

# FTK+ (LCD) (Relay)

Duct sensor for humidity and temperature

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

## Datasheet

Subject to technical alteration  
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The following illustrations show the version with LCD

## » APPLICATION

Duct sensor for measuring humidity and temperature in gaseous media of heating, ventilation and air-conditioning systems. In delivery condition, the sensor is designed for measuring temperature and relative humidity. Alternatively the output can be set to absolute humidity, enthalpy or dew point (changeable using Thermokon USEapp). LCD models with RGB background light have a transparent cover. Display configuration and threshold values for color changes can be parameterized via Thermokon USEapp. With the option board relay two-point controllers or a 2-stage 2-point controller for temperature or humidity can be realized. A mounting flange and fixing material are included in delivery.

## » TYPES AVAILABLE

### Duct humidity sensor with display temperature + humidity – active 2x 0..10 V

- FTK+ 140 LCD VV incl. MF20
- FTK+ 270 LCD VV incl. MF20
- FTK+ 400 LCD VV incl. MF20

### Duct humidity sensor with display temperature + humidity – active 2x 4..20 mA

- FTK+ 140 LCD AA incl. MF20
- FTK+ 270 LCD AA incl. MF20
- FTK+ 400 LCD AA incl. MF20

### Duct humidity sensor optional with display temperature + humidity – active 2x 0..10 V + relay

- FTK+ 140 (LCD) VV Relay incl. MF20
- FTK+ 270 (LCD) VV Relay incl. MF20
- FTK+ 400 (LCD) VV Relay incl. MF20

Options: Additional passive temperature sensor (type VVS|AAS)

eg: PT100/PT1000/NI1000/NI1000TK5000/NTC10K... and other sensors on request

## » 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 are available on our website  
<https://www.thermokon.de/direct/en-gb/categories/ftkplus>

## » NOTES ON DISPOSAL



The crossed-out wheellie bin symbol indicates that the product or removable batteries must not be disposed of with household or commercial waste. Within the EU, you are legally obliged to dispose of the product separately and appropriately in accordance with the national laws of your country. Alternatively, please contact your supplier or Thermokon Sensortechnik GmbH. Further information can be found at: [www.thermokon.de](http://www.thermokon.de)

## » 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.**

» **TECHNICAL DATA**

|   |  |   |
|---|--|---|
| Measuring values                                    | temperature, humidity (humidity output configurable)   |   |
| Output voltage<br><i>(type-dependent)</i>           | <b>VV</b><br>2x 0..10 V or 0..5 V, min. load 10 k $\Omega$ (live-zero configuration via Thermokon USEapp)        |   |
| Output Amp<br><i>(type-dependent)</i>               | <b>AA</b><br>2x 4..20 mA, max. load 500 $\Omega$   |   |
| Output switching contact<br><i>(type-dependent)</i> | <b>Relay</b><br>2 floating contacts for 24 V ~ or 24 V = / 3 A   |   |
| Power supply*                                       | <b>VV</b><br>15..35 V = or 19..29 V ~ SELV   | <b>AA</b><br>15..35 V = SELV  |
| Power consumption                                   | max. 2,3 W (24 V =)   4,3 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                                | typ. 0,3 K (typ. at 21 °C)   |   |
| Accuracy humidity                                   | $\pm$ 2% between 10..90% rH (typ. at 21 °C)  |   |
| Air speed   | max. 12 m/s  |   |
| Display<br><i>(optional with type relay)</i>        | LCD 29x35 mm with RGB backlight  |   |
| Enclosure   | enclosure USE-M, PC, pure white, with removable cable entry, LCD: cover PC, transparent                          |   |
| Protection  | IP65 according to EN 60529   |   |
| Cable entry<br><i>(type-dependent)</i>              | <b>VV   AA</b><br>Flextherm M20, for wire $\varnothing$ =4,5..9 mm, removable                                    | <b>Relay</b><br>M25 with fourfold cable entry for wire with max. $\varnothing$ =7 mm, removable |
| Connection electrical                               | removable plug-in terminal, max. 2,5 mm <sup>2</sup>   |   |
| Pipe  | PA6, black, $\varnothing$ =19,5 mm, length=140   270   400 mm  |   |
| Filter  | stainless steel wire mesh  |   |
| Ambient condition                                   | -20..+70 °C, max. 85% rH short term condensation   |   |
| Notes   | additional passive sensor available (type VVS   AAS)   |   |

» **CONFIGURATION**

The Thermokon bluetooth dongle with micro-USB (Item No.: 668262) is required for communication between USEapp and USE-M / USE L 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 in the Google Play Store or in the Apple App Store.

