

WRF04

Room Temperature Sensor Wall Mounted

thermokon®
Sensortechnik GmbH

Data Sheet

Subject to technical alteration
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Application

Surface mounted room sensor for temperature measuring, with set point and fan stage adjustment, manual override for room and office applications.

Types Available

WRF04 TRA	only room sensor, with transducer 4..20 mA / 0..50 °C*
WRF04 TRV	only room sensor, with transducer 0..10 V / 0..50 °C*
WRF04 Sensor	only room sensor, with sensor acc. to customer's need*

*eg.: PT100/PT1000/Ni1000/Ni1000TK5000/LM235Z/NTC.../PTC... and other sensors on request

Security Advice – Caution



The installation and assembly of electrical equipment should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets. Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Please comply with

- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

Notes on Disposal



As a component of a large-scale fixed installation, Thermokon products are intended to be used permanently as part of a building or a structure at a pre-defined and dedicated location, hence the Waste Electrical and Electronic Act (WEEE) is not applicable. However, most of the products may contain valuable materials that should be recycled and not disposed of as domestic waste. Please note the relevant regulations for local disposal.

Remarks to Room Sensors

Location and Accuracy of Room Sensors

The room sensor should be mounted in a suitable location for measuring accurate room temperature. The accuracy of the temperature measurement also depends directly on the temperature dynamics of the wall. It is important, that the back plate is completely flush to the wall so that there is sufficient circulation of air through the vents in the cover, otherwise, deviations in temperature measurement will occur due to uncontrolled air circulation. The temperature sensor should not be covered by furniture or other objects. Mounting next to doors (due to draught) or windows (due to colder outside wall) should be avoided.

Surface and Flush Mounting

The measuring result is influenced by the thermal characteristics of the wall. A solid concrete wall responds to thermal fluctuations within a room in a much slower than a light-weight structure wall. Room temperature sensors installed in flush-mounted boxes have a longer response time to thermal variations. In extreme cases they detect the radiant heat of the wall even if the air temperature in the room is lower for example. The quicker the dynamics of the wall (temperature acceptance of the wall) or the longer the selected inquiry interval of the temperature sensor is the smaller the deviations limited in time are.

Build-up of Self-Heating by Electrical Dissipative Power

Temperature sensors with electronic components always have a dissipative power, which affects the temperature measurement of the ambient air. The dissipation in active temperature sensors shows a linear increase with rising operating voltage. This dissipative power has to be considered when measuring temperature. In case of a fixed operating voltage ($\pm 0,2$ V) this is normally done by adding or reducing a constant offset value. As Thermokon transducers work with a variable operating voltage, only one operating voltage can be taken into consideration, for reasons of production engineering. Transducers 0..10 V / 4..20 mA have a standard setting at an operating voltage of 24 V =. That means, that at this voltage, the expected measuring error of the output signal will be the least. For other operating voltages, the offset error will be increased or lowered by a changing power loss of the sensor electronics. If a re-calibration should become necessary later directly on the sensor, this can be done by means of a trimming potentiometer on the sensor board.

Remark: Occurring draft leads to a better carrying-off of dissipative power at the sensor. Thus temporally limited fluctuations might occur upon temperature measurement.

Technical Data

Measuring values		temperature
Output voltage	passive TRV	depending on used sensor 1x 0..10 V, min. load 5 k Ω
Output Amp	TRA	1x 4..20 mA, max. load 700 Ω
Power supply	TRV TRA	15..24 V = ($\pm 10\%$) or 24 V ~ ($\pm 10\%$) 15..24 V = ($\pm 10\%$)
Power consumption	TRV TRA	typ. 0,4 W (24 V =) 0,8 VA (24 V ~) max. 0,5 W (24 V =)
Measuring range temp.	passive TRV TRA TRV1 TRA1 TRV3 TRA3 TRV8 TRA8	depending on used sensor adjustable at the transducer -50..+50 $^{\circ}\text{C}$ 0..+50 $^{\circ}\text{C}$ -15..+35 $^{\circ}\text{C}$
Accuracy temperature	passive TRV TRA	depending on used sensor $\pm 1\%$ of measuring range (typ. at 21 $^{\circ}\text{C}$)
Sensor	passive	2-wire (standard), 3 wire or 4-wire
Enclosure		ASA, pure white
Protection		IP30 according to EN 60529
Cable entry		breaking points top/bottom, rear entry
Connection electrical		terminal block, max. 1,5 mm ²
Ambient condition		-35..+70 $^{\circ}\text{C}$
Weight		50 g
Mounting		flush mounted with standard EU box ($\varnothing=55$ mm)
Notes		custom paint available on request, other sensors on request, multi-conductor connection on request, enclosure stainless steel available (see options)

Mounting Advices

Make sure that the device is power-off, if you install it!

