NOVOS 7 RS485 Modbus

Room control unit temperature
Optional: Humidity | CO_2 | VOC

thermokon®
HOME OF SENSOR TECHNOLOGY

Data sheet

Subject to technical changes
Issue date: 11/20/2026 • A200



» APPLICATION

Room control unit for room temperature measurement, optional humidity, CO_2 or VOC. With a monitoring function for colorful visualization of the measured values. The maintenance-free sensor creates conditions for a pleasant indoor climate and well-being. Typical applications are schools, office buildings, hotels or cinemas. The room control unit has a high-resolution 3.5″ display. The innovative and self-explanatory operation offers all relevant functions for intelligent room automation.

» TYPES AVAILABLE

Room operating unit temperature + optional humidity, CO2, VOC – active, BUS

- NOVOS 7 Temp RS485 Modbus
- NOVOS 7 Temp_rH RS485 Modbus
- NOVOS 7 CO2 Temp_rH RS485 Modbus
- NOVOS 7 VOC Temp_rH RS485 Modbus
- NOVOS 7 CO2+VOC Temp_rH RS485 Modbus

» 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. Unauthorized modifications are prohibited! The product must not be used in relation to any equipment that in case of 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 installation. Do not connect to live/operating equipment.

Please comply with

- Local laws, health & safety regulations, technical standards and regulations
- The state of the technology at the time of installation
- This data sheet and installation manual

» PRODUCT TESTING AND CERTIFICATION

Declaration of conformity
The declaration of conformity of the products is available on our website:
https://www.thermokon.de/direct/en-gb/categories/novos-7

»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 must 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).

»APPLICATION NOTICE FOR HUMIDITY SENSORS

At regular environmental conditions, 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 or fingerprints)
- Aggressive chemicals
- Ambient conditions (e.g. condensation on measuring elements)



Do not touch the sensor elements!

Re-calibration or exchange of the sensor elements are not subject of the general warranty.

»INFORMATION ABOUT SELF-CALIBRATION FEATURE CO_2

All gas sensors are subject to drift. The degree of drift is dependent on the use of components and product design. In addition, the following environmental conditions, among others, can accelerate/favor the aging and wear of the sensors:

- Mechanical stress (also due to temperature fluctuation)
- Contamination (e.g. dust or fingerprints)
- Aggressive chemicals
- Ambient conditions (high humidity or condensation on measuring elements)

An internal self-calibration function with dual channel technology largely compensates for the resulting drift. Thermokon sensors are for permanent use (e.g. hospitals).

»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				Description
	Increase compared to the outdoor air concentration		Standard value		
IDA1	<400	ppm	<800	ppm	Good indoor air quality
IDA2	400..600	ppm	800 – 1.000	ppm	Standard indoor air quality
IDA3	600..1.000	ppm	1.000 – 1.400	ppm	Moderate indoor air quality
IDA4	>1.000	ppm	>1.400	ppm	Poor indoor air quality

»INFORMATION ON THE CO_2/VOC MIX SIGNAL

The CO_2/VOC Mix signal is calculated as a weighted average of the output voltages of the analog CO_2 and VOC outputs.
The weighting of the two values can be adjusted in the software/app.

Ex: CO_2 = 800 ppm = 4 V; VOX = Index 120 = 2,4 V
Weighting: 60 % CO_2 and 40 % VOC → 0,6 × 4 V + 0,4 × 2,4 V = 3,36 V

»USER INFORMATION FOR VOC AIR QUALITY SENSORS

Volatile organic compounds (VOC) are gaseous and vaporous substances of organic origin present in the air. VOC sensors detect the major portion of air quality that is perceived olfactorily (through the sense of smell) by humans (e.g. body odors, tobacco smoke, emissions from materials such as furniture, carpets, paints, adhesives, etc.).

The VOC value is an application-specific indicator of indoor air quality and does not provide any information about the composition of the substances present.

A VOC sensor oxidizes the organic molecules that come into contact with it, causing the resistance of the semiconductor to change. The VOC index (0...500) describes the air quality relative to the learned indoor air conditions. A value of 100 corresponds to “normal” indoor air quality (reference value determined dynamically over approximately 8 days); values below 100 indicate an improvement, while values above 100 indicate a deterioration in air quality. If the room is not ventilated despite high index values, the value will gradually approach 100 again, as the sensor learns the poor air as the new “normal”.

