

### Description

TFR-2G3D temperature sensors measure room temperatures. In combination with an Ex-i transmitter with an intrinsically safe circuit, the devices may be used within hazardous areas of zones 1, 2 and 22.

The sensor used is a passive, potential-free sensor. It provides a resistance change following the temperature, which is converted into an output signal (0...10 VDC and/ or 4...20 mA) via the transmitter. Areas of application are residential, work, office and commercial premises as well as industrial areas in non-condensing, non-aggressive ambient air.

The device is maintenance-free.

**ATEX-compliant for zones 1, 2 and 22 according to the ATEX Directive 2014/34/EU.**



(Fig. similar)

### Delivery program

Type	Product No.	Sensor
TFR-2G3D-Pt100	057.1700	Pt100 DIN
TFR-2G3D-Pt1000	057.1701	Pt1000 DIN

### Intrinsic

Simple electrical equipment according to IEC/EN 60079-11, Section 5.7, suitable for zone 1, 2 and 22. Only for connection to intrinsically safe circuits.

The specified values at the terminals must not be exceeded.

$U_o \leq U_i$	$6.5 \text{ V} \leq 30 \text{ V}$
$I_o \leq I_i$	$19.7 \text{ mA} \leq 50 \text{ mA}$
$P_o \leq P_i$	$32 \text{ mW} \leq 100 \text{ mW}$
$C_o \geq C_i + C_{\text{Cable}}$	$C_i = 0 \text{ }\mu\text{F}$
$L_o \geq L_i + L_{\text{Cable}}$	$L_i = 0 \text{ }\mu\text{H}$
$C_{\text{Cable}}, L_{\text{Cable}}$ : see the specifications of the cable manufacturer	
$C_o, L_o$ : see the documentation for the transmitter according to the gas group	

### Technical data

<b>Supply</b>		Via transmitters
<b>Installation location</b>		Vertical, vibration-free
<b>Sensor</b>	TFR-2G3D	Pt100 DIN
	TFR-2G3D-Pt1000	Pt1000 DIN
<b>Safety class</b>		III
<b>Accuracy</b>		Class B
<b>Sensor current</b>		< 2 mA
<b>Ambient</b>	TFR-2G3D	-30...+60 °C
	TFR-2G3D-Pt1000	

<b>Storage temperature</b>	-40...+70 °C
<b>Electrical connection</b>	Screw terminals 0.14...1.5 mm <sup>2</sup>
<b>Bezel material</b>	Plastic
<b>Protection class according to EN 60529</b>	IP65
<b>Physical dimensions</b>	72 × 64 × 37.8 mm
<b>Weight</b>	Approx. 150 g
<b>Included</b>	Temperature sensor

### Installation and operation

#### Safety instructions

All relevant national and international standards and regulations for hazardous areas must be observed. Equipment must be installed in accordance with the manufacturer's instructions. If the device is used in a manner different from that specified by the manufacturer, the safety level of the device may be reduced. EN/IEC 60079-14 can be used for the design, selection and construction of electrical systems.

- Intrinsically safe circuits are designed in such a way that the energy content is below the minimum level that would be required to cause ignition of an explosive atmosphere in the event of a spark occurring.
- Intrinsically safe circuits are to be laid in the color light blue and separated from non-intrinsically safe circuits.
- The intrinsically safe sensor is passive, potential-free and approved for zones 1, 2 and 22.
- Observe the maximum connection values during instrumentation.
- Clean with damp cloth only. Avoid electrostatic charging. Remove dust deposits.
- After installation, the enclosure protection class IP65 according to EN60529 must be reliably fulfilled.
- The permissible ambient temperature must not be exceeded.
- Observe separate documentation:
  - Measuring transducer

#### Instructions for commissioning

##### Notes on mechanical installation and mounting

The installation must be carried out taking into account the relevant regulations and standards valid for the measuring location. In particular, it is necessary to take into account:

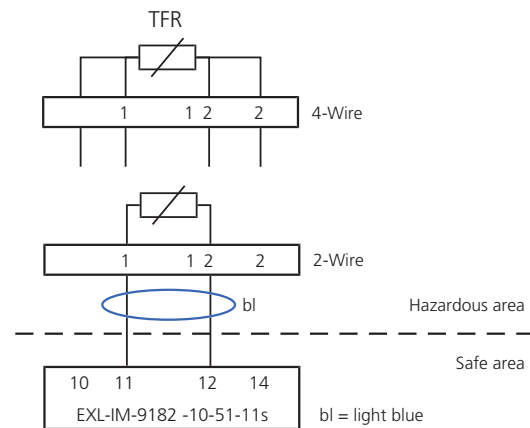
- VDE/VDI 3511 Technical temperature measurement/ Guideline
- VDE/VDI 3512 Sheet 2 Measuring arrangement for temperature measurement
- The EMC guidelines must be complied with
- Parallel installation with live cables must be avoided without fail
- It is recommended to use shielded wires. The shield must be placed on one side of the DDC / PLC
- During installation, make sure that errors caused by heat dissipation remain within the permissible error limits and that the max. ambient temperature is not exceeded

