

# » WSA RS485 BACnet MS/TP

Outdoor sensor for relative humidity and temperature

**thermokon**<sup>®</sup>  
HOME OF SENSOR TECHNOLOGY

## Datasheet

Subject to technical alteration  
Issue date: 08/03/2020 • A110



## » 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 sensor temperature + humidity – active RS485 BACnet**

WSA RS485 BACnet

## » 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 the USEapp software and an optional Bluetooth interface.

**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	2x 0..10 V or 0..5 V, min. load 10 k $\Omega$ (live-zero configuration via Thermokon USEapp)	
Network technology	RS485 BACnet MS/TP	
Power supply	15..35 V = or 19..29 V ~	
Power consumption	max. 0,4 W (24 V =)   0,8 VA (24 V ~)	
Measuring range temp.	+40..+240 °F (default setting), optionally configurable via Thermokon USEapp	
Measuring range humidity	0..100% rH non-condensing, optionally configurable via Thermokon USEapp (enthalpy, absolute humidity, dew point)	
Accuracy temperature	$\pm 0,3$ K (typ. at 70 °F)	
Accuracy humidity	$\pm 2\%$ between 10..90% rH (typ. at 70 °F)	
Air speed	max. 40 ft./s	
Enclosure	enclosure USE-M, PC, pure white, with removable cable entry	
Protection	IP65 according to EN 60529	
Cable entry	M25 for cable max. $\varnothing=0.24$ in., seal insert for fourfold cable entry	
Connection electrical	<b>Mainboard</b> removable plug-in terminal, max. 2,5 mm <sup>2</sup>	<b>Plug-in card</b> removable plug-in terminal, max. 1,5 mm <sup>2</sup>
Pipe	PA6, black, $\varnothing=0.77$ in., length=5.5   10.6   15.75 in.	
Filter	stainless steel wire mesh	
Ambient condition	-4..+158 °F, short term condensation	
Mounting	wall mounting or on a mast tube	