The sensor must not be exposed to direct drafts, as these can significantly influence and distort the measurement result. Any contact with the sensitive sensors must be avoided and will void the warranty.

VOC index	Classification	Meaning	Recommendation
0 – 100	Better air quality	Lower VOC load than the learned reference level of the previously measured indoor air quality, e.g. after ventilation, when using an air purifier, or with low room occupancy.	No action needed
100	Reference value (baseline)	Corresponds to the “normal” indoor air quality learned by the algorithm. On Thermokon devices, this reference is determined dynamically over approx. 8 days.	Normal condition
100 – 500	Worse air quality	Higher VOC load than the learned reference level, e.g. due to cooking, cleaning agents, high occupancy, or emissions from new furniture or fresh paint.	Ventilation or air purification are recommended; at high values (> 350) intense ventilation is recommended

» 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

» TECHNICAL DATA

Measuring values *(optional)*	Temperature; optional humidity | CO_2 | VOC
Network technology	RS485 Modbus, RTU, half-duplex; **Baud rate:** 9.600 | 19.200 | 38.400 | 57.600 | 115.200; **Parity:** none (2 stop bits), even or odd (1 stop bit), **Fail-safe Biasing required**
Power supply*	24 V = (±10 %) | 24 V ~ (±10 %) SELV *With alternating voltage, the correct polarity must be ensured.*
Power consumption	Typ. 2 W (24 V =) | 4 VA (24 V~)
Inputs	1 input for floating contact
Control functions	Presence indication | Lighting control (on/off/dimming) | Scene recall | Blind control (open/close/adjust) | Fan speed levels | Setpoint adjustment | ECO function | Measurement display and history
Display	TFT 3,5″ (320 × 240 px)
Enclosure	Enclosure: PC V0, pure white, black or aluminium; Design cover: pure white, black or aluminium
Degree of Protection	IP30, according to DIN EN 60529
Cable entry	Rear entry | Breaking points at the bottom | Drill marks at the top
Electrical connection	Tool-free mountable spring terminal, max. 1,5 mm² | AWG 16
Ambient condition	+32..+122 °F, max. 85 % (non-condensing)
Mounting	Surface mounted on flush-mounting box (Ø = 2.36″ | 60 mm) or to be mounted flat onto the surface using screws, base part can be mounted and wired separately

Power supply
When several BUS devices are supplied by one 24 V AC voltage supply, it is to be ensured that all “positive” operating voltage input terminals (+) of the field devices are connected with each other and all “negative” operating voltage input terminals (-) (= reference potential) are connected together (in-phase connection of field devices). In case of reversed polarity at one field device, a supply voltage short-circuit would be caused by that device. ***The consequential short-circuit current flowing through this field may cause damage to it. Therefore, pay attention to correct wiring.***

AC voltage requires higher power consumption. This results in greater self-heating and requires an on-site offset adjustment. Therefore, we recommend using a DC power supply.

» Temperature

Measuring range temp	0..+100 | 0..+150 | +40..+90 | +40..+140 °F, **Default setting:** +40..+140 °F, optionally configurable via Thermokon NOVOSapp or BUS
Accuracy temperature	±0,5 K (typ. at 70 °F)

» Humidity *(optional)*

Measuring range humidity *(optional configurable)*	**Relative humidty** (default) 0..100 % rH	**Enthalpy** 0..37 BTU/lb	**Absolute humidity** 0..1,5 | 0..2,3 g/ft³	**Dew point** +32..+122 | -4..+176 °F
	Configurable via Thermokon NOVOSapp or BUS			
Accuracy humidity	±2 % between 10..90 % rH (typ. at 70 °F)			

» CO_2 *(optional)*

Measuring range CO_2	0..2000 ppm | 0..5000 ppm (configurable via Thermokon NOVOSapp or BUS)
Accuracy CO_2	±50 ppm +3 % of reading (typ. at 70 °F | 50 % rH | 1015 hPa)
Calibration	Self-calibration, dual channel
Sensor	NDIR (non-dispersive, infrared)
Display *(optional)*	Display backlight to indicate air quality (traffic light function “TLF”)

