

# FTK+ LRW

Duct sensor for air quality, optional temperature and humidity

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

## Datasheet

Subject to technical alteration  
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### » APPLICATION

Duct air quality sensor for measuring temperature and humidity. The sensor is build with 2x 0..10 V output and a LoRaWAN<sup>®</sup> radio module. Optionally available with external antenna to optimize the radio connection between device and a gateway.

### » TYPES AVAILABLE

#### Duct sensor – active 2x 0..10 V LRW

FTK+ <xxx> VV incl. MF20 (TPO)

<xxx>: 140/270/400 mm

### » 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

At regular environmental condition, it is recommended to calibrate the sensor annually to check the compliance with the accuracy required in the application. The following conditions can damage the sensor element or lead in long term to loss of the specified accuracy:

- Mechanical stress
- Contamination (e.g. dust / fingerprints)
- Aggressive chemicals
- Ambient conditions (e.g. condensation on measuring element)



**Do not touch the sensor elements!**

**Re-calibration or exchange of the sensor element are not subject of the general warranty.**

## » INFORMATION ABOUT LORAWAN SPECIFICATION



The Thermokon LoRaWAN specification can be downloaded from our website.

## » 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.

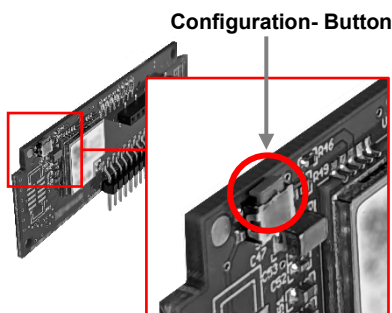
## » CONFIGURATION

**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)**



Configuration- Button

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)**

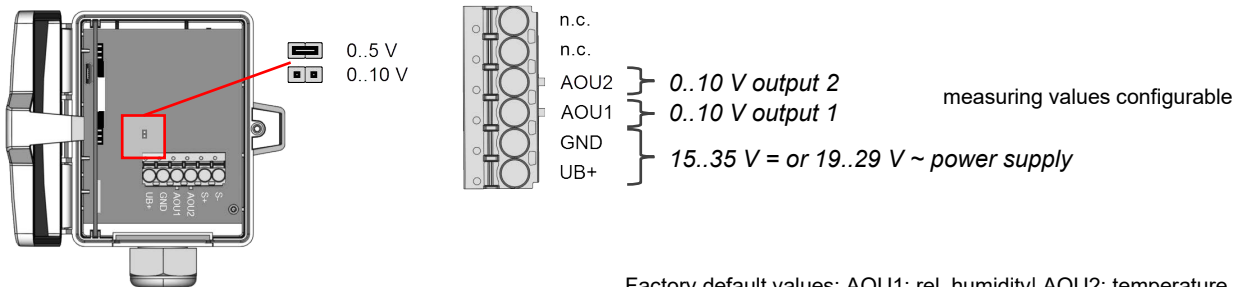
|                          |   |
|--------------------------|---|
| Measuring values         | Temperature, humidity   |
| Output voltage           | 2x 0..10 V or 0.5 V, min. load 10 kΩ (live-zero configuration via Thermokon USEapp) |
| Power supply             | 15..35 V = or 19..29 V ~ SELV   |
| 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          |

» **CONNECTION PLAN**

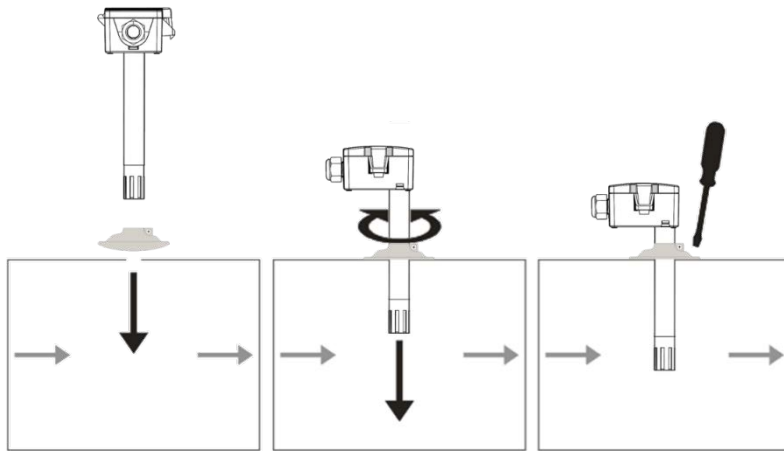
Switch off the power (or disconnect the plug in terminal) to change the output voltage range (default: 0..10 V to 0.5 V). The jumper has to be moved in de-energized state. The set output value range is ready approximately 2 seconds after restart of the device.



