1) Including female power connector with screwed terminals