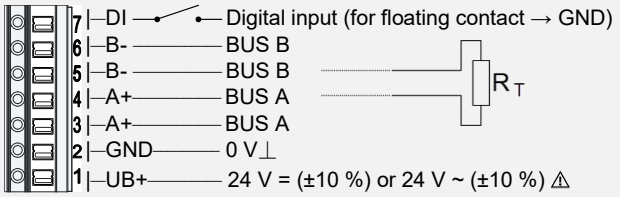
» VOC *(optional)*

Measuring range VOC	VOC index: 0..500
Sensor	Heated metal oxide semiconductor

»WIRING DIAGRAM

Room operating unit – active, RS485 Modbus

Novos 7 RS485 Modbus



With alternating voltage, the correct polarity must be ensured! Please note the technical data.

Don’t forget the BUS termination (120 Ω) at the last device of the line! *(Not included in delivery)*

DI – cable length (specified): max. 3 m

The specified cable length is a maximum of 3 m. Within this range, the requirements for EMC and signal quality are fulfilled. Longer cable lengths may be possible depending on the application; however, they have not been tested and are therefore not specified. For cable lengths exceeding 3 m, the use of shielded cables and low-noise cable routing is recommended.

»MODBUS ADDRESSES

NOVOS RS485 Modbus interface
A detailed description of the Modbus addresses can be found under the following link:
http://thermokon.de/direct/files/novos-rs485-modbus-manual.zip

»MOUNTING ADVICE

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

During assembly:

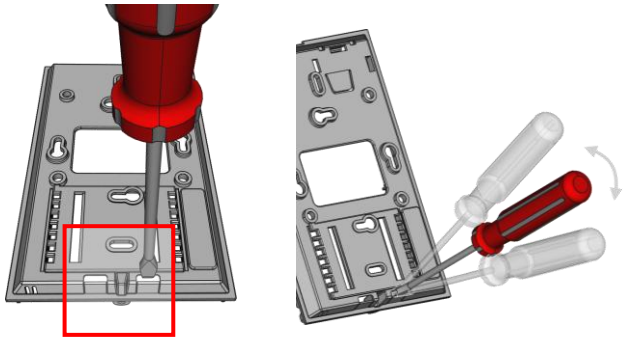
- Seal mounting box (if present).
- Installation type, air draught, heat source, radiation heat or direct sunlight can affect the measurement.
- Building material specific properties of the installation place *(brick-, concrete-, partition wall, cavity wall)* can affect the measurement.

Assembly not recommended:

- in air draughts (e.g.: close to windows/doors/fans)
- near heating sources,
- in direct sunlight
- niches/between furniture

Cable entry

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



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

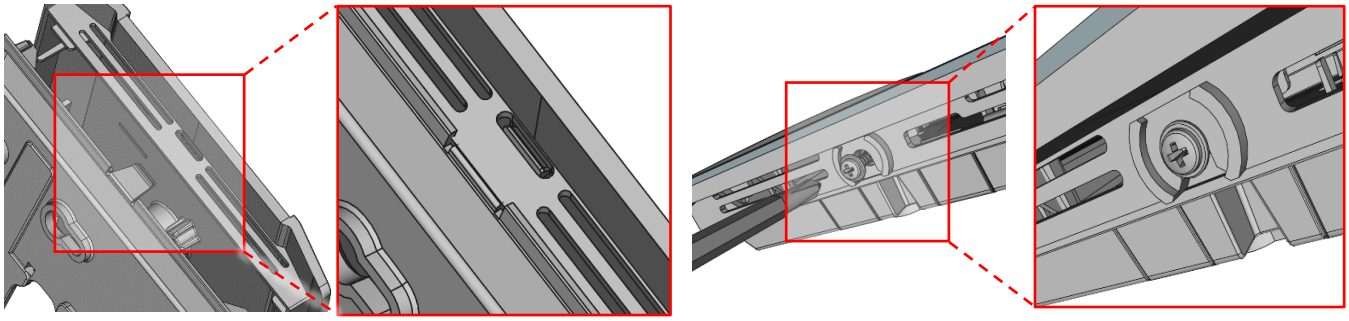
The installation can be performed on the flat wall surface or on a flush-mounted box. A representative place should be selected. Sunshine and draft, e.g. in the installation tube should be avoided, so that the measurement result is not falsified. Seal the end of the installation tube.

