WSA RS485 Modbus

Outdoor sensor for humidity and temperature

thermokon®
HOME OF SENSOR TECHNOLOGY

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 sensor temperature + humidity – active RS485 Modbus

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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.

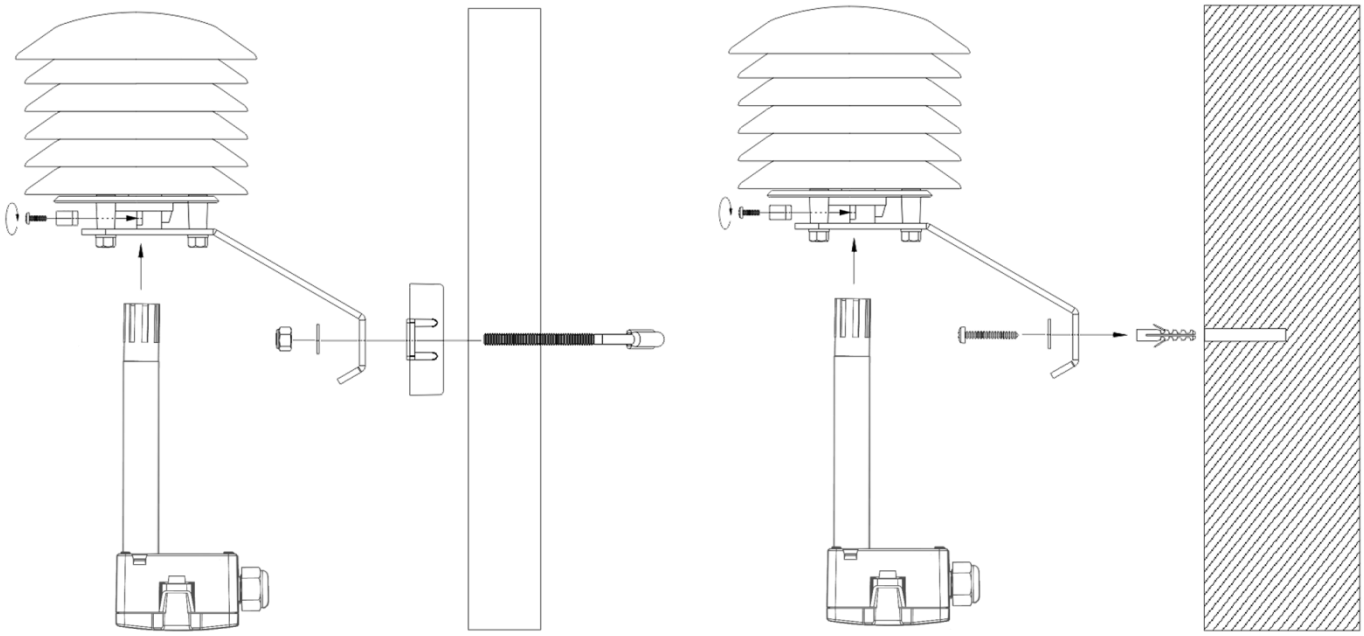
For standard environmental conditions re-calibration is recommended once a year to maintain the specified accuracy.

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 Modbus, RTU, half-duplex, baud rate 9.600, 19.200, 38.400 or 57600, parity: none (2 stopbits), even or odd (1 stopbit)	
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	

