» WSA RS485 BACnet MS/TP

Outdoor sensor for relative humidity and temperature

thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
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USEapp ✓

ASHRAE BACnet™

»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 MS/TP

WSA RS485 BACnet

»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 (±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 kΩ (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.	-20..+80 °C (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	±0,3 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Air speed	max. 12 m/s
Enclosure	enclosure USE-M, PC, pure white, with removable cable entry
Protection	IP65 according to EN 60529
Cable entry	M25 for cable max. Ø=7 mm, seal insert for fourfold cable entry
Connection electrical	**Mainboard** removable plug-in terminal, max. 2,5 mm² / **Plug-in card** removable plug-in terminal, max. 1,5 mm²
Pipe	PA6, black, Ø=19,5 mm, length=140 | 270 | 400 mm
Filter	stainless steel wire mesh
Ambient condition	-20..+70 °C, 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/.
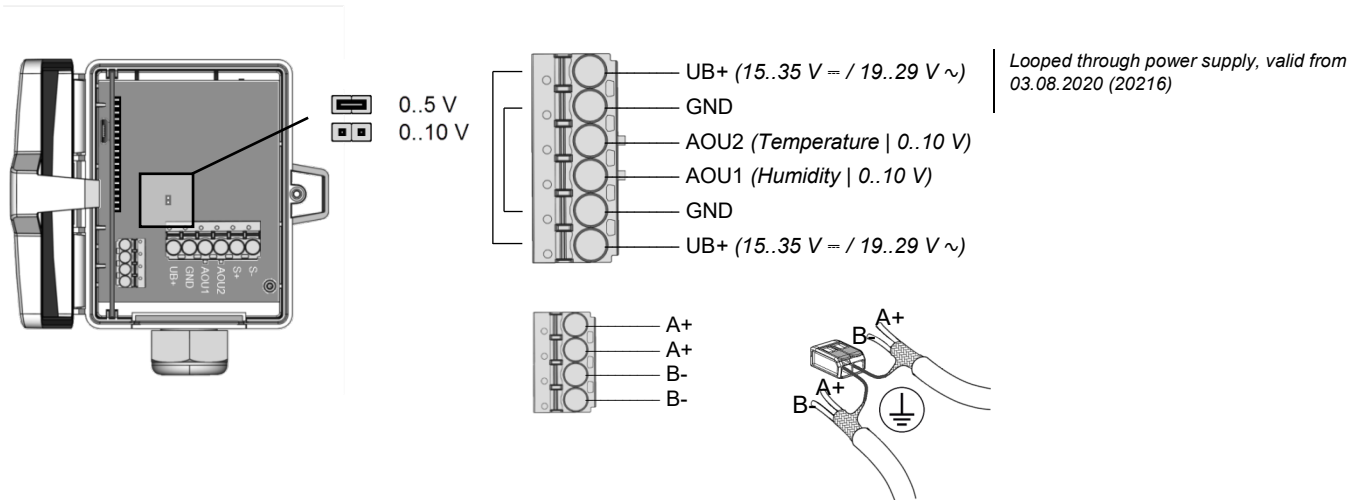
»MOUNTING ADVICES
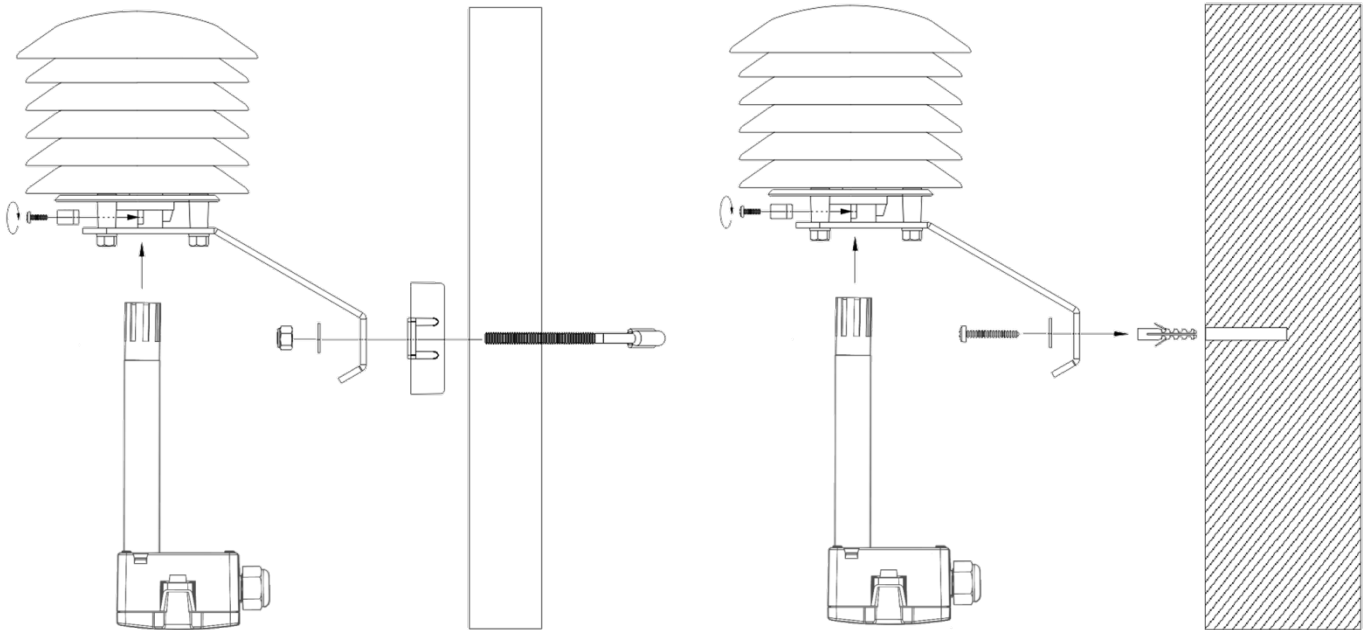
»APPLICATION NOTICE

