

## Datasheet

Subject to technical alteration  
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## Application

Immersion sensor with hinged lid enclosure USE. Complete and integrated thermowell pocket for temperature measurement of gases and liquids in pipework applications. LCD models with RGB background light have a transparent cover. 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

### Immersion sensor with display temperature – active 0..10 V

SFK02+ FR LCD TRV MultiRange 050.04  
SFK02+ FR LCD TRV MultiRange 100.06/04  
SFK02+ FR LCD TRV MultiRange 200.06/04

### Immersion sensor with display temperature – active 4..20 mA

SFK02+ FR LCD TRA MultiRange 050.04  
SFK02+ FR LCD TRA MultiRange 100.06/04  
SFK02+ FR LCD TRA MultiRange 200.06/04

### Immersion sensor with display temperature – active 0..10 V + relay

SFK02+ FR LCD TRA MultiRange Relay 050.04  
SFK02+ FR LCD TRA MultiRange Relay 100.06/04  
SFK02+ FR LCD TRA MultiRange Relay 200.06/04

Optional mounting length 50/100/200/300 mm

## 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

## 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

<b>Measuring values</b>	temperature	
<b>Output voltage</b>	0..10 V or 0..5 V, min. load 10k $\Omega$ (live-zero configuration via Thermokon USEapp)	
<b>Output Amp</b> (type-dependent)	<b>TRA</b> 4..20 mA, max. load 500 $\Omega$	
<b>Output switch contact</b> (type-dependent)	<b>Relay</b> 2 floating contacts for 24 V ~ or 24 V = / 3 A	
<b>Power supply</b> (type-dependent)	<b>TRV</b> 15..35 V = or 19..29 V ~	<b>TRA</b> 15..35 V =
<b>Power consumption</b>	max. 2,5 W (24 V =)   4,3 VA (24 V ~)	
<b>Output signal range temp.</b> *Scaling analogue output	-20..+80 °C (default setting), selectable from 8 temperature ranges -50..+50   -20..+80   -15..+35   -10..+120   0..+50   0..+100   0..+160   0..+250 °C, optionally configurable via Thermokon USEapp	
<b>Operating temperature range</b> * Max. permissible operating temperature	<b>sensor pocket</b> -50..+160 °C	<b>electronic   enclosure</b> -20..+70 °C
<b>Accuracy temperature</b>	$\pm 0,5$ K (typ. at 21 °C) , time constant: $T_{63\%}$ 2,5 s	
<b>Display</b>	LCD 29x35 mm with RGB backlight	
<b>Enclosure</b>	enclosure USE-M, PC, pure white, cover PC, transparent, with removable cable entry	
<b>Protection</b>	IP65 according to EN 60529	
<b>Cable entry</b> (type-dependent)	<b>TRV   TRA</b> Flextherm M16, for wire $\varnothing=3..7$ mm, removable	<b>Relay</b> M25 with fourfold cable entry for wire with max. $\varnothing=7$ mm, removable
<b>Connection electrical</b>	removable plug-in terminal, max. 2,5 mm <sup>2</sup>	
<b>Pocket</b>	stainless steel V4A, $\varnothing=6$   4 mm, mounting length: 50   100   200   300 mm, thread R 1/2" max. operating pressure 10 bar	
<b>Ambient condition</b>	max. 85% rH short term condensation	

## Notes on Disposal

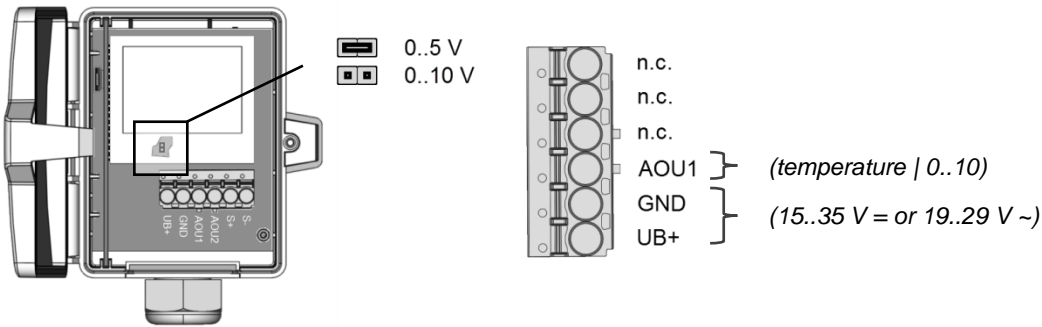


As a component of a large-scale fixed installation, Thermokon products are intended to be used permanently as part of a building or a structure at a pre-defined and dedicated location, hence the Waste Electrical and Electronic Act (WEEE) is not applicable. However, most of the products may contain valuable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

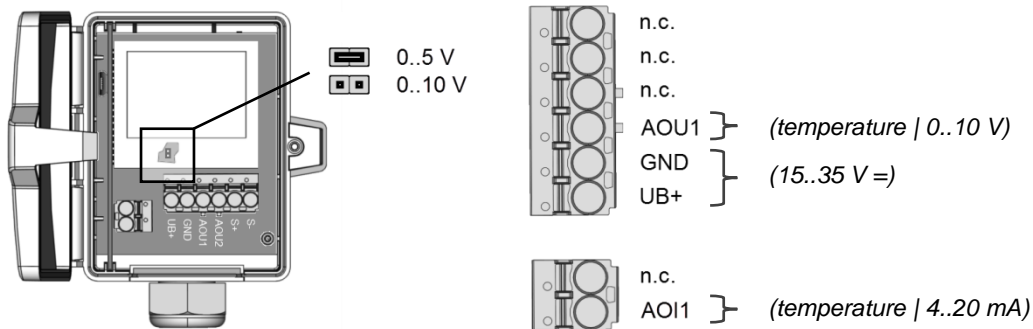
## Connection Plan

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.

