

## Datasheet

Subject to technical alteration  
Issue date: 01.03.2016



## Application

Contact temperature sensor for measuring temperature on pipes and arched surfaces. Designed for control and monitoring systems.

## Types Available

AF25	Sensor	passive, with Sensor according to customer's need*
AF25	TRA	active, 4..20 mA
AF25	TRV	active, 0..10 V

\* eg: PT100/PT1000/Ni1000/Ni1000TK5000/LM235Z/NTC.../PTC... and other sensors on request.

\*\* Measuring range (TRA/TRV) 1: -50..+50 °C, 2: -10..+120 °C, 3: 0..+50 °C, 4: 0..+160 °C, 8: -15..+35 °C

## 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.

## 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

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 a trimming potentiometer on the sensor board.

**Remark: Occurring draft leads to a better carrying-off of dissipative power at the sensor. Thus temporally limited fluctuations might occur upon temperature measurement.**

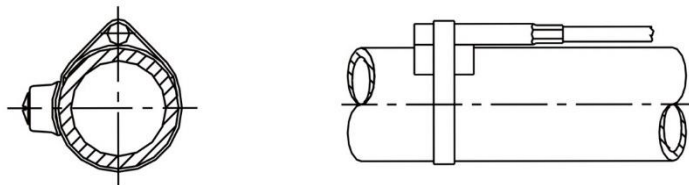
## Technical Data

Measuring values		temperature
Output voltage	passive TRV	depending on used sensor 0..10 V, min. load 5 k $\Omega$
Output Amp	TRA	4..20 mA, max. load 500 $\Omega$
Power supply	TRV TRA	15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ ), 15..24 V = ( $\pm 10\%$ )
Power consumption	TRV TRA	typ. 0,4 W (24 V =)   0,8 VA (24 V ~) typ. 0,5 W (24 V =)
Measuring range temp	passive TRV   TRA TRV1   TRA1 TRV2   TRA2 TRV3   TRA3 TRV4   TRA4 TRV8   TRA8	depending on used sensor adjustable at the transducer -50..+50 °C -10..+120 °C 0..+50 °C 0..+160 °C -15..+35 °C
Accuracy temperature	passive TRV   TRA	depending on length of the connection wire depending on used sensor $\pm 1\%$ of measuring range (typ. at 21 °C)
Sensor	passive	2-wire (standard), 3-wire or 4-wire
Enclosure		PA6, pure white, with quick lock screws, (only active)
Protection		IP65 according to DIN EN 60529, SI-Protection
Cable entry		M20 for cable max. $\varnothing=8$ mm
Connection electrical	TRV   TRA	terminal block max. 1,5 mm <sup>2</sup> connection wire PVC, $\varnothing=25$ mm, sensor wire active silicone, $\varnothing=25$ mm, 1 m (standard), 2 m, 4 m, 6 m, for other lengths please request
Pocket		brass, $\varnothing=6$ mm, mounting length 35 mm
Ambient condition	Enclosure TRV/TRA	-35..+100 °C, max. 85% rH non-condensing -35..+70 °C, max. 85% rH non-condensing
Weight	passive TRV   TRA	30 g 120 g
Notes		other sensors and cable lengths on request

## Mounting Advices

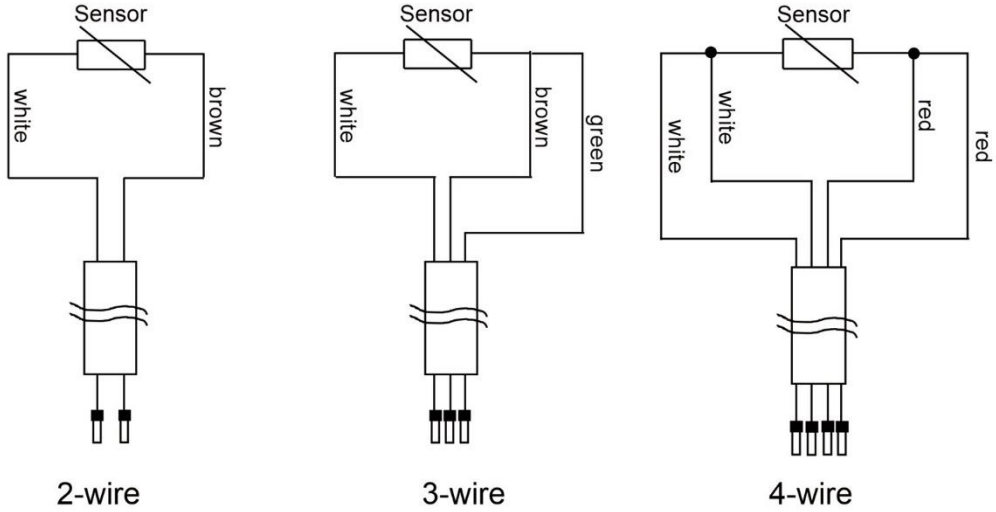
Fixing is done by tightening strap. Use contact fluid for a better heat transfer between the sensor and measuring medium.

To avoid permeation of condensate, mount sensor on top of the tube, if possible.

