

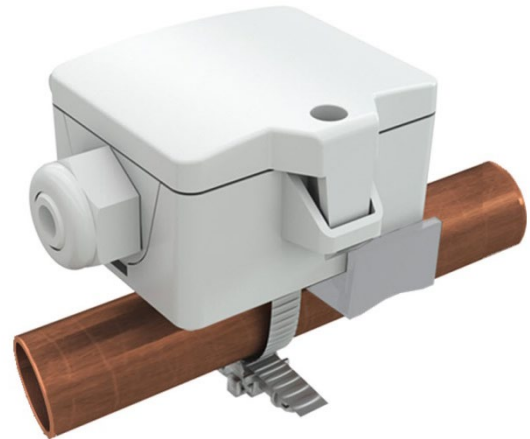
VFG54+

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 sensor temperature – passive

- VFG54+ <sensor>

Contact sensors temperature – active TRV 0..10 V | TRA 4..20 mA

- VFG54+ TRV MultiRange
- VFG54+ TRA MultiRange

<sensor>: PT100/PT1000/NI1000/NI1000TK5000/LM235Z/NTC.../PTC... other sensors on request
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



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.

» GENERAL REMARKS CONCERNING SENSORS

Especially with regard to passive sensors in 2-wire conductor versions, the wire resistance of the supply wire has to be considered. If necessary the wire resistance has to 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 a 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 ($\pm 0,2$ 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 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 =.

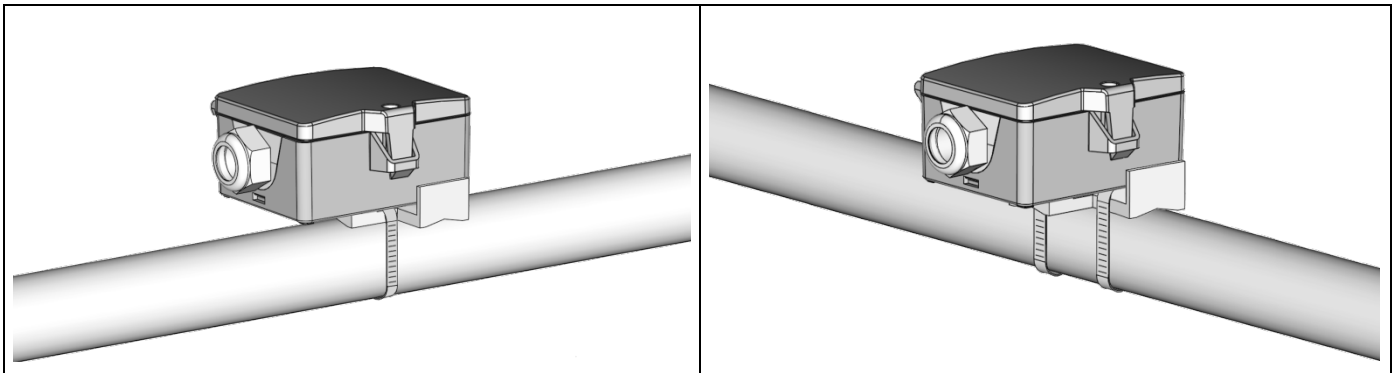
At this voltage, the expected measuring error of the output signal will be the least. Other operating voltages, can cause a measurement deviation changing power loss of the sensor electronics.

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.

» 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.



