PP20R

Competitive pressure sensor for railway applications

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

Overview

- Compliant with EN 50155
- High voltage withstand 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	
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
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
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

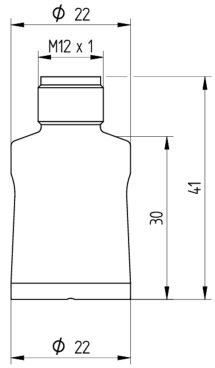
Railway applications	EN 50155
Fire protection	EN 45545 HL 2 / HL 3

Operating conditions

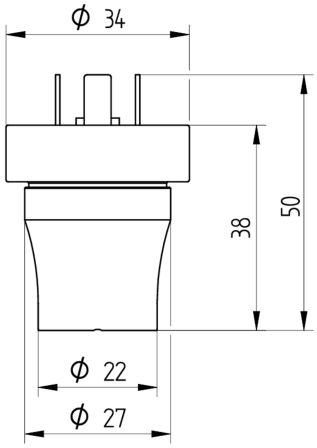
Measuring range (bar)				Proof pressure (bar)	Burst Pressure (bar)
0 … 0.25				2	4
0 … 2.5				4	7
0 … 4				8	15
0 … 6				10	15
0 … 10	0 … 2.5 strengthened	0 … 4 strengthened	0 … 6 strengthened	20	35
0 … 16				32	50

Dimensional drawings

Housing

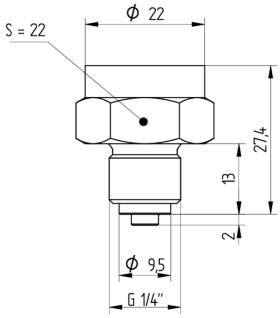


M12-A, 4-pin

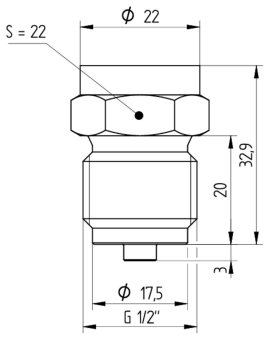


DIN EN 175301-803 A (DIN 43650 A), 4-pin

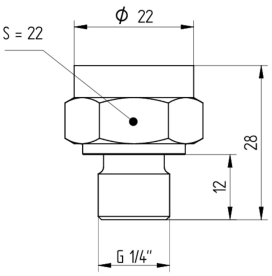
Process connection



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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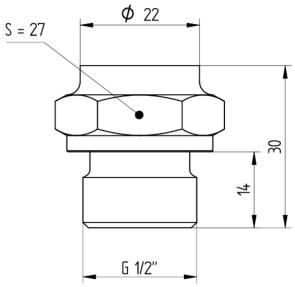
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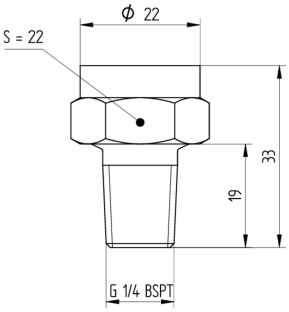
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Dimensional drawings

Process connection

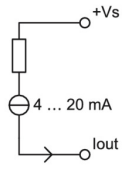
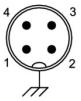
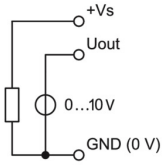
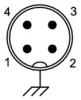


G 1/2 A DIN 3852-E (G51)



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
			Frame Ground	Grounding lug
			n.c.	3
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	PP20R																			
Housing material																				
SS 1.4301 AISI 304			1																	
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), strenghtened						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

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