» **APPLICATION NOTICE**

The Bluetooth dongle snaps into the socket easily. When removing, please fix the plug-in card (option PCB) so that it is not unintentionally pulled out.

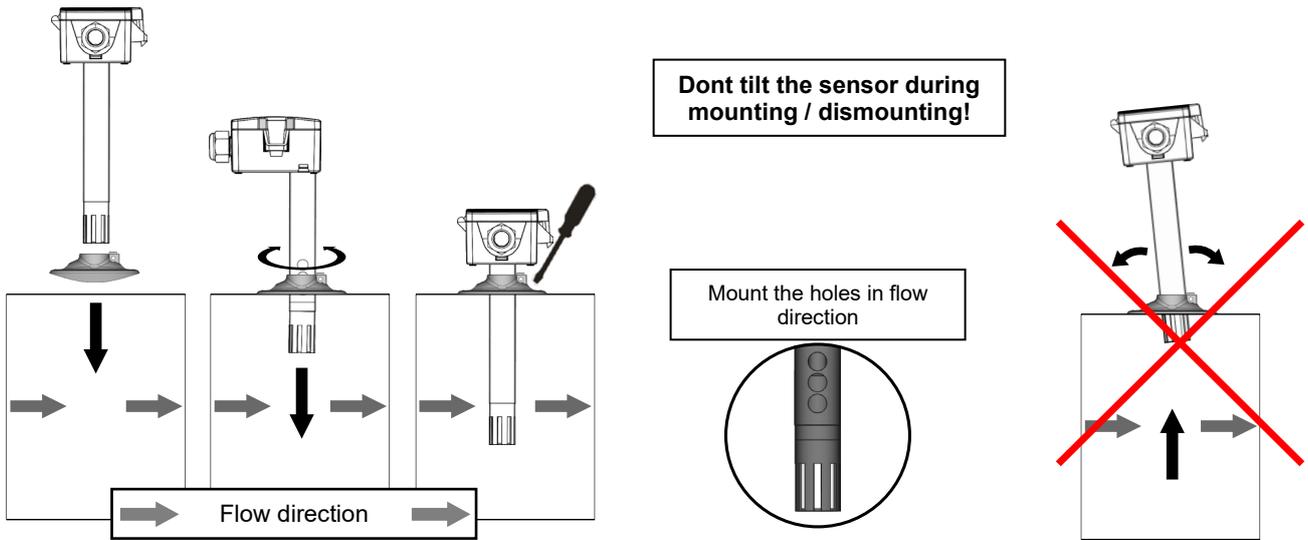


After a certain time, dirt in the air can collect on the filter and then adversely affect the operation of the sensor. Under normal ambient condition an annual maintenance is recommended. Rinse the filter after cleaning with distilled water and dry it using clean oil-free air or nitrogen. Extremely contaminated filters should be replaced. At extreme ambient conditions, e.g. corrosive gases, the humidity sensor may have to be changed.

» MOUNTING ADVICES

The sensor can be mounted on the ventilation duct by means of the mounting flange MF20 TPO (optional with mounting base). **Align the openings on the sensor tube according to the flow direction.** To prevent condensate permeation the pipe must be installed in an orientation that occurring condensate can run off.