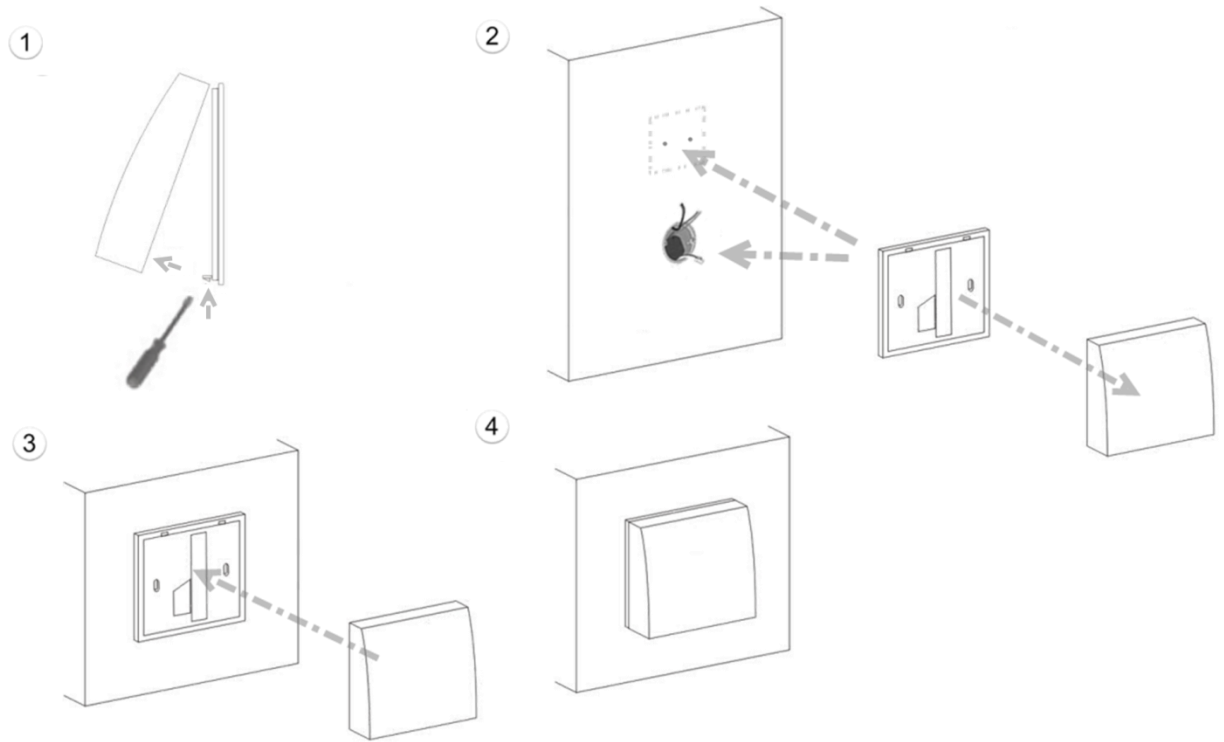
The device can be installed on a smooth wall surface or a flush box. It should be selected a representative location for the measuring medias. The use of deep installation boxes is recommended due to the increased storage capacity for the cabling.

Sunlight and drafts e.g. in conduit must be avoided so that the measuring result is not distorted. If necessary, is the end of the installation tube seal

(1) For wiring, the upper part of the base plate must be solved. Base plate and upper part are connected with each other by mounting clips.

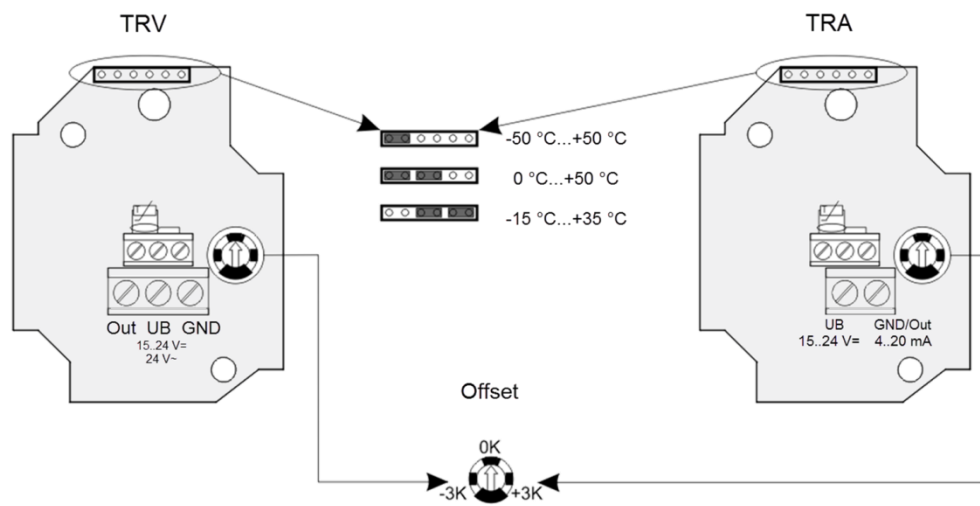
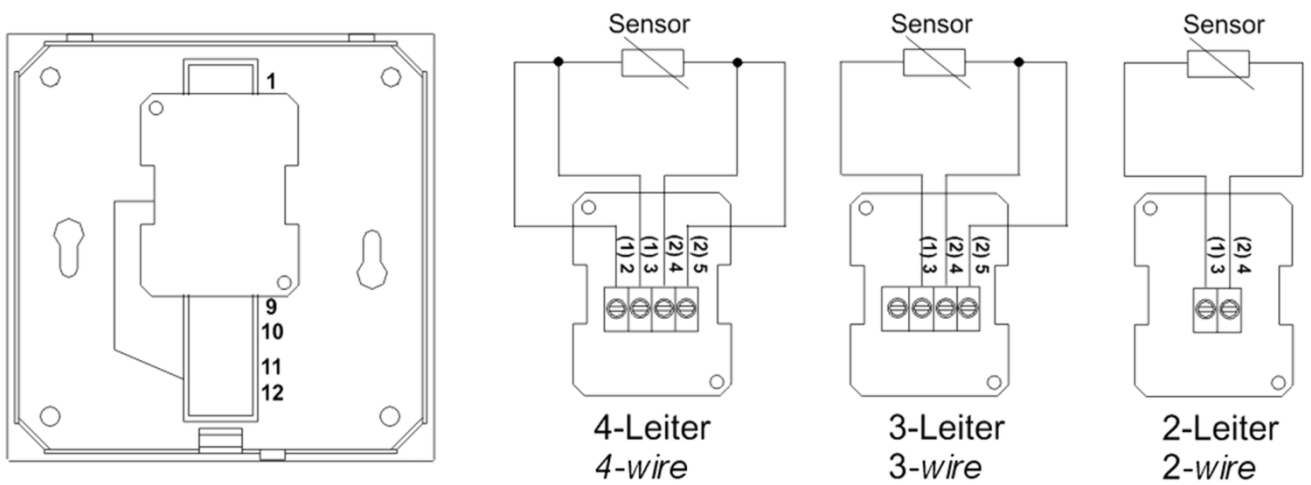
(2) The installation of the base plate to the smooth wall surface can be done with plugs and screws.