## » MOUNTING ADVICES

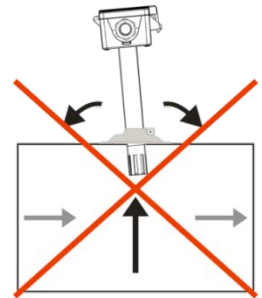
### Mounting

The sensor can be mounted into the ventilation duct with the mounting flange MF20 TPO. To prevent condensate permeation the pipe must be installed in an orientation that occurring condensate can run off.



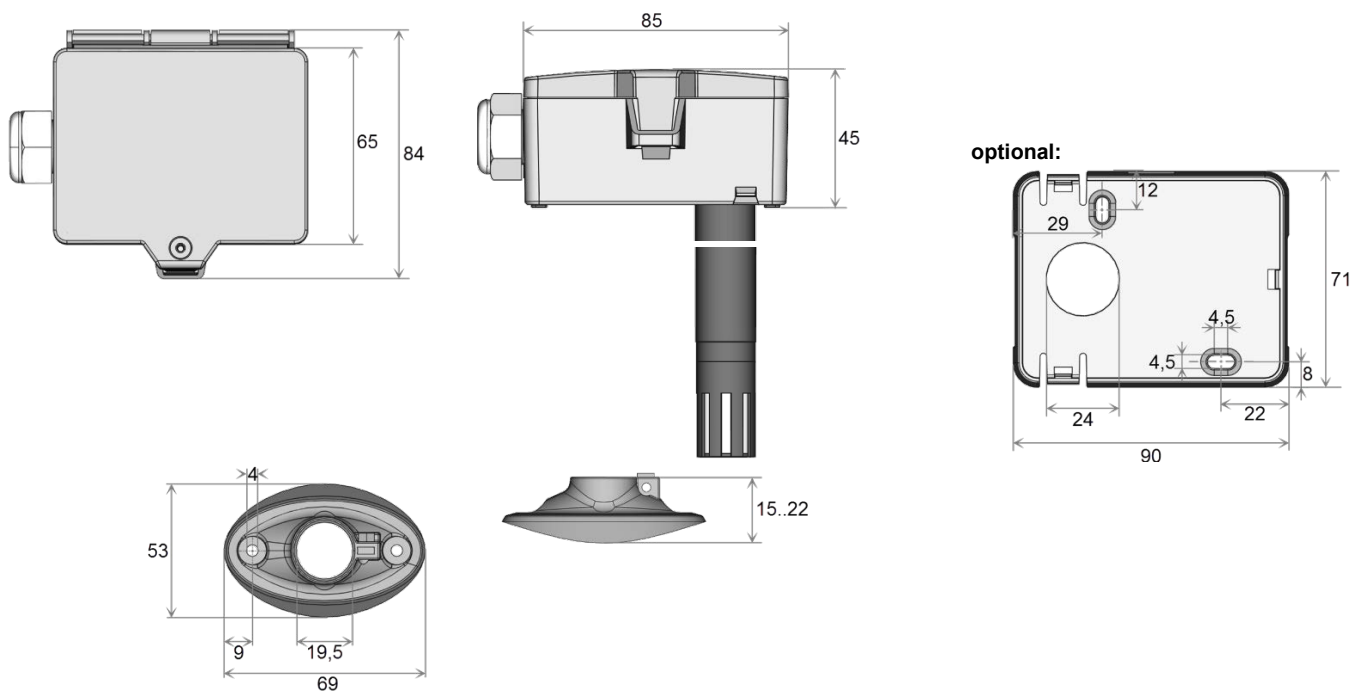
### Dismount

Remove the lower section of the sensor carefully and pulling straight out.



**Don't tilt the sensor during mounting / dismounting!**

## » DIMENSIONS (MM)



## » ACCESSORIES (INCLUDED IN DELIVERY)

Mounting flange MF20 TPO  
 Mounting kit universal  
 • Cover screw + screw cover • 2 Rawlplugs • 2 Screws (countersunk head) • 2 Screws (rounded head)

Item No. 612562

Item No. 698511

## » ACCESSORIES (OPTIONAL)

Mounting base  
 Filter stainless steel, wire mesh (spare part)  
 Rawlplugs and screws (2 pcs each)  
 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. 631228

Item No. 231169

Item No. 102209

Item No. 625241

Item No. 641333

Item No. 668262