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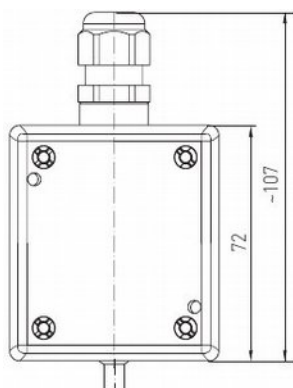
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Instruction Manual

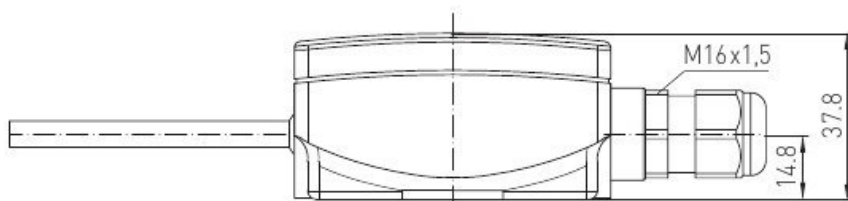
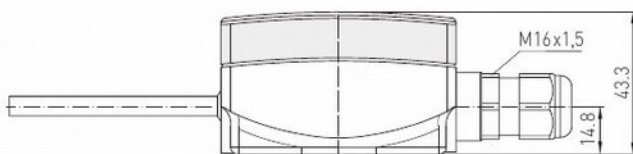
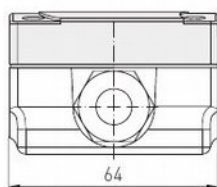
TR02

Room Temperature Transmitter

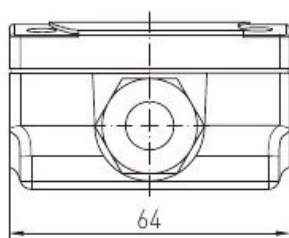
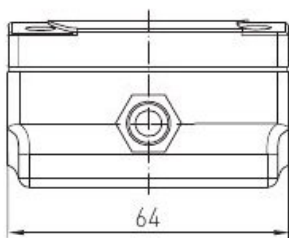
DIMENSIONS



mit Display
with display



ohne Display
without display



Calibrateable outside temperature measuring transducer TR02 with eight switchable measuring ranges, internal or remote sensor, continuous output, terminal box enclosure made of impactresistant plastic, enclosure cover with quicklocking screws, optional with or without display. For the detection of outside temperatures, temperatures in wet room areas, e.g. for installation on outside walls, in cold storage buildings and greenhouses, in the industrial sector and in agriculture. Installation in outdoor areas preferably at the north side of a building or in a protected place. In case of direct solar radiation, a sunshade protector should be used. These outdoor sensors are factorycalibrated. Adjustment / fine adjustment by the user is possible (zero point offset is adjustable).

TECHNICAL DATA:

Power supply: 24 V AC / DC \pm 10 % for output 0 -10 V
15 -36 V DC for output 4 ... 20 mA (depending on working resistance)

Power consumption: < 1.0 VA / 24 V DC
< 2.2 VA / 24 V AC

Sensor:..... Pt1000, DIN EN 60751, class B,
sensor inside external stainless steel sensor tube, 1.4571, V4A

Measuring ranges: **multi-range switching with 8 switchable measuring ranges,**
see table (other ranges optional)
operating range -30 ...+ 70 °C
with manual zero point correction (\pm 10 K)

Output: 0 -10 V or 4... 2.0 mA

Ambient temperature: measuring transducer -30 ...+ 70 °C

Connection type: 2-or 3wire connection

Process connection: by screws

Enclosure: plastic, material polyamide, 30 % glassglobereinforced,
with quick-locking screws, (slotted / Phillips head combination),
colour pure white (similar RAL 9010), enclosure cover for display is transparent!

