

## » MWF400+ (LCD) (Relay)

Average temperature sensor

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

### Datasheet

Subject to technical alteration  
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The following illustrations show the version with LCD

### » APPLICATION

Duct averaging temperature sensor with flexible sensor rod in the newly developed hinged lid enclosure USE-M for measuring the average temperature in air ducts. Display configuration and threshold values for color changes can be parameterized via Thermokon USEapp. With the option board relay two-point controllers or a 2-stage 2-point controller for temperature can be realized.

### » TYPES AVAILABLE

**Duct averaging sensor with display temperature – active 0..10 V | 4..20 mA | relay**

MWF400+ LCD TRV MultiRange  
MWF400+ LCD TRA MultiRange

**Duct averaging sensor optional with display temperature – active 0..10 V | relay**

MWF400+ (LCD) TRV MultiRange Relay

### » 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.

## » 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 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 the USEapp software and an optional Bluetooth interface.

**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	0..10 V or 0..5 V, min. load 10k $\Omega$ (live-zero configuration via Thermokon USEapp)		
Output Amp (type-dependent)	<b>TRA</b> 4..20 mA, max. load 500 $\Omega$		
Output switch contact (type-dependent)	<b>Relay</b> 2 floating contacts for 24 V ~ or 24 V = / 3 A		
Power supply (type-dependent)	<b>TRV   Relay</b> 15..35 V = or 19..29 V ~ SELV	<b>TRA</b> 15..35 V = SELV	
Power consumption	max. 2,5 W (24 V =)   4,3 VA (24 V ~)		
Output signal range temp. *Scaling analogue output	+40..+240 °F (default setting), selectable from 8 temperature ranges -30..+130   0..+250   +40..+140   0..+150   +30..+480   0..+100   +40..+240   +40..+90 °F, optionally configurable via Thermokon USEapp		
Operating temperature range * Max. permissible operating temp	<b>sensor pocket</b> -22..+176 °F	<b>enclosure</b> -4..+158 °F (with LCD) -31..+158 °F (w/o LCD)	<b>mounting base</b> -31..+194 °C
Accuracy temperature	$\pm 0,5$ K (typ. at 70 °F)		
Display (optional)	LCD 1.14x1.38 in. with RGB backlight		
Enclosure	enclosure USE-M, PC, pure white, cover PC, with LCD transparent, with removable cable entry		
Protection	IP65 according to EN 60529		
Cable entry (type-dependent)	<b>TRV   TRA</b> Flextherm M20, for wire max. $\varnothing=0.18..0.35$ in., removable	<b>Relay</b> M25 with fourfold cable entry for wire with max. $\varnothing=0.28$ in., removable	
Connection electrical	removable plug-in terminal, max. 14 AWG		
Sensor rod	copper, $\varnothing=0.16$ in., mounting length: 1.3 ft. sensor neck stainless steel V4A $\varnothing=0.24$ in.		
Ambient condition	max. 85% rH short term condensation		

## » APPLICATION NOTICE



The housing cover must be completely closed in order to ensure the accuracy and reproducibility of the measured values during a test or service log via USEapp.

The Bluetooth dongle snaps into the socket easily. When removing, please fix the plug-in card (option PCB) so that it is not unintentionally pulled out.

» CONFIGURATION



The Thermokon bluetooth dongle with micro-USB is required for communication between USEapp and USE-M / USE L (Item No.: 668262). 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 in the Google Play Store or in the Apple App Store.

