

# NOVOS 3 VOC

Room sensor for air quality with optional temperature and humidity

**thermokon**<sup>®</sup>  
HOME OF SENSOR TECHNOLOGY

## Datasheet

Subject to technical alteration  
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novos



\*with design cover (left), standard design w/o design cover (right)

## » 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

## » 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 can be found on our website <https://www.thermokon.de/>

## » MOUNTING ADVISE ROOM SENSORS

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. (*e.g.: Concrete accepts room temperature variation slower than cavity walls*)

### Assembly not recommendet in...

- Air draught (e.g.: close to windows / doors / fans ...)
- Near heating sources,
- Direct sunlight
- Niches / between furniture / ...

## » 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 ( $\pm 0,2$  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 term 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 compounds (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)	<b>V   VV   3xV</b> 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)	<b>A   AA</b> 1x/2x 4..20 mA, max. load 500 Ω			
Power supply (type-dependent)	<b>V   VV   3xV</b> 15..35 V = or 19..29 V ~ SELV		<b>A   AA</b> 15..35 V = SELV	
Power consumption (type-dependent)	<b>V   VV   3xV</b> typ. 0,4 W (24 V =)   0,8 VA (24 V ~)		<b>A   AA</b> max. 0,5 W / 24 V =	
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			
Measuring range humidity (type-dependent)	<b>relative humidity</b> (default) 0..100% rH	<b>Enthalpy</b> 0..85 KJ/kg	<b>absolute humidity</b> 0..50   0..80 g/m <sup>3</sup> ,	<b>dew point</b> 0..+50   -20..+80 °C,
	configurable via Thermokon NOVOSapp			
Accuracy temperature (type-dependent)	±0,5K (typ. at 21 °C)			
Accuracy humidity (type-dependent)	±2% between 10..90% rH (typ. at 21 °C)			
Calibration	<b>VOC</b> self-calibration			
Sensor	VOC sensor (heated metal oxide semiconductor)			
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. 1,5 mm <sup>2</sup>			
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 ...)			

## » 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.

## » MOUNTING ADVICES

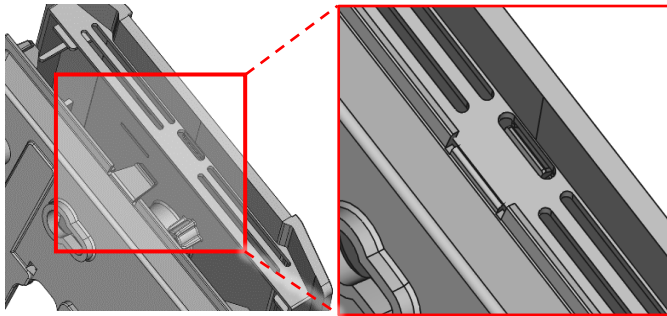
Please make sure that the device is de-energized if you want to install it!

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.

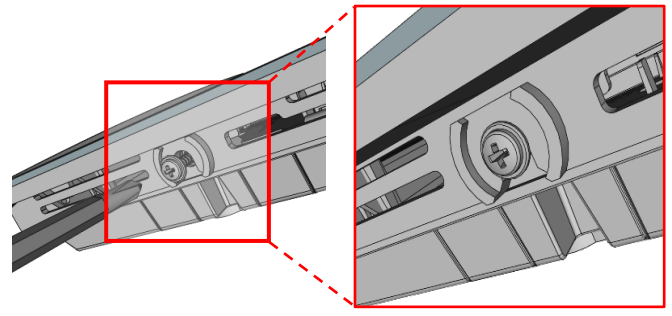
- For wiring, the upper part of the device must be removed from the base plate. Base plate and upper part are detachably connected to each other by means of locking lugs.
- The mounting of the base plate on the flat wall surface is done with rawplugs and screws.
- Finally, the device is attached to the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

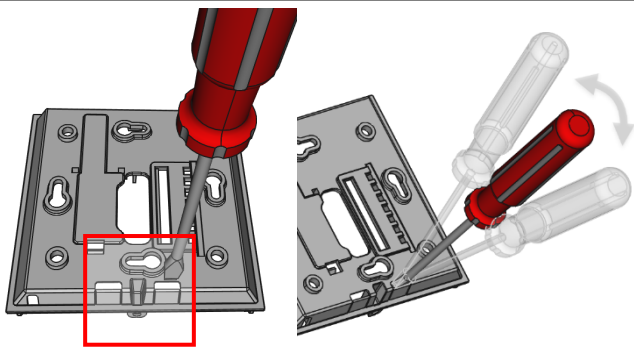


Fix the upper part of the housing on the underside with the screw

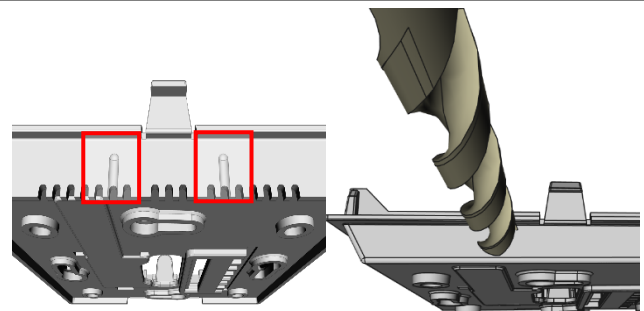


### Cable entry

There are predetermined breaking points for 2 optional cable entries on the underside of the base plate



