

Data Sheet

Subject to technical alteration
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Application

Duct sensor with hinged cover housing for measuring rel. humidity and temperature in gaseous media of heating, cooling and air-conditioning systems (e.g. in fresh air/ exhaust air ducts).

Designed for locking onto control and display systems.

Types available

FTK-SX xxx AA	Duct sensor xxx=140/270/400 mm, output 4..20 mA
FTK-SX xxx VV	Duct sensor xxx=140/270/400 mm, output 0..10 V
FTK-SX xxx AAS	Duct sensor xxx=140/270/400 mm, output 4..20 mA, additional output temperature passive
FTK-SX xxx VVS	Duct sensor xxx=140/270/400 mm, output 0..10 V, additional output temperature passive

Security Advice – Caution



The installation and assembly of electrical equipment must be performed by a skilled electrician.

The device should only be used for the appropriate application. Unauthorised conversions or alteration are prohibited! The modules must not be used in relation with equipment that threatens, directly or indirectly, human health or life or with applications that can result in danger for people, animals or assets. Before connecting devices, the installation must be isolated from the power source!

For devices with controlling units (signal transducers, transmitters, etc.), it is important to make sure that the signal receiving device (actuators, generators, etc.) does not accept damaging or threatening conditions, that may arise from false signals during installation / configuration of the control unit. If necessary, disconnect the signal receiver from any source of power.

The following procedure must be carried out:

1. Disconnect the device from power.
2. Ensure the device is secured against reconnection.
3. Verify the device is not powered.
4. Prior to reconnection, ensure that the enclosure is securely closed.

Please verify and consult:

- Laws, standards and regulations.
- The current condition of the device at the time of installation, to ensure safe installation.
- The devices technical data and installation manual.



Notes on Disposal

As a component of 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. The Waste Electrical and Electronic Act (WEEE) is not applicable. However, the product may contain valuable materials that should not be recycled rather than disposed as domestic waste. Please note the relevant regulations for local disposal.

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 or lowered 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.

Application Notice for Humidity Sensors

Refrain from touching the sensitive humidity sensor. Any touch of it will result in an expiration of warranty.

Under normal environmental conditions we recommend a recalibration interval of about 1 year to maintain the indicated accuracy. At high ambient temperatures and high humidity or when using the sensor in aggressive gases e.g. Chloric, Ozone, Ammoniac, an earlier recalibration or a change of the humidity sensor can become necessary. Such recalibrations or a probable sensor change are not part of the general warranty.

Technical Data

Measuring ranges:	Humidity: 0..100% rH Temp.: -20..+80 °C
Accuracy humidity:	typ. $\pm 2\%$ between 10..90% rH
Repeatability humidity:	typ. $\pm 0,1\%$ rH
Accuracy temp.:	See diagram
Repeatability temperature:	typ. $\pm 0,1$ °C
Long term drift humidity:	typ. $\pm 0.5\%$ rH/year ¹⁾
Long term drift temp.:	typ. ± 0.04 °C/year ¹⁾
Clamps:	Terminal screw max. 1.5 mm ² , pluggable
Cable entry:	Single entry M16 for cable max. $\varnothing=8$ mm
Connection head:	Material PA6, color white
Sensor tube:	Material PA6, color black, $\varnothing=19$ mm
Filter element:	Stainless steel, mesh size 80 μ m
Mounting length:	140 mm, 270 mm or 400 mm
Protection:	IP54 according to EN 60529 (IP65 with Cover screw)
Ambient temperature:	-20...+70 °C, max. 85% rH non-condensed
Weight:	approx. 120 g

Type AA / AAS

Power supply:	15..24 V = ($\pm 10\%$)
Power consumption:	max. 20 mA
Output:	Humidity: 0..20 mA = load <500 Ohm
Temp.:	0..20 mA = load <500 Ohm AAS Temperature additionally depending on sensor used

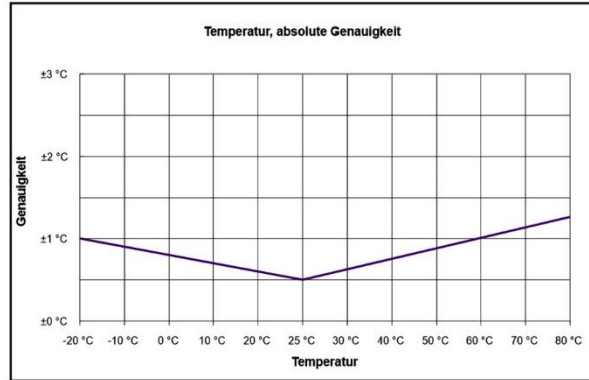
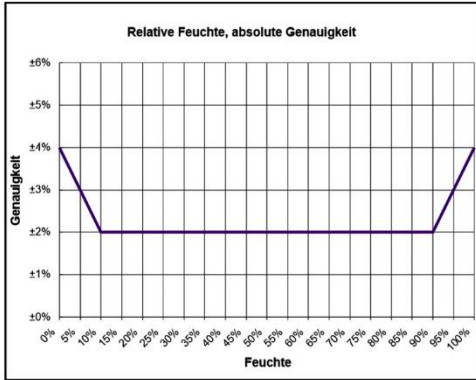
Type VV / VVS

