

PP20R

Competitive pressure sensor for railway applications

PP20R-1.####R.####.####00.050

Overview

- Tested according EN 50155
- High dielectric strength of 1 kV AC exceeding the standard according EN 50155
- High accuracy over a wide temperature range (-40 ... 125 °C) due to active compensated temperature compensation
- Extended EMC immunity compared to EN 50121-3-2
- Traceability according GS1 standard
- Designed for a wide range of railway applications as e.g. pantograph pressure control, coolant recirculating pumps and pneumatic and hydraulic brake systems
- Frontflush pressure connection available for requirements of water applications as e.g. fluid management, water pumps, level monitoring, lavatory equipment and high viscosity media



Picture similar

EN 50155 **CE** **UK**
CA

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 Including zero-point and span error, non-linearity (by terminal base line), hysteresis and non-repeatability (EN 61298-2)
Max. measuring span	400 bar
Measuring range	-1 ... 400 bar
Step response time	< 3 ms
Standard error of measurement (BFSL)	± 0.12 % FSR ± 0.2 % FSR ± 0.4 % 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	With NBR seal: -25 ... 100 °C @ -1 ... 400 bar With EPDM seal: -40 ... 125 °C @ -1 ... 160 bar -30 ... 100 °C @ 160 ... 400 bar With FKM seal: -10 ... 125 °C @ -1 ... 400 bar With FVMQ seal: -40 ... 125 °C @ -1 ... 160 bar
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, gaskets require a minimum ambient temperature of -20 °C and a minimum medium temperature of -25 °C FVMQ, optional

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
Insulation resistance	> 100 MΩ , 500 V DC
Insulation voltage	1 kV AC , EN 50155
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

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Output signal

Current output	4 ... 20 mA , 2-wire
Voltage output	0 ... 10 V , 3-wire 1 ... 5 V , 3-wire 0 ... 2 V , 3-wire
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
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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 ... 2 V output signal 24 V DC , according EN 50155, Class S1
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Power supply

Current consumption (no load)	23 mA , max.
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Factory settings

Output lower limit	3.8 mA
Output upper limit	22 mA
Damping	0 s
Output at sensor fault	23 mA

Compliance and approvals

EMC	EN 61326-1 EN 50121-3-2:2016 EN 55011:2009 (Class A)
Railway applications	EN 50155
Fire protection	EN 45545 HL 3

Operating conditions

	Measuring range (bar)		Proof pressure (bar)	Burst pressure (bar)
0 ... 0.25	0 ... 2.5	-1 ... 1	4	6
0 ... 4	0 ... 6		10	12
0 ... 10	0 ... 2.5 strengthened	0 ... 4 strengthened	15	20
0 ... 12 strengthened	0 ... 16		35	50
0 ... 40	0 ... 60		100	120
0 ... 100			150	200
0 ... 160			350	500
0 ... 250	0 ... 400		500	650

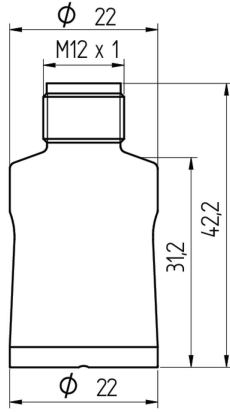
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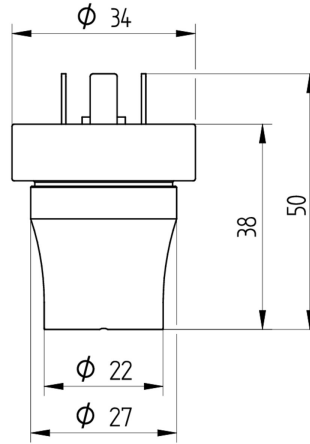
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Dimensional drawings (mm)

Housing



M12-A, 4-pin



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

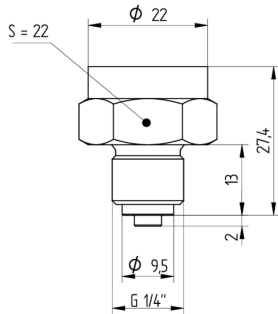
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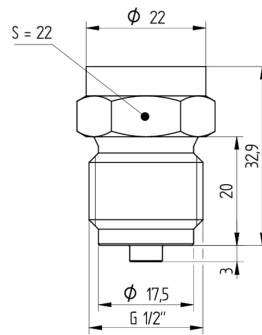
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Dimensional drawings (mm)

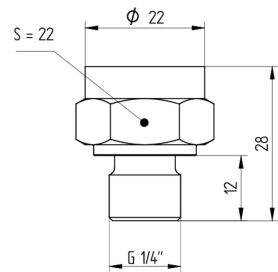
Process connection



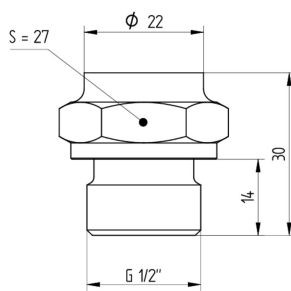
G 1/4 B EN 837-1 (G30)



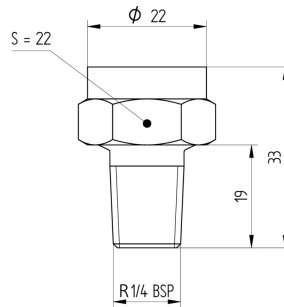
G 1/2 B EN 837-1 (G31)



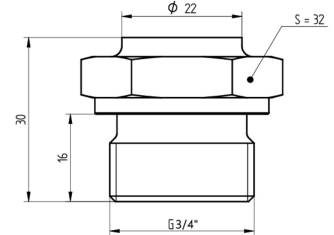
G 1/4 A DIN 3852-E (G50)



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



R 1/4 BSP (R03)



G 3/4 A DIN 3852-E (G57)

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Electrical connection

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

Ordering information

Ordering key - Configuration possibilities see website

	PP20R	-	1	.	#	###	R	.	##	##	.	##	#	#	0	0	.	0	5	0
Product	PP20R																			
Housing material	SS 1.4301 AISI 304																			
Accuracy																				
±1.0 % FS																				
±0.5 % FS																				
±0.3 % FS																				
Measuring range																				
0 ... 0.25 bar (EN)							B10													
0 ... 2.5 bar (EN)							B18													
0 ... 2.5 bar (EN), strengthened							BA8													
0 ... 4 bar (EN)							B19													
0 ... 4 bar (EN), strengthened							BA9													
0...12 bar (EN), strengthened							BAK													
0 ... 6 bar (EN)							B20													
0 ... 6 bar (EN), strengthened							BA0													
0 ... 10 bar (EN)							B22													
0 ... 16 bar (EN)							B24													
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 ... 1 bar (EN)							B73													
Kind of pressure																				
Relative (gauged)							R													

2024-11-15 The product features and technical data specified do not express or imply any warranty. Technical modifications subject to change.

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Ordering information

Ordering key - Configuration possibilities see website

	PP20R	-	1	.	#	###	R	.	##	##	.	##	#	#	0	0	.	0	5	0
Output signal																				
4...20 mA										A1										
0...10 V										A2										
1...5 V										A3										
0...2 V										A9										
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
G 1/4 A DIN EN ISO 1179-2(G50)																				06
G 1/2 A DIN EN ISO 1179-2(G51)																				09
R 1/4 ISO 7-1 (R03)																				17
G3/4 DIN3852-E front flush (G57)																				47
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																				
Without																				0
ATEX																				
Without																				0
Approvals																				
Railway (EN 50155)																				5
Configuration																				
No configuration																				0

(1) Including female power connector with crimped terminals