

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

Measuring values	temperature, humidity (humidity output configurable)	
Output voltage	VV 2x 0..10 V or 0..5 V, configurable via Jumper, min. load 10 k Ω	
Output ampere	AA 2x 4..20 mA, max. load 500 Ω	
Output passive *optional	VVS AAS optional, PT100/PT1000/Ni1000/Ni1000TK5000/NTC10K... and other sensors on request	
Power supply	VV 15..24 V = ($\pm 10\%$) or 24 V ~ ($\pm 10\%$) SELV	AA 15..24 V = ($\pm 10\%$) SELV
Power consumption	VV typ. 0,4 W (24 V =) 0,8 VA (24 V ~)	AA typ. 1 W (24 V =)
Measuring range temp.	VV AA adjustable at the transducer: -20..+80 0..+50 -40..+60 -15..+35 °C default setting: -20..+80 °C	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: 0..50 -20..+80 °C, default: 0..50 °C	
Accuracy temperature	VV AA $\pm 0,3$ K (typ. at 21 °C within default measuring range)	passive typ. $\pm 0,3$ K (typ. at 21 °C), depending on used sensor
Air speed	max. 12 m/s	
Accuracy humidity	$\pm 2\%$ between 10..90% rH (typ. at 21 °C)	
Enclosure	enclosure USE-S, PC, pure white	
Protection	enclosure IP65 according to EN 60529	sensor head IP30 according to EN 60529
Cable entry	Flextherm M16, for wire $\varnothing=3..7$ mm, removable	
Connection electrical	removable plug-in terminal, max. 2,5 mm ²	
Pipe	PA6, black, $\varnothing=19,5$ mm, length=140 270 400 mm	
Ambient condition	-20..+70 °C, short term condensation	
Mounting	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

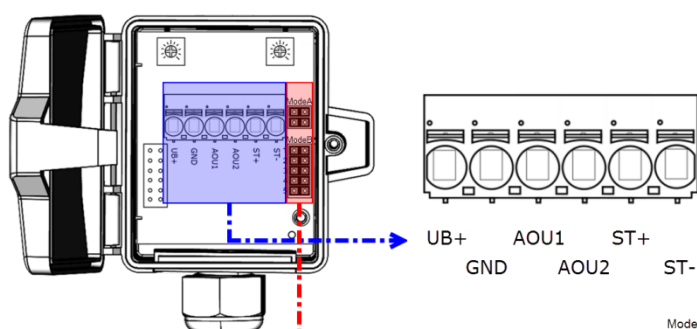
The adjustment of the measuring ranges is made by changing the jumpers in a de-energized state. The output value of the new measuring range is available after 2 seconds. *fig. (Measuring range and offset adjustment, default settings: -20 °C...+80 °C | 0 K)*

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.

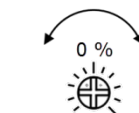
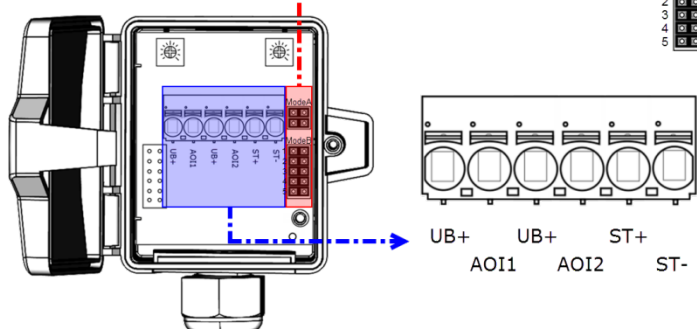
VV, VVS

2x 0..10 V | 0..5 V

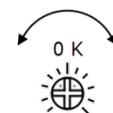


AA, AAS

2x 4..20 mA



-5 %rH +5 %rH
absolute humidity: $\pm 3 \text{ g/m}^3$
enthalpy: $\pm 3 \text{ kJ/kg}$
dew point: $\pm 3 \text{ K}$



-3 K +3 K
temperature: ($\pm 6^\circ\text{F}$)

Mode A
relative humidity

Mode A
enthalpy

Mode A
absolute humidity

Mode A
dew point

Mode B
1 °C
2 0..10 V
3 relative humidity: 0..100%
absolute humidity: 0..50 g/m³
enthalpy: 0..85 kJ/kg
dew point: 0..+50 °C
(+40..+140 °F)

Mode B
1 °F
2 0..5 V
3 absolute humidity: 0..80 g/m³
enthalpy: 0..85 kJ/kg
dew point: -20..+80 °C
(0..+200 °F)

3 relative humidity: 0..100%
absolute humidity: 0..80 g/m³
enthalpy: 0..85 kJ/kg
dew point: -20..+80 °C
(0..+200 °F)

3 absolute humidity: 0..80 g/m³
enthalpy: 0..85 kJ/kg
dew point: -20..+80 °C
(0..+200 °F)