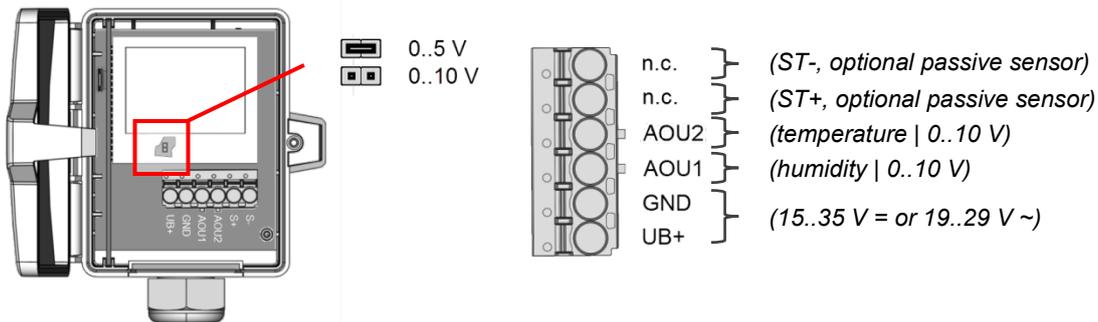
Remove the lower section of the sensor carefully and pulling straight out.



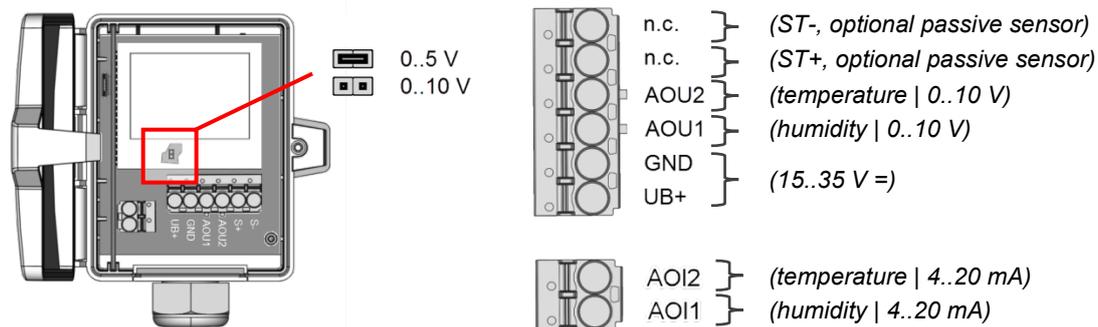
» CONNECTION PLAN

To change the output voltage range (default 0..10 V to 0..5 V) via jumper, the display must be removed from the board first.