Mounting Advices



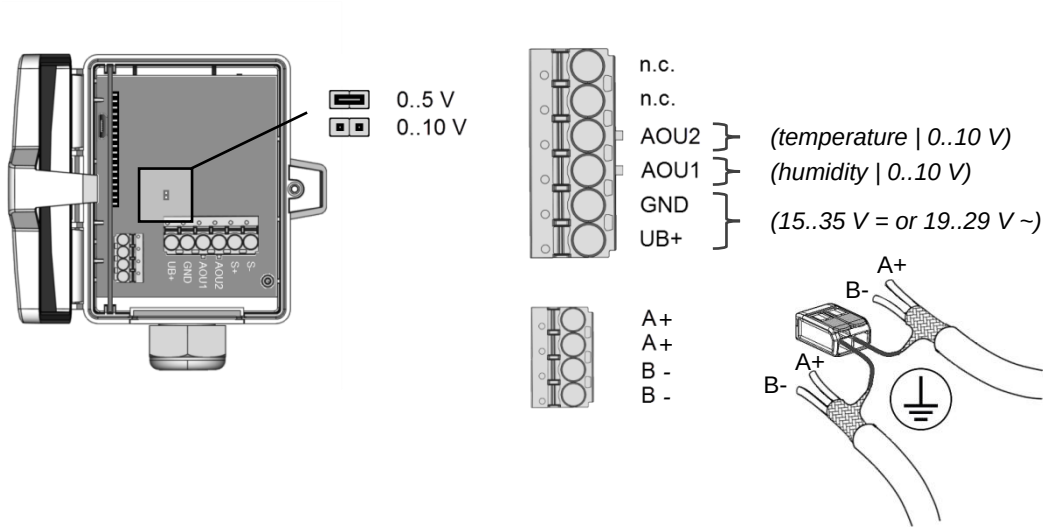
Application Notice

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.

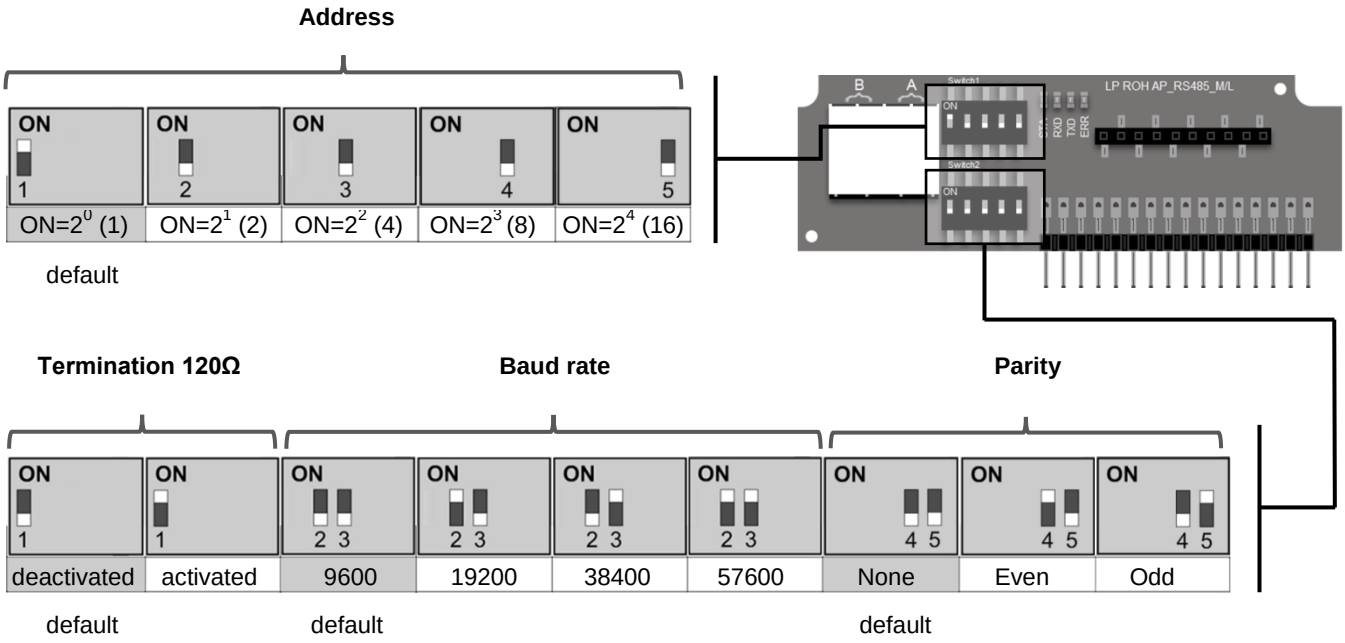
WSA **RS485 Modbus**



The modbus address of the device is set in the range of 1 ... 31 (binary encoded) using a 5-pole DIP switch. With address 0 via DIP, an extended address range (32..247) is available via USEapp.