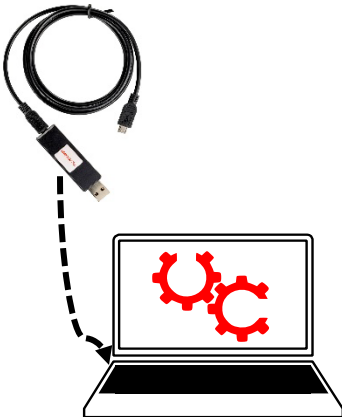

On the upper side of the base plate there are 2 grits as position for a drill hole max. Ø 6 mm



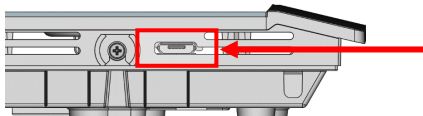
When using a drill, you should absolutely ensure that the base plate is firmly clamped. Before drilling, the pressure must be reduced and carefully drilled. A sudden break-through of the drill bit can be the result.

» **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 
Configuration 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



» **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**

<b>NOVOS 3 VOC VV</b>  <ul style="list-style-type: none"> <li> —AOU1—  VOC   0..10 V</li> <li> —GND—  0 V ⊥</li> <li> —UB+—  15..35 V = / 19..29 V ~</li> </ul>	<b>NOVOS 3 VOC A</b>  <ul style="list-style-type: none"> <li> —AOU1—  VOC   4..20 mA</li> <li> —GND—  0 V ⊥</li> <li> —UB+—  15..35 V =</li> </ul>
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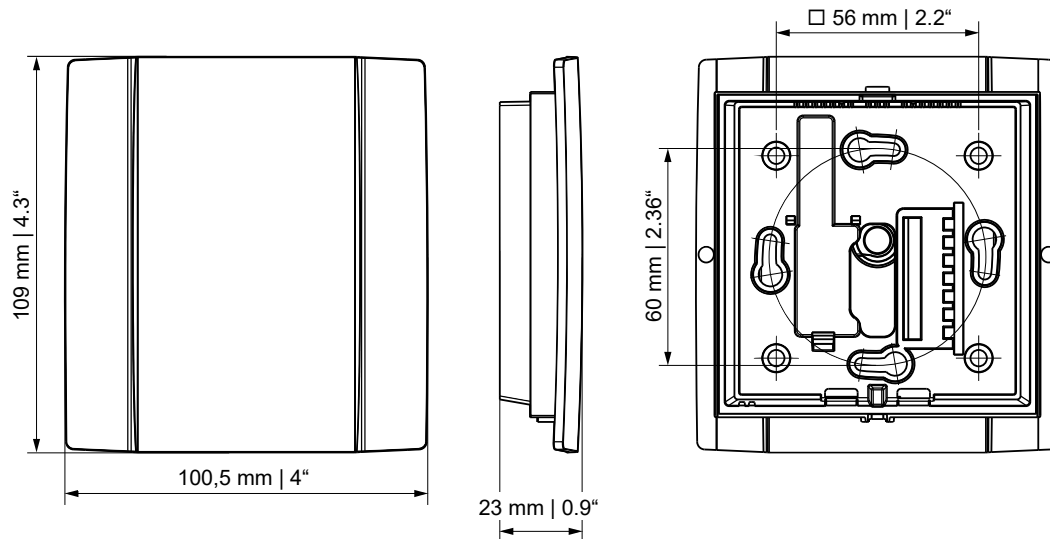
**Room sensor VOC + temperature – active 2x V 0..10 V | 2x A 4..20 mA**

<b>NOVOS 3 VOC + Temp VV</b>  <ul style="list-style-type: none"> <li> —AOU2—  Temperature   0..10 V</li> <li> —AOU1—  VOC   0..10 V</li> <li> —GND—  0 V ⊥</li> <li> —UB+—  15..35 V = / 19..29 V ~</li> </ul>	<b>NOVOS 3 VOC + Temp AA</b>  <ul style="list-style-type: none"> <li> —AOI2—  Temperature   4..20 mA</li> <li> —AOI1—  VOC   4..20 mA</li> <li> —GND—  0 V ⊥</li> <li> —UB+—  15..35 V =</li> </ul>
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**Room sensor VOC + temperature + humidity – active 3xV 0..10 V**

<b>NOVOS 3 + VOC + Temp_rH 3xV</b>  <ul style="list-style-type: none"> <li> —AOU3—  Temperature   0..10 V</li> <li> —AOU2—  Humidity   0..10 V</li> <li> —AOU1—  VOC   0..10 V</li> <li> —GND—  0 V ⊥</li> <li> —UB+—  15..35 V = / 19..29 V ~</li> </ul>
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## » DIMENSIONS (MM)



## » ACCESSORIES (OPTIONAL)

Rawplugs and screws (2 pcs. each)

PSU-UP24 – flush mount power supply 24 V (AC Input: 100..240 V ~ | DC Output 24 V = 0,5 A)

Item No. 102209

Item No. 645737

Bluetooth dongle

Thermokon USB-Interface

Mounting bracket (surface mounted) white

Mounting bracket (surface mounted) black

Item No. 668262

Item No. 597838

Item No. 795050

Item No. 795074