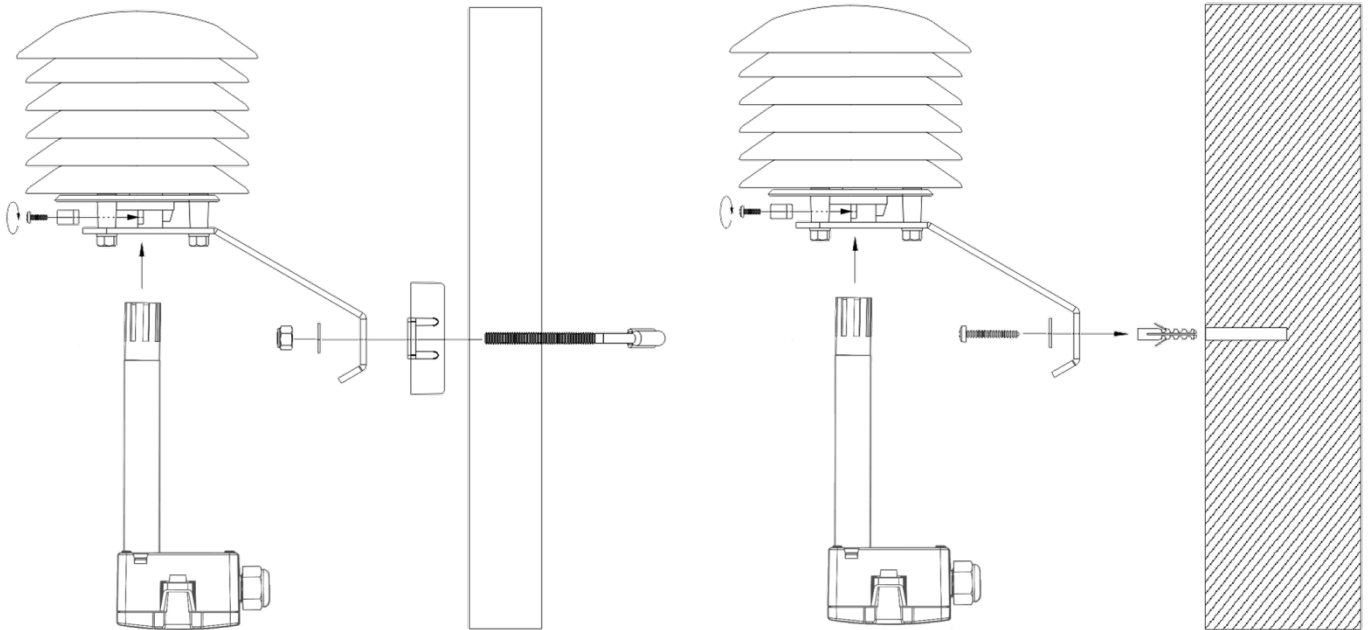
## » PRODUCT TESTING AND CERTIFICATION



### Declaration of conformity

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

» MOUNTING ADVICES



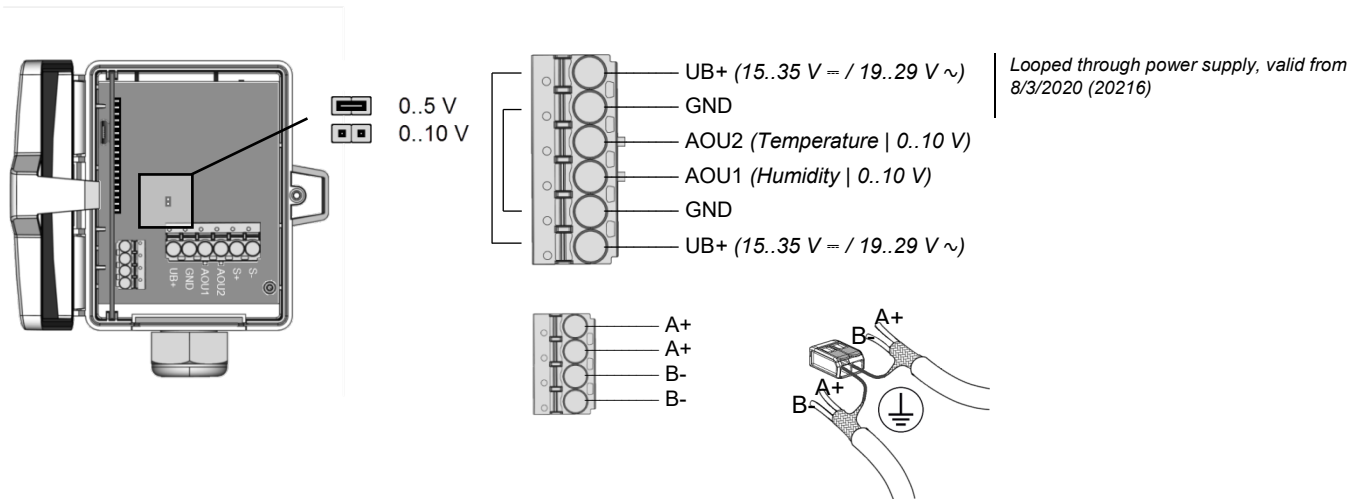
» APPLICATION NOTICE

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.

» CONNECTION PLAN

If the RS485 cable is looped through, connect both cable shields using the enclosed 2-pol. Connect terminal as shown.

