

**Datasheet**

Subject to technical alteration  
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**Application**

Protected temperature and humidity sensor for outside applications. The Radiation shield protects the outside sensors from rain and radiated heat. With the curved shape and color of the plates air flow is able to move across the sensors to keep radiated temperatures from rooftops and surrounding surfaces from affecting humidity readings.

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

WSA VV  
WSA AA

**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

<b>Measuring values</b>	temperature, humidity (humidity output configurable)	
<b>Output voltage</b>	<b>VV</b> 2x 0..10 V or 0..5 V, configurable via Jumper, min. load 10 k $\Omega$	
<b>Output ampere</b>	<b>AA</b> 2x 4..20 mA, max. load 500 $\Omega$	
<b>Output passive</b> *optional	<b>VVS   AAS</b> optional, PT100/PT1000/Ni1000/Ni1000TK5000/NTC10K... and other sensors on request	
<b>Power supply</b>	<b>VV</b> 15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ ) SELV	<b>AA</b> 15..24 V = ( $\pm 10\%$ ) SELV
<b>Power consumption</b>	<b>VV</b> typ. 0,4 W (24 V =)   0,8 VA (24 V ~)	<b>AA</b> typ. 1 W (24 V =)
<b>Measuring range temp.</b>	<b>VV   AA</b> adjustable at the transducer: -20..+80   0..+50   -40..+60   -15..+35 °C default setting: -20..+80 °C	<b>passive</b> depending on used sensor
<b>Measuring range humidity</b>	0..100% rH non-condensing	
<b>Measuring range abs. hum.</b>	adjustable at the transducer: 0..50   0..80 g/m <sup>3</sup> , default setting: 0..50 g/m <sup>3</sup>	
<b>Measuring range enthalpy</b>	0..85 KJ/kg	
<b>Measuring range dew point</b>	adjustable at the transducer: 0..50   -20..+80 °C, default: 0..50 °C	
<b>Accuracy temperature</b>	<b>VV   AA</b> $\pm 0,3$ K (typ. at 21 °C within default measuring range)	<b>passive</b> typ. $\pm 0,3$ K (typ. at 21 °C), depending on used sensor
<b>Air speed</b>	max. 12 m/s	
<b>Accuracy humidity</b>	$\pm 2\%$ between 10..90% rH (typ. at 21 °C)	
<b>Enclosure</b>	enclosure USE-S, PC, pure white	
<b>Protection</b>	<b>enclosure</b> IP65 according to EN 60529	<b>sensor head</b> IP30 according to EN 60529
<b>Cable entry</b>	Flextherm M16, for wire $\varnothing=3.7$ mm, removable	
<b>Connection electrical</b>	removable plug-in terminal, max. 2,5 mm <sup>2</sup>	
<b>Pipe</b>	PA6, black, $\varnothing=19,5$ mm, length=140   270   400 mm	
<b>Ambient condition</b>	-20..+70 °C, short term condensation	
<b>Mounting</b>	wall mounting or mounting to a mast tube	
<b>Notes</b>	additional passive sensor available (type VVS   AAS)	

## Connection Plan

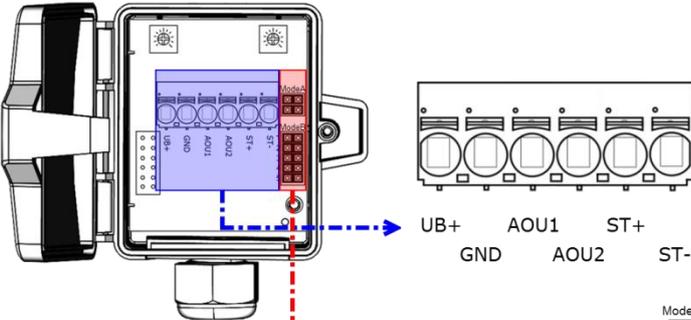
Clamp ST+ | ST- : passive Sensor (VVS | AAS)

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.

