MWF+

Average temperature sensor

thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
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» APPLICATION

Duct averaging temperature sensor in enclosure USE-S for measuring the average temperature in air ducts. The sensor detects the applied temperature value throughout the entire length. Mounting angles for uncomplicated duct mounting are included in delivery. A spring at the connection head reduces vibrations.

» TYPES AVAILABLE

Duct averaging sensor temperature – passive

- MWF+ <Sensor> L<x> incl. installation kit

Duct averaging sensor temperature – active TRV 0..10 V | TRA 4..20 mA

- MWF+ TRV MultiRange L<x> incl. Installation kit
- MWF+ TRA MultiRange L<x> incl. Installation kit

<x>: sensor rod length 3000/6000/15000 mm
<sensor>: Pt1000/Ni1000
MultiRange: Measuring ranges adjustable at the transducer

» 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

» PRODUCT TESTING AND CERTIFICATION

CE

Declaration of conformity
The declaration of conformity of the products are available on our website
https://www.thermokon.de/direct/en-gb/categories/mwfplus

»NOTES ON DISPOSAL



The crossed-out wheelie bin symbol indicates that the product or removable batteries must not be disposed of with household or commercial waste. Within the EU, you are legally obliged to dispose of the product separately and appropriately in accordance with the national laws of your country. Alternatively, please contact your supplier or Thermokon Sensortechnik GmbH. Further information can be found at: www.thermokon.com

»GENERAL REMARKS CONCERNING TO SENSORS

Especially regarding passive sensors in 2-wire conductor versions, the wire resistance of the supply wire must be considered. If necessary, the wire resistance must be compensated by the follow-up electronics. Due to self-heating, the wire current affects the measurement accuracy. So, it should not exceed 1 mA.

When using lengthy connection wires (depending on the cross section used) the measuring result might be falsified due to a voltage drop at the common GND-wire (caused by the voltage current and the line resistance). In this case, 2 GND-wires must be wired to the sensor - one for supply voltage and one for the measuring current.

Sensing devices with transducer should always be operated in the middle of the measuring range to avoid deviations at the measuring end points. The ambient temperature of the transducer electronics should be kept constant. The transducers must be operated at a constant supply voltage (±0,2 V). When switching the supply voltage on/off, onsite power surges must be avoided.

»BUILD-UP OF SELF-HEATING BY ELECTRICAL DISSIPATIVE POWER

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 must be considered when measuring temperature. In case of a fixed operating voltage (±0,2 V) this is normally done by adding or reducing a constant offset value.

Thermokon transducers can be operated with variable operating voltages. The transducers are set at the factory with a reference operating voltage of 24 V =.

At this voltage, the expected measuring error of the output signal will be the least. Other operating voltages can cause a measurement deviation changing power loss of the sensor electronics.

A recalibration can be carried out directly on the unit or via a software variable (app or bus).

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

»USE ENCLOSURE WITH UV AND WEATHER RESISTANCE

After some time, outdoor mounted plastics can lose their color and quality. Therefore, all USE housings are made of special white polycarbonate (PC). The light-stable colorants and additives are used to achieve optimum protection of the polymer while maintaining color stability. The titanium dioxide used is specially developed for polycarbonate and offers excellent UV protection through the reflection of the entire light spectrum including the UV component by 340 nm. This effectively counteracts the otherwise occurring photochemical polymer degradation. The colors stay full for a long time without fading. The material is also resistant to cold and frost.