Power supply: 15..24 V = ($\pm 10\%$) / 24 V~ ($\pm 10\%$)
 Power consumption: typ. 0,4 W / 0,8 VA
 Output: Humidity: 0..10 V =
 Load: min. 10 kOhm
 Temp.: 0..10 V =
 Load: min. 10 kOhm

VVS Temperature additionally depending on sensor used

1) Depending on the ambient atmosphere, the value can be higher.

Accuracy



Connection Plan

FTK AA

1	2	3	4	5	6
temp. +24 V =	Out temp. 4..20 mA	rH +24 V =	Out rH 4..20 mA		

FTK AAS

1	2	3	4	5	6
temp. +24 V =	Out temp. 4..20 mA	rH +24 V =	Out rH 4..20 mA	Sensor A-	Sensor B+

FTK VV

1	2	3	4	5	6
Out temp. 0..10 V	Out rH 0..10 V	UV 24 V ~ / UV 24 V =	GND		

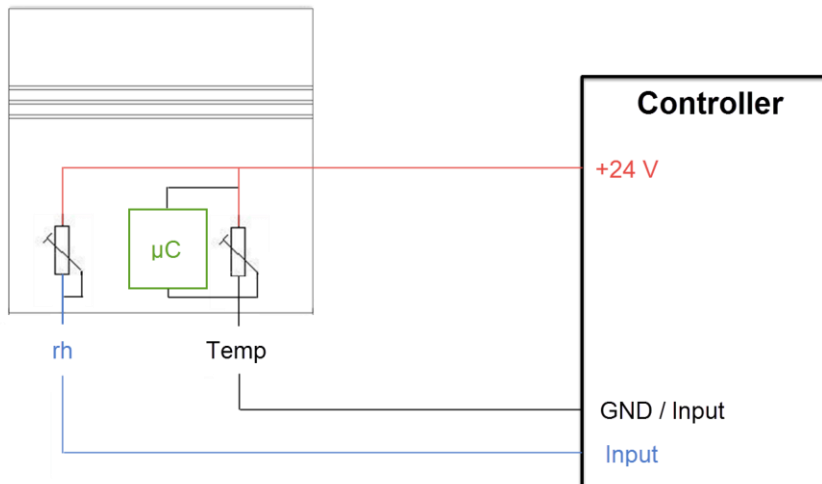
FTK VVS

1	2	3	4	5	6
Out temp. 0..10 V	Out rH 0..10 V	UV 24 V ~ / UV 24 V =	GND	Sensor A-	Sensor B+



Important Note:

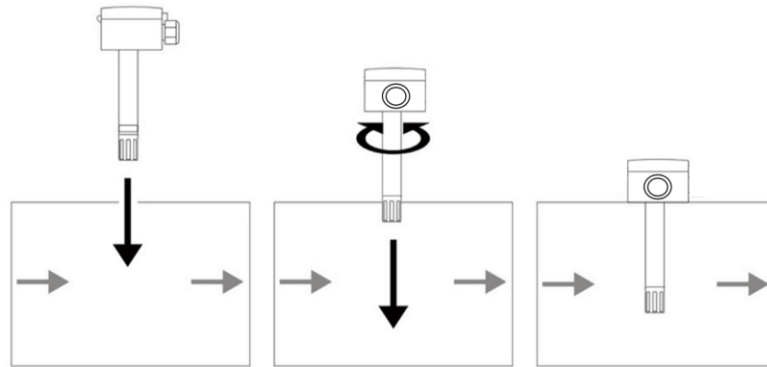
The temperature cable must always be connected to the input of the controller or the mass / GND. A connection with 2-wire cable is in FTK-SX not possible, alternatively use the FK model.



