

NOVOS 3 SR CO2 Temp_rH

Wireless room sensor air quality CO2 + Temperature + Humidity

thermokon[®]
HOME OF SENSOR TECHNOLOGY

Datasheet

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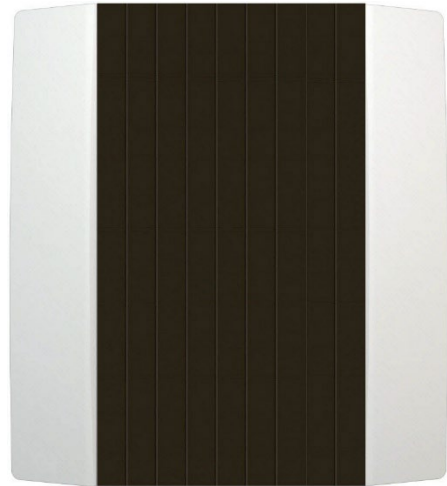


Illustration similar, depending on the type

» APPLICATION

Wireless room sensor with EnOcean- radio interface for integrated measurement of CO2, temperature and relative humidity (rH version) in residential and office spaces. The device is mounted via adhesive pad or screws and sends its values unidirectional to corresponding receivers or gateways, which process the information directly or – depending on the application – forward it to a central control unit.

This product is intended for use as part of an automation solution for (functional) buildings. It transmits sensor data within a building over short distances unencrypted by radio to suitable receivers. No personal data or location data is transmitted.

The product cannot communicate directly with the Internet and is not intended for applications that use the Internet to forward unprocessed sensor data. Automation stations that forward data via the Internet, e.g. to visualise the building status, must ensure that the data to be forwarded is encrypted as required by law.

» TYPES AVAILABLE

Radio room sensor CO2 + temperature

- Novos 3 SR CO2 Temp (EEP A5-09-04)

Radio room sensor CO2 + temperature + humidity

- Novos 3 SR CO2 Temp (EEP A5-09-04)

» 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/direct/en-gb/categories/novos-3>

» 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.

Assembly not recommendet in...

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

» 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.

» INFORMATION ABOUT INDOOR AIR QUALITY CO₂

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

» **TECHNICAL DATA**

Measuring values	CO ₂ , temperature + relative humidity
Radio technology	EnOcean (IEC 14543-3-10), transmission power <10 mW EEP A5-09-04
Frequency	902 MHz
Power supply	1x lithium 3.6V AA solar cell, internal super cap, maintenance free
Measuring range temp	+32..+104 °F
Measuring range humidity	0..100% rH non-condensing
Measuring range CO ₂	0..2550 ppm
Accuracy temperature	±0,4 K (typ. at 70 °F)
Accuracy humidity	±2% between 30..70% rH (typ. at 70 °F)
Accuracy CO ₂	±(50 ppm + 3 % of reading), typ. at 70 °F, 50% rH, 1015 hPa
Measuring interval	WakeUp time = 1000 sec.
Transmission interval	Heartbeat: every WakeUp, (transmission interval = measuring interval)
Enclosure	PC V0, pure white, optional available in aluminium or black colour
Protection	IP20 according to EN 60529
Ambient condition	+32..+104 °F, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using included adhesive foil or screws
Delivery content	adhesive foil, Lithium 3,6V AA
Notes	integrated battery must be installed permanently

» **INFORMATION ABOUT EASYSSENS® (RADIO) / AIRCONFIG GENERAL USAGE****EasySens® - airConfig**

Basic information about EasySens® radio and about general usage of our airConfig software, please download from our website. <https://www.thermokon.de/direct/files/airconfig-software-manual.zip>

» **OVERVIEW OF THE RADIO TELEGRAMS****EEP**

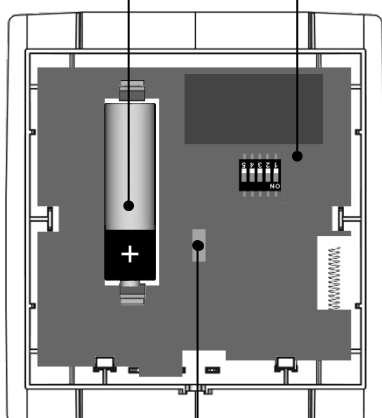
The structure of the data contained in the telegram can be found in the EEP (EnOcean equipment profile) list provided by the EnOcean Alliance.

