LA+ VOC RS485 BACnet

Outdoor sensor for air quality

thermokon®

HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
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Application

Air quality sensor for detection of VOC air quality for outdoor measurement: cold rooms, greenhouses, production plants and warehouses. The sensor consists of a transmitter with VOC sensor, based on a heated tin oxide semiconductor. Designed for outdoor mounted applications with 1 0..10 V outputs.

Types Available

Outdoor sensor VOC – active RS485 BACnet MS/TP

LA+ VOC RS485 BACnet

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.

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

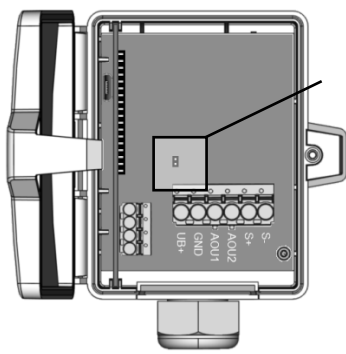|		
Measuring values	CO2	
Output voltage	0..10 V or 0..5 V, min load 10 kΩ (live-zero configuration via Thermokon USEapp)	
Network technology	RS485 BACnet MS/TP	
Power supply	15..35 V = or 19..29 V ~ SELV	
Power consumption	max. 2,5 W (24 V =) | 4,3 VA (24 V ~)	
Calibration	self-calibration, Dual Channel	
Sensor	NDIR (non-dispersiv, infrared)	
Enclosure	enclosure USE-M, PC, pure white, with removable cable entry	
Protection	IP65 according to EN 60529	
Cable entry	M25, for wire max. Ø=7 mm, seal insert for fourfold cable entry	
Connection electrical	**Mainboard** removable plug-in terminal, max. 2,5 mm²	**Plug-in card** removable plug-in terminal, max. 1,5 mm²
Ambient condition	0..+50 °C, max. 85% rH short term condensation	
Mounting	installation is also possible using mounting base	

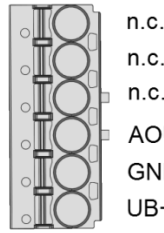**Declaration of conformity**

The declaration of conformity of the products can be found on our website https://www.thermokon.de/.

Connection Plan

LA+ VOC RS485 BACnet

| | 0..5 V |
| | 0..10 V |

n.c.
n.c.
n.c.
AOU1 — *(VOC | 0..10 V)*
GND
UB+ — *(15..35 V = oder 19..29 V ~)*

A +
A +
B -
B -

A+
B-
A+
B-

Address block 1

ON 1	ON 2	ON 3	ON 4	ON 5
ON=2^0 (1)	ON=2^1 (2)	ON=2^2 (4)	ON=2^3 (8)	ON=2^4 (16)
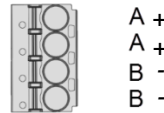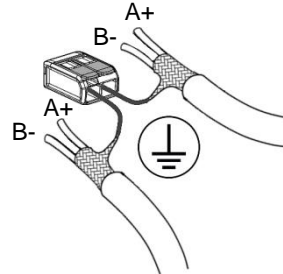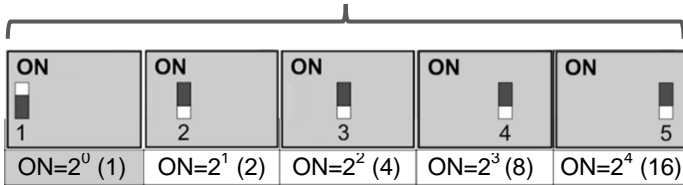
default

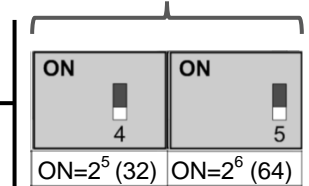| **Termination 120Ω**		**Baud rate**				**Address block 2**	
ON 1	ON 1	ON 2 3	ON 2 3	ON 2 3	ON 2 3	ON 4	ON 5
deactivated	activated	9600	19200	38400	57600	ON=2^5 (32)	ON=2^6 (64)
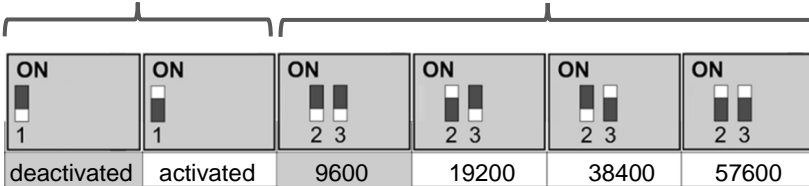
default   default
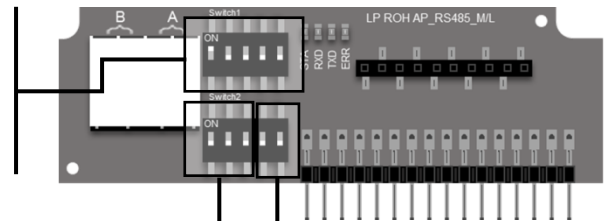
The BACnet address of the device is set binary coded in the range of 1 ... 127 via 7 dip-switches. (the address 0 is reserved and cannot be selected).

