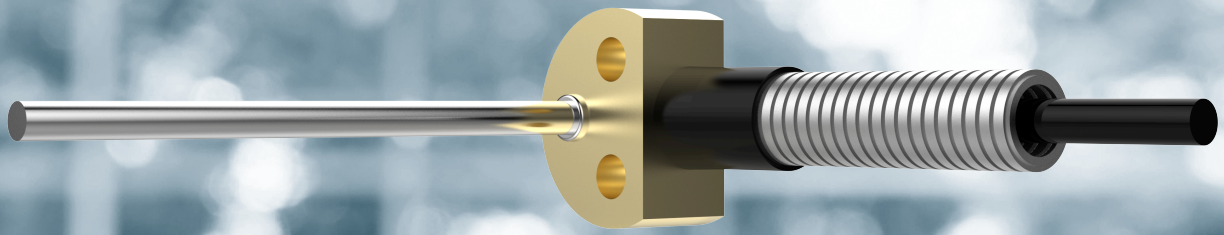
Made in Germany

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Technical Information

# GEL 2161

# Temperature Sensor

## Platinum Resistance Thermometer (Pt100 / Pt1000)

D-51T-2161 | Status 2026-07-07

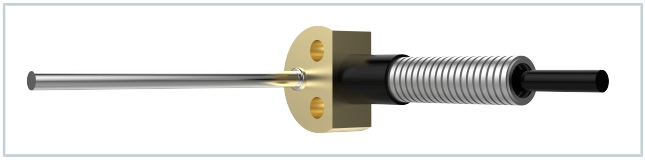
LENORD +BAUER

Finding solutions.
Founding trust.

Motion sensors and integrated drive technology

# General Information

- “Made in Germany” temperature sensor for high quality, durability, and process reliability
- Rugged Pt100 / Pt1000 temperature probe for precise and reliable temperature measurement from -40 °C to +250 °C
- Available in 2-, 3-, and 4-wire configurations for application-specific measurement accuracy
- Stainless steel measuring tube available in lengths from 30 mm to 140 mm
- Flexible integration thanks to custom designs



## Features

- Compact and robust sensor for use in harsh and confined applications
- Brass flange with custom shapes
- Custom assembly options
- Compliant with a wide range of standards and requirements for a variety of applications:
*see „Technical Data - Environmental Testing“, page 4*

## Advantages

- Optimized lifecycle cost
- Maintenance-free and wear-resistant
- Space-saving and compact
- Easy integration
- Easy to install

## Applications

### Railway Technology

- Measurement of the stator temperature on the electric traction motor
- Monitoring of lubricating oil temperature in gearboxes and traction motors
- Temperature monitoring of bearings on wheel sets
- Determination of various temperature values for bogie monitoring

### Maritime Applications

- Monitoring lubricating oil temperature in marine engines, gearboxes, and generators
- Measuring exhaust gas temperatures in engines and turbochargers
- Monitoring engine coolant temperature

### Commercial Vehicles

- Monitoring lubricating oil temperature in engines and transmissions
- Temperature measurement on bearings in transmissions

### Industrial plants

- Monitoring bearing temperature in pumps, compressors, and fans
- Measuring oil and coolant temperatures in hydraulic systems
- Temperature control in conveying and mixing systems for process optimization

### Power generation

- Measuring exhaust gas temperature in turbines and generators
- Monitoring coolant temperature in power plant facilities
- Temperature measurement on transformers and switchgear for condition monitoring

### Chemical and Process Industries

- Control of process temperature in reactors, evaporators, and distillation columns
- Measuring media and pipeline temperatures in production facilities
- Temperature monitoring in storage tanks and heat exchangers

# Technical Data

| Sensor | C | M |
|---|---|---|
| **Temperature Sensor Data** | | |
| Sensing element<br>in accordance with DIN EN 60751: 2009-05 | Pt100 | Pt1000 |
| Measuring range | -40 °C ... +250 °C | |
| Tolerance class | F 0.3 (DIN EN 60751: 2009-05) (1) | |
| Measurement current | 0.3 ... 1 mA (2) | |
| **Mechanical Data** | | |
| Flange material | Brass | |
| Measuring tube material | Stainless steel | |
| Measuring tube diameter | 5 mm | |
| Active length of measuring head | 10 mm | |
| Measuring tube length $L_M$ | 30 to 140 mm | |
| Weight (including 2 m cable) | approx. 100 g | |
| **Environmental Testing** | | |
| The Speed Sensor complies with a wide range of standards and requirements for a variety of applications:<br>*„Technical Data - Environmental Testing“* | | |

(1) Due to the assembly and connection technology, contact resistance may occur, which affects the tolerance class.

