

## 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

**Weather protection - outdoor humidity sensor temperature + humidity – active**

WSA VV  
WSA AA

## » SECURITY ADVICE – CAUTION



The installation and assembly of the device should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorized 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	<b>VV</b> 2x 0..10 V or 0..5 V, configurable via Jumper, min. load 10 k $\Omega$	
Output ampere	<b>AA</b> 2x 4..20 mA, max. load 500 $\Omega$	
Output passive *optional	<b>VVS   AAS</b> optional, PT100/PT1000/Ni1000/Ni1000TK5000/NTC10K... and other sensors on request	
Power supply	<b>VV</b> 15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ ) SELV	<b>AA</b> 15..24 V = ( $\pm 10\%$ ) SELV
Power consumption	<b>VV</b> typ. 0,4 W (24 V =)   0,8 VA (24 V ~)	<b>AA</b> typ. 1 W (24 V =)
Measuring range temp.	<b>VV   AA</b> adjustable at the transducer: 0..+200   +40..+140   -40..+160   0..+100 °F, default setting: 0..+200 °F	<b>passive</b> 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 <sup>3</sup> , default setting: 0..50 g/m <sup>3</sup>	
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	<b>VV   AA</b> $\pm 0,3$ K (typ. at 70 °F within default measuring range)	<b>passive</b> 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	<b>enclosure</b> IP65 according to EN 60529	<b>sensor head</b> IP30 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	
Delivery contents	wall mounting or mounting to a mast tube	
Notes	additional passive sensor available (type VVS   AAS)	

» **PRODUCT TESTING AND CERTIFICATION**



**Declaration of conformity**

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

» **CONNECTION PLAN**

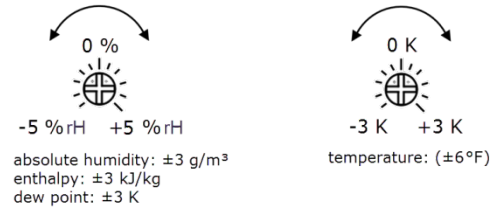
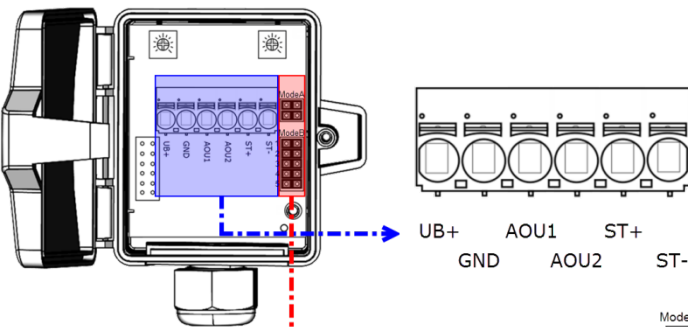
Clamp ST+ | ST- : passive Sensor (VVS | AAS) / AOI1 | AOU1: humidity / AOI2 | AOU2: temperature

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 °C..+200 °F | 0 K)*

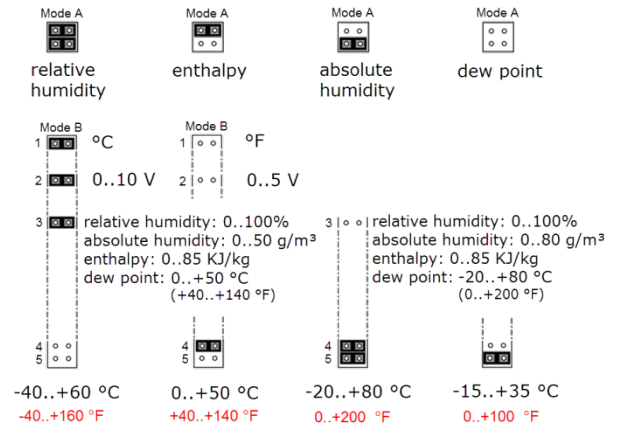
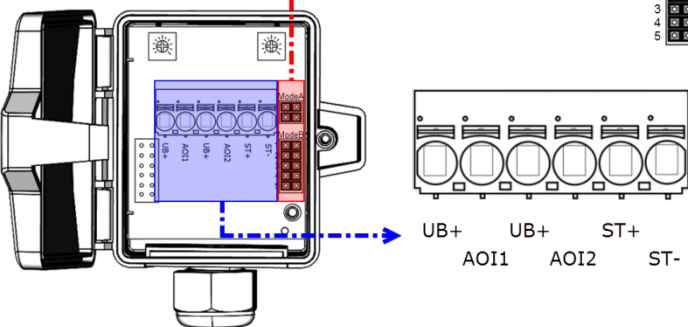
**Note** (type FTK+ AA)

