

VFG54+ LRW

Contact temperature sensor

thermokon[®]
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
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» APPLICATION

Sensor with hinged lid enclosure USE for temperature measurement of pipes and round surfaces. Spring loaded brass contact sensor.

» TYPES AVAILABLE

Contact sensors temperature – active 0..10 V

- VFG54+ LRW

» 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 are available on our website <https://www.thermokon.de/>.

» 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.

» 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.

» 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.

» INFORMATION ABOUT LORAWAN SPECIFICATION



The Thermokon LoRaWAN specification can be downloaded from our website.

» TECHNICAL DATA

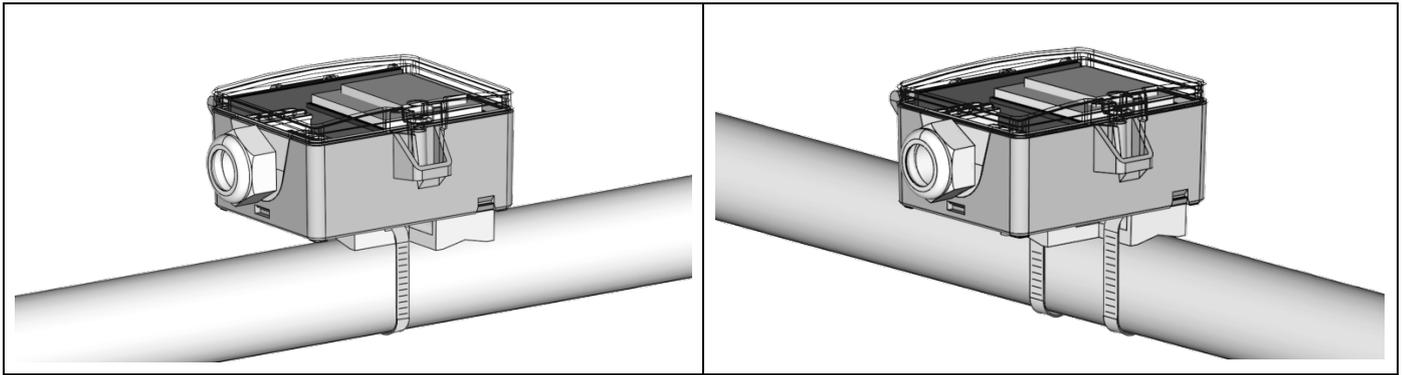
Measuring values	Temperature	
Output voltage	0..10 V or 0..5 V, min load 10k Ω (live-zero configuration via Thermokon USEapp)	
Power supply	15..24 V = ($\pm 10\%$) oder 24 V ~ ($\pm 10\%$) SELV	
Power consumption	max. 2,3 W (24 V =) max. 4,3 VA (24 V ~)	
Output signal range temp. <i>*Scaling analogue output</i>	-20..+80 °C (default setting), optionally configured via Thermokon USEapp	
Operating temperature range <i>* Max. permissible operating temperature</i>	sensor pocket holder -35..+120 °C	enclosure electronic – TRV TRA -35..+70 °C
Accuracy temperature	$\pm 0,5$ K (typ. at 21 °C set to standard measuring range)	
Enclosure	enclosure USE-M / cover, PC (UV resistant), pure white, with removable cable entry	
Protection	IP65 according to EN 60529	
Cable entry	M25 with fourfold cable entry for wire with max. $\varnothing=7$ mm, removable	
Connection electrical	removable plug-in terminal, max. 2,5 mm ²	
Pocket	brass, spring loaded sensor	
Ambient condition	max. 85% rH short term condensation	
Configuration	Thermokon USEapp, LoRaWAN® Downlink, Jumper	
Mounting	installation possible in or across the direction of the pipe	

» 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	Configurable transmission interval, factory default value 5 min