BACnet Objects:
USE-RS485 BACnet interface

A detailed description of the BACnet interface can be found in our downloadcenter:
→ **Download**

Measuring values

Object	Access	Description	Unit
AI-6	R	**VOC**	%

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 Google Play Store or in the Apple App Store.
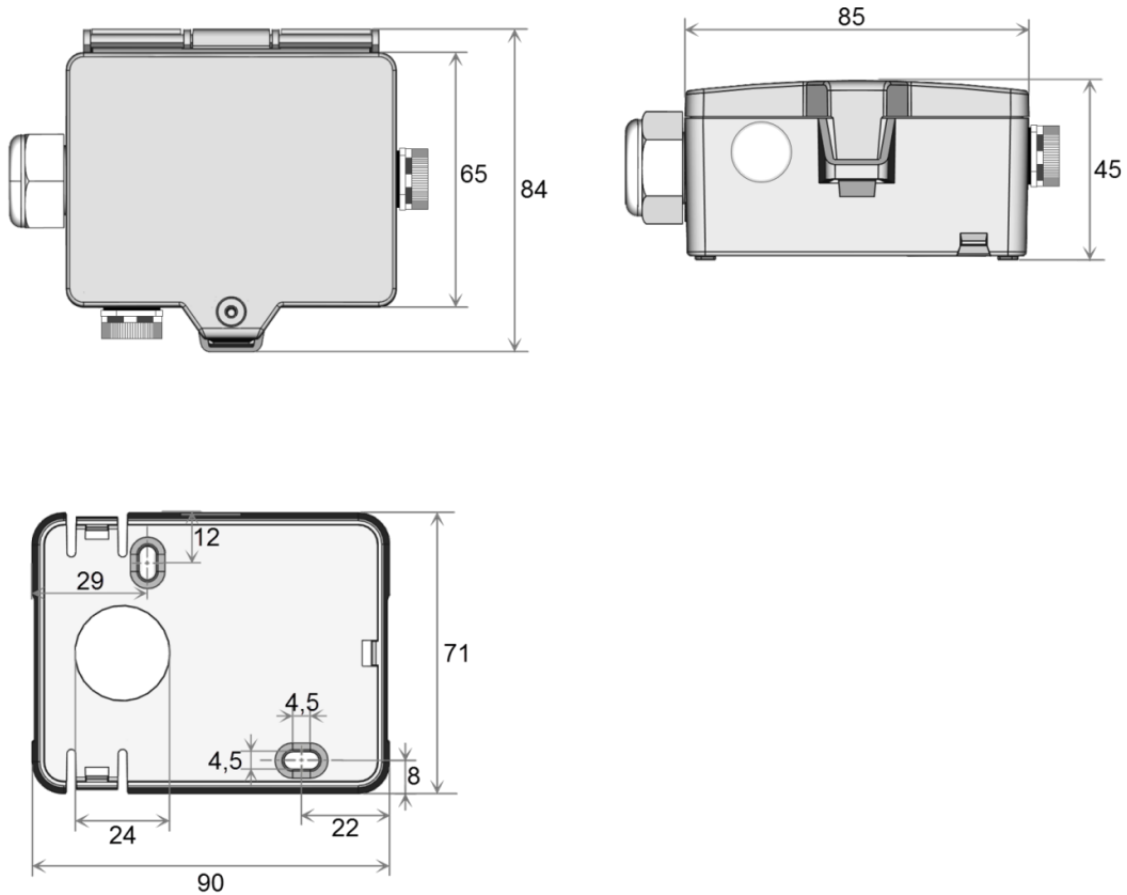
Application notice

The housing cover must be completely closed in order to ensure the accuracy and reproducibility of the measured values during a test or service log via USEapp.

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.

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)

Bluetooth dongle   Item No. 668262
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)   Item No. 641364