Enclosure dimensions: 72 x 64 x 37.8 mm (Thor III without display)
72 x 64 x 43.3 mm (Thor III with display)

Cable gland: M 16 x 1,5, including strain relief, exchangeable,
max. inner diameter 10.4 mm

Electrical connection: 0.14 -1.5 mm² via terminal screws

Humidity: < 95 % r. H., nonprecipitating air

Protection class: III (according to EN 60 730)

Protection type: **IP 65** (according to EN 60 529)

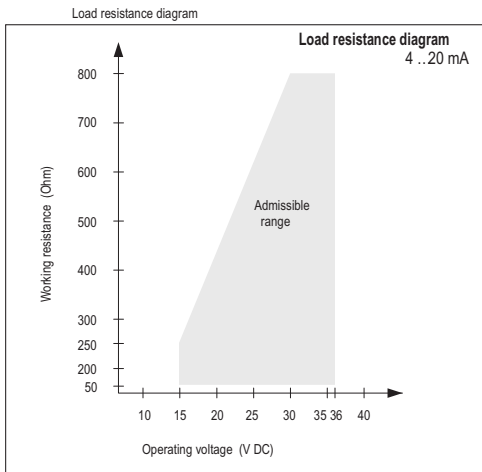
Standards: CE conformity, electromagnetic compatibility according to EN 61326: 2006,
according to EMC directive 2004 / 108 / EC

Optional: singleline **display with illumination** , cutout ca. 36 x15 mm (W x H),
for displaying actual temperature

Output: 4...20 mA
Connection:2wire connection
Auxiliary energy:15 ... 36 V DC $\pm 10\%$,
 supplied from 4...20 mA loop,
 residual ripple, stabilised ± 0.3 V
Working resistance:.....Ra (Ohm) = (Ub44 V) / 0.02 A

Output: 0 - 10 V
Connection:3wire connection
Auxiliary energy:24 V AC / DC $\pm 20\%$
Working resistance:.....minimum load resistance 5 kOhm

Accuracy: ± 0.4 K at 25 °C, otherwise ± 0.8 K
Measuring element:see table
Operating temperature: ...transmitter -30...+ 70 °C
Linearisation:temperature linear
 according to DIN IEC 751
Linearity error: $\pm 0.3\%$ of measuring range
Standards:CE conformity, electromagnetic compatibility
 according to EN 61326: 2006,
 according to EMC directive 2004 / 108 / EC

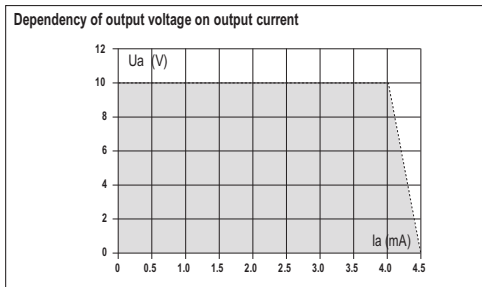


TEMPERATURE RANGES:

When selecting measuring transducer ranges,
 it is necessary to ensure that the maximum temperatures
 permissible for sensor / enclosure are not exceeded !

Ambient temperature for measuring transducers:
 -30 ...+ 70 °C

Apparent ohmic resistance = see load resistance diagram

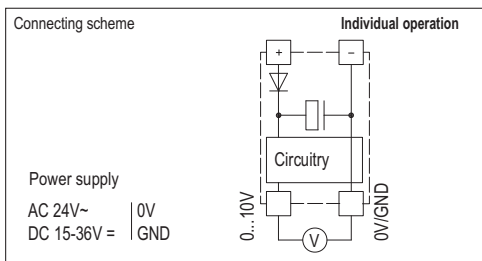


SUPPLY VOLTAGE :

For operating voltage reverse polarity protection, a oneway rectifier or
 reverse polarity protection diode is integrated in this device variant.
 This internal oneway rectifier also allows operating 0 -10 V devices on AC
 supply voltage.

The output signal is to be tapped by a measuring instrument. Output
 voltage is measured her against zero potential (0 V) of the input voltage!

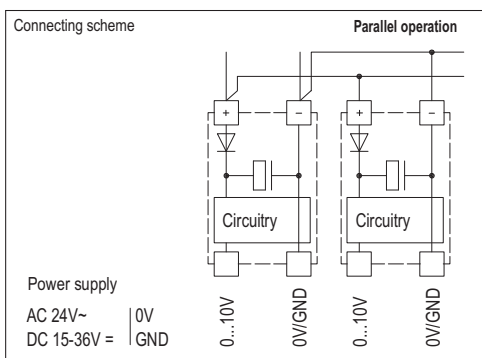
When this device is operated on **DC supply voltage** , the operating voltage
 input UB+ is to be used for 15...36 V DC supply and UB -or GND for ground
 wire!