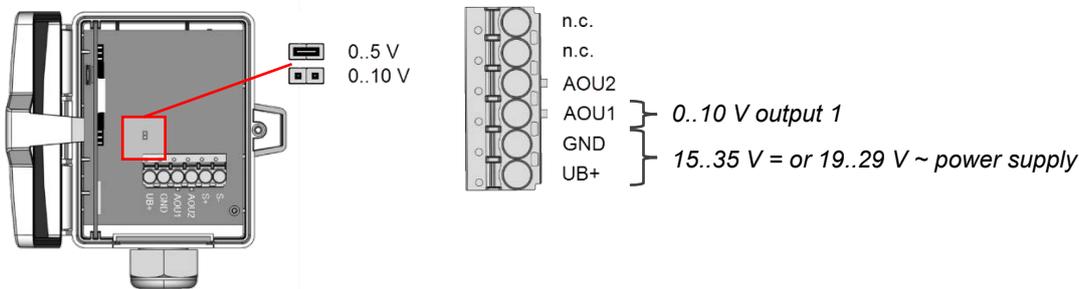
» MOUNTING ADVICES

The device is fixed using the tightening strap. Use contact fluid for better heat transfer between sensor and measuring medium. To avoid permeation of condensate, mount the sensor on top of the tube, if possible. The installation is possible in or across the direction of the pipe.



» 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.



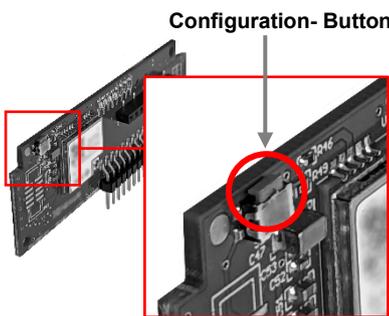
» CONFIGURATION

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



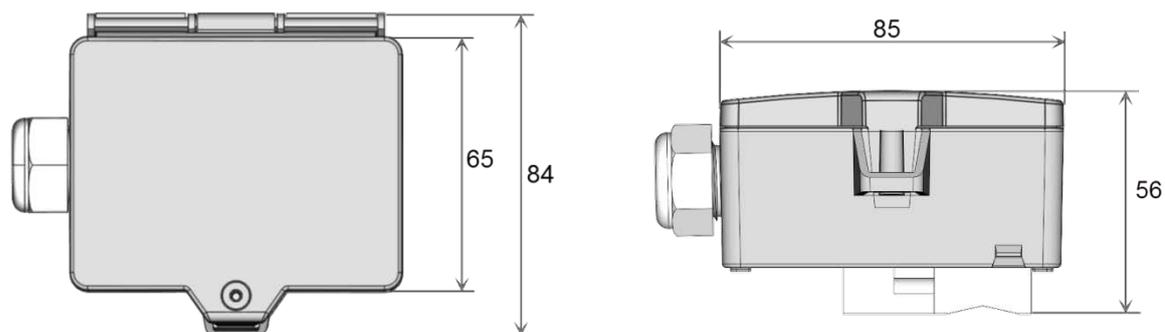
1. Connect the sensor with the power supply according to wiring diagram
2. Plug in the bluetooth dongle
3. Press the button to start configuration mode.
4. Configure the sensor using the USEapp on a mobile device.
5. Disconnect the bluetooth connection.
6. Remove the bluetooth dongle off the sensor.
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.

» DIMENSIONS (MM)



» ACCESSORIES (INCLUDED IN DELIVERY)

Mounting kit universal

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

Item No. 698511

» ACCESSORIES (OPTIONAL)

Bluetooth dongle

Item No. 668262

Tension clamp for pipes \varnothing up to 110 mm with contact fluid

Item No. 658911

Tension clamp for pipes \varnothing up to 250 mm with contact fluid

Item No. 648103

Tightening strap PA for pipes \varnothing up to 100 mm with contact fluid

Item No. 668071

Cable entry M25 USE white, sealing insert 4x $\varnothing=7$ mm (4 pcs)

Item No. 641364