WSA RS485



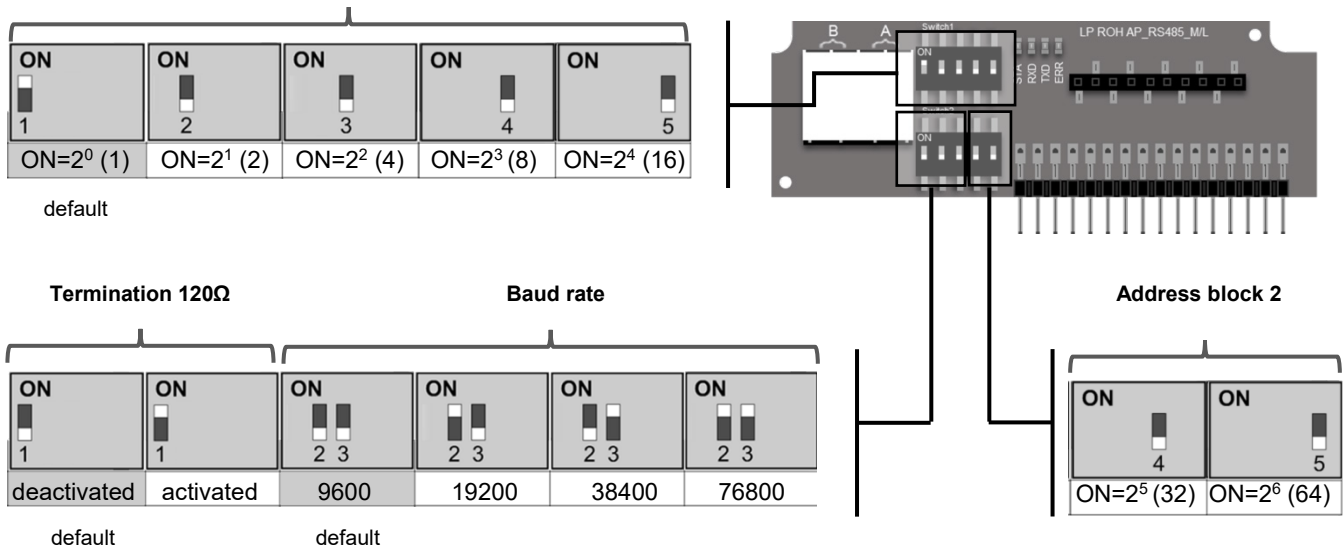
The BACnet address of the device is set binary coded in the range of 1 ... 127 via 7 dip-switches. (the address 0 is reserved and cannot be selected).



**BACnet Objects, BIBBS and PICs:**  
USE-RS485 BACnet interface

A detailed description of the BACnet interface can be found at the following link:  
→ [Download](#)

**Address block 1**



**Measuring values**

Objects	Access	Description	Unit
AI-1	R	relative Humidity	%rH

**Object AV-38 = 1 (Unit SI)**

Objects	Access	Description	Unit
AI-0	R	temperature	SI °C
AI-2	R	absolute humidity	SI g/m <sup>3</sup>
AI-3	R	enthalpy	SI KJ/kg
AI-4	R	dew point	SI °C

**Object AV-38 = 2 (Unit Imperial)**

Objects	Access	Description	Unit
AI-0	R	temperature	Imperial °F
AI-2	R	absolute humidity	Imperial gr/ft <sup>3</sup>
AI-3	R	enthalpy	Imperial BTU/lb
AI-4	R	dew point	Imperial °F

**» CONFIGURATION**



The Thermokon bluetooth dongle with micro-USB is required for communication between USEapp and USE-M / USE L (Item No.: 668262). Commercial bluetooth dongles are not compatible.