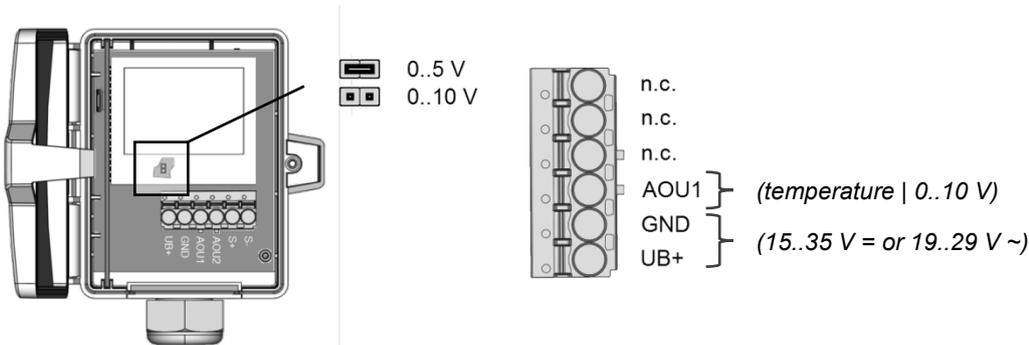
» MOUNTING ADVICES

The sensor can be mounted to the ventilation duct by means of the mounting clip. During the installation, observe that the bending radius of the sensor rod has to be no smaller than 1.38 in.. **Note: Please pay attention to the sensor rod while mounting and protect it from mechanical damage!**

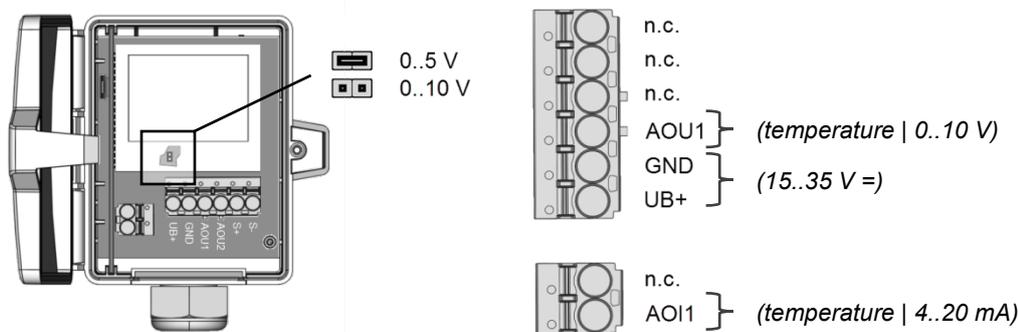
» CONNECTION PLAN

To change the output voltage range (default 0..10 V to 0..5 V) via jumper, the display must be removed from the board first.