When several devices are supplied by one 24 V **AC voltage supply** , it is to
 be ensured that all positive operating voltage input terminals (+) of the
 field devices are connected with each other and all negative operating
 voltage input terminals (- (= reference potential)) are connected together
 (inphase connection of field devices). All outputs of field devices must be
 referenced to the same potential!

In case of reversed polarity at one field device, a supply voltage short-
 circuit would be caused by that device. The consequential shortcircuit
 current flowing through this field device may cause damage to it.

Therefore, pay attention to correct wiring!



Devices are to be connected under dead-voltage condition. Devices must only be connected to safely extra-low voltage. Consequential damages caused by a fault in this device are excluded from warranty or liability. Installation of these devices must only be realized by authorized qualified personnel. The technical data and connecting conditions shown on the device labels and in the mounting and operating instructions delivered together with the device are exclusively valid. Deviations from the catalogue representation are not explicitly mentioned and are possible in terms of technical progress and continuous improvement of our products. In case of any modifications made by the user, all warranty claims are forfeited. Operating this device close to other devices that do not comply with EMC directives may influence functionality. This device must not be used for monitoring applications, which solely serve the purpose of protecting persons against hazards or injury, or as an EMERGENCY STOP switch for systems or machinery, or for any other similar safety-relevant purposes.

Dimensions of enclosures or enclosure accessories may show slight tolerances on the specifications provided in these instructions.

Modifications of these records are not permitted.

In case of a complaint, only complete devices returned in original packing will be accepted.

Our General Terms and Conditions for Business together with the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry (ZVEI conditions) including supplementary clause Extended Retention of Title apply as the exclusive terms and conditions"

Notes regarding mechanical mounting and attachment:

Mounting shall take place while observing all relevant regulations and standards applicable for the place of measurement (e.g. such as welding instructions, etc.). Particularly the following shall be regarded:

- VDE / VDI directive technical temperature measurements, measurement set - up for temperature measurements.
- The EMC directives must be adhered to.
- It is imperative to avoid parallel laying of current-carrying lines.
- We recommend to use shielded cables with the shielding being attached at one side to the DDC / PLC.

Before mounting, make sure that the existing thermometer technical parameters comply with the actual conditions at the place of utilization, in particular in respect of:

- Measuring range
- Permissible maximum pressure, flow velocity
- Oscillations, vibrations, shocks are to be avoided (< 0.5 g)

CONNECTING CONDITIONS

Output: 0 - 10 V

The output voltage follows linear to the temperature signal applied at the input terminals and generates a proportional output signal of 0 - 10 V. The voltage outputs are short-circuit proof against ground wire. Applying voltage supply to the output terminals will destroy the device.

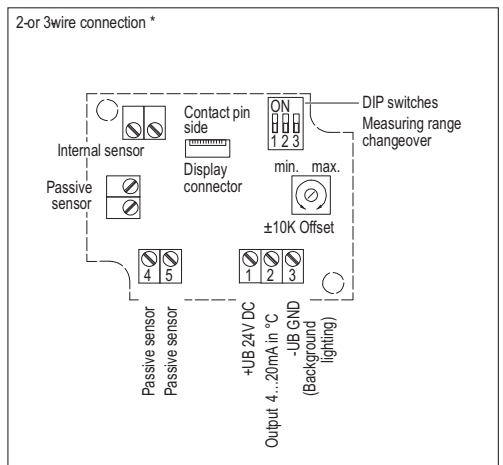
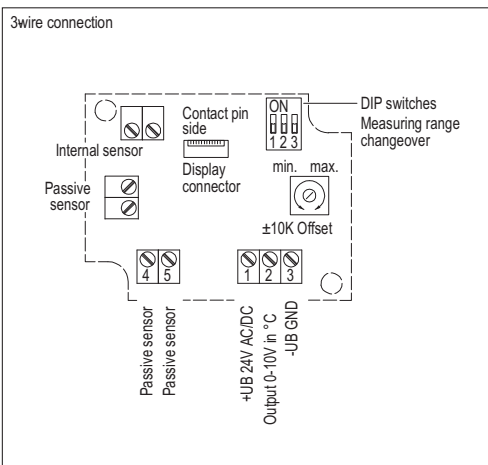
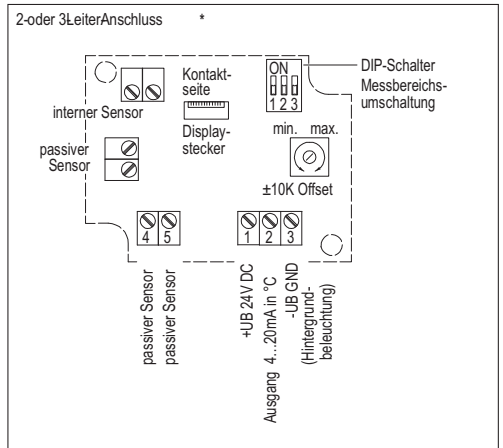
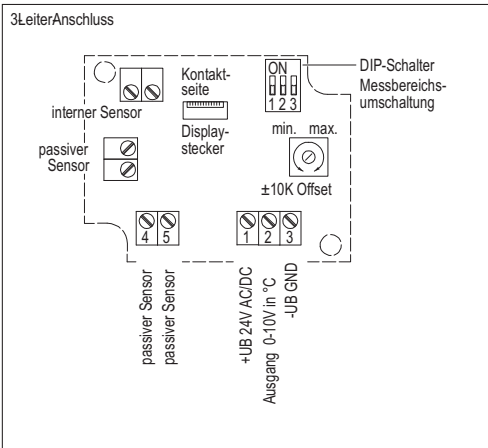
Output: 4 ... 20 mA