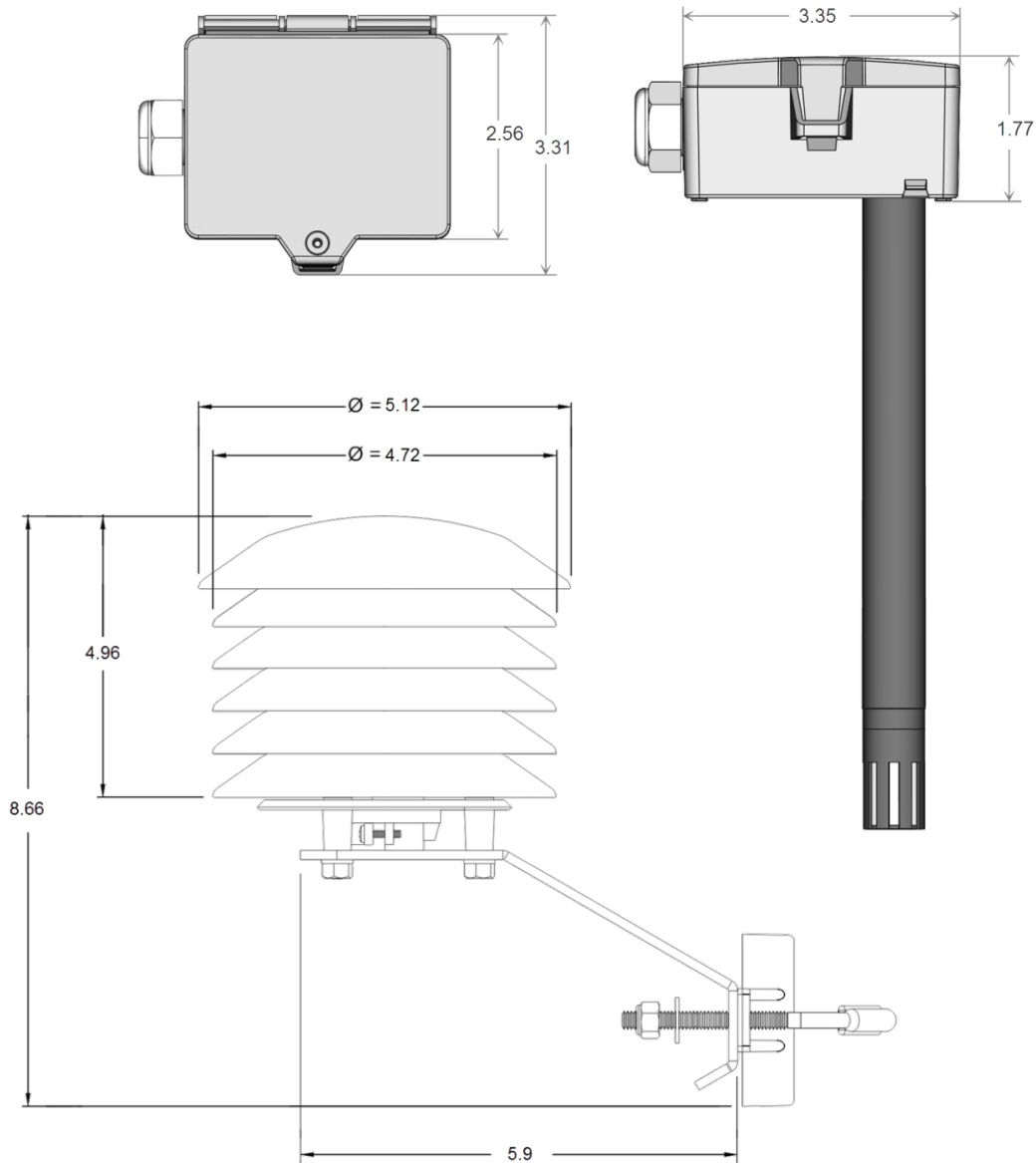
Application-specific reconfiguration of the devices can be carried out using the Thermokon USEapp. The configuration is carried out in the voltage-supplied state.



The configuration-app and the app description can be found in the Google Play Store or in the Apple App Store.



## » DIMENSIONS (IN.)



## » ACCESSORIES (INCLUDED IN DELIVERY)

Mounting kit universal

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

Item No. 698511

## » ACCESSORIES (OPTIONAL)

Bluetooth dongle USE for USEapp

Mounting base

Filter stainless steel, wire mesh

Item No. 668262

Item No. 631228

Item No. 231169