LK+ VOC (LCD) (Temp_rH)

Duct sensor for air quality, optional temperature and humidity

thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

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The following illustrations show the version with LCD

» APPLICATION

Duct air quality sensor for detection of VOC air quality, and optional humidity combined in one unit. Designed for duct mounted applications with up to 3 0..10 V outputs. The sensor consists of a transmitter with VOC sensor, based on a heated tin oxide semiconductor. With the option board relay two-point controllers or a 2-stage 2-point controller for temperature or humidity can be realized.

» TYPES AVAILABLE

Duct sensor VOC, optional with LCD – active 2x 0..10 V | 2x 4..20 mA | Relay

- LK+ VOC (LCD) VV
- LK+ VOC (LCD) AA
- LK+ VOC (LCD) VV Relay

optionally with shorter sensor tube, Type 100

- LK+ VOC (LCD) 100 VV
- LK+ VOC (LCD) 100 AA
- LK+ VOC (LCD) 100 VV Relay

Duct sensor VOC + temp +rH (opt.), optional with LCD – active 3x/4x 0..10 V

- LK+ VOC (LCD) Temp 3xV
- LK+ VOC (LCD) Temp_rH 4xV

optionally with shorter sensor tube, Type 100

- LK+ VOC (LCD) 100 Temp 3xV
- LK+ VOC (LCD) 100 Temp_rH 4xV

Options: additional passive temperature sensor
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/ .

»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

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.

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 therm 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.

»APPLICATION NOTICE FOR AIR QUALITY SENSORS VOC

Volatile organic compunds (VOC) are gaseous and vaporous substances of organic origin in the air. VOC-sensors monitor the significant part of humanly olfactory sensed air quality. (e.g. body odur | tobacco smoke | odur of materials, furniture, carpets, paint, adhesives, …)

The VOC-Value is an application-specific indication for air quality and doesn't provide any information about individual components of VOC

A VOC sensor oxidises the organic molecules that collide with it, which results in changing the resistance of the semiconductor.

Any contact with the sensitive sensors must be avoided and will invalidate the warranty.

The VOC Sensor is factory calibrated and can be calibrated via USEapp subsequently, if needed.

»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.

»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.

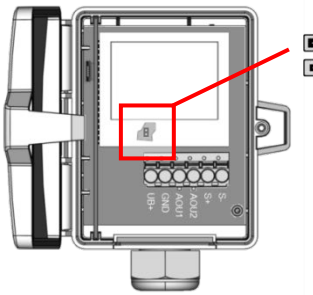
»TECHNICAL DATA

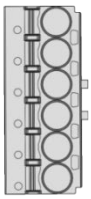
Measuring values	VOC, temperature + humidity (depending on the device)	
Output voltage	1..3x 0..10 V or 0..5 V, min. load 10 kΩ (live-zero configuration via Thermokon USEapp)	
Output Amp *(type-dependent)*	**AA** 2x 4..20 mA, max. load 500 Ω	
Output passive *(optional)*	**passive** Options: additional passive temperature sensor eg: PT100/PT1000/NI1000/NI1000TK5000/NTC10K... and other sensors on request	
Output switch contact *(type-dependent)*	**Relay** 2 floating contacts for 24 V ~ or 24 V = / 3 A	
Power supply *(type-dependent)*	**V | VV | 3xV | Relay** 15..35 V = or 19..29 V ~ SELV	**AA** 15..35 V = SELV
Power consumption	max. 2,3 W (24 V =) | max. 4,3 VA (24 V ~)	
Measuring range temp. *(type-dependent)*	**VV | 3xV** 0..+50 °C (default setting), optionally configured via Thermokon USEapp	
Measuring range humidity *(type-dependent)*	**3xV** 0..100% rH non-condensing, optionally configured via Thermokon USEapp (enthalpy, absolute humidity, dew point)	
Accuracy temperature *(type-dependent)*	**VV | AA | 3xV | Relay** ±0,5 K (typ. at 21 °C)	**passive** depending on used sensor
Accuracy humidity *(type-dependent)*	**3xV** ±2% between 10..90% rH (typ. at 21 °C)	
Air speed	min. 0,3 m/s, max. 12 m/s	
Calibration	self-calibration	
Sensor	VOC sensor (heated metal oxide semiconductor)	
Display *(optional)*	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 *(type-dependent)*	**V | VV | AA | 3xV** Flextherm M20, for wire Ø=4,5..9 mm, removable	**Relay** M25 with fourfold cable entry for wire with max. Ø=7 mm, removable
Pipe *(type-dependent)*	**V** PA6, black, Ø=19,5 mm, length 150 mm **Type 100** Length 70 mm	**VV | AA | VV Relay | 3xV** PA6, black, Ø=19,5 mm, length 180 mm **Type 100** Length 100 mm
Connection electrical	removable plug-in terminal, max. 2,5 mm²	
Ambient condition	0..+50 °C, max. 85% rH short term condensation	
Mounting	installation is also possible using mounting base	
Notes	mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue ...)	

»CONNECTION PLAN

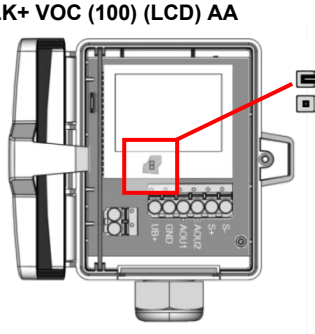
To change the output voltage range (default: 0..10 V to 0..5 V) via jumper, the display must be removed from the board.

