FTK+ LCD

Duct sensor for humidity and temperature

thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
Issue date: 10.05.2017

USEapp

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 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

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.

General remarks concerning sensors

Especially with regard to passive sensors in 2-wire conductor versions, the wire resistance of the supply wire has to be considered. If necessary the wire resistance has to be compensated by the follow-up electronics. Due to self-heating, the wire current affects the measurement accuracy, so it should not exceed 1 mA.

When using lengthy connection wires (depending on the cross section used) the measuring result might be falsified due to a voltage drop at the common GND-wire (caused by the voltage current and the line resistance). In this case, 2 GND-wires must be wired to the sensor - one for supply voltage and one for the measuring current.

Sensing devices with a transducer should always be operated in the middle of the measuring range to avoid deviations at the measuring end points. The ambient temperature of the transducer electronics should be kept constant. The transducers must be operated at a constant supply voltage (±0,2 V). When switching the supply voltage on/off, onsite power surges must be avoided.

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 a trimming potentiometer on the sensor board.

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.

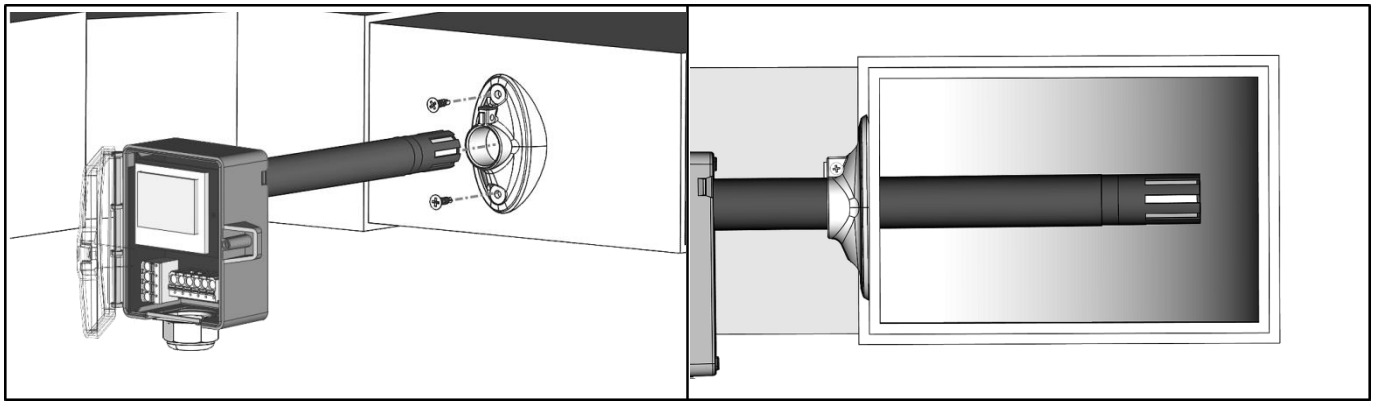
When exposed to high ambient temperature and/or high levels of humidity or presence of aggressive gases (i.e. chlorine, ozone, ammonia) the sensor element may be affected and re-calibration may be required sooner than specified. Re-calibration and deterioration of the humidity sensor due to environmental conditions are not subject of the general warranty.

