Temperature sensor

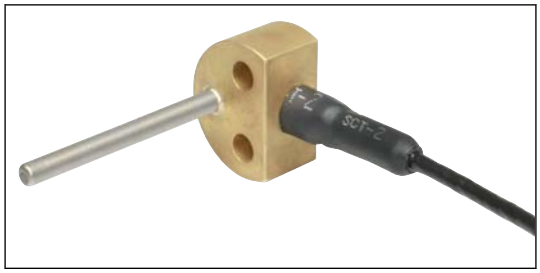
Platinum resistance thermometer
Pt100 / Pt1000

GEL 2161

Technical information

Version 10-2018

General information



- Compact and robust sensor for use in harsh and close applications
- Brass flange available with customer-specific designs
- Measuring tube lengths from 30 mm to 140 mm
- Connection with 2-, 3- or 4-wire technology
- Custom configuration and packaging

Advantages

- Compact design with simple flange mounting
- Assembly in combination with a speed sensor reduces the amount of wiring
- Optimal adaptation to individual installation situations by custom flange designs and field-attachable measuring tube lengths

Fields of application

- Rail vehicle industry
- Automation

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Technical data

Type	C	M
Electrical data		
Measuring element	according to DIN EN 60751: 2009-05	
	Pt100	Pt1000
Tolerance class	F 0.3 (DIN EN 60751: 2009-05)	
Measuring range	-40 °C to +250 °C	
Measuring current	0.3 to 1 mA (1)	
Insulation	500 V AC (according to EN 61439-1)	
Mechanical data		
Storage temperature	-40 °C to +120 °C	
Degree of protection	IP 68	
Vibration resistance	300 m/s^2 (EN 61373 cat. 3)	
Shock resistance	1000 m/s^2 (EN 61373 cat. 3)	
Material of flange	brass	
Material of measuring tube	stainless steel	
Diameter of measuring tube	5 mm	
Active length of measuring head	10 mm	
Length of measuring tube L_M	30 to 140 mm	
Weight incl. 2 m cable	approx.100 g	
Applicable standards		
Electromagnetic compatibility	according to DIN EN 50155:2008-03 prescribed tests from DIN EN 50121-3-2	
Railway applications	DIN EN 50155:2008-03	

Cable type	A	B	C
Cable data			
Temperature range	-40 °C to +150 °C	-40 °C to +120 °C(2)	
Cable	screened (3)		
	PTFE	halogen free	
Cable diameter	3.8 mm	4.8 mm	5.7 mm
Cable cross section	4 x 0.14 mm^2		4 x 0.34 mm^2
Bending radius static / dynamic	10 x cable diameter		
Fire behaviour	-	NF F16–101:1988 DIN EN 45545-2:2013 for hazard level HL1 to 3	

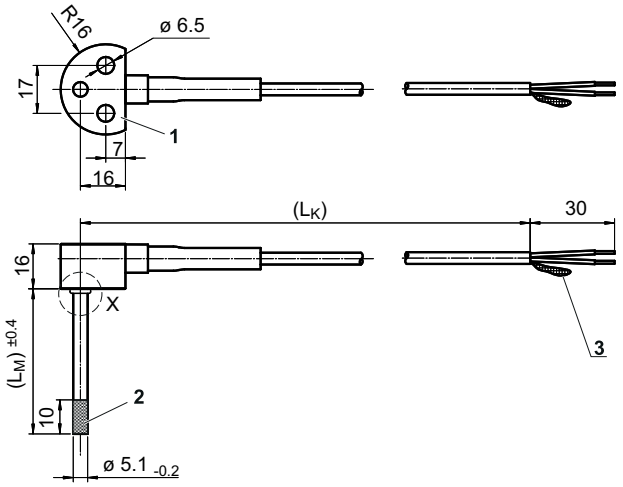
Flexible conduit data	
Temperature range	-40 °C to +95 °C continuous, short-term +150 °C
Outer diameter	13 mm
Bending radius static / dynamic	20 mm / 50 mm
Fire behaviour	NF F16–101 / 102 DIN EN 45545-2:2013 for hazard level HL2