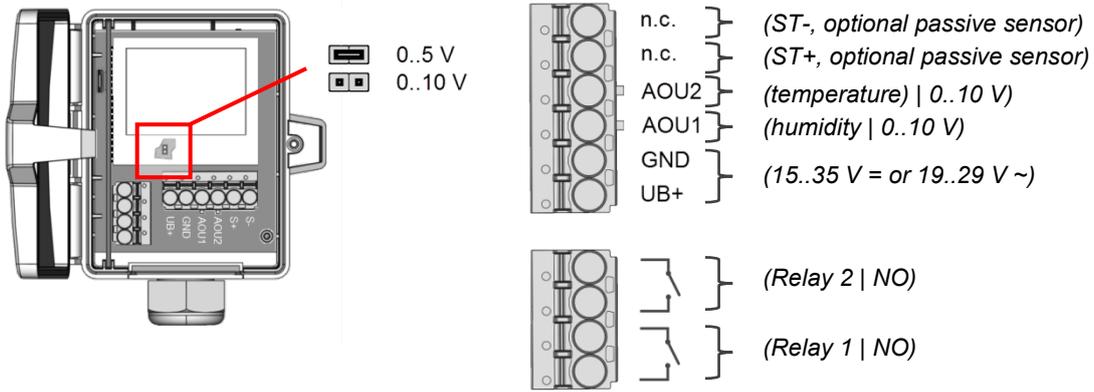
FTK+ LCD VV



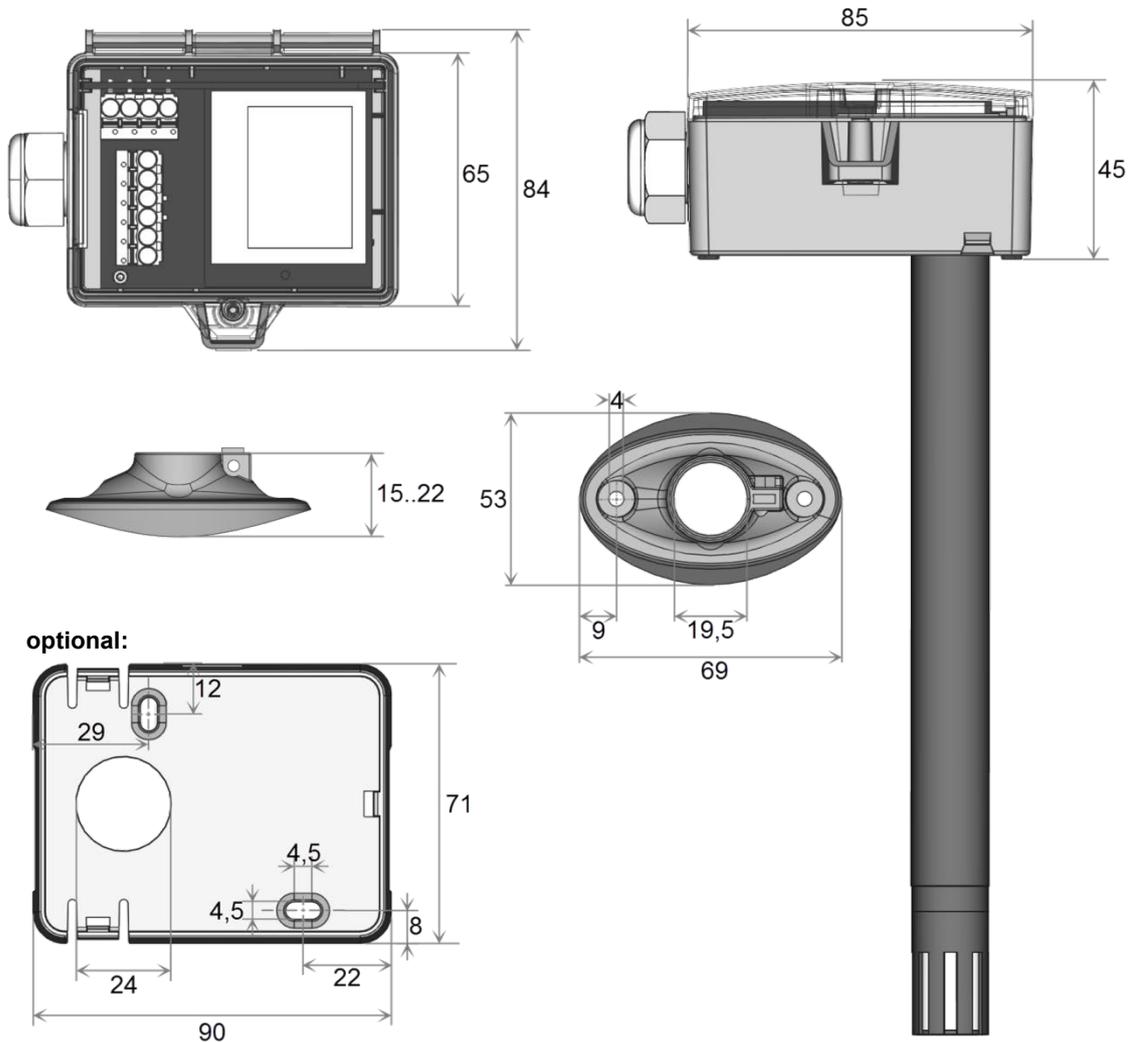
FTK+ LCD AA



**FTK+ (LCD) VV Relay**



**» DIMENSIONS (MM)**



**» ACCESSORIES (INCLUDED IN DELIVERY)**

Mounting flange MF20  
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)**

Bluetooth dongle  
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)  
Mounting base  
Filter stainless steel, wire mesh  
Sealing insert M20 USE white, 2x Ø=7 mm (for 2 wire; PU 10 pieces)

Item No. 668262  
Item No. 641364  
Item No. 631228  
Item No. 231169  
Item No. 641333