LK-SX CO_2+VOC

Sensor for detection of carbon dioxide (CO_2)
and mixed gas content in air ducts

thermokon Sensortechnik GmbH

Data sheet

Subject to technical alteration
Issue date: 24.08.2015

Application

For detection of CO2 and VOC. Designed for duct mounted applications with up to 2 0..10 V outputs.

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.

Information about Indoor Air Quality CO_2

EN 13779 defines several classes for indoor air quality:

Category	CO_2 content above the content in outdoor air in ppm		Description
	Typical range	Standard value	
IDA1	<400 ppm	350 ppm	Good indoor air quality
IDA2	400.. 600 ppm	500 ppm	Standard indoor air quality
IDA3	600..1.000 ppm	800 ppm	Moderate indoor air quality
IDA4	>1.000 ppm	1.200 ppm	Poor indoor air quality

Information about Self-Calibration Feature CO_2

All gas sensors are subject to drift caused by components. This fact results generally in the need to recalibrate the sensors regularly.

With dual channel technology Thermokon integrates automatic self-calibration for different fields of operation. In contrast to common used ABC-Logic sensors with self-calibration dual channel are suitable for applications operating 24 hours, 7 days a week as for example hospitals.

Manual calibration is not necessary!

Application Notice for Air Quality Sensors VOC

Unlike CO_2 sensors, which specifically measure CO_2, mixed gas sensors detect a wide range of gases. The sensor signal does not indicate the type of gas or it's concentration in ppm. Mixed gas sensors detect gases and vapours consisting of carbohydrates, or more generally gases that can be oxidised (burnt): Odours, perfume, cleaning fluid scent, tobacco smoke, new materials fumigations (furniture, carpets, paint, glue ...).

Unlike CO_2, which humans cannot sense, the amount of odours (VOC) indicates the level of air quality. VOC sensors have proven their value in a multitude of applications for many years.

Measuring principle:

Similar to a catalyst converter the organic molecules are burnt (oxidized) when in contact with the sensor's heated -dioxide surface, adding a small amount of heat combustion. The increased temperature is measured providing a signal proportional to the number of molecules being burnt. CO_2 cannot be detected as it cannot be further oxidized.

Refrain from touching the sensor's element sensitive surface. Touching the sensitive surface element will void warranty.

Information about Calibration VOC

Similar to a catalyst converter the VOC sensor will deteriorate over time, which will affect the sensitivity. This VOC sensor automatically compensates the decrease in sensitivity by dynamic auto-calibration.

The reference level of air quality is derived from the ambient conditions over a 72h period. The lowest reading within this 72h time period will be used as reference level, representing the "clean and fresh air level".

Technical Data

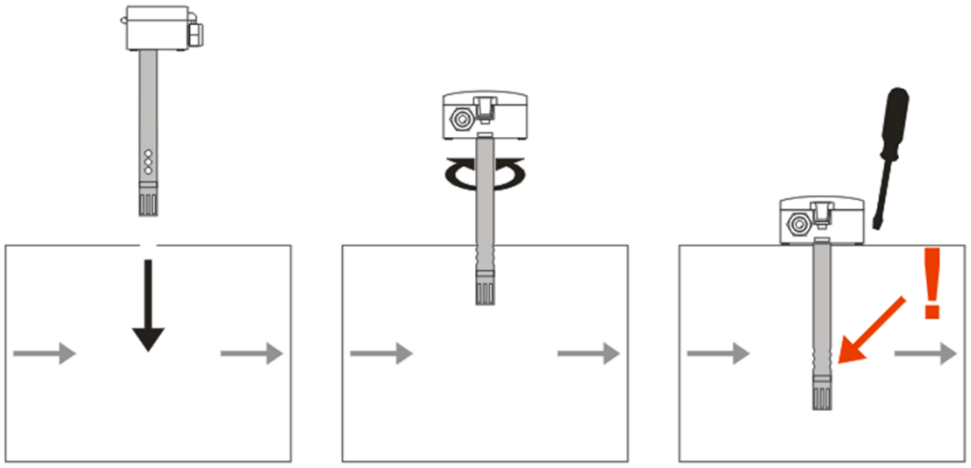
Measuring values	CO2, VOC
Output voltage	2x 0..10 V, load min. 10 kΩ
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	max. 1,5 W (24 V =) | 2,9 VA (24 V ~)
Measuring range velocity	0..100%
Measuring range CO2	0..2000 ppm
Accuracy CO2	±75 ppm or ±10% of measured value
Calibration	Self calibration dual channel (CO2)
Air speed	min 3 m/sec, max 10 m/sec
Sensor	VOC-Sensor, NDIR (non-dispersive infrared)
Enclosure	PA6, pure white
Protection	IP54 according to EN 60529, IP65 with bolted cover
Cable entry	M20 for wire max 8 mm
Connection electrical	Terminal block max 1,5 mm²
Pipe	PA6, black, Ø=19,5 mm, L =180 mm
Filter	stainless steel, wire mesh
Ambient condition	0..+50 °C, max 85% rH non-condensing
Weight	400 g
Delivery content	MF20 flange
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 ...)

