

Datasheet

Subject to technical alteration
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**» 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> AA incl. MF20 (TPO)

<xxx>: 5,51/10,6/15,75 in.

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

eg: PT100/PT1000/Ni1000/Ni1000TK5000/NTC10K... and other sensors on request.

» PRODUCT TESTING AND CERTIFICATION**Declaration of conformity**

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

» 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

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.

» APPLICATION NOTICE FOR HUMIDITY SENSORS

At regular environmental condition, it is recommended to calibrate the sensor annually to check the compliance with the accuracy required in the application. The following conditions can damage the sensor element or lead in long term to loss of the specified accuracy:

- Mechanical stress
- Contamination (e.g. dust / fingerprints)
- Aggressive chemicals
- Ambient conditions (e.g. condensation on measuring element)



Do not touch the sensor elements!

Re-calibration or exchange of the sensor element are not subject of the general warranty.

» TECHNICAL DATA

Measuring values	temperature, humidity (humidity output configurable)	
Output voltage (type-dependent)	VV 2x 0..10 V or 0..5 V, configurable via Jumper, min. load 10 k Ω	
Output ampere (type-dependent)	AA 2x 4..20 mA, max. load 500 Ω	
Output passive (type-dependent)	VVS AAS optional, PT100/PT1000/Ni1000/Ni1000TK5000/NTC10K... and other sensors on request	
Power supply (type-dependent)	VV 15..24 V = ($\pm 10\%$) or 24 V ~ ($\pm 10\%$) SELV	AA 15..24 V = ($\pm 10\%$) SELV
Power consumption (type-dependent)	VV typ. 0,4 W (24 V =) 0,8 VA (24 V ~)	AA typ. 1 W (24 V =)
Measuring range temp. (type-dependent)	VV AA adjustable at the transducer: 0..+200 +40..+140 -40..+160 0..+100 °F, default setting: 0..+200 °F	passive depending on used sensor
Measuring range humidity	0..100% rH non-condensing	
Measuring range abs. hum.	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: +40..+140 0..+200 °F, default setting: +40..+140 °F	
Accuracy temperature (type-dependent)	VV AA $\pm 0,3$ K (typ. at 70 °F within default measuring range)	passive typ. $\pm 0,3$ K (typ. at 70 °F), depending on used sensor
Air speed	max. 40 ft./s	
Accuracy humidity	$\pm 2\%$ between 10..90% rH (typ. at 70 °F)	
Enclosure	enclosure USE-S, PC, pure white	
Protection	enclosure IP65 according to EN 60529	
Cable entry	Flextherm M20, for wire max. $\varnothing=0.18..0.35$ in., removable	
Connection electrical	removable plug-in terminal, max. 14AWG	
Pipe	PA6, black, $\varnothing=0.77$ in., length=5.5 10.6 15.75 in.	
Ambient condition	-4..+158 °F, short term condensation	

» 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.

» CONNECTION PLAN AND CONFIGURATION

Offset	Terminal assignment	Device configuration																		
Temperature -6°F +6°F	 VV, VVS 0..10V 0..5V AA, AAS 4..20mA AOU1: Humidity AOU2: Temperature Clamp ST+ ST- : passive sensor (VVS AAS)	Jumper 1-2 (humidity) Jumper1-5 <table><tr><td>1</td><td>°F</td><td>°C (additional information below)</td></tr><tr><td>2</td><td>0..10V</td><td>0..5 V VV, VVS only</td></tr><tr><td>3</td><td colspan="2">relative humidity: 0..100% absolute humidity: 0..80 g/m³ enthalpy: 0..85 kJ/kg dew point: 0..+200 °F</td></tr><tr><td>3</td><td colspan="2">relative humidity: 0..100% absolute humidity: 0..50 g/m³ enthalpy: 0..85 kJ/kg dew point: +40..+140 °F</td></tr><tr><td>4</td><td>-40°F..+160°F</td><td>+40°F..+140°F</td></tr><tr><td>4</td><td>0°F..+200°F</td><td>0°F..+100°F</td></tr></table> EN datasheet with additional information about °C	1	°F	°C (additional information below)	2	0..10V	0..5 V VV, VVS only	3	relative humidity: 0..100% absolute humidity: 0..80 g/m³ enthalpy: 0..85 kJ/kg dew point: 0..+200 °F		3	relative humidity: 0..100% absolute humidity: 0..50 g/m³ enthalpy: 0..85 kJ/kg dew point: +40..+140 °F		4	-40°F..+160°F	+40°F..+140°F	4	0°F..+200°F	0°F..+100°F
1	°F	°C (additional information below)																		
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4	-40°F..+160°F	+40°F..+140°F																		
4	0°F..+200°F	0°F..+100°F																		