»TECHNICAL DATA

Measuring values	Temperature	
Output voltage *(type-dependent)*	**TRV:** 1 x 0..10 V or 0..5 V, min. load 5 kΩ	
Output ampere *(type-dependent)*	**TRA:** 1 x 4..20 mA, max. load 500 Ω	
Output passive *(type-dependent)e*	**Passive** PT1000/Ni1000	
Power supply *(type-dependent)*	**TRV** 15..24 V = (±10 %) or 24 V ~ (±10 %) SELV	**TRA** 15..24 V = (±10 %) SELV
Power consumption *(type-dependent)*	**TRV** typ. 0,4 W (24 V =) | 0,8 VA (24 V ~)	**TRA** typ. 0,5 W (24 V =)
Measuring range temp. *(type-dependent)*	**passive** -35..+70 °C, depending on used sensor	
Output signal range temp. **Scaling analogue output (type-dependent)*	**TRV | TRA** default setting: -20..+80 °C selectable from 8 temperature ranges -50..+50 | -20..+80 | -15..+35 | -10..+120 | 0..+50 | 0..+100 | 0..+160 | 0..+250 °C, adjustable at the transducer	
Operating temperature range ** Max. permissible operating temperature*	**Sensor rod** -35..+70 °C	**Electronic | enclosure** -30..+70 °C
Accuracy temperature *(type-dependent)*	**TRV | TRA** ±0,5 K (typ. at 21 °C within default measuring range)	**Passive** Pt1000: DIN class B Ni1000: ±0,4 K (typ. at 0 °C)

Enclosure	enclosure USE-S, PC, pure white, with removable cable entry
Protection	IP65 according to EN 60529
Cable entry	Flextherm M20, for wire Ø=4,5..9 mm, removable
Connection electrical	removable plug-in terminal, max. 2,5 mm²
Sensor rod *(optional)*	3000 mm, 6000 mm, 15000 mm
Ambient condition	max. 85 %rH, short term condensation

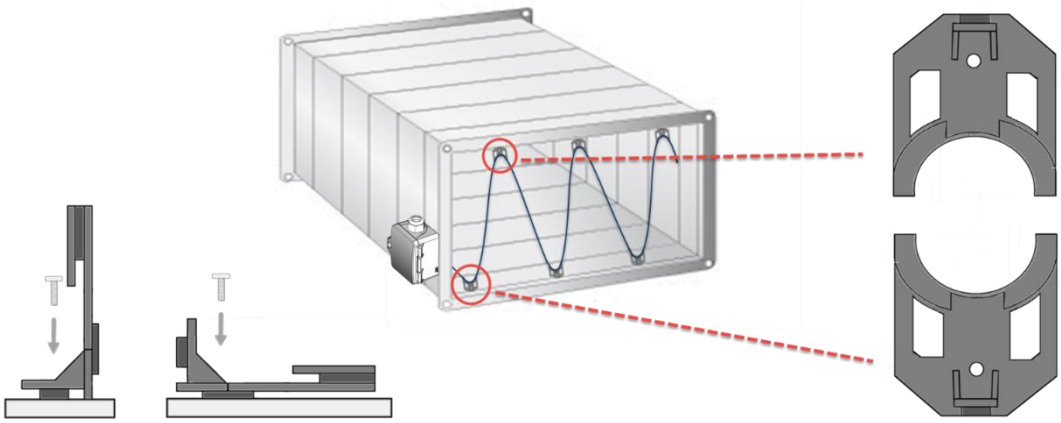
» MOUNTING ADVICE

Model MWF can either be mounted directly on the ventilation duct by means of a mounting flange or by screws.

By means of the mounting brackets included the sensor rod is braced to the ventilation duct.

Note: Please pay attention to the sensor rod while mounting and protect it from mechanical damage!

Mounting angle:

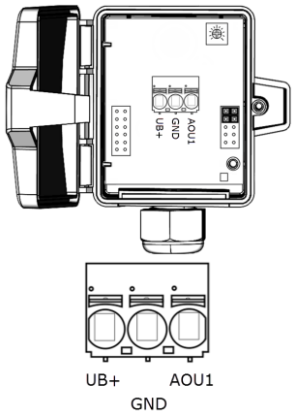


Vertical mounting **Horizontal mounting**

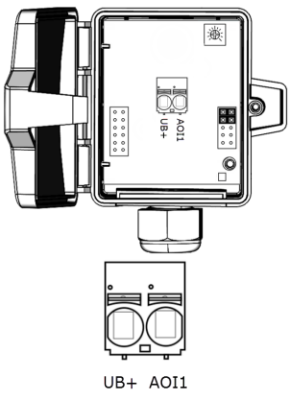
» CONNECTION PLAN AND CONFIGURATION

The adjustment of the measuring ranges is made by changing the jumpers in a de-energized state. The output value of the new measuring range is available after 2 seconds.