(3) Then, the device is placed on the base plate.

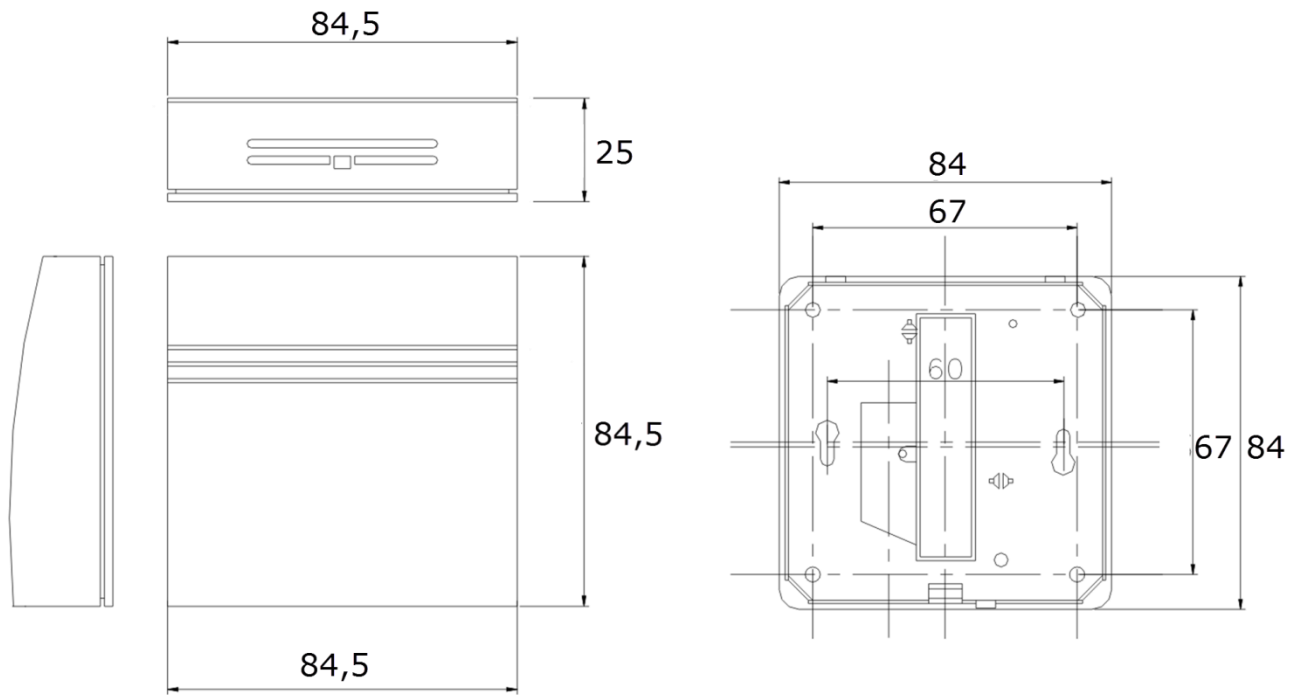


Connection Plan

Sensor



Dimensions (mm)



Accessories (optional)

Rawl plugs and screws (2 pcs. each)

Item No. 102209

Frame for surface mounting WRF04

Item No. 111584

Balls stroke protection BS100 (only for WRF04)

Item No. 103312