» 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**

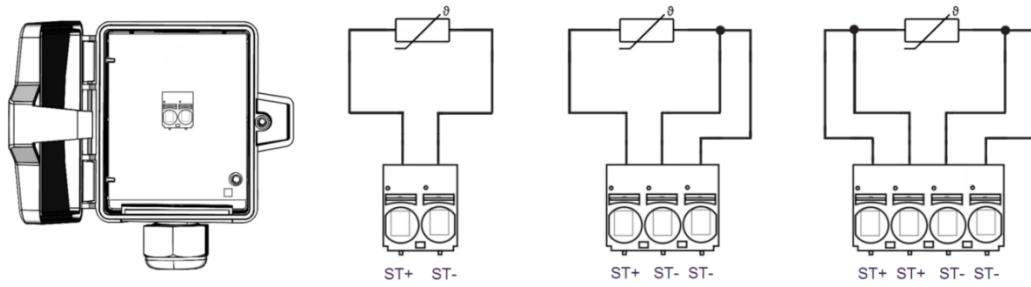
Measuring values	temperature		
Output voltage	TRV 1x 0..10 V or 0..5 V, configurable via jumper, min. load 5 k Ω		
Output ampere	TRA 1x 4..20 mA, max. load 500 Ω		
Output passive	passive PT100 PT100 1/3 DIN PT1000 PT1000 1/3 DIN Ni1000 Ni1000TK5000, NTC10k NTC 10k Precon NTC5k NTC20k NTC1,8k, LM235Z DS18B20 1-wire, KTY81-110 KTY81-121 KTY81-122 KTY81-210		
Power supply	TRV 15..24 V = ($\pm 10\%$) or 24 V ~ ($\pm 10\%$) SELV	TRA 15..24 V = ($\pm 10\%$) SELV	
Power consumption	TRV typ. 0,4 W (24 V =) 0,8 VA (24 V ~)	TRA typ. 0,5 W (24 V =)	
Measuring range temp.	passive -35..+90 °C		
Output signal range temp. <i>*Scaling analogue output</i>	TRV TRA default setting: 0..+100 °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 <i>* Max. permissible operating temperature</i>	sensor pocket holder -35..+120 °C	enclosure electronic – TRV TRA -35..+70 °C	enclosure electronic – passive -35..+90 °C
Accuracy temperature	TRV TRA $\pm 0,5$ K (typ. at 21 °C for measuring range 0..50 °C)*		passive typ. $\pm 0,3$ K (typ. at 21 °C), depending on used sensor
Sensor	passive optional, 2-wire (default), 3-wire or 4-wire		
Enclosure	enclosure USE-S, PC, pure white		
Protection	IP65 according to EN 60529		
Cable entry	Flextherm M20, for wire $\varnothing=4,5..9$ 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		
Mounting	can be mounted in line or transversely to the pipe		

*other measuring ranges: $\pm 1\%$ of the measuring range

» **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.

Passive



Active

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

UB+ AOU1
GND

TRA
4..20mA

UB+ AOU1

Temperature Offset

0 K
-3 K +3 K

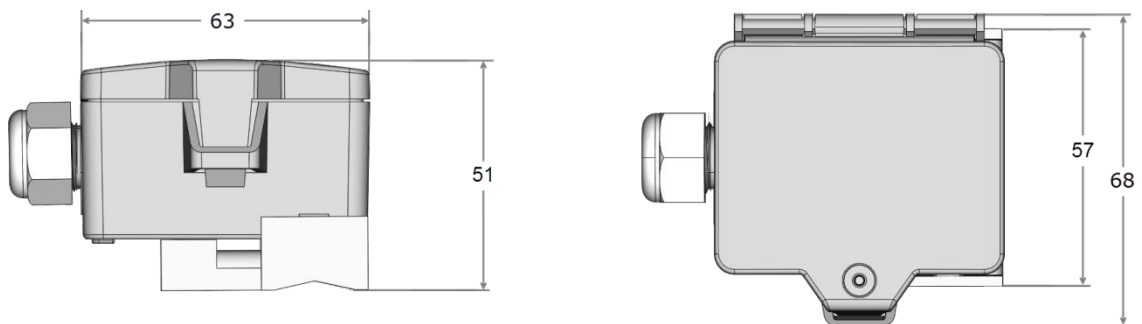
Jumper 1-5

1	°C	°F (more info below)
2	0..10V	0..5V <i>TRV only</i>
3	-50 °C..+50 °C	0 °C..+100 °C
4	-10 °C..+120 °C	-20 °C..+80 °C
5	0 °C..+50 °C	0 °C..+250 °C
3	-15 °C..+35 °C	0 °C..+160 °C

EN-US datasheet with more information regarding °F

fig. (Measuring range and offset adjustment, default settings: 0 °C..+100 °C | 0 K)

» **DIMENSIONS (MM)**



» **ACCESSORIES (INCLUDED)**

Mounting kit (Cover screw + screw cover)

Item No. 804363

» **ACCESSORIES (OPTIONAL)**

- Tension clamp for pipes Ø up to 110 mm with contact fluid
- Tension clamp for pipes Ø up to 250 mm with contact fluid
- Tightening strap PA for pipes Ø up to 100 mm with contact fluid
- Sealing insert M20 USE white, 2x Ø=7 mm (for 2 wire; PU 10 pieces)

- Item No. 658911
- Item No. 648103
- Item No. 668071
- Item No. 641333