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

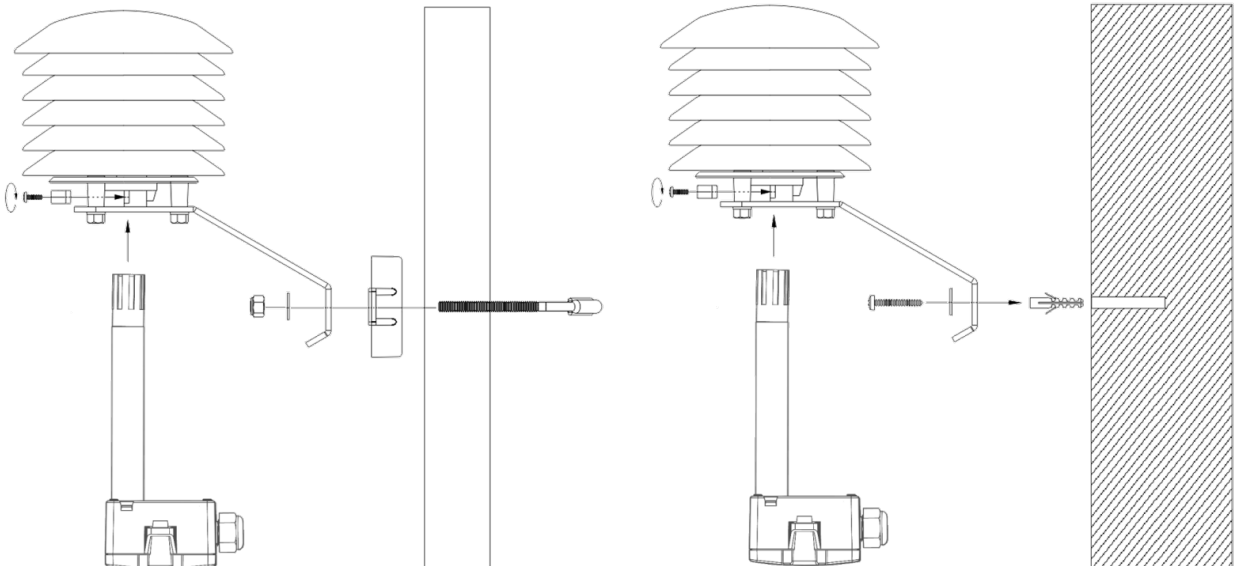
VV, VVS  
2x 0..10 V | 0..5 V



AA, AAS  
2x 4..20 mA



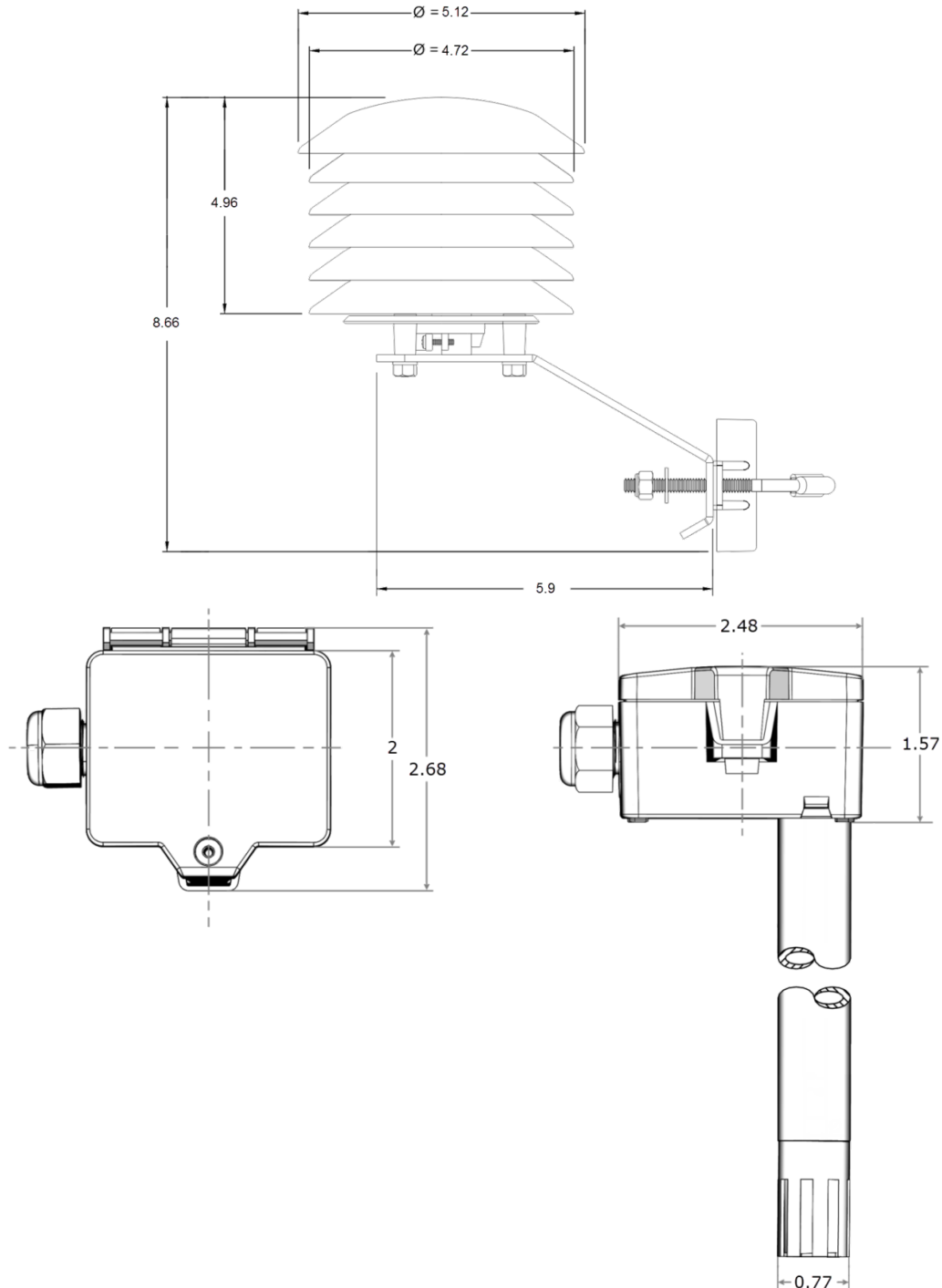
» **MOUNTING ADVICES**



## » 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 (IN.)



## » ACCESSORIES (OPTIONAL)

Filter stainless steel, wire mesh (spare part)  
 Weather protection for FTK, FTK+, WSA (replacement)  
 Sealing insert M20 USE white, 2x  $\varnothing=0.28$  in. (for 2 wire; PU 10 pieces)

Item No. 231169  
 Item No. 625241  
 Item No. 641333