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

0..5 V
0..10 V

UB+ (15..35 V ⎓ / 19..29 V ~)
GND
AOU2 (Temperature | 0..10 V)
AOU1 (Humidity | 0..10 V)
GND
UB+ (15..35 V ⎓ / 19..29 V ~)

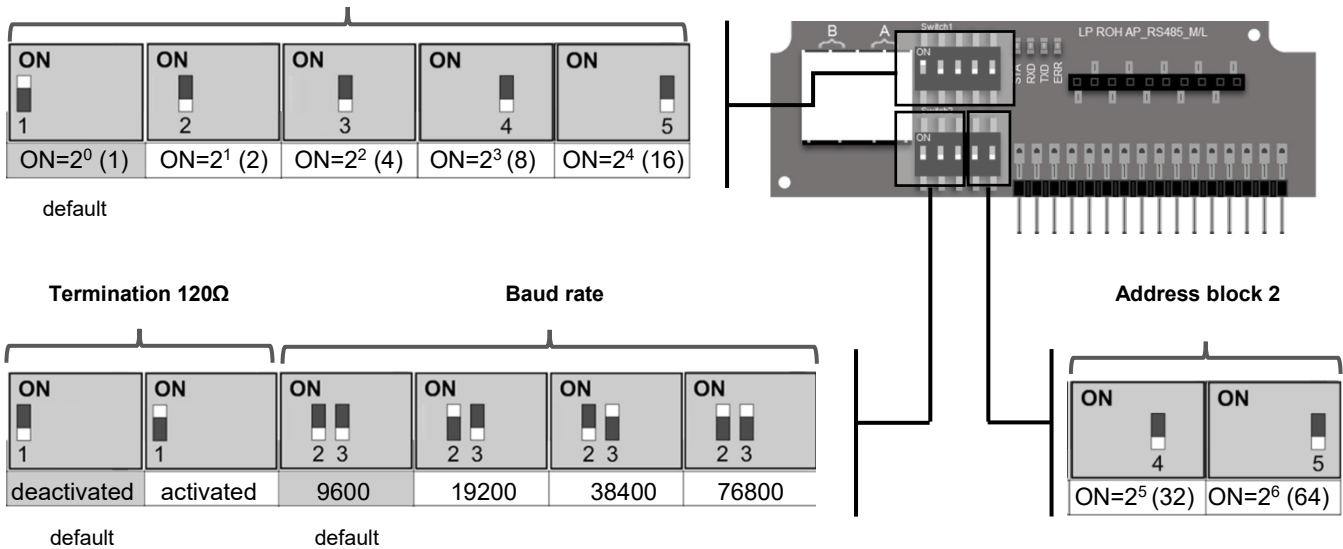*Looped through power supply, valid from 03.08.2020 (20216)*

A+
A+
B-
B-

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

ON	ON	ON	ON	ON
1	2	3	4	5
ON=2^0 (1)	ON=2^1 (2)	ON=2^2 (4)	ON=2^3 (8)	ON=2^4 (16)

default

Termination 120Ω

ON	ON
1	1
deactivated	activated

default

Baud rate

ON	ON	ON	ON
2 3	2 3	2 3	2 3
9600	19200	38400	76800

default

Address block 2

ON	ON
4	5
ON=2^5 (32)	ON=2^6 (64)

