NOVOS 3 (EPD) VOC

Room sensor for air quality with optional temperature and humidity

Thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
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» APPLICATION

Room sensor for recording mixed gas and additionally temperature and humidity (relative, absolute, enthalpy, dew point). The maintenance-free sensor creates the conditions for a pleasant indoor climate and well-being. Typical applications are schools, office buildings, hotels, cinemas or similar.

» TYPES AVAILABLE

Room air quality sensor VOC – active 0..10 V | 4..20 mA
- NOVOS 3 VOC V*
- NOVOS 3 VOC A*

Room air quality sensor VOC + temperature – active 2x 0..10 V | 2x 4..20 mA
- NOVOS 3 VOC Temp VV*
- NOVOS 3 VOC Temp AA*

Room air quality sensor VOC + temperature + humidity – active 3xV 0..10 V
- NOVOS 3 VOC Temp_rH 3xV*

*Optional available with ePaper Display

» 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

»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 NOVOSapp subsequently, if needed.

»TECHNICAL DATA

Measuring values	VOC + temperature (optional) + humidity (optional)
Output voltage *(type-dependent)*	**V | VV | 3xV** 1x/2x/3x 0..10 V or 0..5 V, min load 10 kΩ (live-zero configuration 1..10/2..10 V) configurable via Thermokon NOVOSapp
Output Amp *(type-dependent)*	**A | AA** 1x/2x 4..20 mA, max. load 500 Ω

Power supply *(type-dependent)*	**V | VV | 3xV** 15..35 V = or 19..29 V ~ SELV	**A | AA** 15..35 V = SELV
Power consumption *(type-dependent)*	**V | VV | 3xV** typ. 0,4 W (24 V =) | 0,8 VA (24 V ~)	**A | AA** max. 0,5 W / 24 V =

Display *(optional)*	ePaper, as measured value display, display can be parameterized via Thermokon NOVOSapp
Enclosure	PC V0, pure white, design cover (optional)
Protection	IP20 according to DIN EN 60529
Cable entry	rear entry, breaking points bottom, drill mark top
Connection electrical	tool-free mountable spring terminal, max. AWG16
Ambient condition	0..50 °C, max. 85% non-condensing
Mounting	surface mounted on flush-mounting box (Ø=2.36in. | 60 mm) or to be mounted flat onto the surface using screws, base part can be mounted and wired separately
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 ...)

»Temperature *(optional)*

Output signal range temp. **scaling analogue output*	0..+50 °C (default setting), selectable from 4 temperature ranges -50..+50 | 0..+50 | -15..+35 | -20..+80 °C, configurable via NOVOSapp
Accuracy temperature *(type-dependent)*	±0,5K (typ. at 21 °C)

»Humidity *(optional)*

Measuring range humidity	**relative humidty** (default) 0..100% rH	**Enthalpy** 0..85 KJ/kg	**absolute humidity** 0..50 | 0..80 g/m³,	**dew point** 0..+50 | -20..+80 °C,
	configurable via Thermokon NOVOSapp			

Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)

»VOC

Measuring range VOC	0..100 %
Sensor	VOC sensor (heated metal oxide semiconductor)

»MOUNTING ADVICES

The Accuracy of the room sensors are influenced by the technical specifications as well as the positioning and the installation type.

During Assembly:
- Seal mounting box (if present).
- Installation type, air draught, heat source, radiation heat or direct sunlight can affect the measurement.
- Bulding material specific properties of the installation place *(brick-, concrete-, partition wall, cavity wall, …)* can affect the measurement.

Assembly not recommendet in…
- Air draught (e.g.: close to windows / doors / fans …)
- Near heating sources,
- Direct sunlight
- Niches / between furniture / …

Please make sure that the device is de-energized if you want to install it!

The installation can be performed on the flat wall surface or on a flush-mounted box. A representative place should be selected. Sunshine and draft, e.g. in the installation tube should be avoided, so that the measurement result is not falsified. Seal the end of the installation tube.

- For wiring, the upper part of the device must be removed from the base plate. Base plate and upper part are detachably connected to each other by means of locking lugs.
- The mounting of the base plate on the flat wall surface is done with rawplugs and screws.
- Finally, the device is attached to the base plate and fixed with the screw.