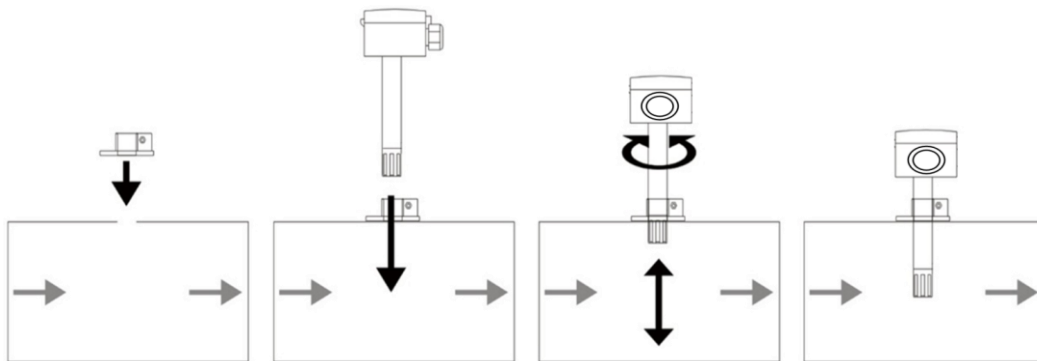
Mounting Advices

The sensor can be mounted on the ventilation duct using a mounting flange (recommended) or directly.

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

Mounting without mounting flange:

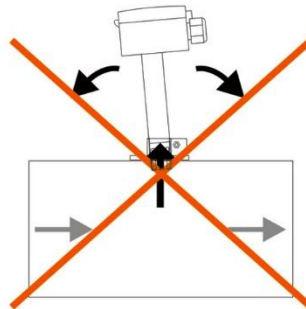
Maximum air speed 10 m/s. Fix sensor to duct.

Mounting with mounting flange:

Maximum air speed 10 m/s. Fix mounting flange to duct, fix sensor to mounting flange.

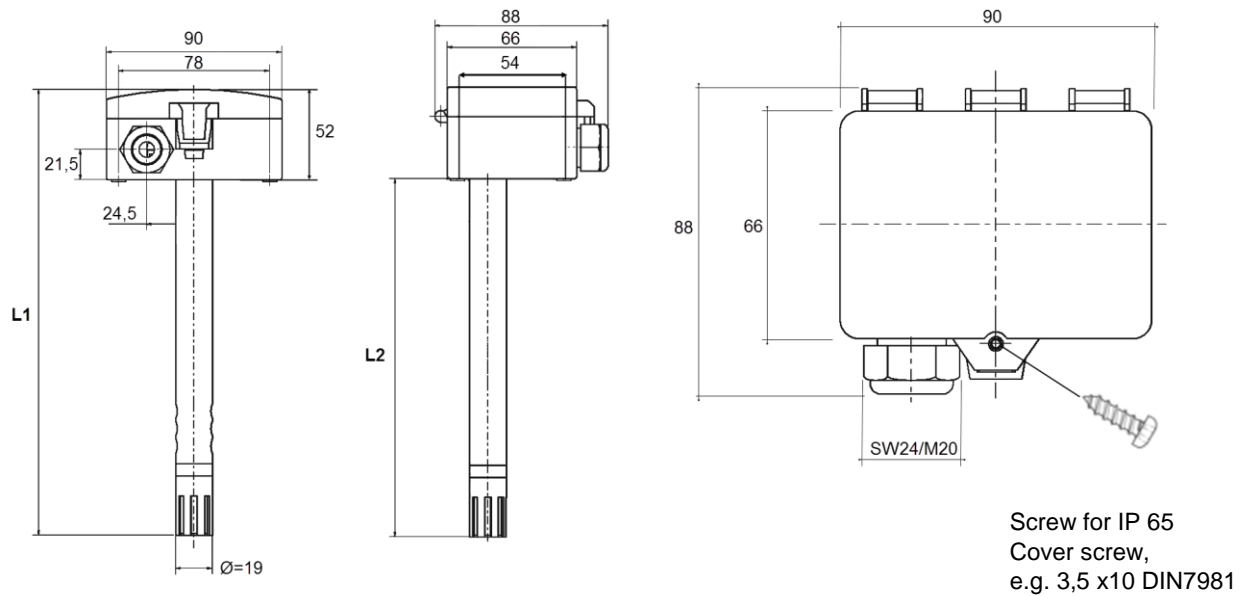
Dismounting Advices

Unfix sensor and pull out vertically. **Do not tilt the sensor when pulling it out!**

**Application Notice**

Due to air circulations, dirt and dust particles can be piled up in the course of time on the sintered filter, which is protecting the sensor. Thus, the function of the sensor can be affected. After having dismantled the filter, it can be cleaned by blowing it out with oil-free and filtered compressed air, super-clean air or nitrogen or by washing it out with distilled water. If the filter is too dirty, it should be replaced.

Dimensions (mm)



Lengths depending on the type:

Lengths over all	L1	192 / 322 / 452 mm
Lengths sensor tube	L2	140 / 270 / 400 mm

Accessories (optional)

(MF19-TPO)	Mounting flange for installation on ventilation duct
Replacement filter, V2A	Filter stainless steel, wire mesh 80 µm
D + S VPE AGS / WRF	Attachment for direct fastening to the ventilation duct