- 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 wall plugs and screws.
- Finally, the device is attached to the base plate and fixed with the screw.
- internal connecting wires must be routed in such a way that they do not press against the PCB or the sensors. Excess cable must be stored in the flush-mounted wall box.

Housing open / close

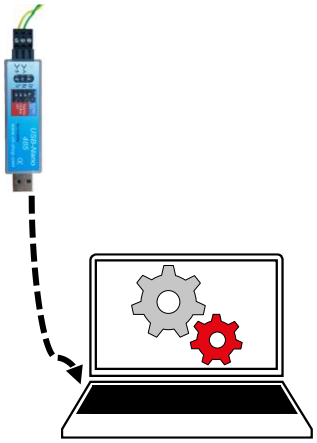
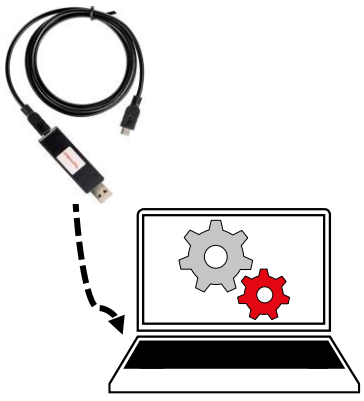
Snap the upper part of the housing into the locking lug on the upper side

Fix the upper part of the housing on the underside with the screw included in the delivery.

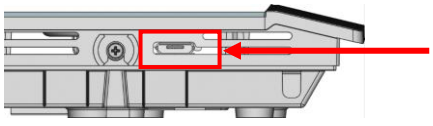


»CONFIGURATION

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

Device connection	RS485	Micro-USB	Micro-USB
Configuration adapter	USB/RS485 converter	Thermokon USB interface	USB Bluetooth dongle
			
Configurations software	PC/notebook with uConfig software *Parameterization with Thermokon uConfig software, via USB/RS485 interface* – Art.-No.: 668293.*	PC/notebook with uConfig software *Partly parameterization with Thermokon uConfig software, via Thermokon USB interface* – Art.-No.: 597838.*	Smartphone/tablet with NOVOSapp *Parameterization with mobile device via Bluetooth and NOVOSapp. Seperately available Bluetooth dongle* required – Art.-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.

In addition, a configuration during operation is possible via BMS through RS485 connection.

»FUNCTIONAL DESCRIPTION – NOVOS 7 HOME SCREEN

Home screen
The display on the home screen of the NOVOS room control unit can be freely parameterized. All icons and notifications can be switched ON and OFF. The Set point may also be overwritten.



Status messages
Status reports and notifications may be displayed on the home screen at any time (max. 24 characters).

Room temperature
The current room temperature can be shown on the display.

Favorite buttons (2 – 5)
Below the home screen's edge, there are 4 individually parameterizable capacitive keys. The corresponding symbols are displayed in the home screen's footer.

Headline
In the home screen's header, icons can be shown or hidden as desired.

Date and time
The date and time is displayed in the home screen's centre.

Set point
The room control unit's current set point is displayed below the room temperature.

Rotary push-button (Favorite button 1)
The rotary push-button is used to navigate through the submenus. In addition, a favourite function can be defined for the button.

By pressing the rotary push-button, the function submenu (carousel) is displayed.