Housing open / close

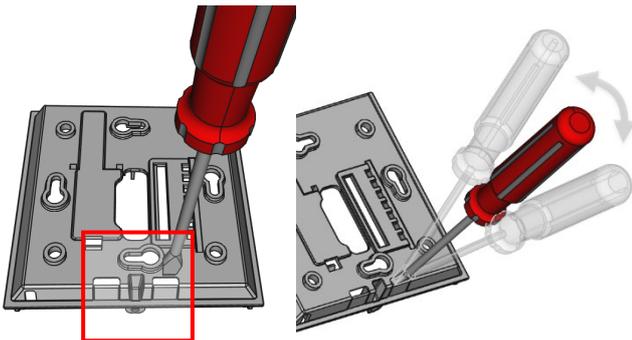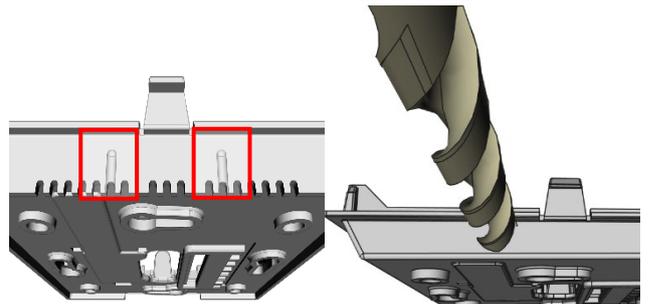| Snap the upper part of the housing into the locking lug on the upper side	Fix the upper part of the housing on the underside with the screw
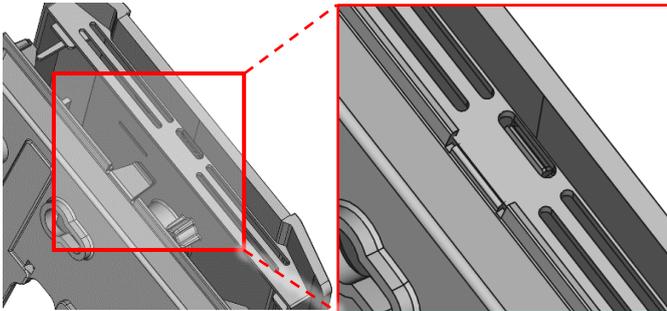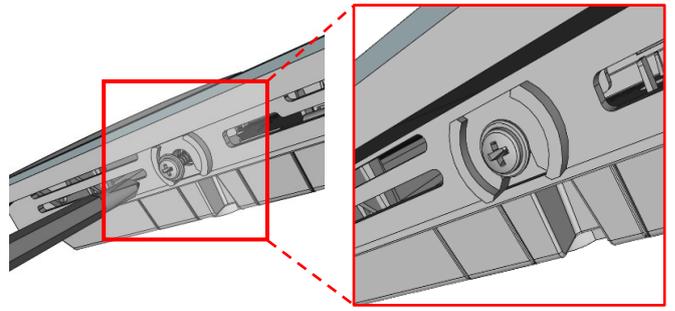
Cable entry

There are predetermined breaking points for 2 optional cable entries on the underside of the base plate	On the upper side of the base plate there are 2 grits as position for a drill hole max. Ø 6 mm

⚠️ When using a drill, you should absolutely ensure that the base plate is firmly clamped. Before drilling, the pressure must be reduced and carefully drilled. A sudden break-through of the drill bit can be the result.
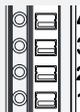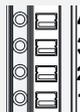
»CONNECTION PLAN

The following connection diagrams show the assignment of measuring values to analog outputs in factory default. Output variables reconfigurable via Thermokon NOVOSapp.

Room sensor VOC – active V 0..10 V | A 4..20 mA

NOVOS 3 VOC VV	NOVOS 3 VOC A
3 |—AOU1——— VOC | 0..10 V 2 |—GND——— 0 V⊥ 1 |—UB+——— 15..35 V ⎓ / 19..29 V ∼	3 |—AOI1——— VOC | 4..20 mA 2 |—GND——— 0 V⊥ 1 |—UB+——— 15..35 V ⎓

Room sensor VOC + temperature – active 2x V 0..10 V | 2x A 4..20 mA

NOVOS 3 VOC + Temp VV	NOVOS 3 VOC + Temp AA
4 |—AOU2——— Temperature | 0..10 V 3 |—AOU1——— VOC | 0..10 V 2 |—GND——— 0 V⊥ 1 |—UB+——— 15..35 V ⎓ / 19..29 V ∼	4 |—AOI2——— Temperature | 4..20 mA 3 |—AOI1——— VOC | 4..20 mA 2 |—GND——— 0 V⊥ 1 |—UB+——— 15..35 V ⎓

Room sensor VOC + temperature + humidity – active 3xV 0..10 V

NOVOS 3 + VOC + Temp_rH 3xV
5 |—AOU3——— Temperature | 0..10 V 4 |—AOU2——— Humidity | 0..10 V 3 |—AOU1——— VOC | 0..10 V 2 |—GND——— 0 V⊥ 1 |—UB+——— 15..35 V ⎓ / 19..29 V ∼

