

## MWF+

Average temperature sensor

**thermokon**<sup>®</sup>  
HOME OF SENSOR TECHNOLOGY

### Datasheet

Subject to technical alteration  
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### » APPLICATION

Duct sensor for measuring the average temperature in air ducts. The sensor measures the mean temperature value throughout the entire length. A spring at the connection head reduces vibrations. Mounting angles are included in the delivery content. A hinged cover and tool-free wiring as well as removable cable entries ensure a quick and easy installation. In addition to LoRaWAN®, additional analog voltage outputs are available as interfaces. In radio-shielded mounting locations, an optional external antenna can be used to optimize the radio link between the device and the gateway.

### » TYPES AVAILABLE

**Duct averaging sensor optional with Display temperature – active RS485 Modbus**  
MWF+ (LCD) RS485 Modbus L<x> incl. Installation kit

<x>: sensor rod length 3000/6000 mm  
MultiRange: Measuring range configurable via app

### » 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



#### Declaration of conformity

The declaration of conformity of the products can be found on our website  
<https://www.thermokon.de/direct/en-gb/categories/mwfplus>

## » NOTES ON DISPOSAL



The crossed-out wheellie 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](http://www.thermokon.com)

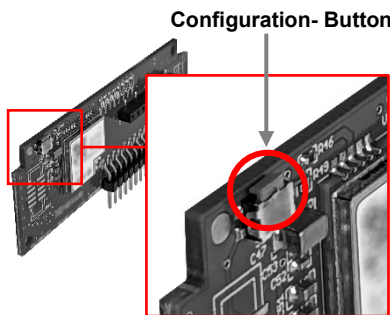
## » CONFIGURATION

**The Thermokon Bluetooth-Dongle (Item-No. 668262) is required for Communication between USEapp and USE-M/USE-L LRW-products. Commercial bluetooth dongles are not compatible.**



Application-specific reconfiguration of the devices can be carried out using the Thermokon USEapp. The configuration is carried out in the voltage-supplied state.

**The configuration-app and the app description can be found on the website [www.thermokon.de](http://www.thermokon.de)**



1. Connect the sensor with the power supply according to wiring diagram
2. Plug in the bluetooth dongle
3. Press the button to start configuration mode.
4. Configure the sensor using the USEapp on a mobile device.
5. Disconnect the bluetooth connection.
6. Remove the bluetooth dongle off the sensor.
7. Press the button to stop configuration mode.
8. Configuration values are saved and the device is ready for use.

## » USER ADVICE



The bluetooth dongle snaps in the connector, when removing the bluetooth dongle hold the board down to prevent pulling out the board.

## » INFORMATION ABOUT LORAWAN SPECIFICATION



The Thermokon LoRaWAN specification can be downloaded from our website.

## » 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 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.

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	0..10 V or 0..5 V, min load 10 kΩ (live-zero configuration via Thermokon USEapp)		
Power supply	15..24 V = (±10%) oder 24 V ~ (±10%) SELV		
Power consumption	max. 2,3 W (24 V =)   max. 4,3 VA (24 V ~)		
Output signal range temp. <i>*Scaling analogue output</i>	-20..+80 °C (default setting), optionally configurable via Thermokon USEapp		
Operating temperature range <i>* Max. permissible operating temp</i>	<b>sensor rod</b> -30..+80 °C	<b>electronic   enclosure</b> -35..+70 °C (w/o LCD)	<b>mounting base</b> -35..+90 °C
Accuracy temperature	±0,5 K (typ. at 21 °C with default settings)		
Enclosure	enclosure USE-M, PC, pure white, cover PC, with removable cable entry		
Protection	IP65 according to EN 60529		
Cable entry	Flextherm M20, for wire max. Ø= 4,5..9 mm, removeable		
Connection electrical	removable plug-in terminal, max. 2,5 mm²		
Sensor rod	3000 mm   6000 mm		
Ambient condition	max. 85% rH short term condensation		
Configuration	Thermokon USEapp, LoRaWAN Downlink, Jumper		