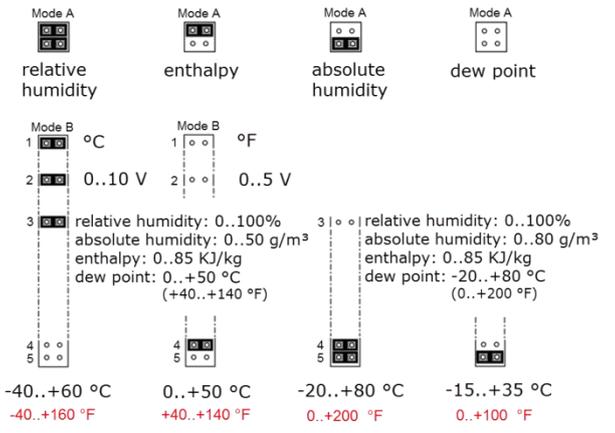
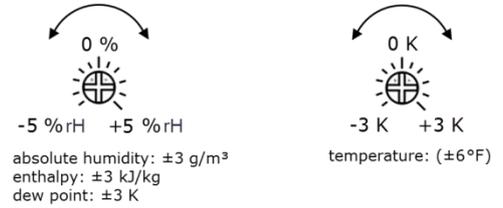
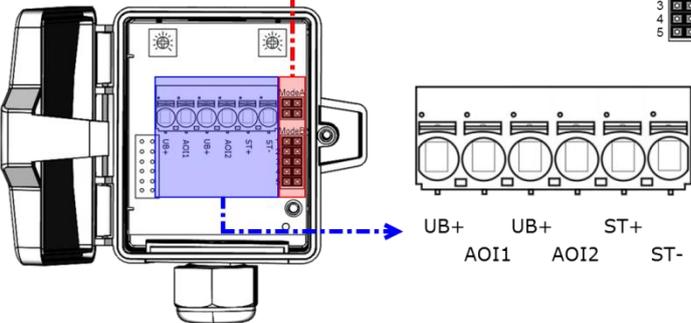
**Note** (type FTK+ AA)