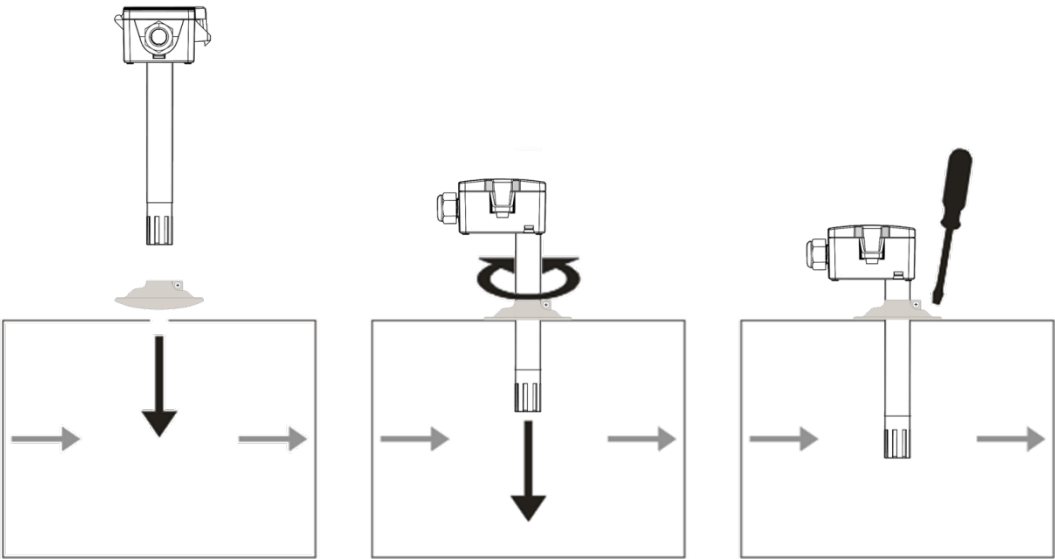
The adjustment of the measuring ranges is made by changing the jumpers in a de-energized state. The output value of the new measuring range is available after 2 seconds. *fig. (Measuring range and offset adjustment, default settings: 0 °F..+200 °F | 0 °F)*

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.

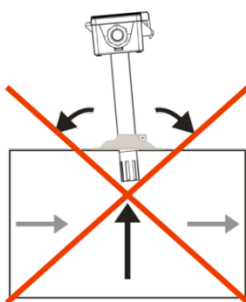
» MOUNTING ADVICES

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.

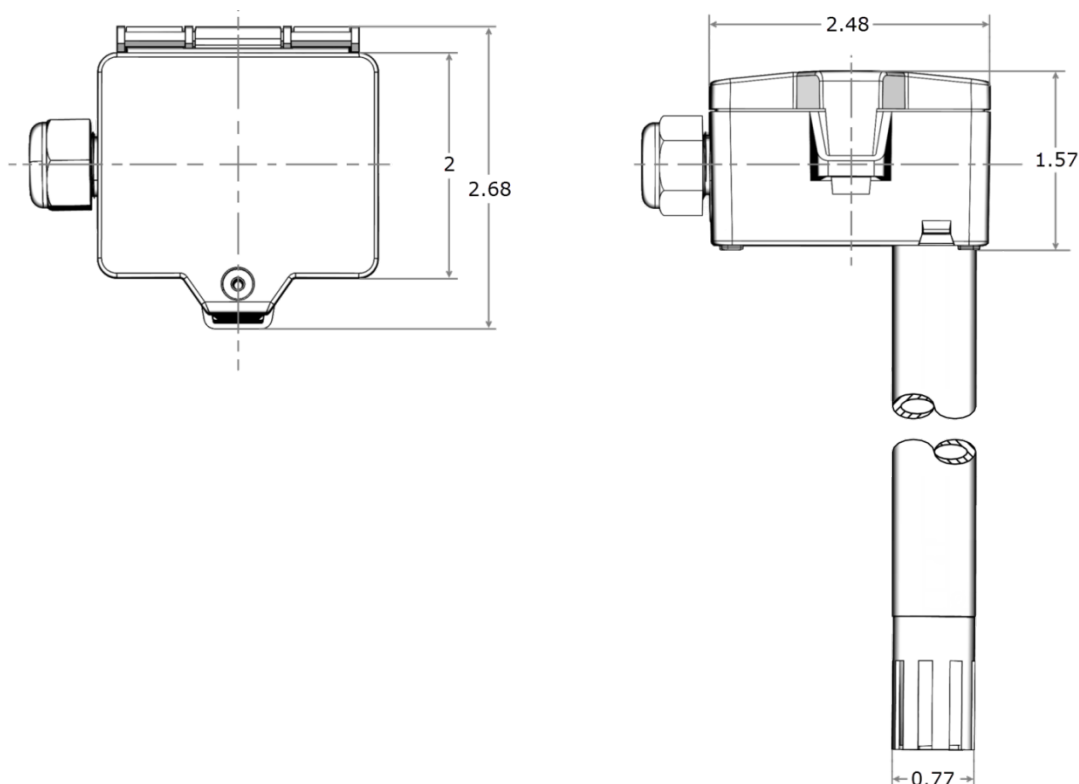


» DISMOUNTING ADVICES

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



» DIMENSIONS (IN.)



» ACCESSORIES (INCLUDED IN DELIVERY)

Mounting flange MF20 TPO

Item No. 612562

Mounting kit universal

Item No. 698511

• Cover screw + screw cover • 2 Rawlplugs • 2 Screws (countersunk head) • 2 Screws (rounded head)

» ACCESSORIES (OPTIONAL)

Rawlplugs and screws (2 pcs. each)

Item No. 102209

Filter stainless steel, wire mesh (spare part)

Item No. 231169

Weather protection for FTK, FTK+, WSA (replacement)

Item No. 625241

Sealing insert M20 USE white, 2x Ø=0.28 in. (for 2 wire; PU 10 pieces)

Item No. 641333