#### Recommended transmitter

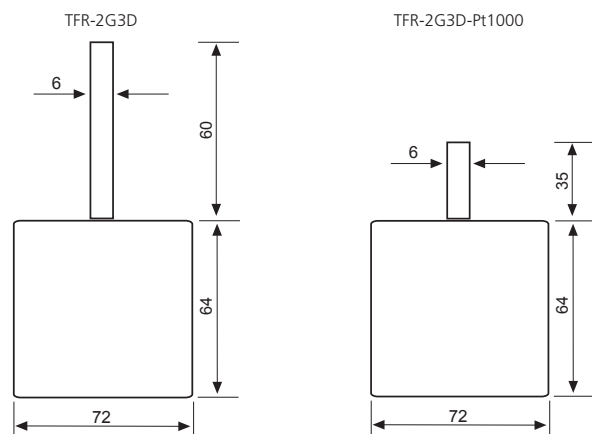
- Transmitter from Company Stahl type EXL-IM-9182-10-51-11s
- When using the sensor together with a transmitter recommended by us, the intrinsic safety for simple circuits is proven
- Manufacturer's certificate for Zone 1, 2 and 22

#### Electrical connection


The electrical connection is made according to the operating instructions of the transmitter.



#### Dimensions



(All measurements in mm)

We, the	
Schischek GmbH Mühlsteig 45 Business Park South 5 90579 Langenzenn GERMANY	
declare under sole responsibility in accordance with the provisions of the guidelines:	
2014/34/EU	
that the product	
TFR-2G3D	
to which this declaration refers, complies with the following norms or normative documents:	
EN 60079-11:2012 EN 60079-31:2014	EN IEC 60079-0:2018+AC:2020-02
Marking:	
CE Zone 1, Zone 2, Zone 22	
Simple resources	
Managing:	
	
(Dr. Sven Ludwig)	
90579 Langenzenn, 2024-09-01	

### Manufacturer's declaration for sensors for use in hazardous areas

Item	Room temperature sensors	Manufacturer	Schischek GmbH
Type	TFR-2G3D	Property	Passive, potential-free
Installation in	Zone 1, 2, 22	Associated equipment	EXL-IM-9182-10-51-11s

#### Test goal

The room temperature sensor has been tested for suitability for installation and operation in hazardous areas of zones 1, 2 and 22. The test is based on Directive 2014/34/EU (ATEX). The standards applied are EN 60079-0, EN 60079-11 and EN 60079-31. The room temperature sensor is a simple electrical device within the meaning of EN 60079-11 Section 5.7 and must be operated via an intrinsically safe circuit. The transmitter EXL-IM-9182-10-51-11s from Company Stahl is suitable. The transmitter may only be installed and operated in non-hazardous areas.

#### Proof of intrinsic safety for simple circuits in use with EXL-IM-9182-10-51-11s

$U_o \leq U_i$	$6.5 \text{ V} \leq 30 \text{ V}$
$I_o \leq I_i$	$19.7 \text{ mA} \leq 50 \text{ mA}$
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Test	Result
IP protection	The device meets at least IP65
Inspection of metallic housing parts	Magnesium, titanium and zirconium content < 7.5%
Checking plastic	Suitable in the used ambient temperature range -30 °C ... +60 °C
Electrostatics	Can be used without restriction in groups IIA and IIB, for group IIC the warning "Wipe only with a damp cloth" applies
Locks and latches	Not to comply with special conditions, not relevant
Grounding (potential equalisation)	Double insulation, no PE, PA necessary or grounded via system components
Cable and cable entries	The cables must be protected from mechanical and thermal stress, after installation, min. IP65 must be fulfilled
Temperature testing	No temperature increase >5K; the sensor is suitable for -30 °C to +60 °C

#### Overall rating/additional comments

The room temperature sensor type TFR-2G3D can be used in conjunction with the transmitter EXL-IM-9182-10-51-11s from Company Stahl in zones 1 and 2. The information in the data sheet or the operating instructions must be observed. The warnings regarding electrostatic charging must also be observed. The potential equalisation must be ensured via the pipeline in which the room temperature sensor is installed. After installation, at least the protection class IP65 must be guaranteed.



Langenzenn, 01. Sept. 2024  
Wen Liu  
Explosion Protection Officer

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