Mounting advices

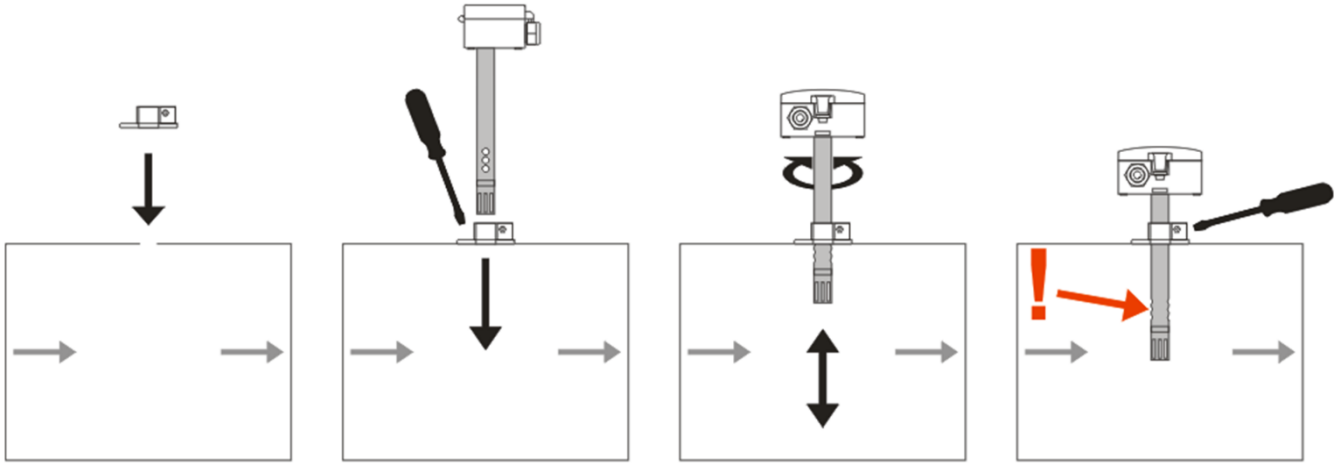
The sensor can be mounted on a flange (recommended) or directly into the ventilation duct.

Please note that during installation the openings of the pipe are mounted in the direction of air flow!

Mounting without and with mounting flange:



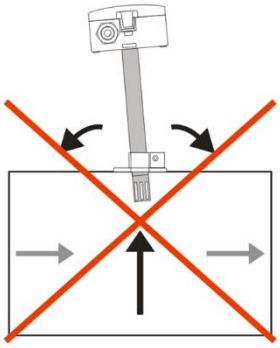
Mounting with mounting flange



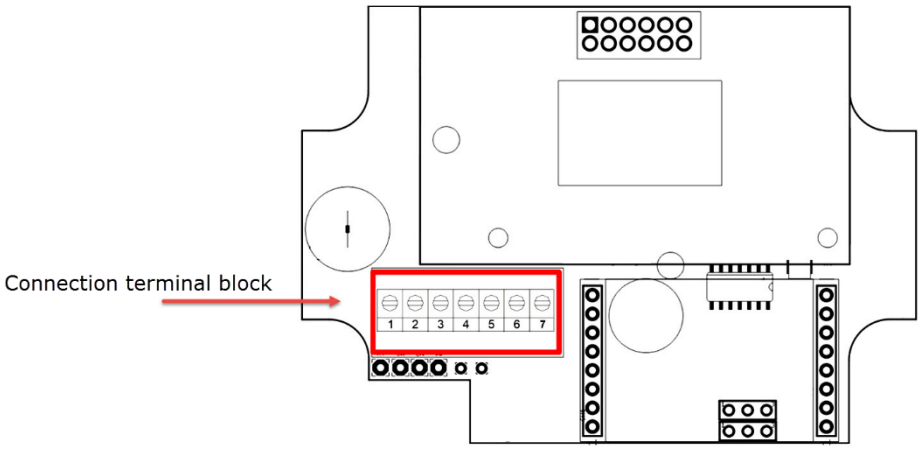
Dismounting Advices

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

Pay close attention to the correct dismantling of the component!



