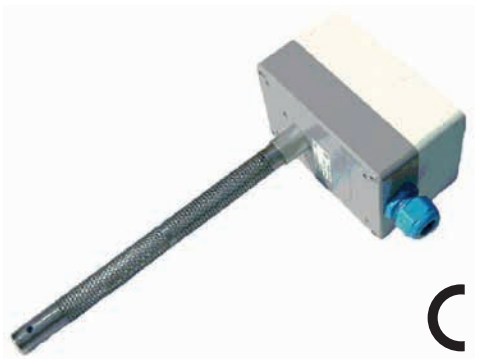
Description

TFFK-2G duct humidity sensors determine the temperature and the relative humidity in ducts. In combination with transmitters with intrinsically safe circuits, the sensors can be used within hazardous areas of zones 1 and 2. The sensor has a passive resistance output, which is converted from the transmitter to an active signal 0...10V/0(4)...20 mA. The active signal is proportional to the relative humidity.

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



(Fig. similar)

Delivery program

Type	Product No.	Adjustment range
TFFK-2G	057.1030	0…100 % r.F.

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
Accuracy	> 40% RH = ± 2.5% RH < 40% RH = +8 / -2.5% RH Pt100 ± 0.5 °C
Measuring	0…100% RH
Workspace	30…100% RH
Ambient	-10 °C…+50 °C
Storage temperature	-20…+60 °C
permissible air velocity	8 m/s With gauze protection: 15 m/s

Measuring medium	Waseous, depressurised, non-aggressive
Electrical connection	Screw terminals 0.5 mm²
Housing	Plastic, IP64, for duct mounting
Sensor	Stainless steel, IP40, Pt 100 0 ... 1000 Ω, 2(3) conductors, linear characteristic
Dimensions (W×H×D)	120 x 80 x 60 mm
Weight	about 500 g
Included	Duct sensor + Pt100 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 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.

Assembly and installation

Take into account the regulations and standards applicable to the measuring location:

- Comply with EMC guidelines
- Avoid parallel laying with live cables
- Use shielded cables, placing the shield on one side of the DDC / PLC
- The probe must lie freely in the measuring medium for at least 170 mm

Maintenance instructions

The measuring element is maintenance-free in pure recirculation operation. However, aggressive and solvent-containing media can cause incorrect measurements depending on the type and concentration. Precipitates that form a water-repellent film over the sensor are harmful (e.g. resin aerosols, varnish aerosols, ...). The water resistance enables cleaning in water.

- Use only mild detergent for cleaning
- Thoroughly remove residues of cleaning agents
- Do not use solvents for cleaning

The sensors have good long-term stability. Regeneration is not required.

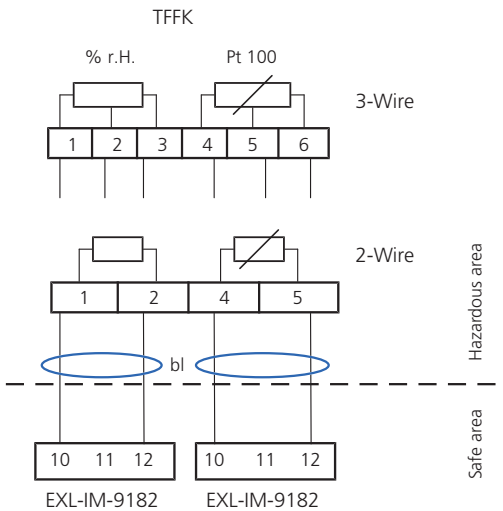
Recommended transmitter

- 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

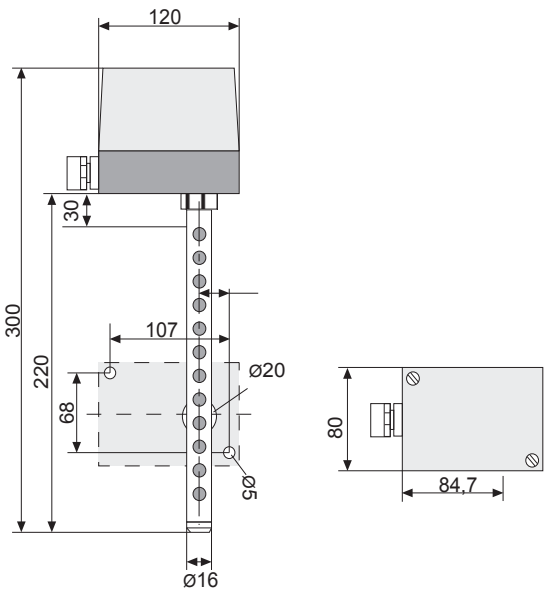
The electrical connection is made according to the operating instructions of the transmitter.

- Two transmitters are required for the electrical connection.



bl: light blue

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

TFFK-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	Duct humidity sensors	**Manufacturer**	Schischek GmbH
Type	TFFK-2G	**Property**	Passive, potential-free
Installation in	Zone 1, 2	**Associated equipment**	EXL-IM-9182-10-51-11s

Test goal

The duct humidity 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 duct humidity 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 switching amplifier EXL-IM-9182-10-51-11s from Company Stahl is suitable. The switching amplifier 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
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$C_o \geq C_i + C_{Cable}$	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 IP40
Inspection of metallic housing parts	Magnesium, titanium and zirconium content < 7.5%
Checking plastic	Suitable for use in the ambient temperature range -10 °C ... +50 °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: -10 °C ... +50 °C

Overall rating/additional comments

The duct humidity sensor type TFFK-2G can be used in conjunction with the switching amplifier EXL-IM-9182-10-51-11s 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 IP40 must be guaranteed.

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

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