

Datasheet

Subject to technical alteration
Issue date: 03.01.2017



Application

Duct humidity and temperature sensor in new hinged lid enclosure USE for all HVAC duct applications. Designed for control and monitoring applications.

Types Available

Duct humidity sensor temperature + humidity – active 2x 0..10 V

FTK+ <xxx> VV incl. MF20 (TPO)

Duct humidity sensor temperature + humidity – active 2x 4..20 mA

FTK+ <xxx> VV incl. MF20 (TPO)

<xxx>: 140/270/400 mm

Options: Additional passive temperature sensor (type VVS|AAS)

eg: PT100/PT1000/NI1000/NI1000TK5000/NTC10K... and other sensors on request.

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.

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.

Application Notice for Humidity Sensors

Refrain from touching the sensitive humidity sensor/element. Touching the sensitive surface will void warranty.

For standard environmental conditions re-calibration is recommended once a year to maintain the specified accuracy.

When exposed to high ambient temperature and/or high levels of humidity or presence of aggressive gases (i.e. chlorine, ozone, ammonia) the sensor element may be affected and re-calibration may be required sooner than specified. Re-calibration and deterioration of the humidity sensor due to environmental conditions are not subject of the general warranty.

Technical Data

Measuring values		temperature, humidity (humidity output configurable)
Output voltage	VV VVS	2x 0..10 V 2x 0..10 V (min. load 10 k Ω) + passive sensor
Output Amp	AA AAS	2x 4..20 mA (max. load 500 Ω) + passive sensor
Power supply	VV VVS	15..24 V = ($\pm 10\%$) or 24 V ~ ($\pm 10\%$)
	AA AAS	15..24 V = ($\pm 10\%$)
Power consumption	VV VVS	max. 0,4 W (24 V =) 0,8 VA (24 V ~)
	AA AAS	max. 1 W (24 V =)
Measuring range temp	passive active	typ. 0,3 K (typ. at 21 $^{\circ}$ C), depending on used sensor adjustable at the transducer: -20..+80 0..+50 -40..+60 -15..+35 $^{\circ}$ C default setting: -20..+80 $^{\circ}$ C
Measuring range humidity		0..100% rH non-condensing
Measuring range absolute humidity		adjustable at the transducer: 0..50 0..80 g/m 3 default setting: 0..50 g/m 3
Measuring range enthalpy		0..85 kJ/kg
Measuring range dew point		adjustable at the transducer: 0..50 -20..+80 $^{\circ}$ C default setting: 0..50 $^{\circ}$ C
Accuracy temperature		$\pm 0,5$ $^{\circ}$ C (typ. at 25 $^{\circ}$ C)
Accuracy humidity		$\pm 2\%$ between 10..90% rH (typ. at 21 $^{\circ}$ C)
Air speed		max. 12 m/s
Enclosure		enclosure USE-S 63x51x40 mm, PA6, pure white
Protection		IP65 according to EN 60529
Cable entry		M16 for cable max. $\varnothing=8$ mm
Connection electrical		removable plug-in terminal, max. 2,5 mm 2
Pipe		PA6, black, $\varnothing=19,5$ mm, length=140 270 400 mm
Filter		stainless steel wire mesh
Ambient condition		-20..+70 $^{\circ}$ C
Delivery contents		incl. mounting flange
Notes		additional passive sensor available (type VVS AAS)

Connection Plan and Configuration

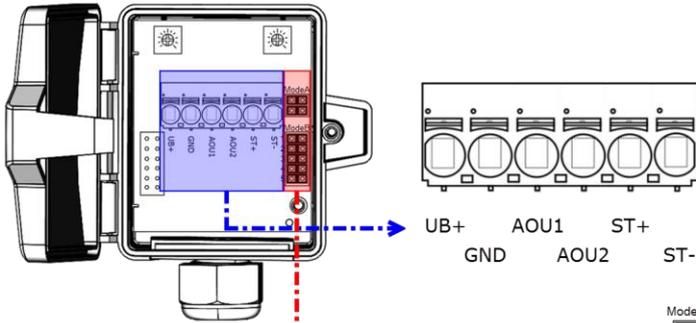
Clamp ST+ | ST- : passive Sensor (VVS | AAS)

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.