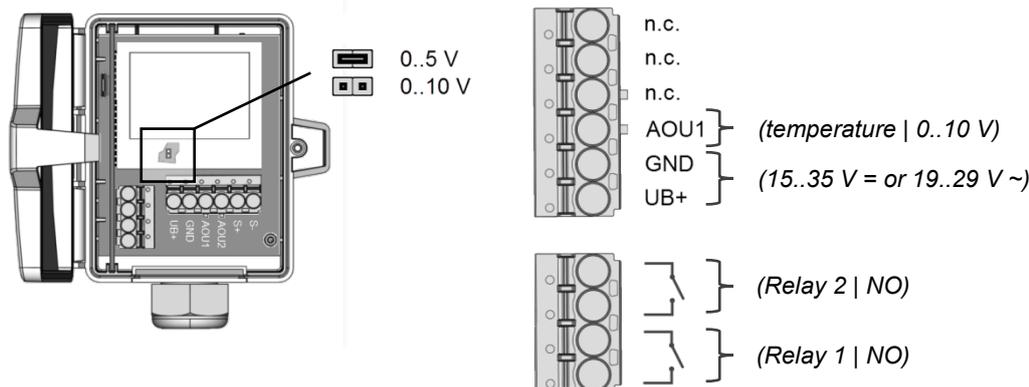
MWF400+ LCD TRV MultiRange



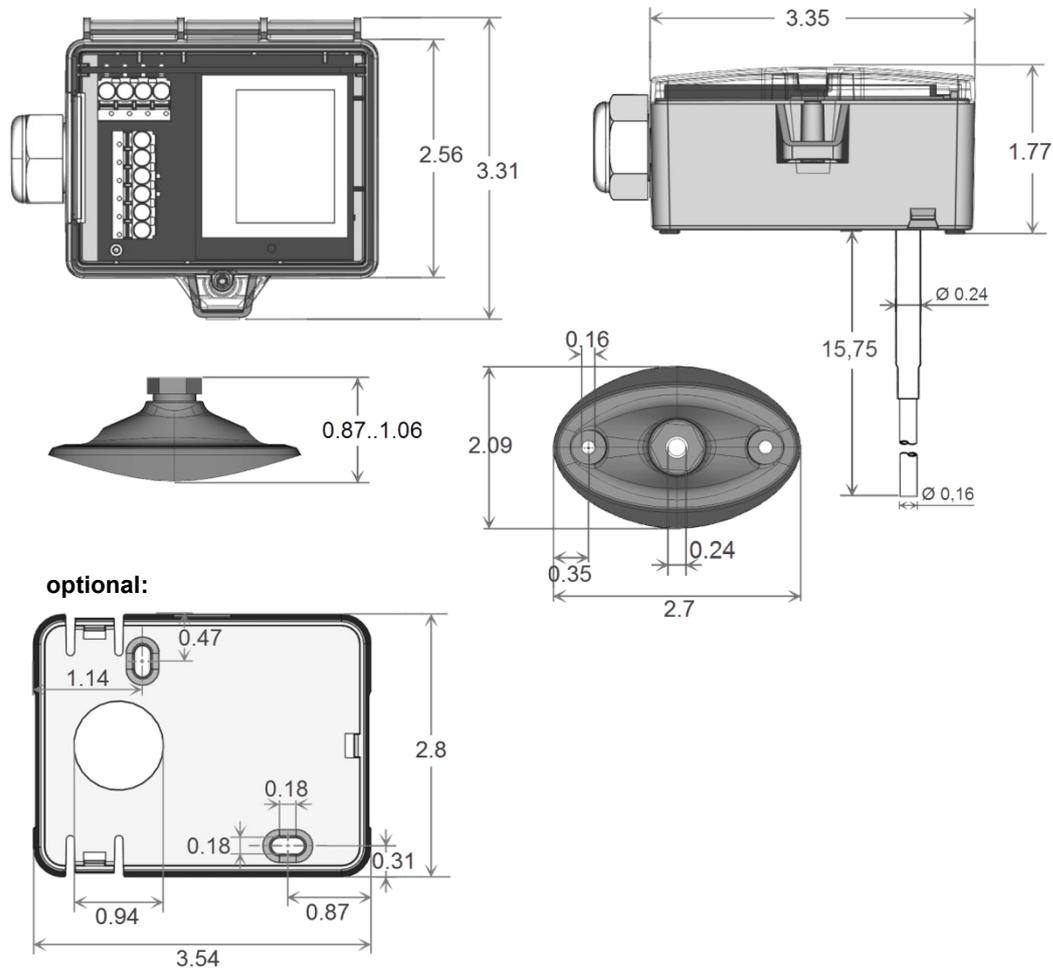
MWF400+ LCD TRA MultiRange



MWF400+ (LCD) TRV MultiRange Relay



## » DIMENSIONS (IN.)



## » ACCESSORIES (INCLUDED IN DELIVERY)

Mounting flange MF6DS  
 Mounting kit universal  
 • Cover screw + screw cover • 2 Rawlplugs • 2 Screws (countersunk head) • 2 Screws (rounded head)

Item No. 669016  
 Item No. 698511

## » ACCESSORIES (OPTIONAL)

Bluetooth dongle  
 Cable entry M25 USE white, sealing insert 4x  $\varnothing=0.28$  in. (4 pcs)  
 Mounting base  
 Sealing insert M20 USE white, 2x  $\varnothing=0.28$  in. (for 2 wire; PU 10 pieces)

Item No. 668262  
 Item No. 641364  
 Item No. 631228  
 Item No. 641333