»CONFIGURATION

The configuration is performed in powered state. The following options are available for configuring the device:

Device connection	Micro-USB	Micro-USB
Configuration adapter	Thermokon USB-Interface 	USB-Bluetooth Dongle
Confguration interface	PC/Notebook with uConfig software Parameterization partial via desktop PC/Notebook with uConfig software, via Thermokon USB-Interface*. Item No. 597838	Smartphone/Tablet with NOVOS App Parameterization with mobile devices via Bluetooth and NOVOSapp. A separately available Bluetooth dongle* is required. Item no. 668262

Commercially available Bluetooth dongles or USB to Micro-USB adapter cables are not compatible. You need a mobile device that supports at least Bluetooth version 4.1. The configuration app with the corresponding instructions can be downloaded from the Google Play Store or the Apple App Store.
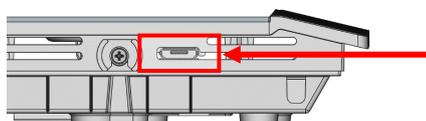
Position of the micro USB port, see bottom of the device, for configuration with Bluetooth dongle or Thermokon USB-Interface

» DISPLAY

The display scales automatically depending on the device and the number of measured variables. Parameters such as the display/hiding of measured variables are changed via the app. The software and hardware versions are displayed during the boot process.

Display		
1 Measured value	2 Measured values	3 / 4 Measured values

header

Measured value- area

$19,5$ °C

CO_2 $21,2$ °C
721 ppm

CO_2 721 ppm VOC 50 %
$21,2$ °C RH 75 %

Symbols		
Measured values*		
	Temperature	RH Humidity
	VOC	

Additional symbols *(displayed when triggered)*

⚠ Notice   Internal sensor error (display next to measured variable)   Measured value range

*depending on variant

» PRODUCT TESTING AND CERTIFICATION

Declaration of conformity
The declaration of conformity of the products can be found on our website
https://www.thermokon.de/direct/en-gb/categories/novos-3

» NOTES ON DISPOSAL

The crossed-out wheelie 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.com

» DIMENSIONS (MM)
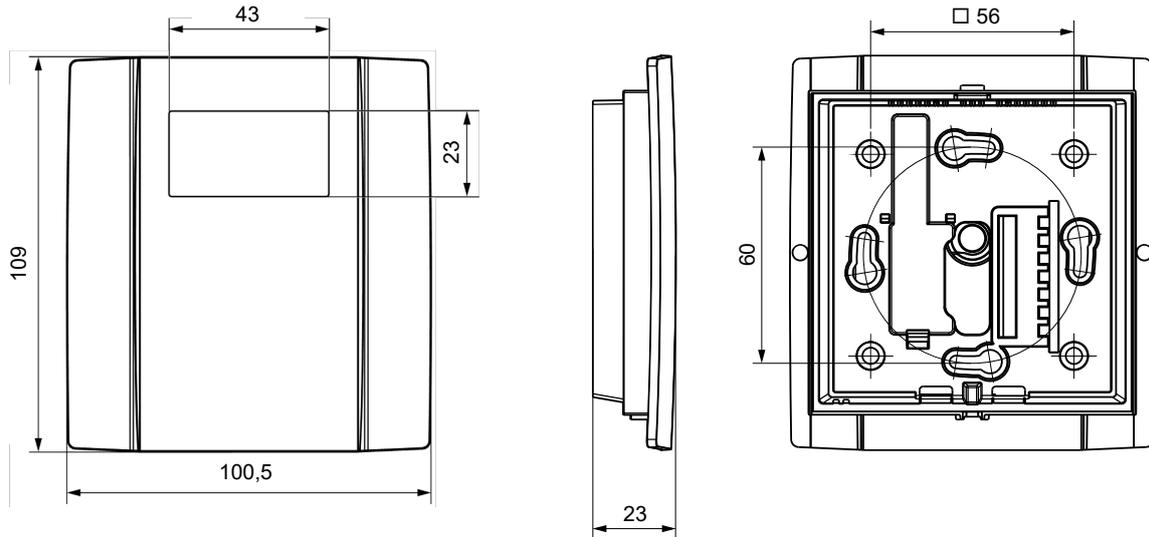
» ACCESSORIES (OPTIONAL)

Rawlplugs and screws (2 pcs. each)	Item No. 102209
PSU-UP24 – flush mount power supply 24 V (AC Input: 100..240 V ~ | DC Output 24 V = 0,5 A)	Item No. 645737
Bluetooth dongle	Item No. 668262
Thermokon USB-Interface	Item No. 597838
Mounting bracket (surface mounted) white	Item No. 795050
Mounting bracket (surface mounted) black	Item No. 795074