

Description

Room thermostat with contact output

Room thermostats TBR-2G-... monitor, regulate and limit temperatures in a non-aggressive environment. In combination with switching amplifiers with an intrinsically safe circuit, the sensors can be used within hazardous 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.



Standard version: Adjustment dial on the outside of the housing
Version type "U": Adjustment dial in the housing



Lieferprogramm

| Type | Product No. | Adjustment range |
|---------------|-------------|------------------|
| TBR-2G-0/40 | 057.1427 | 0...+40 °C |
| TBR-2G-0/40-U | 057.1412 | 0...+40 °C |

| Type | Product No. | Adjustment range |
|---------------|-------------|------------------|
| TBR-2G-0/60 | 057.1426 | 0...+60 °C |
| TBR-2G-0/60-U | 057.1413 | 0...+60 °C |

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.

| | |
|---|-------------------------------------|
| $U_o \leq U_i$ | $9.6 \text{ V} \leq 30 \text{ V}$ |
| $I_o \leq I_i$ | $10 \text{ mA} \leq 50 \text{ mA}$ |
| $P_o \leq P_i$ | $24 \text{ mW} \leq 100 \text{ mW}$ |
| $C_o \geq C_i + C_{\text{Cable}}$ | $C_i = 0 \text{ }\mu\text{F}$ |
| $L_o \geq L_i + L_{\text{Cable}}$ | $L_i = 0 \text{ }\mu\text{H}$ |
| $C_{\text{Cable}}, L_{\text{Cable}}$: see the specifications of the cable manufacturer | |
| C_o, L_o : see the documentation for the switching amplifier according to the gas group | |

Technical data

| | | |
|------------------------------|---------------|--|
| Supply | | Via switching amplifiers |
| Contact | | Dust-encapsulated microswitch as a single-pole, potential-free changeover switch |
| Ambient | TBR-2G-0/40 | -20...+65 °C |
| | TBR-2G-0/40-U | -20...+65 °C |
| | TBR-2G-0/60 | -10...+ 65 °C |
| | TBR-2G-0/60-U | -20...+65 °C |
| Storage temperature | TBR-2G-0/40 | -30...+70 °C |
| | TBR-2G-0/40-U | -30...+70 °C |
| | TBR-2G-0/60 | -20...+70 °C |
| | TBR-2G-0/60-U | -30...+70 °C |
| Gear shift difference | TBR-2G-0/40 | 2 K – External adjustment |
| | TBR-2G-0/40-U | 1 K – Internal adjustment |
| | TBR-2G-0/60 | 2 K – External adjustment |
| | TBR-2G-0/60-U | 1,5 K – Internal adjustment |

| | | |
|-------------------|---------------|--|
| Housing | TBR-2G-0/40 | Plastic, PA, glass ball reinforced IP54 |
| | TBR-2G-0/40-U | Plastic, IP65, capillary, rotary switch bushing IP54 |
| | TBR-2G-0/60-U | Plastic, PA, glass ball reinforced IP54 |
| Dimensions | | 108 × 70 × 73.5 mm |
| Weight | TBR-2G-0/40 | 364 g |
| | TBR-2G-0/40-U | 354 g |
| | TBR-2G-0/60 | 364 g |
| | TBR-2G-0/60-U | 364 g |
| Included | | Room 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

Assembly and installation

The device can be mounted in any position. The setpoint is set on the rotary switch.

Function

Heating

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

Cooling

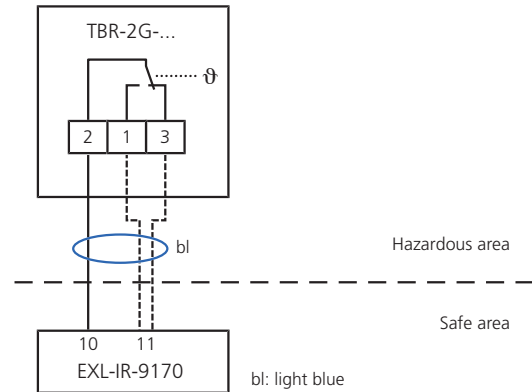
The set setpoint (scale value) corresponds to the shutdown value of the cooling. The switch-off value is lower by the switching difference. Contact 1 - 2 closes to the setpoint value when the temperature rises.

Recommended switching amplifier

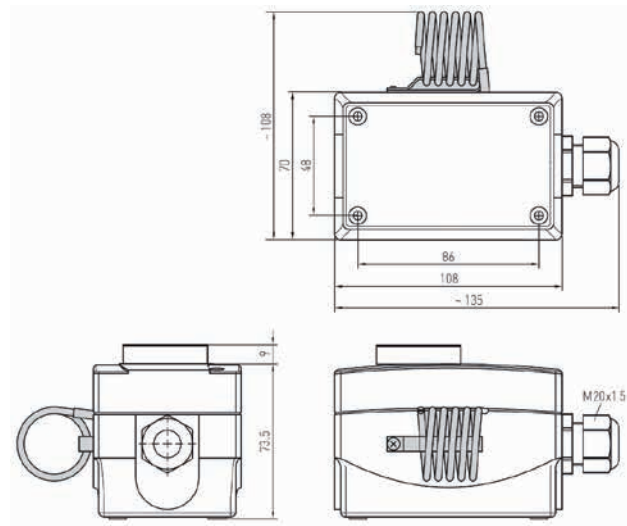
- Ex-i switching amplifier from Company Stahl type EXL-IR-9170-11-12-11s
- When using the sensor together with a switching amplifier recommended by us, the intrinsic safety for simple circuits is proven
- Manufacturer's certificate for zone 1, 2

Electrical connection


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



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

Test goal

The room 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 used are EN 60079-0 and EN 60079-11. The room thermostat 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-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

| | |
|---|-------------------------------------|
| $U_o \leq U_i$ | $9.6 \text{ V} \leq 30 \text{ V}$ |
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| Test | Result |
|--------------------------------------|---|
| IP protection | The device meets at least IP54 |
| Inspection of metallic housing parts | Magnesium, titanium and zirconium content < 7.5% |
| Checking plastic | Suitable in the used ambient temperature range -20 °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: -20 °C ... +65 °C |

Overall rating/additional comments

The room thermostat TBR-2G can be used in connection with the switching amplifier EXL-IR-9170 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 IP54 must be guaranteed.



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

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