Modbus addresses:
USE-RS485 Modbus Interface

A detailed description of the Modbus addresses can be found under the following link:
→ **Download**



Register address 400 = 1 (unit SI)

Address	Access	Description	Resolution / Unit		
0	R	**Temperature**	SI	0.1	°C
1	R	**Relative humidity**	SI	0.1	% rH

Register address 400 = 2 (unit Imperial)

Address	Access	Description	Resolution / Unit		
0	R	**Temperature**	Imperial	0.1	°F
1	R	**Relative humidity**	Imperial	0.1	% rH

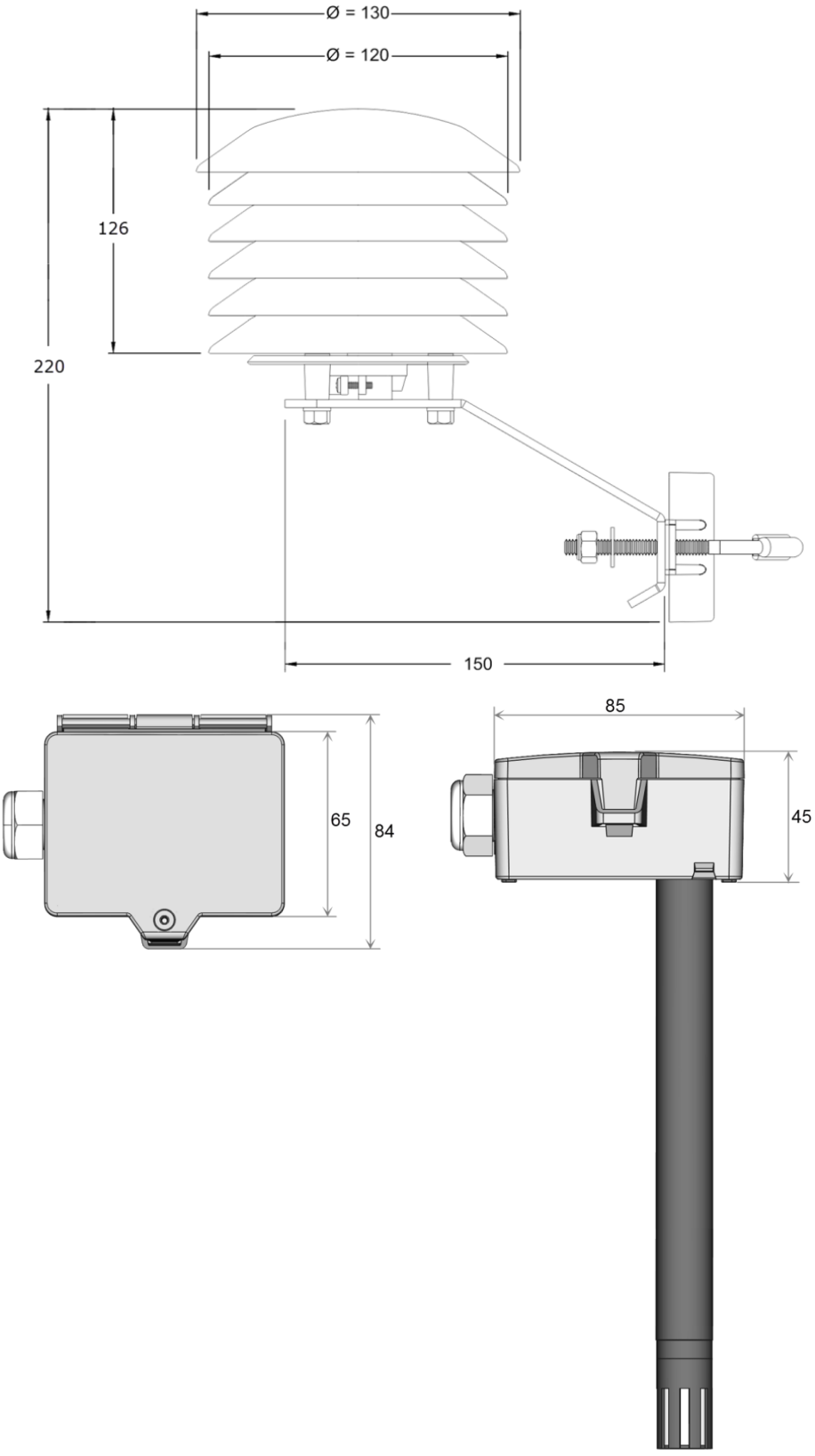
Configuration

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)

Mounting base — Item No. 631228
Filter stainless steel, wire mesh — Item No. 231169