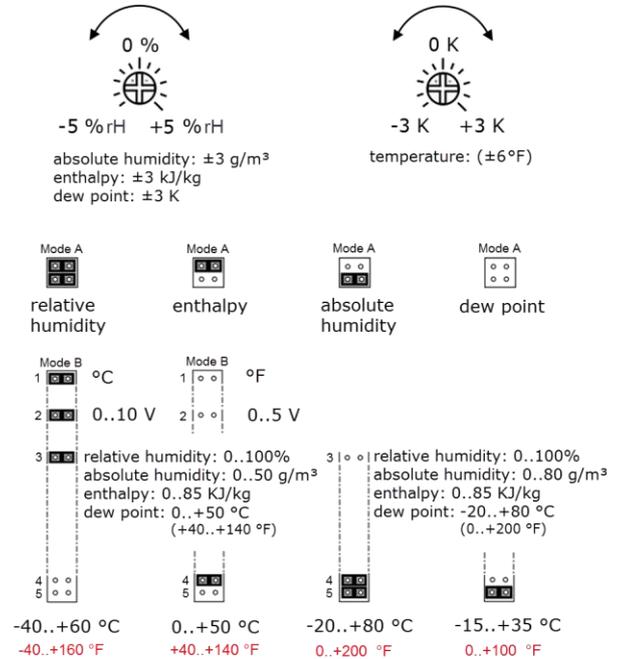
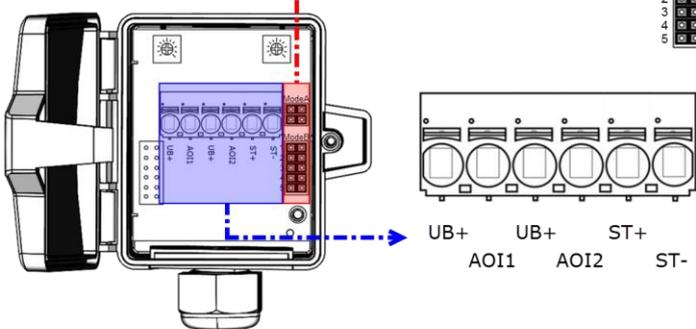
Note (type FTK+ AA)

When only using the temperature output, the humidity output must always be connected to mass/GND of the analog input module.

VV, VVS
2x 0..10 V | 0..5 V



AA, AAS
2x 4..20 mA

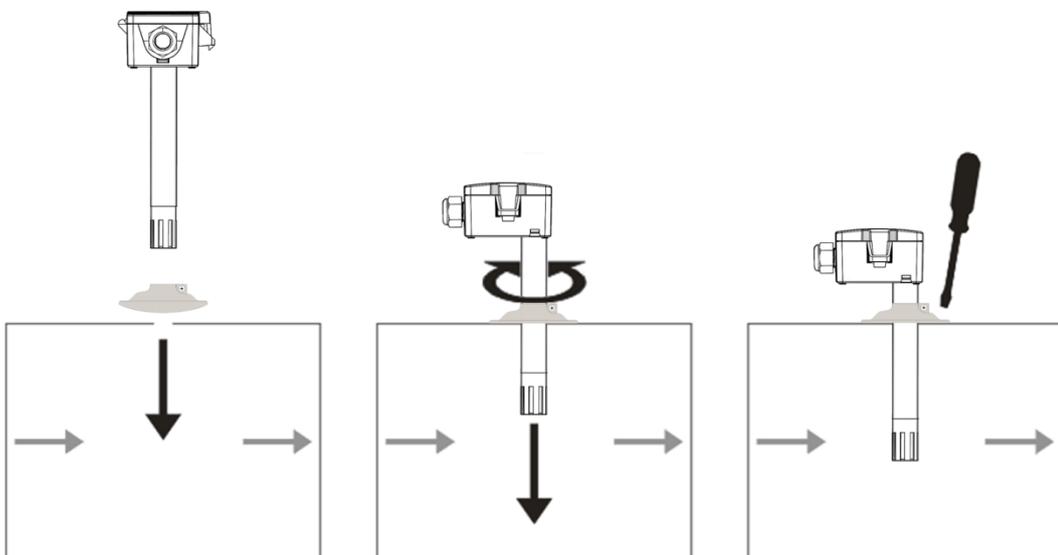


AOI1 | AOU1: humidity
AOI2 | AOU2: temperature

fig. (Measuring range and offset adjustment, default settings: -20 °C..+80 °C | 0 K)

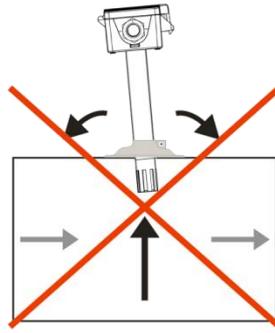
Mounting Advices

The sensor can be mounted into the ventilation duct with the mounting flange MF20 TPO. For risk of condensate permeation the pipe must be installed in a position that occurred condensate can run off.