Connection Plan



Clamp	Function
1	24 V
2	GND
3	Not used
4	Not used
5	Not used
6	output CO2 0..10 V
7	output VOC 0..10 V

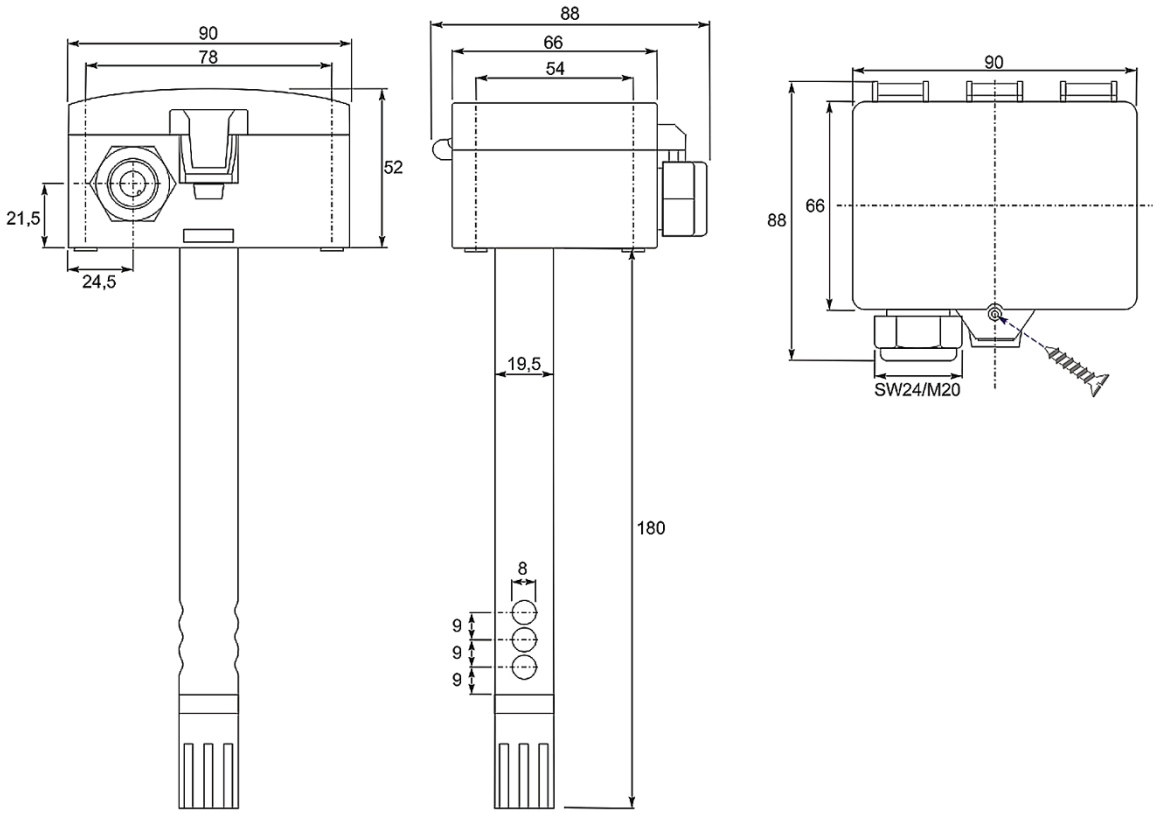
Application notice

Dirt in the air can collect on the filter and then adversely affect the operation of the sensor after a certain time.

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.

Dimensions (mm)



Accessories

Rawl plugs and screws (2 pcs each)	Item No. 102209
Filter stainless steel, wire mesh	Item No. 231169
Mounting flange MF20 TPO	Item No. 612562