» CONFIGURATION AND COMMISSIONING



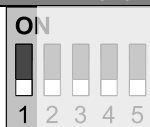
After configuring the dip switches, the device does not accept the settings made until the learn button is pressed.

Low light backup battery
AA (optional)

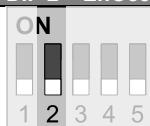


Learn button

DIP 1 – no function



DIP 2 – EnOcean Security

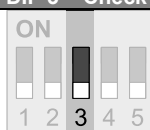


Encrypted data transmission protects against various types of attack, such as repeat and eavesdropping attacks or fake telegrams.

2 | **Factory default: off**

on | Encryption mechanism enabled
off | Encryption mechanism disabled

DIP 3 – Check sum

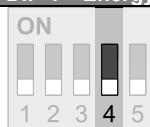


By default, the radio transmitter uses the checksum CRC8 in the transmitted telegrams. This has the advantage that faulty telegrams are verified better and sorted out in critical radio links. Radio receivers older than the TCM3xx only support simple checksum. In this case the radio transmitter must be changed to simple checksum via diswitch. The simple checksum is compatible with all receivers. Directly after the dipswitch is set, the adjustment starts.

3 | **Factory default: off**

on | Simple Check sum
off | CRC8

DIP 4 – Energy status message

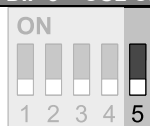


If the energy state is low, an additional signal telegram (SIG) - [06 01] is sent. Ensure sufficient ambient brightness, change the battery or insert a battery for support due to insufficient ambient brightness.

4 | **Factory default: off**

on | Activated
off | Disabled

DIP 5 – CO2 Calibration



At default settings the ABC Logic is disabled. The ABC Logic has to be used during certain Environmental scenarios. In the chapter "CO2 Calibration" are more Informations

5 | **Factory default: off**

on | ABC-Logic activated
off | ABC-Logic disapled

» CO2 CALIBRATION

The device is factory calibrated and uses a LED technology based NDIR measurement for a very small measurement drift.

A calibration for standard environmental conditions is not necessary.

The ABC-Logic (Automatic Background Calibration) is deactivated by default.

ABC-Logic Functional description

Every 15 days the sensor performs an automatic calibration and saves the lowest measured value as the new reference value. This reference value is used for the following measurements. To ensure correct operation of the ABC-Logic, the reference value should be close to 400 ppm (fresh air).

Important notice

The sensor detects the lowest CO2 value in a 15-day period and sets it as the reference value.

If clean air is supplied (approx. 400ppm), the reference value remains meaningful. If this is not the case, dirty air is set as the new reference value ("good" air) and no meaningful measurement result is subsequently displayed. In many 24/7 applications, therefore, no reliable measurement result is obtained: hospitals, airports, train stations, forced ventilated barns, testing laboratories, casinos, etc. ...

For special applications, the user can manually calibrate the sensor (ABC-Logic has to be deactivated).

(manual) calibration process

1. The calibration must be carried out in fresh air, the device must first be operated in fresh air for at least 3 minutes (reference condition 400ppm)
2. Press and hold the learn button for between 8-12 seconds (exact time must be observed)
3. The device recalibrates/adjusts to the reference value. (current CO₂ measured value $\triangleq$ new 400ppm)
4. when the learn button is released, a signal telegram (SIG) with the confirmation value 'hex(06 FF)' is sent if the calibration was successful.
If no SIG telegram is sent, the calibration has failed and must be repeated.
5. The device is recalibrated and ready for use.

» FACTORY DEFAULT – SHIPPING MODE

After delivery the room operating unit is by default in a shipping mode, in this case press the learn button (<1 second) at the rear of the device [Signal telegram will be send. SIG -> 0x0F // shipping mode deactivated].

For further shipment, it is possible to set the room operating unit back in default shipping mode. In this case the learn button must be held down for between 2-4 seconds (exact timing is mandatory) [Signal telegram will be send, SIG -> 0x0E // shipping mode activated].