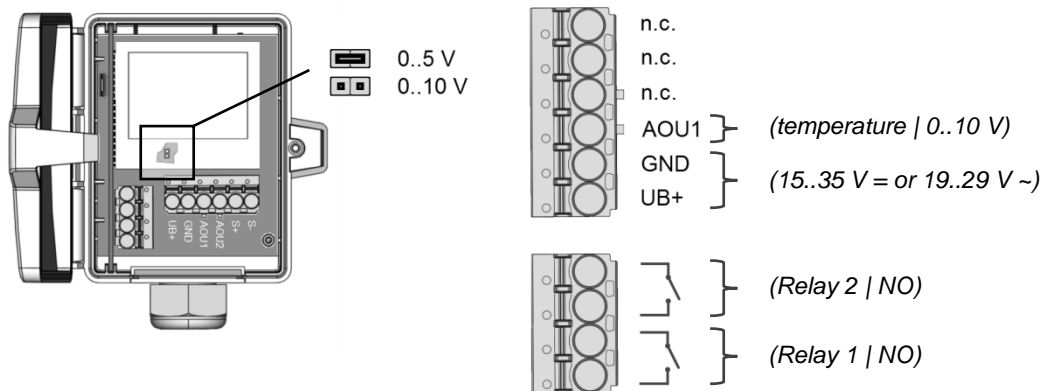
### SFK02+ FR LCD TRV MultiRange



### SFK02+ FR LCD TRA MultiRange



### SFK02+ FR LCD TRV MultiRange Relay



## 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.

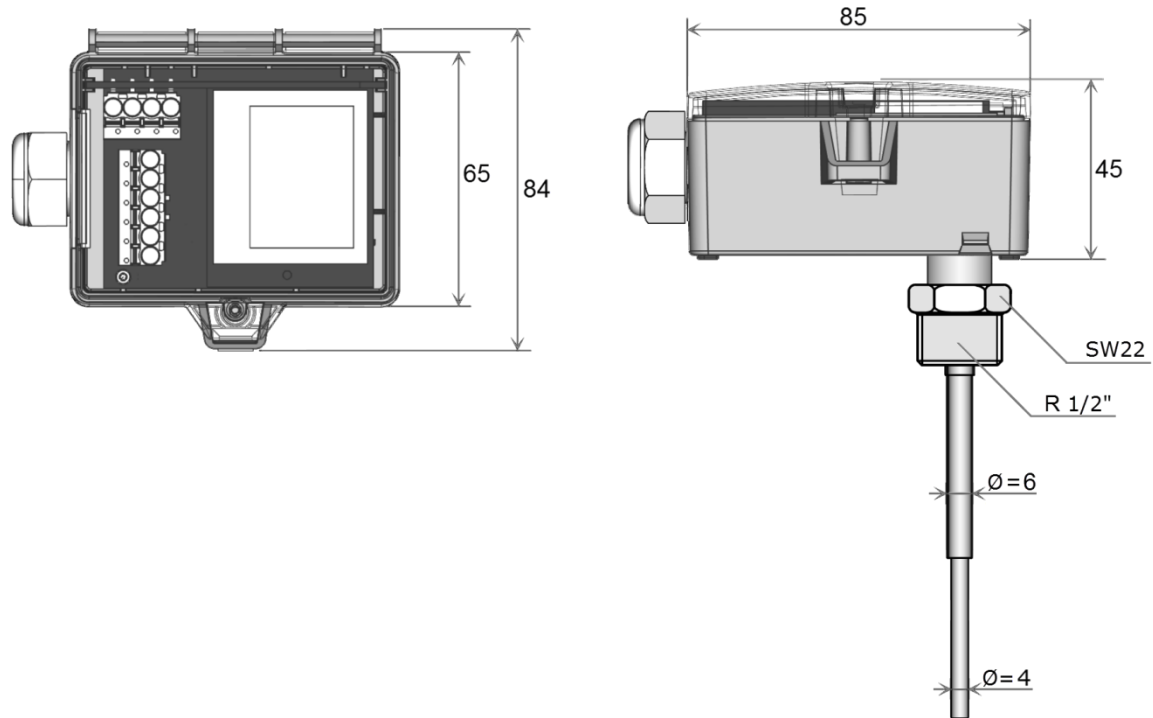
## Application notice



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.

## Dimensions (mm)



## Accessories (included in delivery)

Mounting kit universal

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

Item No. 698511

## Accessories (optional)

Bluetooth dongle

Cable entry M25 USE white, sealing insert 4x  $\text{Ø}=7$  mm (4 pcs)

M16 Sealing inserts cable entry (packaging unit 10 pcs.) for wire with  $\text{Ø}$  8 mm

Item No. 668262

Item No. 641364

Item No. 641340