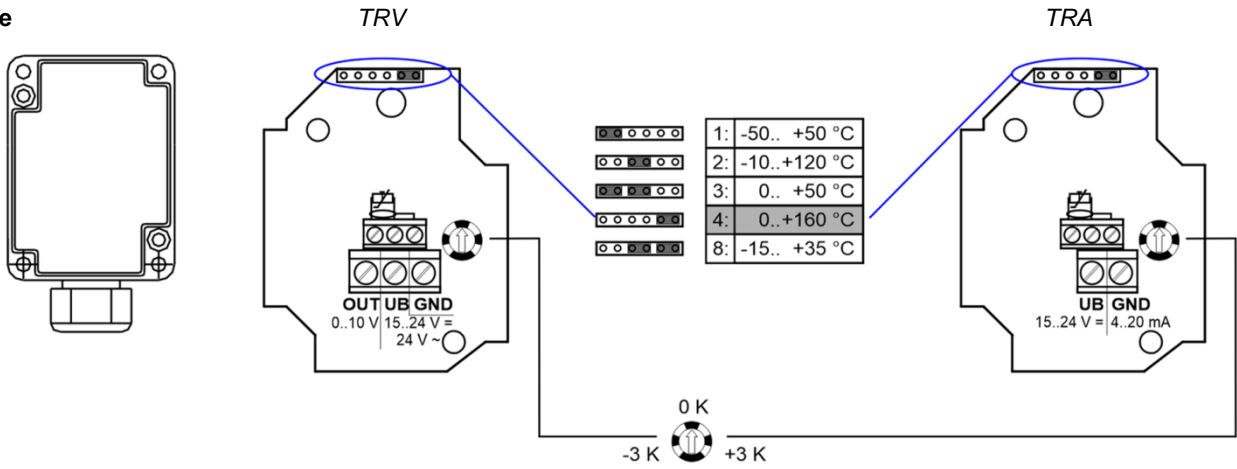


# Connection Plan

## Passive



## Active

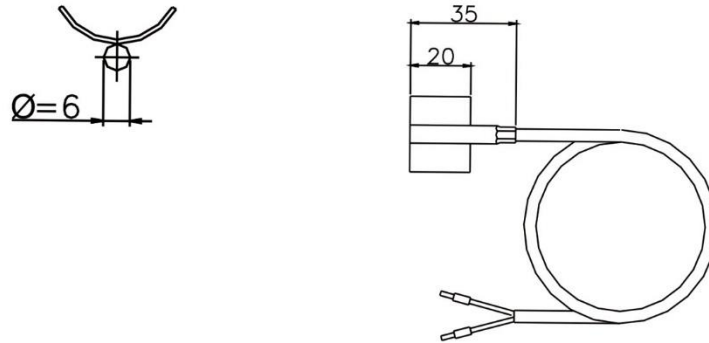


## Caution

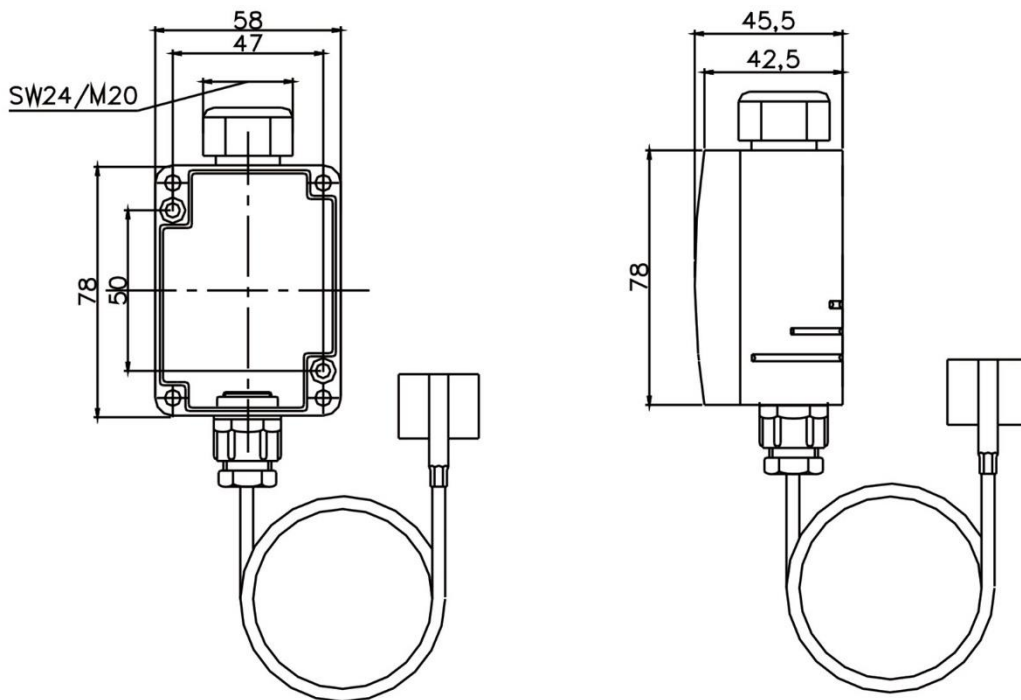
With electronic sensors e.g. AD592, SMT160, LM235, DS1820 use: brown= plus (+), white= minus (-), green=out

**Dimensions (mm)**

**Passive**



**Active**



**Accessories (optional)**

Tightening strap 2" with contact fluid  
 Tightening strap 900 mm with contact fluid

Item No. 102254  
 Item No. 102315