Technical Data

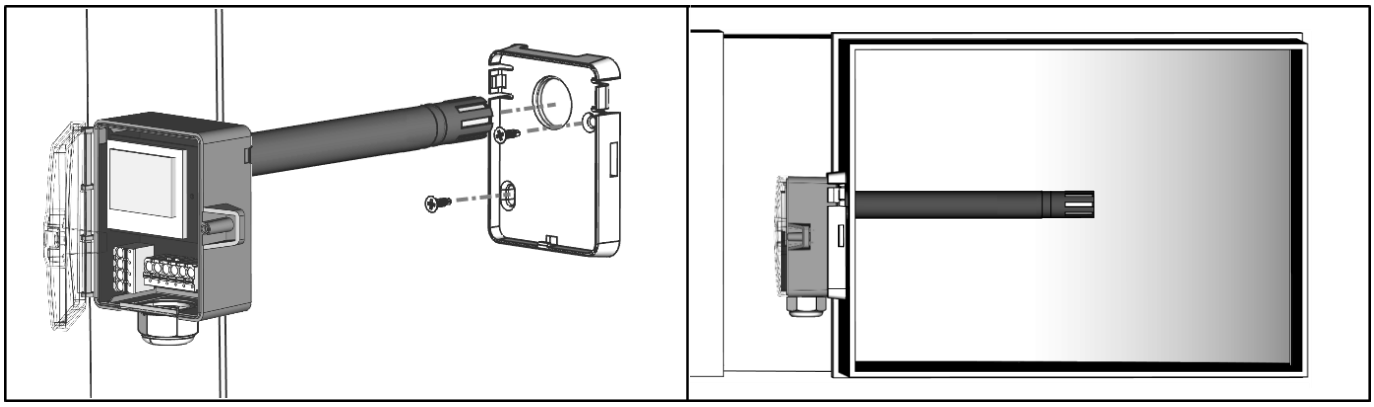
Measuring values		temperature, humidity (humidity output configurable)
Output voltage		2x 0..10 V or 0..5 V, min. load 10 kΩ (live-zero configuration via Thermokon USEapp)
Output Amp	AA	2x 4..20 mA, max. load 500 Ω
Output switching contact	Relay	2 floating contacts for 24 V ~ or 24 V = / 3 A
Power supply		15..35 V = or 19..29 V ~,
	AA	15..35 V =
Power consumption		max. 2,3 W (24 V =) | 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, optionally configured via Thermokon USEapp (enthalpy, absolute humidity, dew point)
Accuracy temperature		typ. 0,3 K (typ. at 21 °C)
Accuracy humidity		±2% between 10..90% rH (typ. at 21 °C)
Air speed		max. 12 m/s
Display		LCD 29x35 mm with RGB backlight
Enclosure		enclosure USE-M, PC, pure white, cover PC, transparent, with removable cable entry
Protection		IP65 according to EN 60529
Cable entry	VV | AA	M16 for cable max. Ø=8 mm
	Relay	M20 for cable max. Ø=10 mm, seal insert for double cable entry for wire max Ø=6 mm
Connection electrical		removable plug-in terminal, max. 2,5 mm²
Pipe		PA6, black, Ø=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)

Mounting Advices

The sensor can be mounted on the ventilation duct by means of the mounting flange MF20 TPO (optional with mounting base).

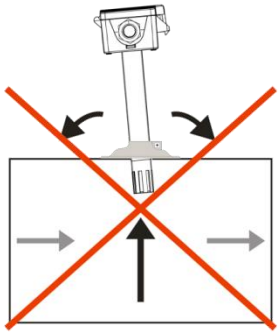


optional:



Dismounting Advices

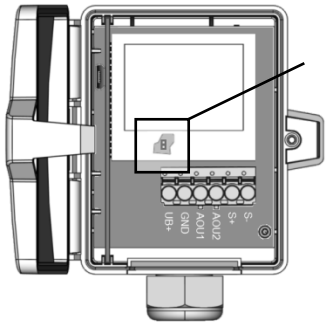
Remove the lower section of the sensor carefully and pulling straight out. **Pay close attention to the correct dismantling of the component!**



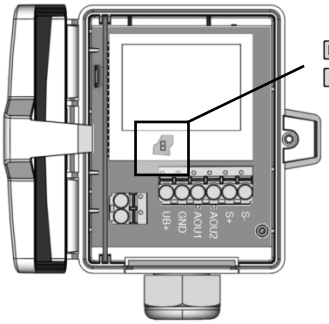
Connection Plan

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.

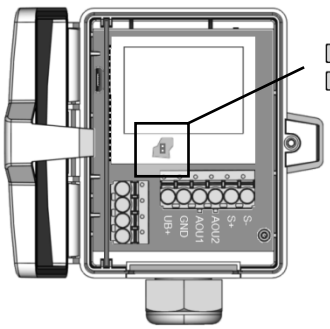
FTK+ **LCD VV**



FTK+ **LCD AA**



FTK+ **LCD VV Relay**



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.

