

PP20R

Competitive pressure sensor for railway applications

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

Overview

- Compliant with EN 50155
- High insulation resistance 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 railway brake systems



EN 50155

Technical data

Performance characteristics

Measuring range	0... 16 bar
Min. measuring span	0.25 bar
Max. measuring span	16 bar
Pressure type	Relative (gauged)
Standard error of measurement (BFSL)	± 0.12 % FSR ± 0.2 % FSR ± 0.4 % FSR Including non-linearity, hysteresis and non-repeatability according BFSL
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)
Temperature coefficient	≤ 0.05 % FSR/10 K , measuring span ≤ 0.05 % FSR/10 K , zero point
Compensated temperature range	-10 ... 60 °C
Long term stability	≤ 0.2 % FSR/a
Response time	< 3 ms

Process conditions

Process pressure	Refer to section "Operating 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 connection

Connection variants	Refer to section "Dimensional drawings"
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Process connection

Wetted parts material	AISI 304 (1.4301) Ceramic, 96% AL2O3 FVMQ NBR, optional FKM (Viton®) gaskets require a minimum ambient temperature of -20 °C and a minimum medium temperature of -25 °C EPDM, optional
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Ambient conditions

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
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
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

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

Overall size	Refer to section "Dimensional drawings"
Style	Compact transmitter
Material	AISI 304 (1.4301)

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Electrical connection

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

Compliance and approvals

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

Railway applications EN 50155

Power supply

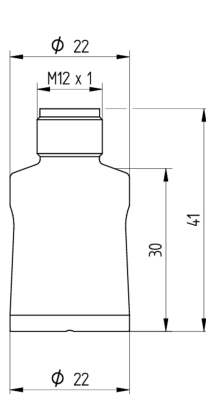
Voltage supply range 11 ... 35 V DC , with current output
14 ... 35 V DC , with voltage output

Operating conditions

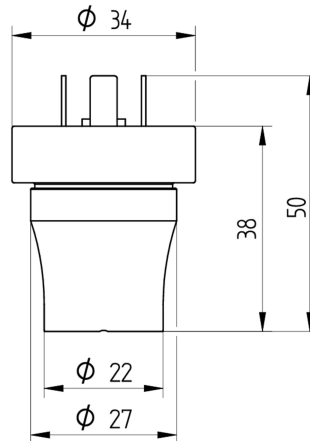
Measuring range (bar)			Proof pressure (bar)	Burst Pressure (bar)
0 ... 0.25	0 ... 1	0 ... 1.6	2	4
0 ... 2.5			4	7
0 ... 4			8	15
0 ... 6			10	15
0 ... 10	0 ... 2.5 strengthened	0 ... 4 strengthened	20	35
0 ... 16			32	50

Dimensional drawings

Housing

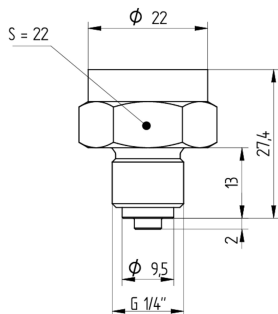


X04-14
M12-A, 4-pin

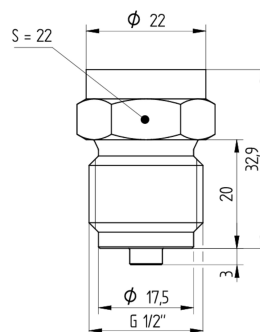


X14-44
DIN EN 175301-803 A (DIN 43650 A), 4-pin

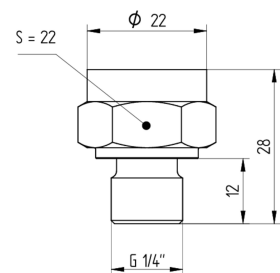
Process connection



G30-02
G 1/4 B EN 837-1



G31-03
G 1/2 B EN 837-1



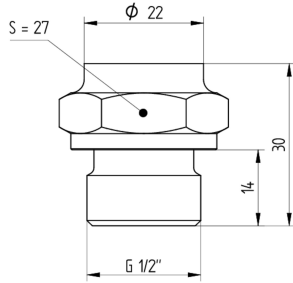
G50-06
G 1/4 A DIN 3852-E

PP20R

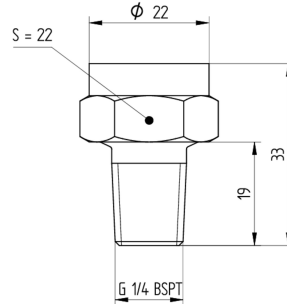
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PP20R-1.###R.###.##4#00.050

Process connection



G51-09
G 1/2 A DIN 3852-E



R03-17
R 1/4 BSP - Tr

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
0 ... 10 V (3-wire)			+Vs	1
			Uout	2, 4
			GND (0 V)	3
			Frame Ground	Plug thread
0 ... 10 V (3-wire)			+Vs	1
			Uout	3
			GND (0 V)	2
			Frame Ground	Grounding lug

Ordering information

Ordering key - Configuration possibilities see website

Product	PP20R - 1 . # ### R . ## ## . ## 4 # 0 0 . 0 5 0
	PP20R
Housing material	SS 1.4301 AISI 304 1
Accuracy	
±1.0 % FS	1
±0.5 % FS	3
± 0.3 % FS	B
Measuring range	
0 ... 0.25 bar (EN)	B10
0 ... 2.5 bar (EN)	B18

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Ordering key - Configuration possibilities see website

	PP20R	-	1	.	#	###	R	.	##	##	.	##	4	#	0	0	.	0	5	0	
0 ... 2.5 bar EN, strenghtened							BA8														
0 ... 4 bar (EN)							B19														
0 ... 4 bar (EN), strenghtened							BA9														
0 ... 6 bar (EN)							B20														
0 ... 6 bar (EN), strenghtened							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 BSP-TR (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