

# WSA LRW

Outdoor sensor for relative humidity and temperature

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

## Datasheet

Subject to technical alteration  
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### » APPLICATION

Weatherproof humidity and temperature sensor for outdoor applications. The radiation shield protects the sensors from rain, hail and radiated heat. The curved shape of the plates ensure that air can move across the sensors to keep radiated temperature from rooftops and other surrounding surfaces away and guarantee proper measurement. Typical applications are meteorology, greenhouses and industrial environments. In addition to LoRaWAN®, additional analog voltage outputs are available as interfaces.

### » TYPES AVAILABLE

**Weather protection – outdoor sensor temperature + humidity – active 2x 0..10 V LRW**  
WSA Temp\_rH LRW

### » 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

### » PRODUCT TESTING AND CERTIFICATION



#### Declaration of conformity

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

### » 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

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.

Thermokon transducers can be operated with variable operating voltages. The transducers are set at the factory with a reference operating voltage of 24 V =.

At this voltage, the expected measuring error of the output signal will be the least. Other operating voltages, can cause a measurement deviation changing power loss of the sensor electronics.

A recalibration can be carried out directly on the unit or via a software variable (app or bus).

**Remark: Occurring draught 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

For standard environmental conditions re-calibration is recommended once a year to maintain the specified accuracy. A re-calibration may be required sooner than specified, or the sensor element may have to be exchanged when exposed to the following environmental conditions:

- Mechanical stress
- Contamination (dust / fingerprints e.g.)
- Abrasive chemicals
- Environmental influences (e.g. condensation on measuring element)

Re-calibration and deterioration of the humidity sensor due to environmental conditions are not subject of the general warranty.

**Refrain from touching the sensitive humidity sensor/element. Touching the sensitive surface will void warranty.**

## » USE ENCLOSURE WITH UV AND WEATHER RESISTANCE

After some time, outdoor mounted plastics can lose their color and quality. Therefore, all USE housings are made of special white polycarbonate (PC). The light-stable colorants and additives are used to achieve optimum protection of the polymer while maintaining color stability. The titanium dioxide used is specially developed for polycarbonate and offers excellent UV protection through the reflection of the entire light spectrum including the UV component by 340 nm. This effectively counteracts the otherwise occurring photochemical polymer degradation. The colors stay full for a long time without fading. The material is also resistant to cold and frost.

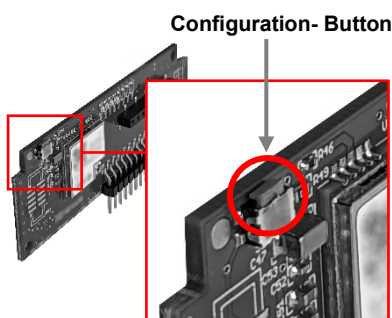
## » CONFIGURATION

**The Thermokon Bluetooth-Dongle (Item-No. 668262) is required for Communication between USEapp and USE-M/USE-L LRW-products. 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 on the website [www.thermokon.de](http://www.thermokon.de)**



1. Connect the sensor with the power supply according to wiring diagram
2. Plug in the bluetooth dongle
3. Press the button to start configuration mode.
4. Configure the sensor using the USEapp on a mobile device.
5. Disconnect the bluetooth connection.
6. Remove the bluetooth dongle off the sensor.
7. Press the button to stop configuration mode.
8. Configuration values are saved and the device is ready for use.

## » USER ADVICE



The bluetooth dongle snaps in the connector, when removing the bluetooth dongle hold the board down to prevent pulling out the board.

» **TECHNICAL DATA (TYPE-DEPENDENT)**

Measuring values	Temperature, humidity
Output voltage	2x 0..10 V or 0.5 V, min. load 10 kΩ (live-zero configuration via Thermokon USEapp)
Power supply	15..35 V = or 19..29 V ~ SELV
Power consumption	max. 2,3 W (24 V =)   max. 4,3 VA (24 V ~)
Measuring range temp.	-20..+80 °C (default setting), optionally configured via Thermokon USEapp
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,3 K (typ. at 21 °C set to standard measuring range)
Air Speed	max. 12 m/s
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Enclosure	enclosure USE-M / cover, PC, pure white, with removable cable entry
Protection	IP65 according to EN 60529
Cable entry	Flextherm M20, for wire max. Ø=4,5..9 mm (0.18..0.35 in.), removeable
Pipe	PA6, black, Ø=19,5 mm, length 140   270   400 mm
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Configuration	Thermokon USEapp, LoRaWAN® Downlink, Jumper
Ambient condition	-20..+70 °C, max. 85% rH short term condensation

» **LoRaWAN®**

Radio technology	LoRaWAN®
LoRaWAN version	1.0.2
Device class	Class A
Frequency	EU868 (863-870 MHz)
Max. transmission power	+14 dBm (25 mW)
Receiver sensitivity	-137 dBm
Antenna	Internal send- / receiver antenna, external antenna available on request
LoRaWAN Features	Over the Air Activation (OTAA), Adaptive Data Rate (ADR)
Data transmission	Configurable transmission interval, factory default value 5 min

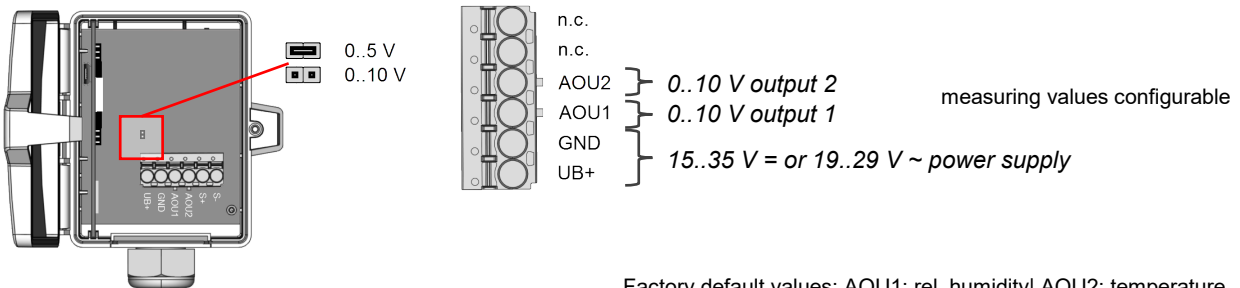
» **INFORMATION ABOUT LORAWAN SPECIFICATION**



The Thermokon LoRaWAN specification can be downloaded from our website.