Dismounting Advices

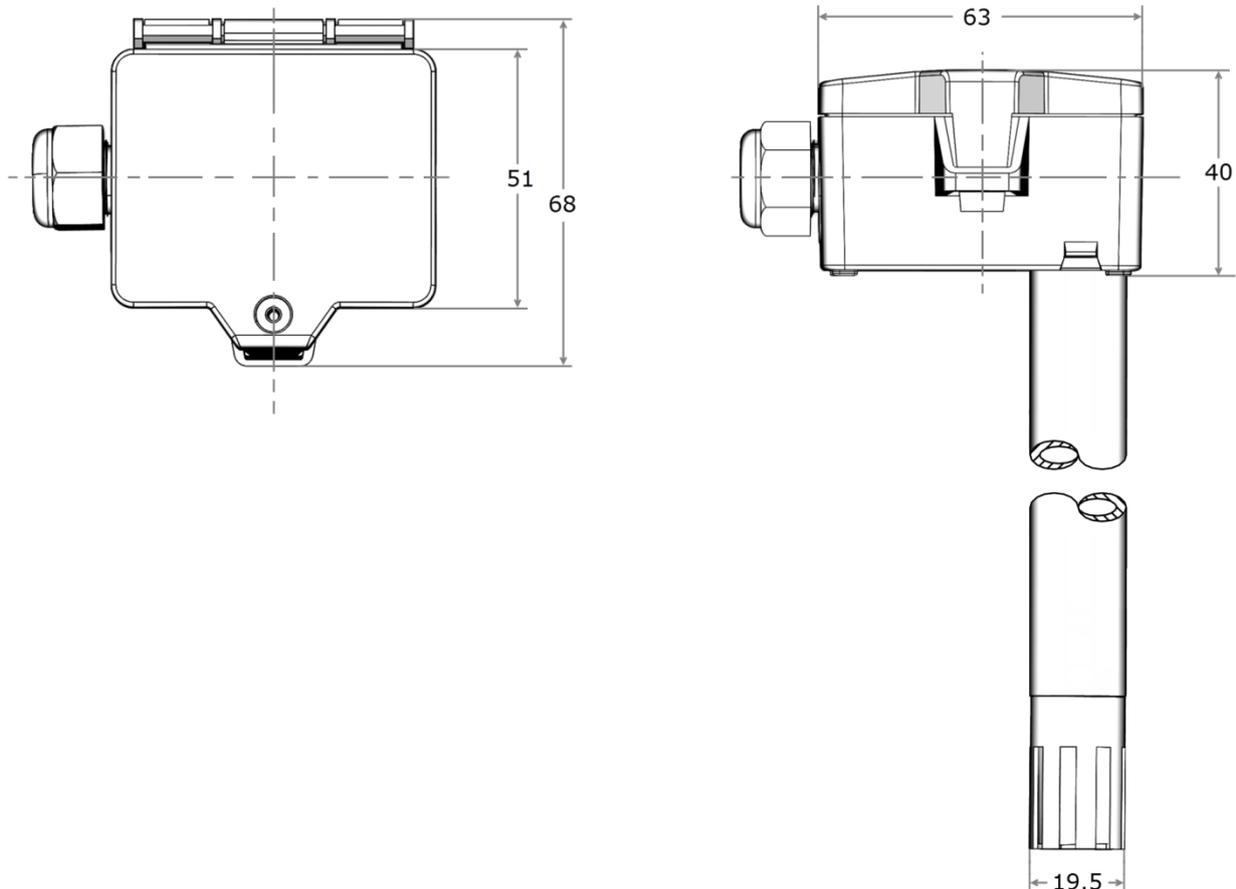
Remove the lower section of the sensor carefully and pulling straight out. **Pay close attention to the correct dismantling of the component!**



Application Notice

After a certain time, dirt in the air can collect on the filter and then adversely affect the operation of the sensor. Under normal ambient condition an annual maintenance is recommended. Rinse the filter after cleaning with distilled water and dry it using clean oil-free air or nitrogen. Extremely contaminated filters should be replaced. At extreme ambient conditions, e.g. corrosive gases, the humidity sensor may have to be changed.

Dimensions (mm)



Accessories (optional)

Rawplugs and screws (2 pcs each)
 Filter stainless steel, wire mesh (spare part)
 Mounting flange MF20 TPO
 Weather protection for FTK, FTK+, WSA (replacement)

Item No. 102209
 Item No. 231169
 Item No. 612562
 Item No. 625241

Sealing inserts cable entry (packaging unit 10 pcs.)

Ø	3 mm	5 mm	7 mm	8 mm
Item No.	641036	641012	639248	641340