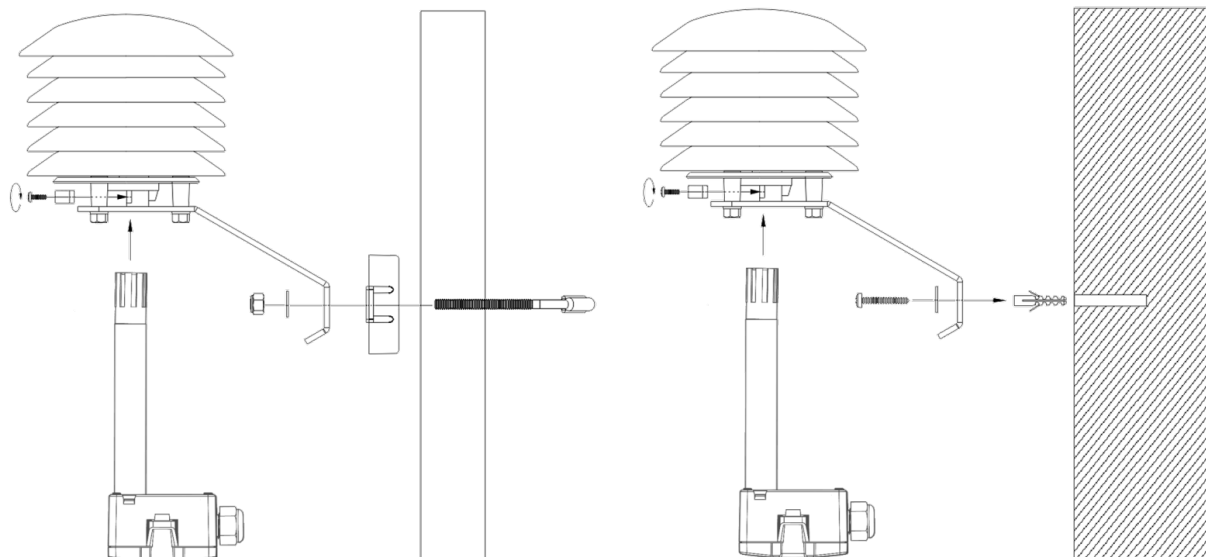
-40..+60 °C
-40..+160 °F

0..+50 °C
+40..+140 °F

-20..+80 °C
0..+200 °F

-15..+35 °C
0..+100 °F

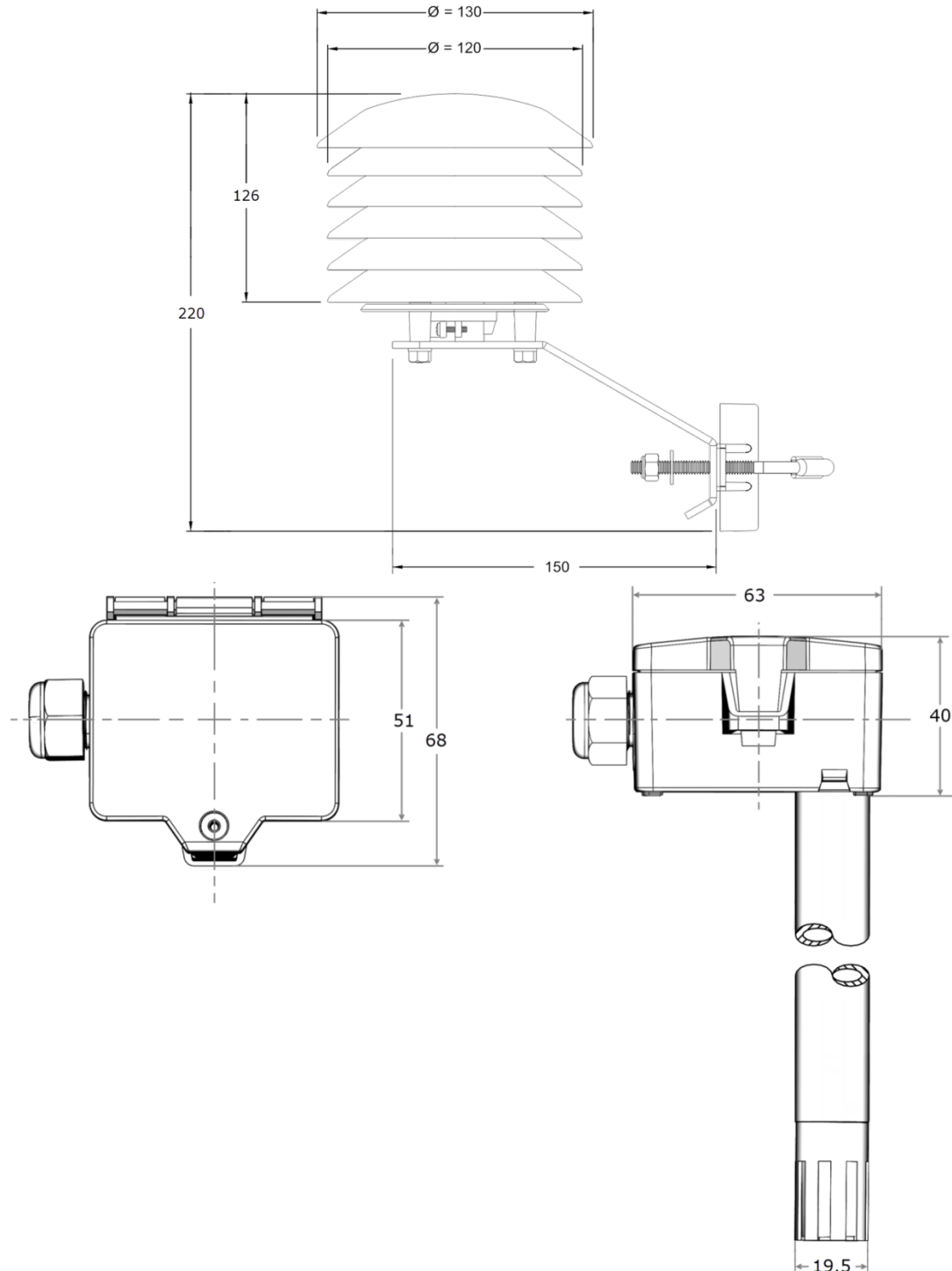
» MOUNTING ADVICES



» 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)
 Weather protection for FTK, FTK+, WSA (replacement)
 M16 Sealing inserts cable entry (packaging unit 10 pcs.) for wire with $\varnothing$ 8 mm

Item No. 231169
 Item No. 625241
 Item No. 641340