Description

Two-stage room thermostat with contact output

Room thermostats TBR-2-2G-... 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.

(Fig. similar)

Delivery program

Type	Product No.	Adjustment range
TBR-2-2G	057.1415	0…40 °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 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 amplifiers
Contact	2 dust-encapsulated microswitches as single-pole potential-free changeover switches
Ambient	-15…+65 °C
Storage temperature	-20…+65 °C
Switching difference 1	1 K – External adjustment
Switching difference 2	1 K – Internal adjustment
Housing	Plastic, PA glass fiber reinforced, IP54
Capillary	Stainless steel 1.4301
Tolerance	Tmin +/- 3K Tmax+/- 3K (at 20°C +/- 1 K)
Dimensions (L×W×D)	108 x 73.5 x 70 mm
Weight	490 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 two intrinsically safe contacts must be installed separately from each other and must not be connected together.
- 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 with the upper rotary switch (top of housing). The switching difference is adjusted with the lower rotary switch (opening on the underside of the housing).

Function

Heating

Contacts 2-3 and 5-6 open when the temperature rises to the set value.

Cooling

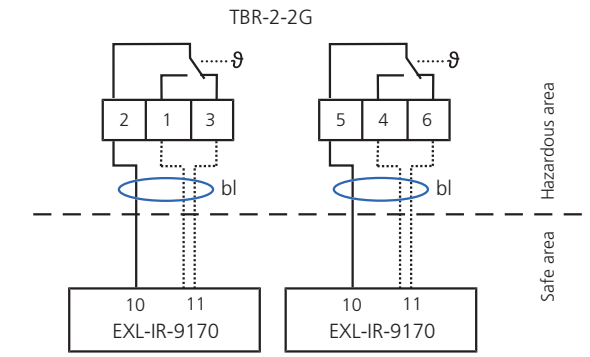
Contacts 2-1 and 5-4 open when the temperature drops to the set value.

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

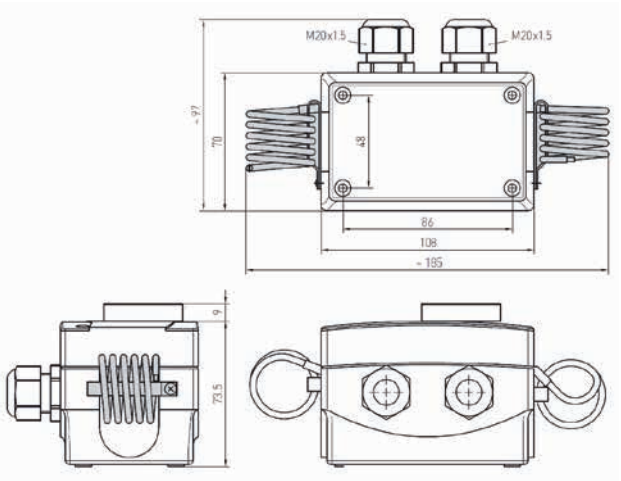
Electrical connection

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



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

TBR-2-2G

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 two-stage	**Manufacturer**	Schischek GmbH
Type	TBR-2-2G	**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 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 IP54
Inspection of metallic housing parts	Magnesium, titanium and zirconium content < 7.5%
Checking plastic	Suitable in the used ambient temperature range -15 °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: -15 °C ... +65 °C

Overall rating/additional comments

The two-stage room thermostat type TBR-2-2G can be used in zones 1 and 2 in conjunction with the switching amplifier EXL-IR-9170. One switching amplifier must be used per stage. The information in the data sheet or the operating instructions must be observed. In the same way, the warnings regarding electrostatic charging must be observed. After installation, at least the protection class IP54 must be be guaranteed.

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

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