Configuration

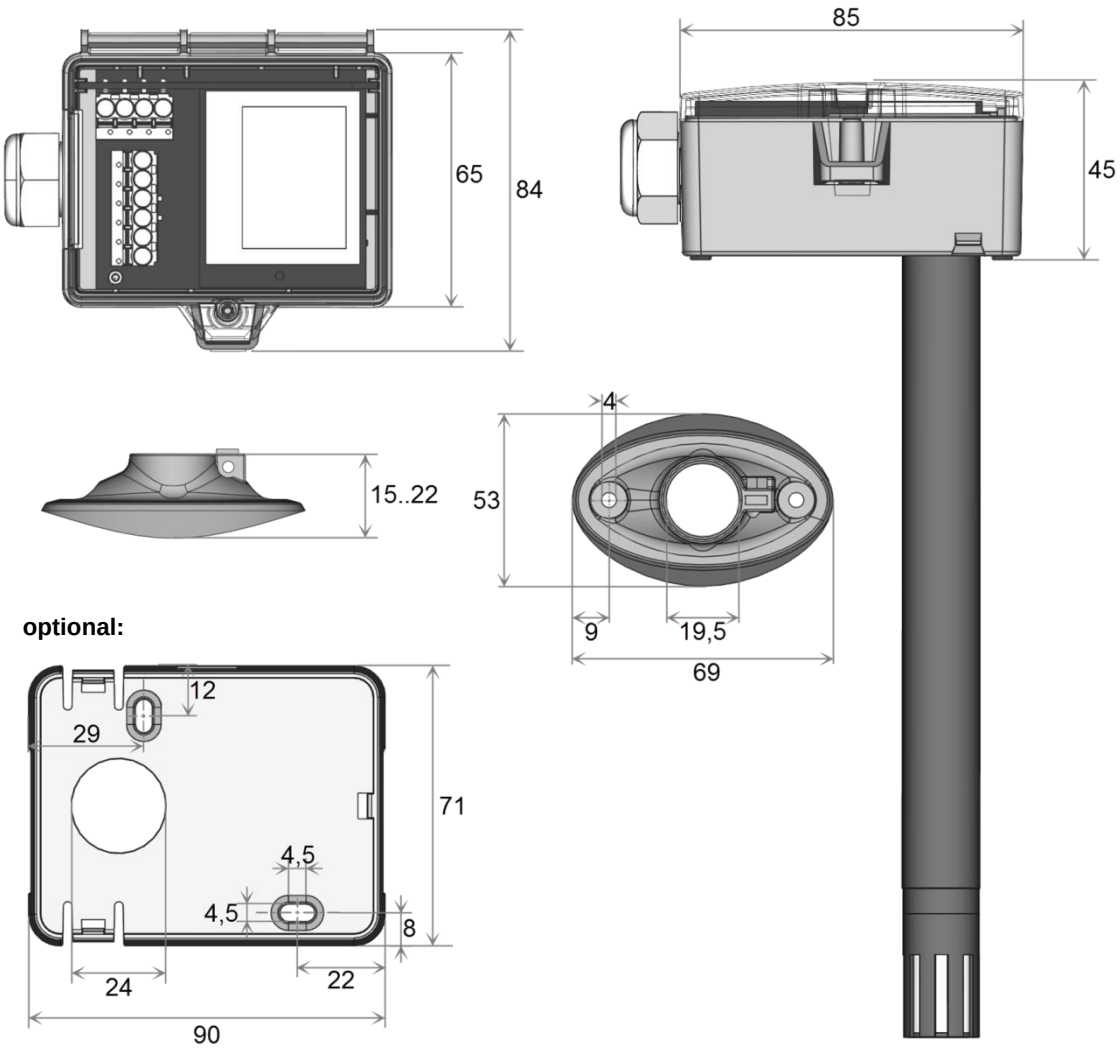
The Thermokon bluetooth dongle with micro-USB is required for communication between USEapp and USE-M / USE L (Item No..: 668262). Commercial bluetooth dongles are not compatible.

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 download area of our webpage.

→ **Download (APK-file for Android)**

Dimensions (mm)



Accessories (included in delivery)

Mounting flange MF20 — Item No. 612562

Mounting kit 2 **(only version VV & AA)** — Item No. 640503

- Cable entry M16
- Cover screw
- 2 Screws (rounded head)

Mounting kit 3 **(only version Relay)** — Item No. 674133

- Cable entry M20
- seal insert for double cable entry 2x 6 mm
- Cover screw
- 2 Screws (rounded head)

Accessories (optional)

Bluetooth dongle — Item No. 668262

Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs) — Item No. 641364

Mounting base — Item No. 631228

Filter stainless steel, wire mesh — Item No. 231169

M16 Sealing inserts cable entry (packaging unit 10 pcs.)

for wire with Ø	3 mm	5 mm	7 mm	8 mm
Item No	641036	641012	639248	641340

M20 Sealing inserts cable entry (packaging unit 10 pcs.)

for wire with Ø	2x6 mm	2x7 mm	6 mm	8 mm
Item No	641319	641333	641074	641081