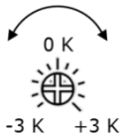
TRV
0..10V | 0..5V



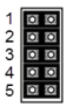
TRA
4..20mA



Temperature
Offset



Jumper
1-5

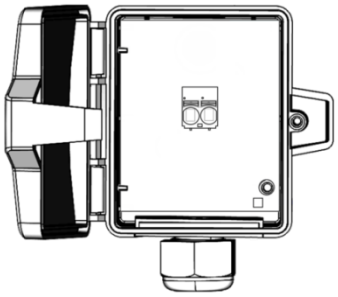


1	°C	°F (more info below)	
2	0..10V	0..5 V	*TRV only*
-50 °C..+50°C		0°C..+100°C	
-10°C..+120°C		-20°C..+80°C	
0°C..+50°C		0°C..+250°C	
-15°C..+35°C		0°C..+160°C	

EN-US datasheet with more information regarding °F

fig. (Measuring range and offset adjustment, default settings: -20 °C..+80 °C | 0 K)

Passive



(Pt1000 | Ni1000)

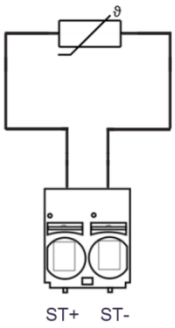
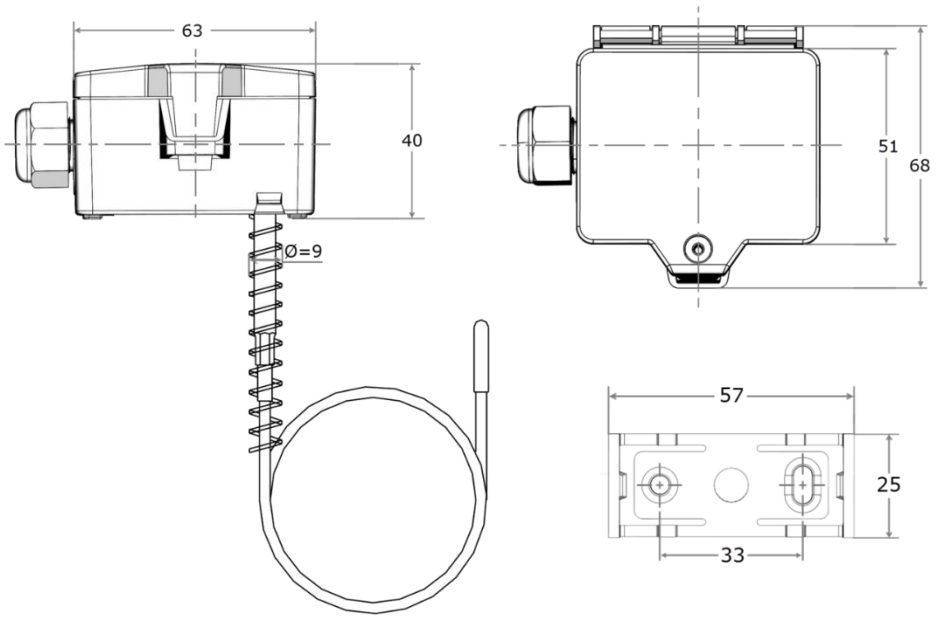


fig. (terminal assignment passive sensor)

» DIMENSIONS (MM)



» ACCESSORIES (INCLUDED IN DELIVERY)

Mounting base USE-S	Item No. 667722
Sensor rod mounting angle set	Item No. 679466
Mounting kit universal	Item No. 698511

• Cover screw + screw cover• 2 wall plugs • 2 Screws (countersunk head) • 2 Screws (rounded head)

» ACCESSORIES (OPTIONAL)

Sealing insert M20 USE white, 2x Ø=7 mm (for 2 wire; PU 10 pieces)	Item No. 641333