In case of the 4 ... 20 mA measuring transducer, display and evaluating elements are connected in series in the current loop. The measuring transducer thereby follows the flowing current in variance of the input signal. 4 mA are for the measuring transducer's internal current consumption. The apparent ohmic resistance can either be connected in the plus or minus path of the measuring transducer. In case of an apparent ohmic resistance in the plus path, power supply and resist.

SAFETY REGULATIONS

These devices shall only be used for their intended purpose. Respective safety regulations issued by the VDE, the states, their control authorities, the TÜV and the local energy supply company must be observed. The buyer has to ensure adherence to the building and safety regulations and has to avoid all dangers of any kind. We do not assume any warranty for faults or damages arising or resulting from improper use of our equipment or from non-observance of operating instructions. These instruments must be installed by authorised specialists only!

Preferably shielded cables should be used in order to prevent damages / errors. It is imperative to avoid laying parallel with current-carrying lines. EMC directives must be adhered to.



Messbereiche (einstellbar) Measuring ranges (adjustable)	DIP 1	DIP 2	DIP 3
-20 °C ... +150 °C	ON	ON	ON
-50 °C ... +50 °C	OFF	ON	ON
-20 °C ... +80 °C	ON	OFF	ON
-30 °C ... +60 °C	OFF	OFF	ON
0 °C ... +40 °C	ON	ON	OFF
0 °C ... +50 °C	OFF	ON	OFF
0 °C ... +100 °C	ON	OFF	OFF
0 °C ... +150 °C	OFF	OFF	OFF

Anschluss * :

2-Leiter-Anschluss für Geräte ohne / mit Display (unbeleuchtet)

3-Leiter-Anschluss für Geräte mit beleuchtetem Display

Connection * :

2-wire connection for devices with / without display (not illuminated)

3-wire connection for devices with illuminated display

TR02

Temperature Transmitter for Ambient Air

- resistance thermometer and temperature transmitter
- Pt1000 Measuring element
- for ambient air monitoring
- special version on request
- temperature range $-20\dots+150\text{ }^{\circ}\text{C}$



Description:

The devices of the model type series TR02 are calibrationable outside temperature measuring transducer with 8 switchable measurement ranges. The devices have either internal or external sensors. The output signal is either a 4...20 mA current or a 0...10 V voltage signal.

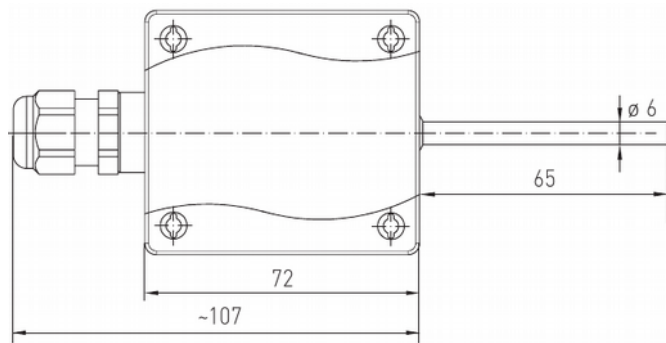
The entire electronic is placed inside a housing made of impact resistant plastic. The quick release fastener screws allow a quick and uncomplicated mounting. The devices can be delivered with or without a display.

