Datasheet

Subject to technical alteration
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»APPLICATION

Immersion sensor in enclosure form B integrated thermowell pocket for high temperature measurement of liquids in duct applications. Types SFKH03 with a 70 mm neck pipe are designed for applications with insulation materials.

»TYPES AVAILABLE

Immersion sensor temperature – passive

SFK(H)03 <sensor> <xxx>.08

Immersion sensor temperature – active TRV 0..10 V | TRA 4..20 mA

SFK(H)03 TRVx <xxx>.08
SFK(H)03 TRAx <xxx>.08

<Sensor>: PT100/PT1000/NI1000/NI1000TK5000/LM235Z/NTC.../PTC...other sensors on request
<xxx>: mounting length 50/100/150/200/250/450 mm
TRVx | TRAx: Product types with different measuring ranges available

»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 (±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 (±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.

» PRODUCT TESTING AND CERTIFICATION

Declaration of conformity

The declaration of conformity of the products can be found on our website https://www.thermokon.de/.

» TECHNICAL DATA

Measuring values	temperature
Medium	gases, fluids
Output voltage (type-dependent)	**TRV** 1x 0..10 V, min. load 5 kΩ
Output ampere (type-dependent)	**TRA** 1x 4..20 mA, max. load 500 Ω
Output passive (type-dependent)	**passive** PT100 | PT100 1/3 DIN | PT1000 | PT1000 1/3 DIN | Ni1000 | Ni1000TK5000, NTC10k | NTC 10k Precon | NTC20k | NTC1,8k, LM235Z

Power supply (type-dependent)	**TRV** 15..35 V = or 15..26 V ~ SELV	**TRA** 15..24 V = (±10%) SELV
Power consumption (type-dependent)	**TRV** typ. 1 W (24 V =) | 1,4 VA (24 V ~)	**TRA** typ. 0,5 W (24 V =)

Measuring range temp. (type-dependent)	**passive** PT / Ni: -50..+160 °C (T160), optional -80..+260 °C (T260), NTC: -50..+150 °C (T150), LM235Z: -50..+120 °C (T120)
Output signal range temp. *Scaling analogue output (type-dependent)	**TRV | TRA** TRV1 | TRA1: -50..+50 °C, TRV2 | TRA2: -10..+120 °C, TRV3 | TRA3: 0..+50 °C, TRV4 | TRA4: 0..+160 °C, TRV5 | TRA5: 0..+300 °C

Operating temperature range *Max. permissible operating temp	**sensor pocket** -50..+160 °C optional -80..+260 °C	**enclosure – TRV TRA** -35..+70 °C	**enclosure - passive** -35..+90 °C

Accuracy temperature (type-dependent)	**TRV | TRA** ±0,2 K or ±0,1 % (whatever is greater, typ. at 21 °C)	**passive** depending on used sensor Sensor, PT100 | PT1000: ±0,3 K (typ. bei 0 °C, Kl.B) , Ni1000: ±0,4 K (typ. bei 0 °C), Ni1000TK5000: ±0,4 K (typ. bei 0 °C), NTC10K: ±0,22 K (typ. bei 25 °C)

|	
Sensor (type-dependent)	**passive** 2-wire (standard), 3-wire or 4-wire
Enclosure	shape B, aluminium
Protection	IP66 according to EN 60529, SI-Protection
Cable entry	M20, for wire Ø=8 mm
Connection electrical	terminal block, max. 1,5 mm²
Neck pipe (optional)	stainless steel V2A, Ø=15 mm, L=70 mm
Pocket	stainless steel V4A, Ø=8 mm, mounting length: 100 | 150 | 200 | 250 mm, thread G 1/2" max. operating pressure 40 bar (580,15 psi)
Ambient condition	max. 85% rH short term condensation

» MOUNTING ADVICES

For risk of condensate permeation in the sensor tube respectively in the immersion pocket the bushing must be installed in a position that occurred condensate can run off.