» **CONNECTION PLAN**

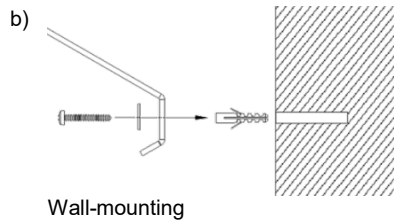
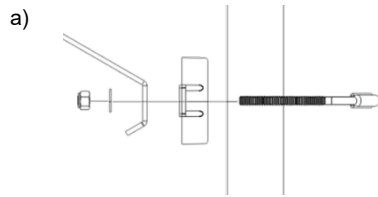
Switch off the power (or disconnect the plug in terminal) to change the output voltage range (default: 0..10 V to 0.5 V). The jumper has to be moved in de-energized state. The set output value range is ready approximately 2 seconds after restart of the device.



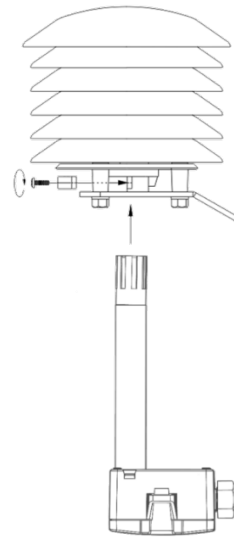
Factory default values: AOU1: rel. humidity | AOU2: temperature

## » MOUNTING ADVICES

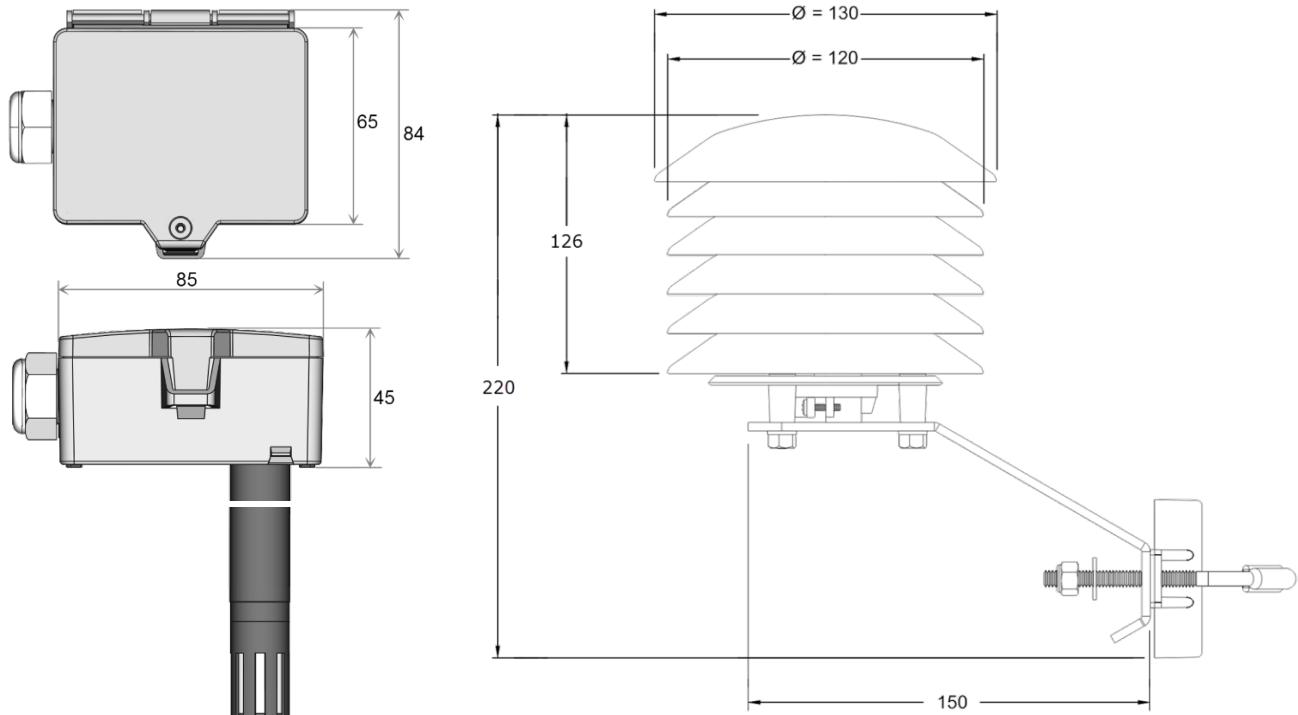
### 1. Install mounting



### 2. Insert the sensor duct and screw together



## » DIMENSIONS (MM)



## » ACCESSORIES (INCLUDED IN DELIVERY)

Mounting kit universal

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

Item No. 698511

## » ACCESSORIES (OPTIONAL)

Filter stainless steel, wire mesh (spare part)

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

Sealing insert M20 USE white, 2x Ø=7 mm (for 2 wire; PU 10 pieces)

Bluetooth dongle Micro-USB

Item No. 231169

Item No. 625241

Item No. 641333

Item No. 668262