Typical application:

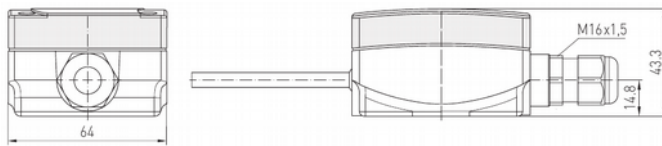
The devices of the model type series TR02 are used to measure the ambient temperature, the temperature in moist room areas, e.g. on external walls, in cooling or greenhouses, in industry areas and in agriculture. In the outdoor area the mounting is preferably done on the north side or a sheltered location.

In direct sunlight a sunscreen has to be used. The outdoor sensor are factory adjusted. A fine calibration by the user is possible through zero and offset adjustment.

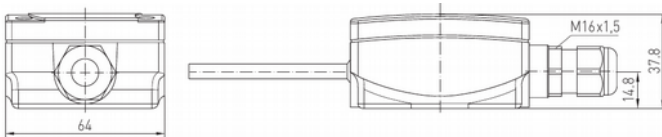
Models:



With LCD display:



Transmitter without display:



Technical Data:

Power supply:	24 V AC/DC $\pm 10\%$ for 0...10 V 15...36 VDC for 4...20 mA
Power input:	< 1,0 VA at 24 VDC < 2,2 VA at 24 VAC
Output:	0...10 V, 3 wire, ≥ 5 k Ω load 4...20 mA, 2 wire load [Ω] = $(U_b - 14 \text{ V}) / 0,02 \text{ A}$
Accuracy:	$\pm 0,4 \text{ K}$ at 25 °C, other $\pm 0,8 \text{ K}$
Measuring element:	Pt1000, DIN EN 60751, class B
Cable threaded connection:	M16 x 1,5 with tension relief
Electrical connection:	0,14 – 1,5 mm ² screw terminals
Housing material:	polyamide, 30% glass ball reinforced with quick release fastener screws
Protection class:	IP65 (EN 60529), III (EN 60730)
Permissible humidity:	< 95 % rH non condensing
Ambient temperature:	-50...+80°C transmitter only -30...+70°C with LCD display
Measuring range:	-50...+150°C

Model Code:

Order number: TR02. I. -020+150. 0. 0

Temperature Transmitter
for ambient air

Output signal:

U = 0...10 V
I = 4...20 mA

Measuring range

(see table standard-measuring ranges):

-020+150 up to +000+150
or special measuring range on request

Models:

0 = measuring transmitter without on site display
1 = measuring transmitter with LCD display

Options:

0 = without
9 = please specify in plain text

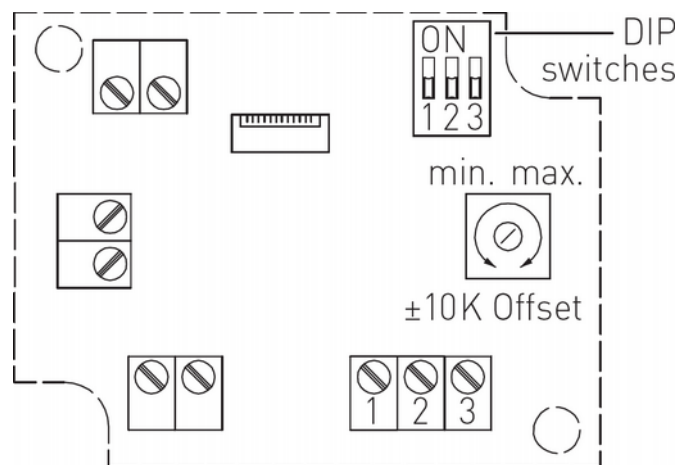
Standard-measuring range:

via DIP-switch configurable:

Measuring range [°C]	Measuring range code	DIP 1	DIP 2	DIP 3
-20...+150	-020+150	ON	ON	ON
-50... +50	-050+050	off	ON	ON
-20... +80	-020+080	ON	off	ON
-30... +60	-030+060	off	off	ON
0... +40	+000+040	ON	ON	off
0... +50	+000+050	off	ON	off
0...+100	+000+100	ON	off	off
0 +150	+000+150	off	off	off

Special measuring range on request

Electrical connection:



1 = +U_b 24 VDC 2 = output 3 = GND