(1) A higher measuring current may lead to inacurracies in measurement due to internal heat dissipation, up to 3 mA for Pt1000 and 10 mA for Pt100 is possible.
(2) Extended temperature range with fixed and protected installation: -50°C to +120°C
(3) specification upon request

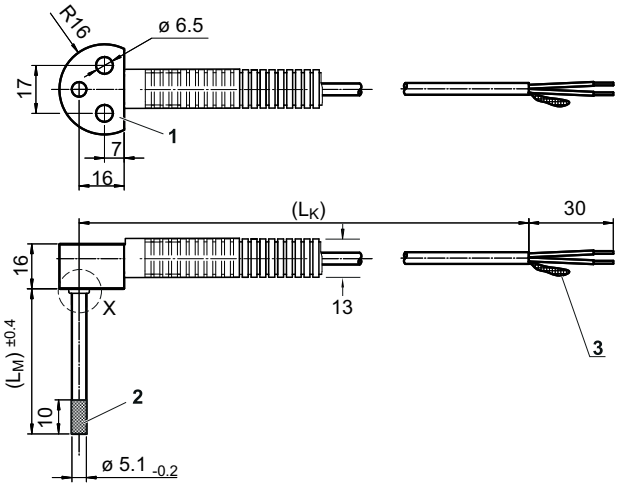
Dimensional drawing, Connection assignment

Dimensional drawing of temerature sensor with standard flange

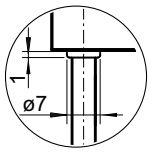
Cable outlet type **K**



Cable outlet type **W** (flexible cable conduit DN 10)

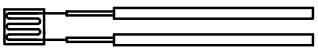
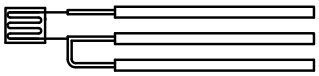
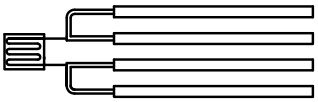
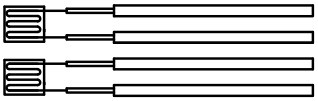


detail X



1 standard flange
2 measuring head
3 cable screen
L_K length of cable (defined in type code)
L_M length of measuring tube (defined in type code)

Connection assignment

Wiring (1)	**Scheme**	**Cable type**(1) **A colour**	**Cable type** (1) **B / C numbered**
Type **12**		white red	1 2
Type **13**		white red blue /red	1 2 3
Type **14**		white blue / white red blue /red	1 2 3 4
Type **22**		white blue / white red blue /red	1 2 3 4

(1) see type code

Type code,
Installation example

Type code

	Measuring element						
	C Pt100						
	M Pt1000						
		Connection					
		12 1 Pt100 / Pt1000 in 2-wire					
		13 1 Pt100 / Pt1000 in 3-wire					
		14 1 Pt100 / Pt1000 in 4-wire					
		22 2 Pt100 / Pt1000 in 2-wire					
			Cable screen				
			L connected to sensor housing				
			P not connected to sensor housing				
				Measuring tube length (L_M)			
				000 Length in mm (minimum 30 mm, maximum 140 mm)			
					Cable type		
					A PTFE cable, 4 x 0,14 mm^2		
					B non-halogen cable, 4 x 0,14 mm^2		
					C non-halogen cable, 4 x 0,34 mm^2		
						Cable outlet	
						K cable	
						W flexible conduit DN 10	
							Cable length (L_K)
							00000 Cable length in mm (minimum 20 mm, maximum 20 m)
2161	_	_ _	_	_ _ _	_	_	_ _ _ _ _

Note: The type code is used to define a customized product. The Lenord + Bauer drawings are general outline drawings. Customized special designs receive a Y-number, eg GEL 2161Yxxx and are created by technical drawing or application description.

Installation examples GEL 2161 with speed sensor GEL 247