Description

The TFR-2G temperature sensor is used for measuring room temperatures. In conjunction with an Ex-i transmitter with an intrinsically safe circuit type EXL-IM-9182, the devices can be used within hazardous areas of zones 1 and 2.

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 zone 1 and 2 according to ATEX Directive 2014/34/EU.

(Fig. similar)

Delivery program

Type	Product No.	Measuring	Sensor
TFR-2G-Pt100	057.1200	–30 ... +60 °C	Pt100 DIN
TFR-2G-Pt1000	057.1203	–30 ... +60 °C	Pt1000 DIN

Intrinsic

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

The specified values at the terminals must not be exceeded.

$U_o \leq U_i$	6.5 V ≤ 30 V
$I_o \leq I_i$	19.7 mA ≤ 50 mA
$P_o \leq P_i$	32 mW ≤ 100 mW
$C_o \geq C_i + C_{Cable}$	C_i = 0 µF
$L_o \geq L_i + L_{Cable}$	L_i = 0 µH
C_{Cable}, L_{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

Supply	Via transmitters
Safety class	Simple electrical equipment according to IEC/EN 60079-11
Accuracy	Class B
Sensor current	< 2 mA
Ambient	-30...+60 °C
Storage temperature	-40...+70 °C

Electrical connection	Screw terminals, 0.14...1.5 mm²
Bezel material	Plastic, IP30, for wall or flush mounting
Dimensions (W×H×D)	85 x 85 x27
Weight	55 g
Temperature class	T6 (max. 85 °C)
Included	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 deviates from the way 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 shown in light blue and are to be laid separately from non-intrinsically safe circuits.
- The intrinsically safe sensor is passive, potential-free and approved for zones 1 and 2.
- Observe the maximum connection values during instrumentation.
- Clean with damp cloth only. Avoid electrostatic charging. Remove dust deposits.

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:

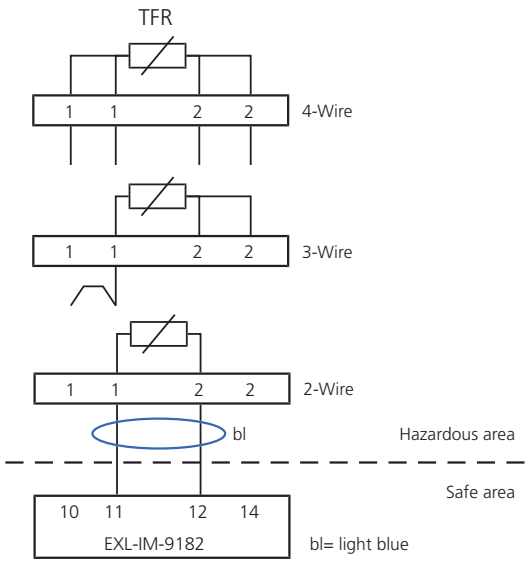
- VDE/VDI 3511 Technical temperature measurement/ Guideline
- VDE/VDI 3512 Sheet 2 Measuring arrangement for temperature measurement
- The EMC guidelines must be complied with
- Parallel installation with live cables must be avoided without fail
- It is recommended to use shielded wires. The shield must 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

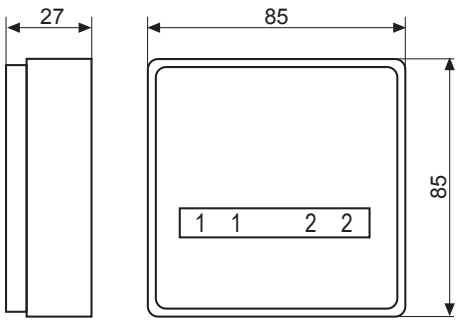
- Transmitter made of steel type EXL-IM-9182-10-51-11s
- When using the sensor together with a transmitter recommended by us, the intrinsic safety for simple circuits is proven
- Manufacturer's certificate for zone 1, 2

Electrical connection

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



Dimensions



(all measurements in mm)

Wir, die

Schischek GmbH
Mühlsteig 45
Gewerbegebiet Süd 5
90579 Langenzenn
GERMANY

erklären in alleiniger Verantwortung gemäß den Bestimmungen der Richtlinien:

2014/34/EU

dass das Produkt

TFR-2G

auf das sich diese Erklärung bezieht, mit den folgenden Normen oder den normativen Dokumenten übereinstimmt:

EN 60079-11:2012 EN IEC 60079-0:2018+AC:2020-02

Kennzeichnung:

CE Zone 1, Zone 2

Einfaches Betriebsmittel

Geschäftsführer:

(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-2G	**Property**	passive, potential-free
Installation in	Zone 1, 2	**Associated equipment**	EXL-IM-9182

Test goal

The room temperature sensor has been tested for suitability for installation and operation in hazardous areas of zones 1 and 2. The test is based on Directive 2014/34/EU (ATEX). The standards applied are EN 60079-0, EN 60079-11. The room temperature sensor is a simple electrical device in the sense of EN 60079-11 Section 5.7 and must be operated via an intrinsically safe circuit. The EXL-IM-9182 transmitter 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

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

Test	Result
IP protection	The device meets at least IP30
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 equalization)	Double insulation, no PE, PA necessary
Cable and cable entries	The cables must be protected from mechanical and thermal stress, after installation, min. IP20 must be fulfilled
Temperature testing	Together with the EXL-IM-9182 transmitter, a temperature increase of <5 K was measured in the event of an error; operating temperature range: -30 °C ... +60 °C

Overall rating/additional comments

The room temperature sensor TFR-2G can be used in conjunction with the transmitter EXL-IM-9182 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. After installation, at least the protection class IP30 must be guaranteed.

Langenzenn, den 01. Sept. 2024
Wen Liu
Explosionsschutzbeauftragter

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