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» CONNECTION PLAN

Attention: With digital sensors such as **AD592, SMT160, LM235, DS1820** the following applies: brown= plus (+), white= minus (-) ,green=out

» DIMENSIONS (MM)

SFK03

SFKH03
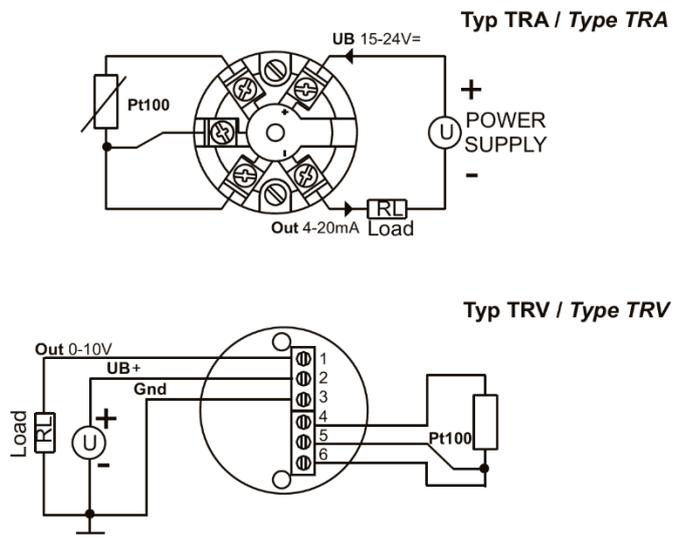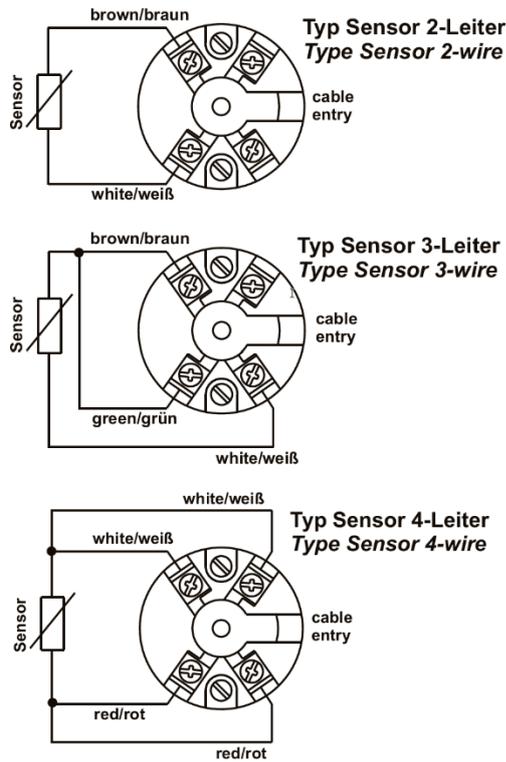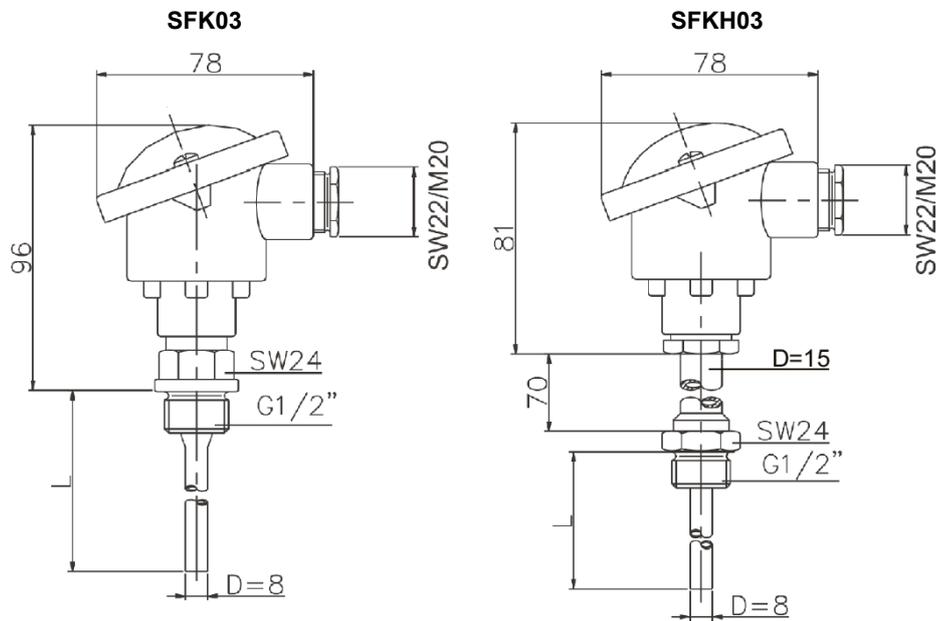
» ACCESSORIES (OPTIONAL)

Bonded pocket type ESH60 for mounting length 50 mm	Item No. 319096
Bonded pocket type ESH110 for mounting length 100 mm	Item No. 103459
Bonded pocket type ESH160/170 for mounting length 150 mm	Item No. 103466
Bonded pocket type ESH210 for mounting length 200 mm	Item No. 103473
Bonded pocket type ESH260 for mounting length 250 mm	Item No. 173247