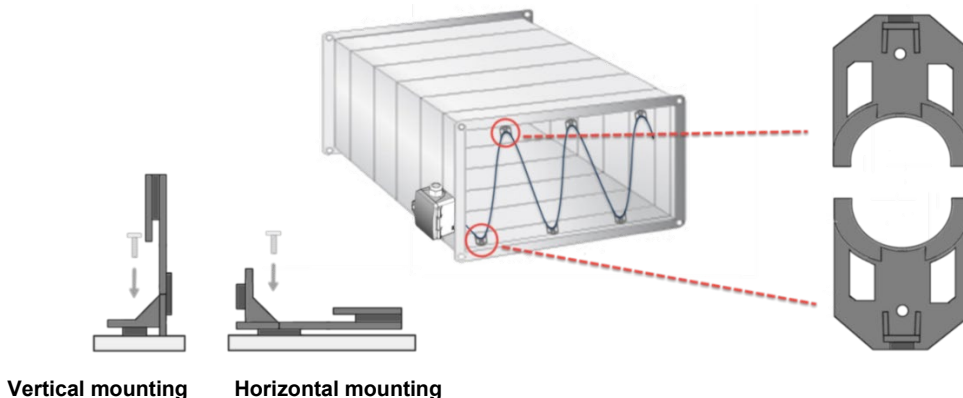
» **LoRaWAN®**

Radio technology	LoRaWAN®
LoRaWAN version	1.0.2
Device class	Class A
Frequency	EU868 (863-870 MHz)
Max. transmission power	+14 dBm (25 mW)
Receiver sensitivity	-137 dBm
Antenna	Internal send- / receiver antenna, external antenna available on request
LoRaWAN Features	Over the Air Activation (OTAA), Adaptive Data Rate (ADR)
Data transmission <i>(configurable)</i>	Configurable transmission interval, factory default value 5 min

» **MOUNTING ADVICES**

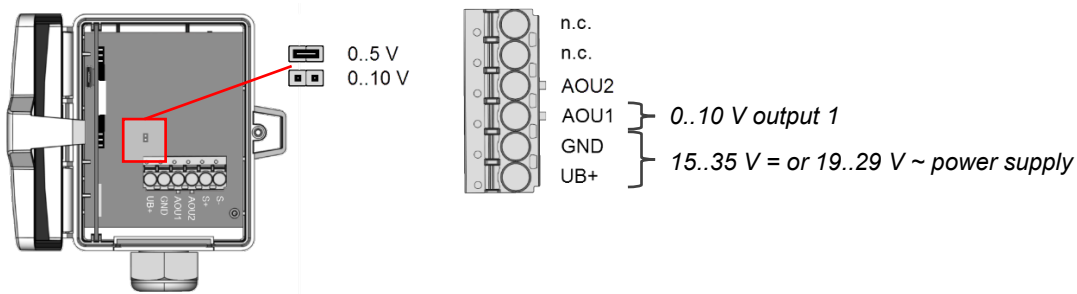
The MWF+ can either be mounted directly on the ventilation duct by means of a mounting flange or by screws. By means of the mounting brackets included the sensor rod is braced to the ventilation duct.

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

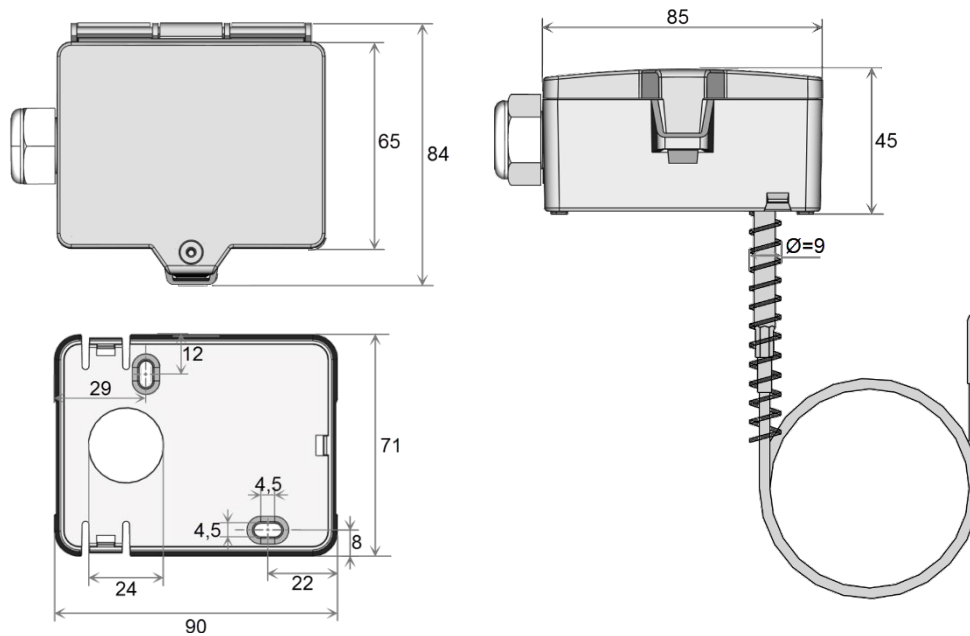


## » CONNECTION PLAN

Switch off the power (or disconnect the plug in terminal) to change the output voltage range (default: 0..10 V to 0..5 V). The jumper has to be moved in de-energized state. The set output value range is ready approximately 2 seconds after restart of the device.



## » DIMENSIONS (MM)



## » ACCESSORIES (INCLUDED IN DELIVERY)

Mounting base USE-M  
 Sensor rod mounting bracket set  
 Mounting kit universal  
 • Cover screw + screw cover • 2 Rawlplugs • 2 Screws (countersunk head) • 2 Screws (rounded head)

Item No. 631228  
 Item No. 679466  
 Item No. 698511

## » ACCESSORIES (OPTIONAL)

Sealing insert M20 USE white, 2x Ø=7 mm (for 2 wire; PU 10 pieces)  
 Bluetooth dongle

Item No. 641333  
 Item No. 668262