Description

Average temperature sensors TFM-2G determine the average value of the temperature in ventilation and air conditioning ducts. In combination with transmitters with an intrinsically safe circuit, the transmitters may be used within hazardous areas of zones 1 and 2. The sensor is a passive, potential-free sensor and provides a resistance change following the temperature. An Ex-i transmitter converts this change in resistance into a 0...10 VDC and / or 4...20 mA output signal. Areas of application are pipelines in the entire plant construction and industrial sectors.

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

(Fig. similar)

Delivery program

Type	Product No.	Nominal length of protective tube
TFM 2G-0.4-Pt100	057.1231	0,4 m
TFM 2G-3-Pt100	057.1232	3 m
TFM 2G-6-Pt100	057.1233	6 m

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
Sensor	Pt100 DIN
Protective tube	Copper with plastic coating d = 5 mm
Laying	Minimum bending radius 35 mm, no vibration load <1/2 G
Sensor current	< 2 mA
Ambient temperature range	Ta: -20...+60 °C
Measuring	Tb: -20...+70 °C

Storage temperature	–30...+60 °C
Electrical connection	Screw terminals 0.14 - 1.5 mm²
Housing	Plastic, IP65 according to EN 60529
Physical dimensions	72 × 64 × 37.8 mm
Safety class	Simple electrical equipment according to EN 60079-0 / EN 60079-11
CE	2014/34/EU (ATEX)
Included	Average temperature sensors

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 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.
- Partially opened valves are not tight. Explosive mixture may leak out.
- 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.

Commissioning and decommissioning

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:

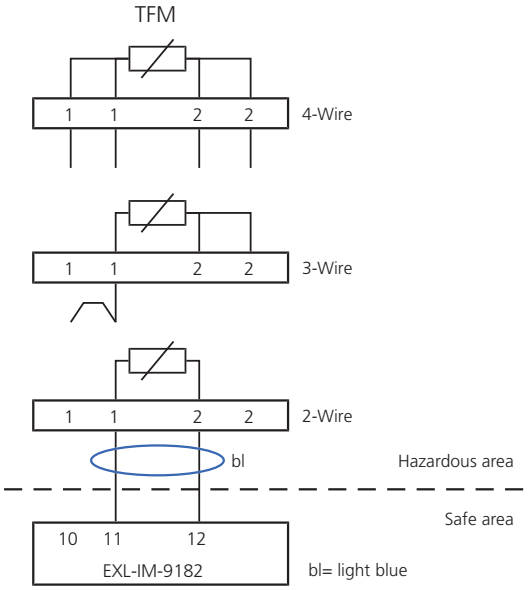
- VDE/VDI 3511 Technical temperature measurement/ Guideline
- VDE/VDI 3512 Sheet 2 Measuring arrangement for temperature measurement
- The EMC guidelines must be complied with
- Parallel installation with live cables must be avoided without fail
- It is recommended to use shielded wires. The shield must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

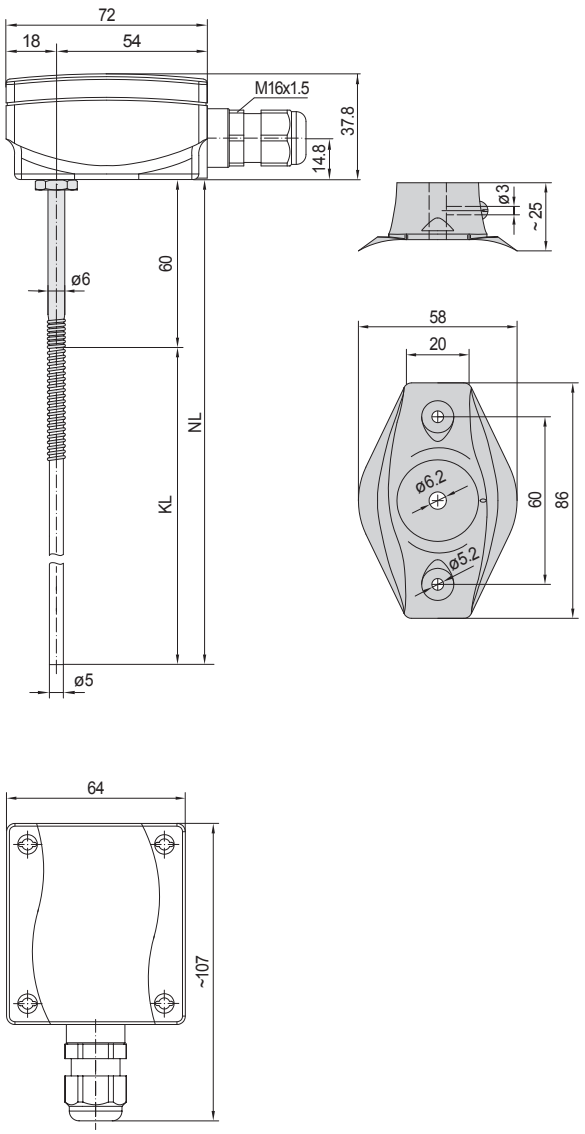
- Transmitter from Company Stahl type EXL-IM-9182-10-51-11s
- When using the sensor together with a transmitter recommended by us, the intrinsic safety for simple circuits is proven
- Manufacturer's certificate for zone 1, 2

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

TFM-2G

to which this declaration refers, complies with the following norms or normative documents:

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

Marking:

CE Zone 1, Zone 2

Simple resources

Managing:

(Dr. Sven Ludwig)

90579 Langenzenn, 2024-09-01

Manufacturer's declaration for sensors for use in hazardous areas

Item	Average temperature sensors	**Manufacturer**	Schischek GmbH
Type	TFM-2G	**Property**	Passive, potential-free
Installation in	Zone 1, 2	**Associated equipment**	EXL-IM-9182-10-51-11s

Test goal

The average 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 used are EN 60079-0 and EN 60079-11. The average 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 switching amplifier EXL-IM-9182-10-51-11s from Company Stahl is suitable. The switching device 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 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 IP65
Inspection of metallic housing parts	Magnesium, titanium and zirconium content < 7.5%
Checking plastic	Suitable in the used ambient temperature range -20 °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. IP20 must be fulfilled
Temperature testing	Together with the switching amplifier EXL-IM-9182-10-51-11s, a temperature increase of <5 K was measured in the event of an error; operating temperature range: -20 °C ... +60 °C

Overall rating/additional comments

The TFM-2G average temperature sensor can be used in conjunction with the EXL-IM-9182-10-51-11s switching amplifier 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 IP65 must be guaranteed.

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

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PUB113-432-00
Issue 03/25