(2) A higher measurement current can lead to measurement inaccuracies due to self-heating; a maximum of 3 mA is possible for Pt1000 and 10 mA for Pt100.

| Cable type | A | B | C |
|---|---|---|---|
| **Cable Data** | | | |
| Temperature range | -40 °C ... +150 °C | -40 °C ... +120 °C (2) | |
| Cable (3) | PTFE and Shielded | halogen-free and with a Shield | |
| Cable diameter | 3.8 ± 0.3 mm | 4.8 ± 0.3 mm | 5.7 ± 0.3 mm |
| Cable cross-section | 4 x 0.22 mm² | 4 x 0.14 mm² | 4 x 0.34 mm² |
| Minimum bending radius (static/dynamic) | 10 x cable diameter | | |
| Flame behavior | - | DIN EN 45545-2:2013 for hazard class HL1-3, R15 (EL1A) | |

(2) Extended temperature range for fixed, protected installation: -50°C to +120°C

(3) Specifications available upon request

| Corrugated Pipe Data | |
|---|---|
| Temperature range | -40 °C ... +95 °C continuous, +150 °C for short periods |
| Outer diameter | 13 mm |
| Bending radius (static/dynamic) | 20 mm / 50 mm |
| Flame behavior | DIN EN 45545-2:2013 for hazard class HL2 (R22 & R23) |

# Technical Data - Environmental Testing

Lenord+Bauer's temperature sensors are designed for a wide range of applications. During design and manufacturing, we consistently ensure the reliability and compatibility of the sensors with a wide variety of standards, and these are continuously tested.

Through the ongoing development and optimization of sensors for a wide range of applications, Lenord+Bauer has extensive experience in this field.

Only the minimum standards for all sensors are listed below.

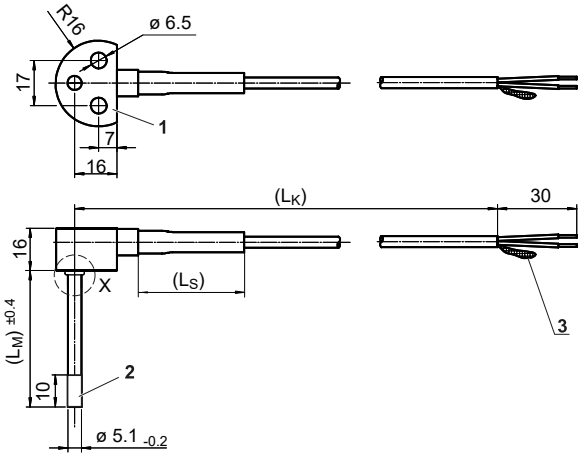
If you have additional requirements regarding standards and approvals, please feel free to contact us.

| | Rail Vehicle Industry | Maritime Applications | Industrial applications |
|---|---|---|---|
| Operating and working temperature | -40 °C … +120 °C | | |
| Storage temperature | -40 °C … +120 °C | | |
| General Industry Standard | DIN EN 50155:2022-06 | DNV-CG-0339 | Depending on the application |
| Dielectric strength | 500 V AC / 750 V DC<br>DIN EN 50155:2022-06 | DNV-CG-0339 | 500 V AC |
| Electromagnetic Compatibility | DIN EN 50121-3-2:2017-11 | DNV-CG-0339 | IEC 61000-6-2:2016<br>IEC 61000-6-4:2016 |
| Vibration Resistance | DIN EN 61373:2011-04<br>Cat. 3 | DNV-CG-0339 | IEC 60068-2-64:2008<br>IEC 60068-2-6:2008 |
| Shock resistance | DIN EN 61373-2011-04<br>Cat. 3 | DNV-CG-0339 | IEC 60068-2-27:2008 |
| Fire protection | DIN EN 45545-2:2023-12<br>NFPA 130 upon request | IMO 2010 FTP | Upon request |
| Degree of protection on the measurement side (1) | IP68 | | |
| MTTF value | > 2,000,000 h at 55 °C | | |

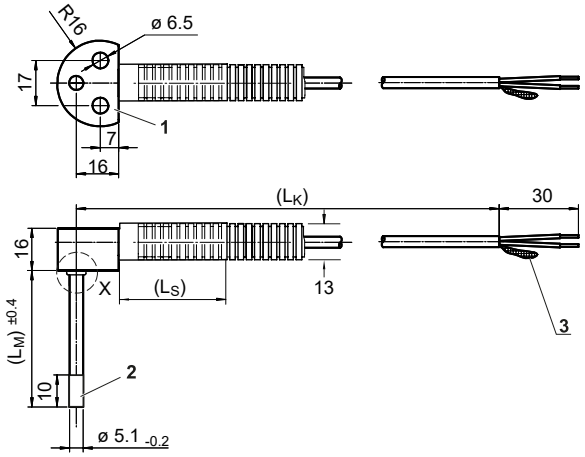
(1) The degree of protection on the cable outlet side depends on the cable gland or cable protection

## Dimensional Drawings for Temperature Sensor with Standard Flange

Cable outlet, Type **K**

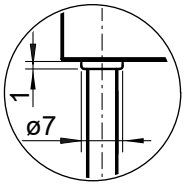



Cable outlet, Type **W** (Corrugated tube, NW 10)

