

PP20R

Competitive pressure sensor for railway applications

PP20R-1.####R.####.###4#00.050

Overview

- Tested according EN 50155
- High dielectric strength of 1,5 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 railway brake systems



EN 50155

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	16 bar
Measuring range	0 ... 16 bar
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
Temperature coefficient	≤ 0.05 % FSR/10 K , measuring span ≤ 0.05 % FSR/10 K , zero point

Process conditions

Process temperature	-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
Process pressure	Refer to section "Operating conditions"

Process connection

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

Ambient conditions

Operating temperature range	-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
Storage temperature range	-40 ... 125 °C
Degree of protection (EN 60529)	IP 65 , with connector DIN EN 175301-803 A (DIN 43650 A), 4-pin IP 67 , with connector M12-A. 4-pin IP 69K , with connector M12-A. 4-pin
Insulation resistance	> 100 MΩ , 500 V DC
Insulation voltage	1,5 kV AC , EN 50155
Shock and vibration tests (EN 61373:1999, 2010)	Vibration: Category 2, Shock: Category 1, 2, 3 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
Voltage output	0 ... 2 V 1 ... 5 V 0 ... 10 V
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 voltage output
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Compliance and approvals

EMC
EAC (TR CU 020/2011)
EN 61326-1:2013
EN 50121-3-2:2016
EN 55011:2009 (Class A)

Compliance and approvals

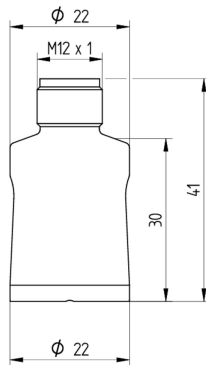
Railway applications EN 50155
Fire protection EN 45545 HL 2 / HL 3

Operating conditions

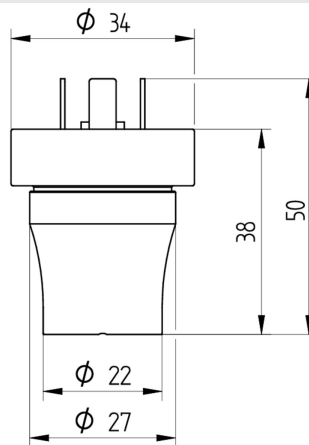
Measuring range (bar)				Proof pressure (bar)	Burst Pressure (bar)
0 ... 0.25				2	4
0 ... 2.5				4	7
0 ... 4				8	15
0 ... 6				10	15
0 ... 10	0 ... 2.5 strengthened	0 ... 4 strengthened	0 ... 6 strengthened	20	35
0 ... 16				32	50

Dimensional drawings (mm)

Housing

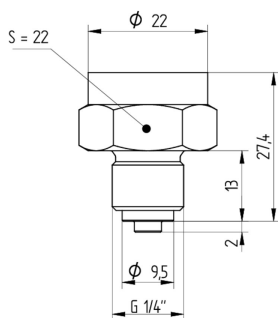


M12-A, 4-pin

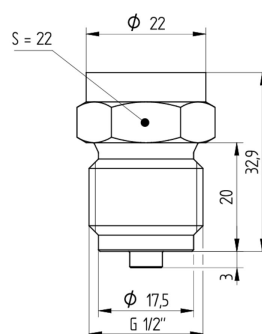


DIN EN 175301-803 A (DIN 43650 A), 4-pin

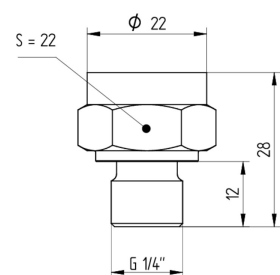
Process connection



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



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



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

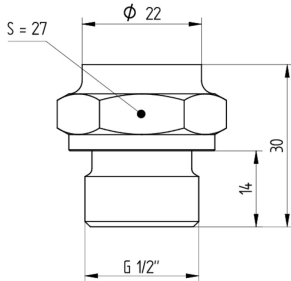
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Competitive pressure sensor for railway applications

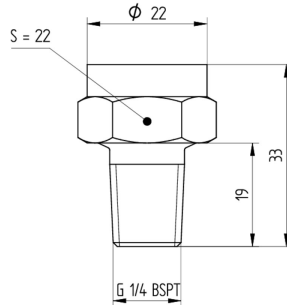
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Dimensional drawings (mm)

Process connection



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



R 1/4 BSP - Tr (R03)

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			

Ordering information

Ordering key - Configuration possibilities see website

	PP20R	-	1	.	#	###	R	.	##	##	.	##	4	#	0	0	.	0	5	0
Product	PP20R																			
Housing material	SS 1.4301 AISI 304																			
Accuracy																				
±1.0 % FS																				1
±0.5 % FS																				3
±0.3 % FS																				B

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Ordering information

Ordering key - Configuration possibilities see website

	PP20R	-	1	.	#	###	R	.	##	##	.	##	4	#	0	0	.	0	5	0
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 ... 6 bar (EN)							B20													
0 ... 6 bar (EN), strengthened							BA0													
0 ... 10 bar (EN)							B22													
0 ... 16 bar (EN)							B24													
Kind of pressure																				
Relative (gauged)								R												
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													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 3852-E (G50)																				06
G 1/2 A DIN 3852-E (G51)																				09
R 1/4 ISO 7-1 (R03)																				17
Process connection material																				
Stainless steel 1.4301 AISI 304																				4
Seal																				
NBR standard																				1
EPDM																				2
FKM (Viton®)																				3
FVMQ																				6
Oil filling																				
Without																				0
Display																				
Without																				0
ATEX																				
Without																				0
Approvals																				
Railway (EN 50155)																				5
Configuration																				
No configuration																				0