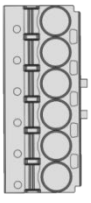
LK+ VOC (LCD) VV



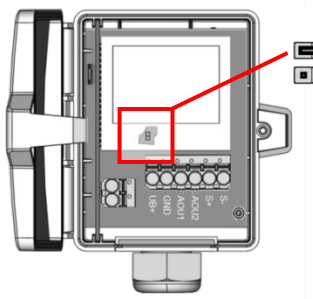


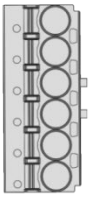
LK+ VOC (100) (LCD) AA



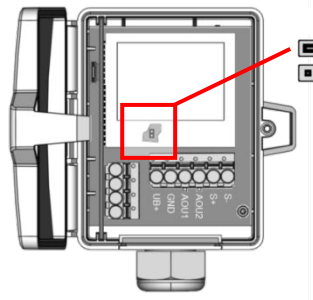


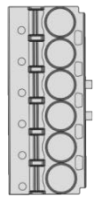
LK+ VOC (100) (LCD) 3xV

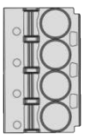




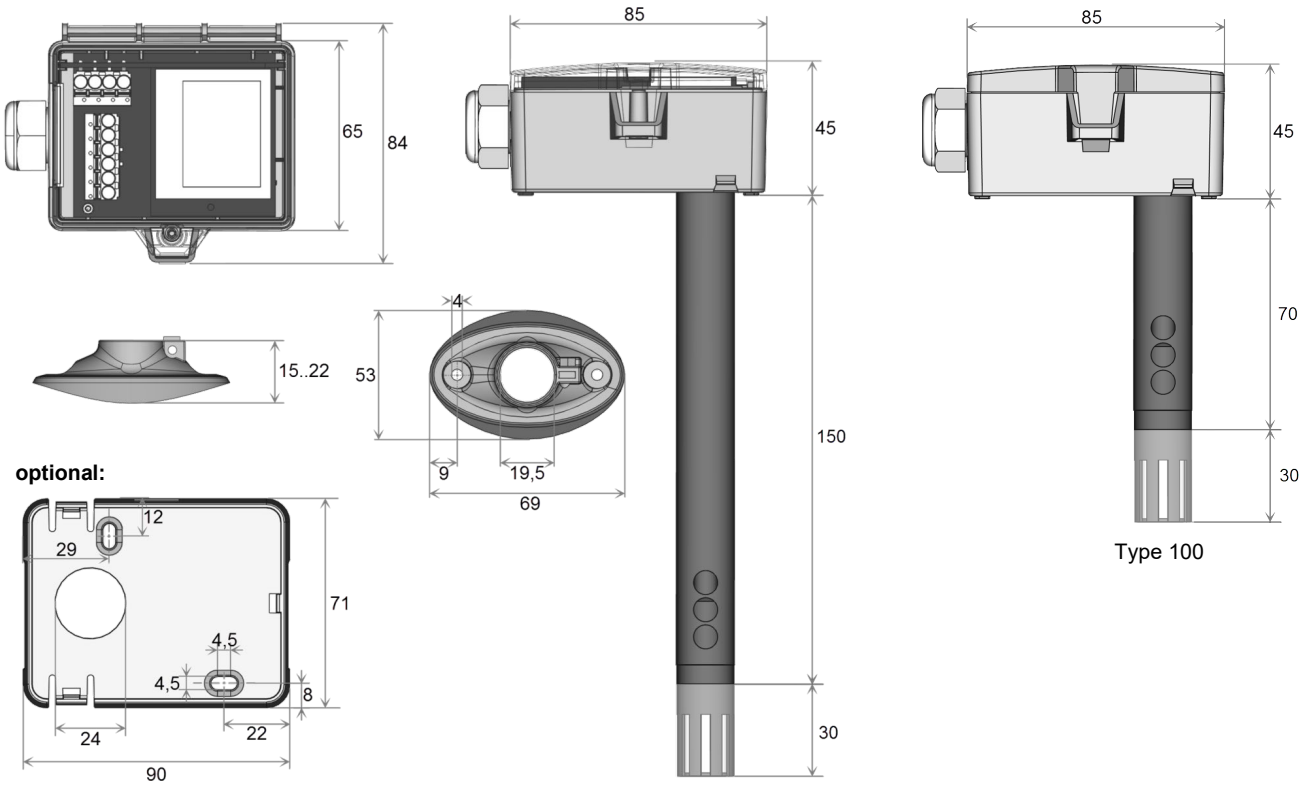
LK+ VOC (100) (LCD) VV Relay







»DIMENSIONS (MM)



»ACCESSORIES (INCLUDED IN DELIVERY)

Mounting base	Item No. 631228
Mounting kit universal	Item No. 698511

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

»ACCESSORIES (OPTIONAL)

Sealing insert M20 USE white, 2x Ø=7 mm (for 2 wire; PU 10 pieces)	Item No. 641333
Bluetooth dongle	Item No. 668262