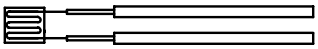
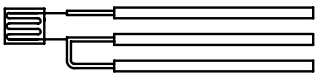
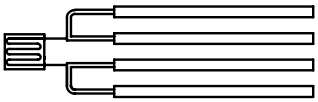
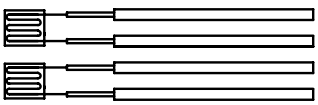



| | |
|---|---|
| 1 | Standard flange |
| 2 | Measuring head |
| 3 | Cable shield |
| $L_K$ | Cable length (defined in the Type Code) |
| $L_M$ | Measuring tube length (defined in the Type Code) |
| $L_S$ | Heat-shrink tubing length: up to 40 mm<br>The cable cannot be bent in this area. |

Detail X




## Pin assignment

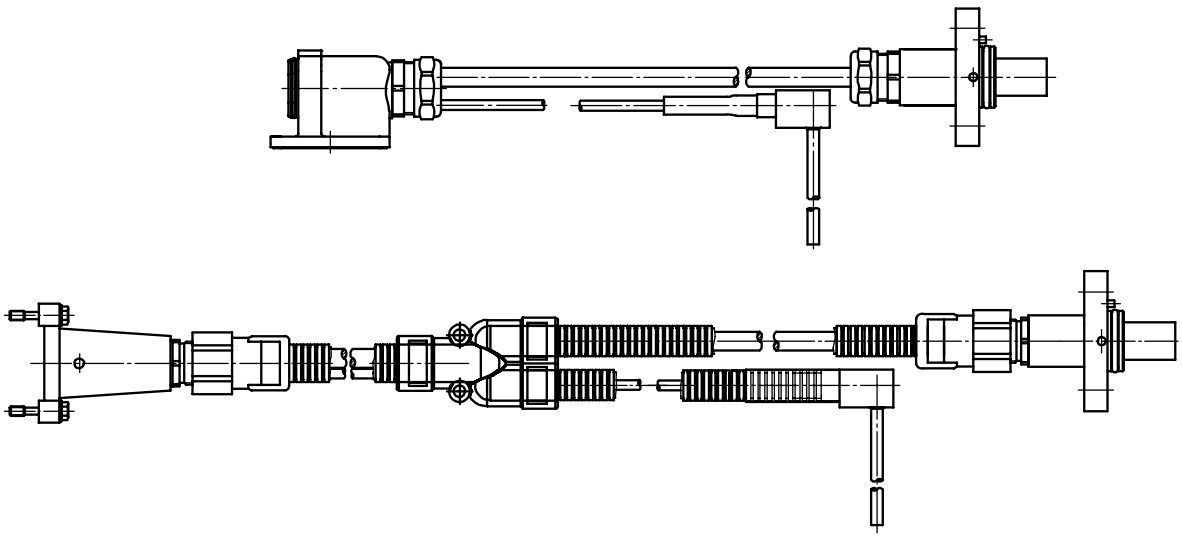
| Connection Technology | Illustration | Cable Type A Color | Cable Type B / C Numbered |
|---|---|---|---|
| Type **12** |  | white<br>red | 1<br>2 |
| Type **13** |  | white<br>red<br>blue / red | 1<br>2<br>3 |
| Type **14** |  | white<br>blue / white<br>red<br>blue / red | 1<br>2<br>3<br>4 |
| Type **22** |  | white<br>blue / white<br>red<br>blue / red | 1<br>2<br>3<br>4 |

# Type Code GEL 2161

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **2161** | **Product Type** | | | | | | | |
| | **Sensor** | | | | | | | |
| | **C** Pt100 | | | | | | | |
| | **M** Pt1000 | | | | | | | |
| | | **Connection Technology** | | | | | | |
| | | **12** 1 Pt100 / Pt1000 in a 2-wire circuit | | | | | | |
| | | **13** 1 Pt100 / Pt1000 in 3-wire configuration | | | | | | |
| | | **14** 1 Pt100 / Pt1000 in 4-wire configuration | | | | | | |
| | | **22** 2 Pt100 / Pt1000 in 2-wire configuration | | | | | | |
| | | | **Cable shield** | | | | | |
| | | | **L** Attached to the sensor housing | | | | | |
| | | | **P** Not connected to the sensor housing | | | | | |
| | | | | **Measuring tube length $L_M$** | | | | |
| | | | | **xxx** Length in mm (minimum length 30 mm, maximum length 140 mm) | | | | |
| | | | | | **Cable type** | | | |
| | | | | | **A** PTFE cable, 4 x 0.22 mm² | | | |
| | | | | | **B** Halogen-free cable, 4 x 0.14 mm² | | | |
| | | | | | **C** Halogen-free cable, 4 x 0.34 mm² | | | |
| | | | | | | **Cable outlet** | | |
| | | | | | | **K** Cable | | |
| | | | | | | **W** Corrugated tube NW10 | | |
| | | | | | | | **Cable length $L_K$** | |
| | | | | | | | **xxxxx** Length in mm (minimum length 20 mm, maximum length 20 m) | |
| ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | |
| **2161** | _ | _ _ | _ | _ _ _ | _ | _ | _ _ _ _ _ | ◄ **Product code** |

A Y-number is assigned for customer-specific designs. Custom designs are manufactured according to drawings or application descriptions and may differ from the standard technical specifications.

**Assembly examples for GEL 2161 with GEL 247 Speed Sensor**



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