Description

The TBK-2G duct thermostats monitor, regulate and limit the temperature of systems such as heat exchangers, water circuit running systems or heating registers in a non-aggressive environment. In combination with the Ex-i switching amplifier EXL-IR-9170 with its intrinsically safe circuit, the sensors may be used in potentially explosive areas of zones 1 and 2.

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.	Adjustment range	Gear shift difference
TBK-2G 0/60-U	057.1420	0 ...+60 °C, adjustable inside	3 K
TBK-2G 0/60	057.1423	0 ...+60 °C, adjustable outside	3 K
TBK-2G 0/90-U	057.1424	0 ...+90°C, adjustable inside	3 K
TBK-2G 50/140-U	057.1425	50 ...+140 °C, adjustable inside	1 K

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.

$U_o \leq U_i$	9.6 V ≤ 30 V
$I_o \leq I_i$	10 mA ≤ 50 mA
$P_o \leq P_i$	24 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 switching amplifier according to the gas group	

Technical data

Supply	Via switching amplifier EXL-IR-9170
Contact	Dust-encapsulated microswitch as a single-pole, potential-free changeover switch
Ambient	–10 ... +65 °C
Storage temperature	–20 ... +70 °C
Bezel material	Plastic
Capillary	Copper, about 200 mm
Safety class	Simple electrical equipment according to EN 60079-11
CE	2014/34/EU (ATEX)
Installation location	In hazardous areas zone 1, 2 (when using a suitable switching amplifier)
Protection class according to EN 60529	IP20
Dimensions (W×H×D)	293 x 13 x 73.5 mm
Included	Thermostat

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.
- Observe separate documentation:
  - Switching amplifiers

Location and installation

The device can be mounted in any position.

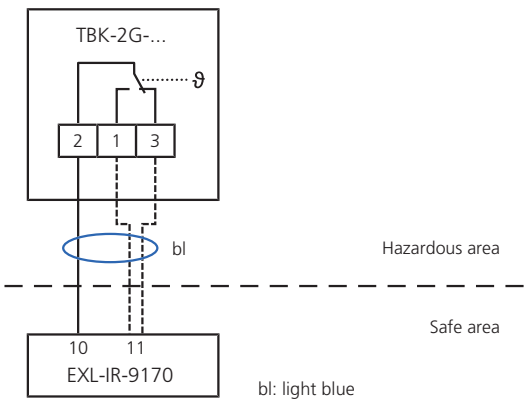
Assembly: Remove the lid for assembly and electrical connection. Use the supplied screws. The installation location must be selected in such a way that the maximum ambient temperature is not exceeded.

Recommended switching amplifier

- Ex-i switching amplifier from Company Stahl type EXL-IR-9170-11-12-11s
- When using the sensor together with a switching amplifier 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 switching amplifier.



Function

The setpoint is set on the rotary switch.

Heating: The set setpoint (scale value) corresponds to the switch-off value of the heater. The switch-on value is lower by the switching difference. Contact 2 - 3 opens when the temperature rises to the set setpoint.

Cooling: The set setpoint (scale value) corresponds to the on-switch value of the cooling. The switch-off value is lower by the switching difference. Contact 2 - 1 closes when the temperature rises to the set setpoint.

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

TBK-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 thermostat	**Manufacturer**	Schischek GmbH
Type	TBK-2G	**Property**	Passive, potential-free
Installation in	Zone 1, 2	**Associated equipment**	EXL-IR-9170

Test goal

The duct thermostat 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 and EN 60079-11. The duct thermostat is a simple electrical equipment within the meaning of EN 60079-11 Section 5.7 and must be operated via an intrinsically safe circuit. The switching amplifier EXL-IR-9170 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-IR-9170

$U_o \leq U_i$	9.6 V ≤ 30 V
$I_o \leq I_i$	10 mA ≤ 50 mA
$P_o \leq P_i$	24 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 switching amplifier according to the gas group	

Test	Result
IP protection	The device meets at least IP20
Inspection of metallic housing parts	Magnesium, titanium and zirconium content < 7.5%
Checking plastic	Suitable in the used ambient temperature range -10 °C ... +65 °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-IR-9170, a temperature increase of <5 K was measured in the event of an error; operating temperature range: -10 °C ... +65 °C

Overall rating/additional comments

The TBK-2G duct thermostat can be used in conjunction with the EXL-IR-9170 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 IP20 must be guaranteed.

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

SCHISCHEK
A rotork Brand

Contact us now
mail@rotork.com
www.rotork.com

PUB113-421-00
Issue 03/25