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



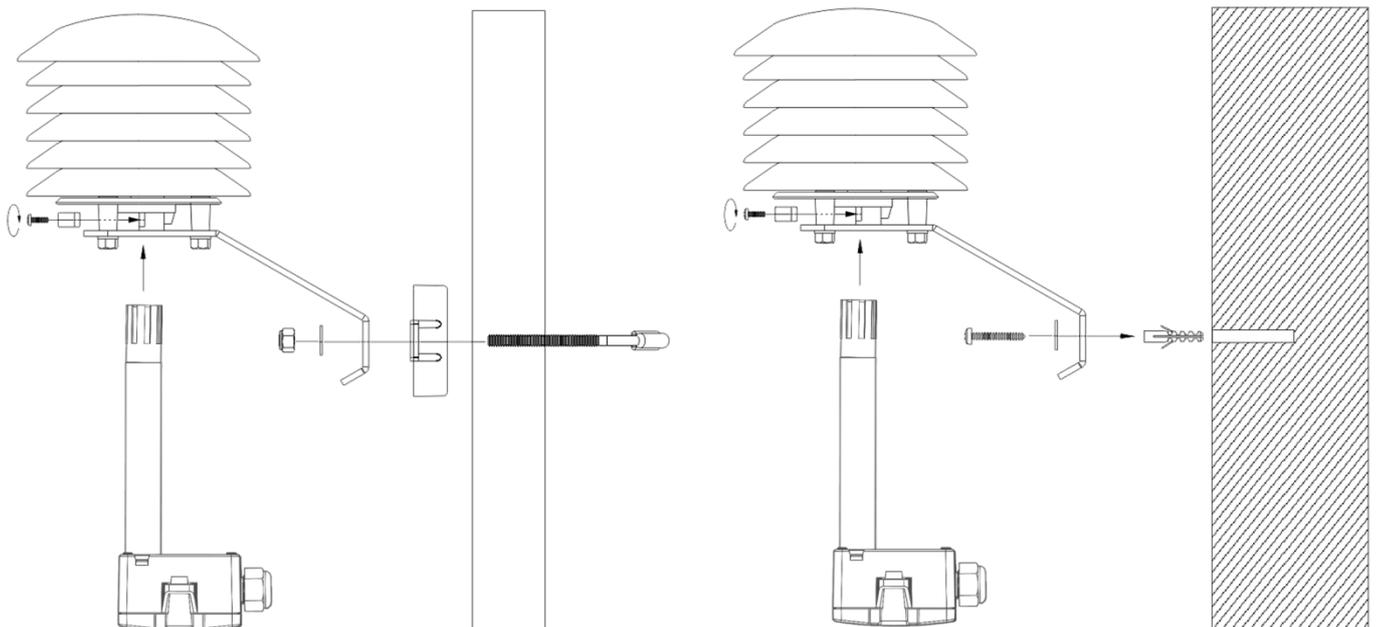
AA, AAS  
2x 4..20 mA



AOI1 | AOU1: humidity  
AOI2 | AOU2: temperature

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

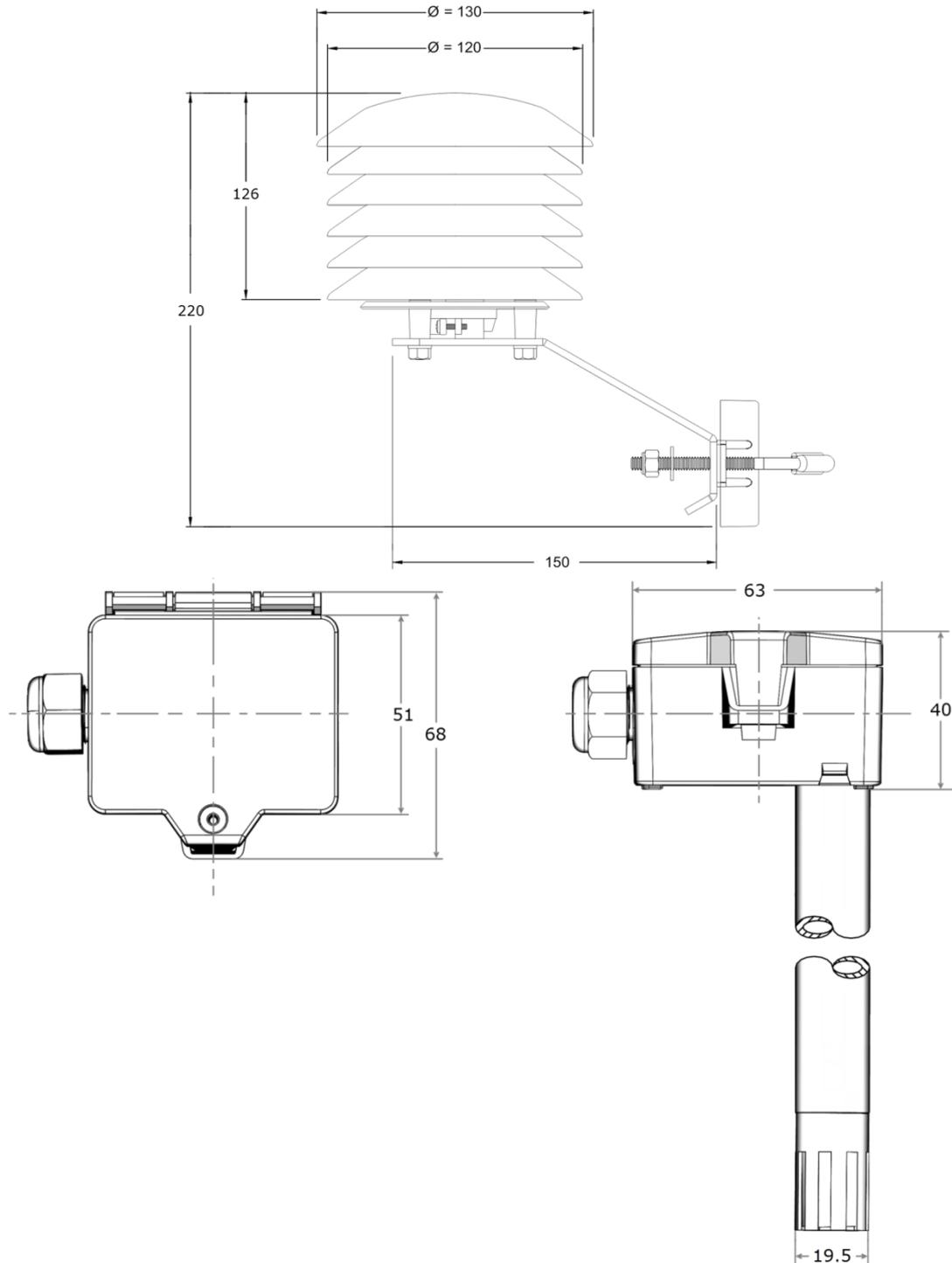
## Mounting Advices



## 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)

Filter stainless steel, wire mesh (spare part)

Item No. 231169

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

Item No. 625241

M16 Sealing inserts cable entry (packaging unit 10 pcs.) for wire with Ø 8 mm

Item No. 641340