»FUNCTION SUBMENU (CAROUSEL)

Headline
Symbols of the enabled functions are displayed here.
(e.g. ECO or room occupancy)

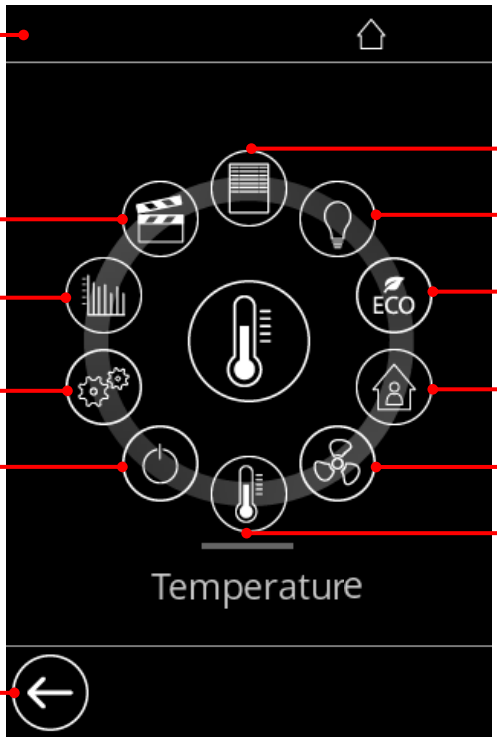
Scene
Control scenes (max. 8 different).

Measured values
Display internal or external measured values.

Settings
The device's configuration options
Default access password: 2030

Display OFF
Switch off the display. Pressing any key reactivates the display.

Back
Return to main menu.



Shading
Control shading circuits (max.8).

Light
Control light circuits (max. 8).

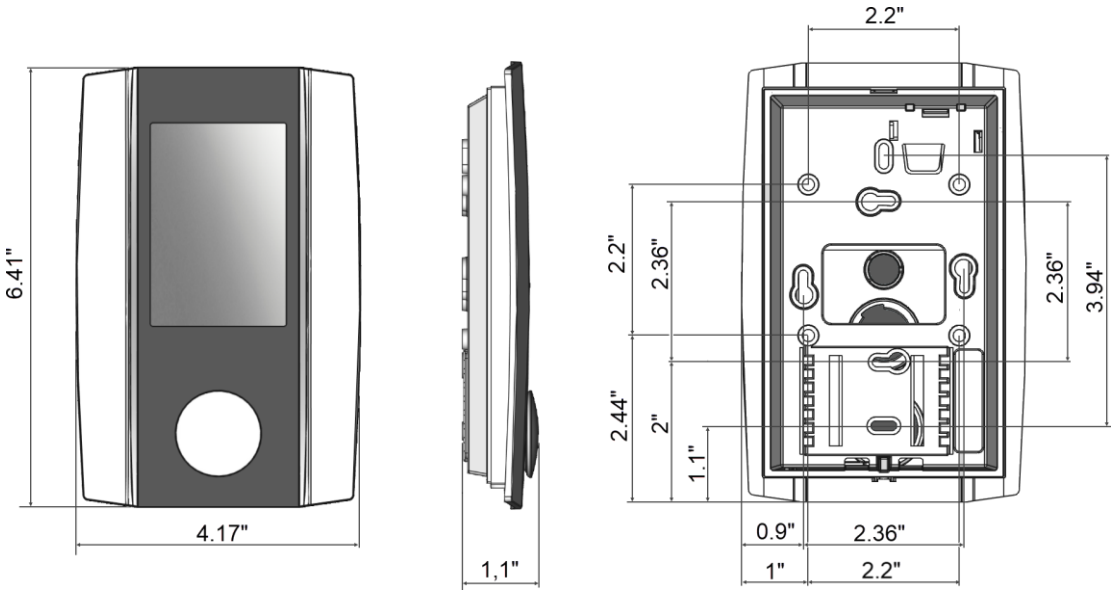
ECO
Turn the ECO function on and off.

Room occupancy
Display occupied/unoccupied status.

Fan stages
Control fan speeds (max. 5).

Temperature
Adjust the set point value.

»DIMENSIONS (MM)



»ACCESSORIES (OPTIONAL)

Wall plugs and screws (2 pcs. each)	Item No. 102209
NOVOS 5/7/Touch frame for surface-mounting, white	Item No. 802666
NOVOS 5/7/Touch frame for surface-mounting, black	Item No. 802703
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
USB RS485 Modbus RTU logger	Item No. 809917
USB interface RS485 (incl. driver CD)	Item No. 668293
RS485 biasing adapter	Item No. 811378