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/m³
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/ft³
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.
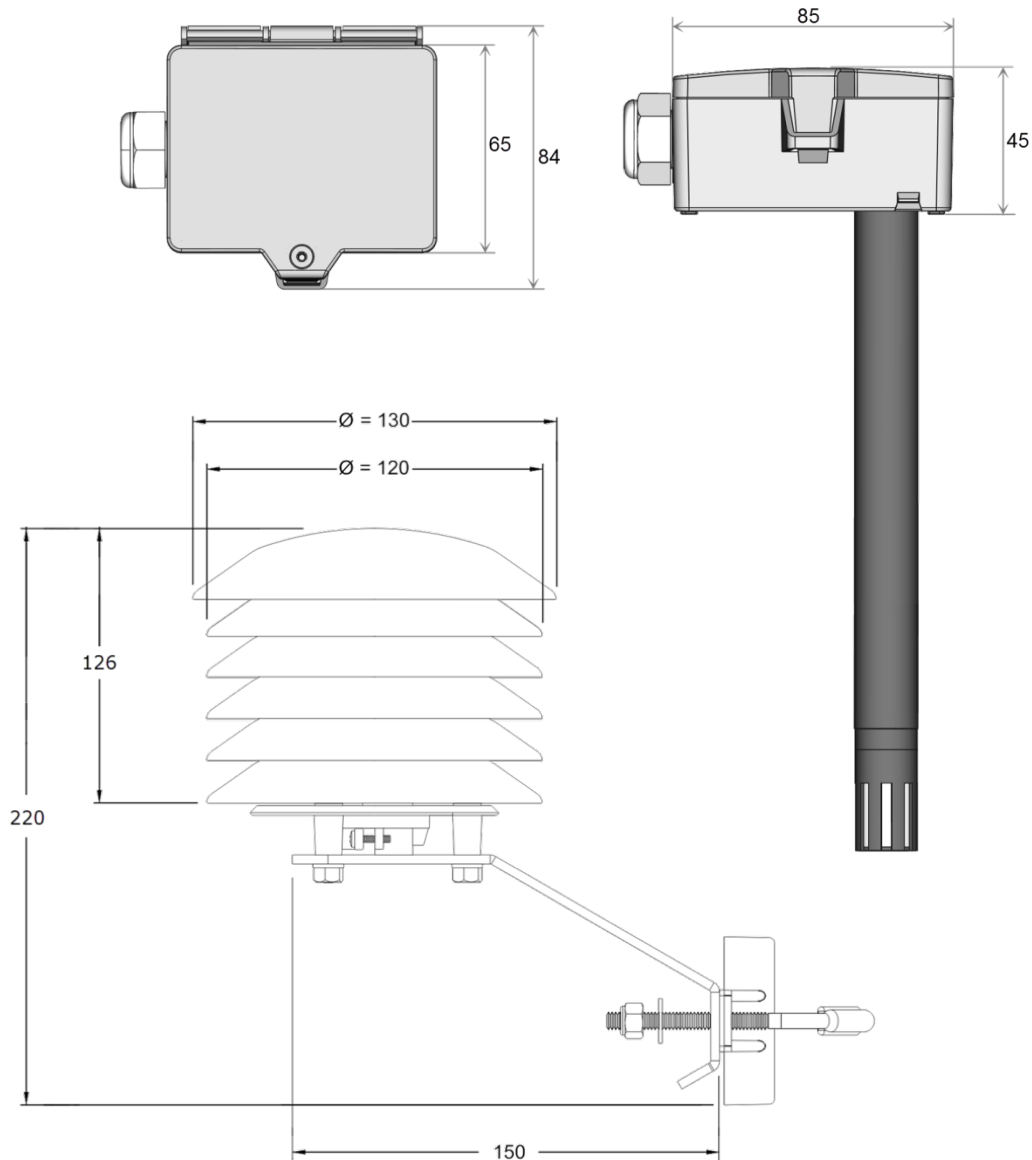
Application-specific reconfiguration of the devices can be carried out using the Thermokon USEapp. The configuration is carried out in the voltage-supplied state.

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

»DIMENSIONS (MM)

»ACCESSORIES (INCLUDED IN DELIVERY)

Mounting kit universal   Item No. 698511
• Cover screw + screw cover• 2 Rawlplugs • 2 Screws (countersunk head) • 2 Screws (rounded head)

»ACCESSORIES (OPTIONAL)

Bluetooth dongle USE for USEapp   Item No. 668262
Mounting base   Item No. 631228
Filter stainless steel, wire mesh   Item No. 231169