In order to assure a correct evaluation of the measured values by the receiver, it is necessary to have the devices learned in by the receiver. This is done automatically by means of a "learn button" at the sensor or manually by input of the 32bit sensor ID and a special "learning procedure" between sender and receiver. The respective details are described in the corresponding software documentation of the receiver.

The sensor is supplied in an operational status.

» CRC8 CHECKSUM

By default, the radio transmitter uses the checksum CRC8 in its telegrams. This has the advantage that faulty telegrams can be better verified and sorted out on critical radio ranges. Radio receivers older than the TCM3xx only support a simple checksum. In this case, the radio transmitter must be set to simple checksum. To do this, the corresponding dip switch has to be set. The simple checksum is compatible with all receivers.

» POWER SUPPLY

The device is primarily supplied from the inserted 3.6V AA lithium battery. The solar cell supports the battery and recharges the internal energy storage. The internal energy storage is used for the supply of the radio module as well as the temperature and humidity sensors. To charge the internal energy storage approximately 200 Lux for about 4h a day are required. If the device is installed in dark areas with insufficient light the 3,6V battery provides the energy. Only 3.6V AA lithium batteries can be used. Insert the battery correctly into the battery compartment as indicated.

Under reference conditions (factory delivery status and sufficient daylight), the battery life is approx. 2 years. Depending on the settings and local conditions, this value can vary.

» ENERGY STATUS (SIGNAL TELEGRAM)

If the energy state reaches a critical level, an additional signal telegram (SIG) - [06 00] is sent out. After the transmission, the device continues sending the sensor values as configured until the power supply is no longer sufficient.

Exchange the battery and retrieve the device from the shipping mode by pressing the learn button.

If the energy status is good after awakening from the shipping mode, after the learn telegram an additional signal telegram with the energy state "good" (SIG) - [06 64] is transmitted.

Signal telegrams (SIG) can be received with an STC65+ Modbus (from V4.7.0), STC-Bacnet IP (from V3.0.3.4) or a STC-IoT Gateway and evaluated by the superior control unit (BMS).

Telegram content

Offset	Size	Data	Shortcut	Description	
0	8	Message index	MID	Enumeration: 0x06 – Energy status of the device	
8	8	Energy	ERG	Description	Telegram (SIG)
				0..100 %	
				100: Energy level good	hex(06 64)
				1: Energy level low	hex(06 01)
				0: Energy level critical	hex(06 00)

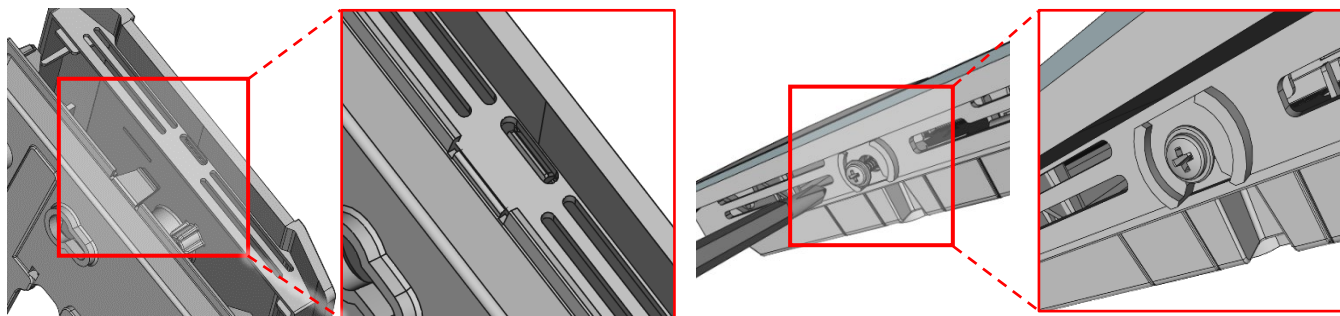
» MOUNTING ADVICE

Installation is made by gluing the sensor base plate to the smooth wall surface using the adhesive tape included. If required, the base plate can also be fixed by means of Rawlplugs and screws.

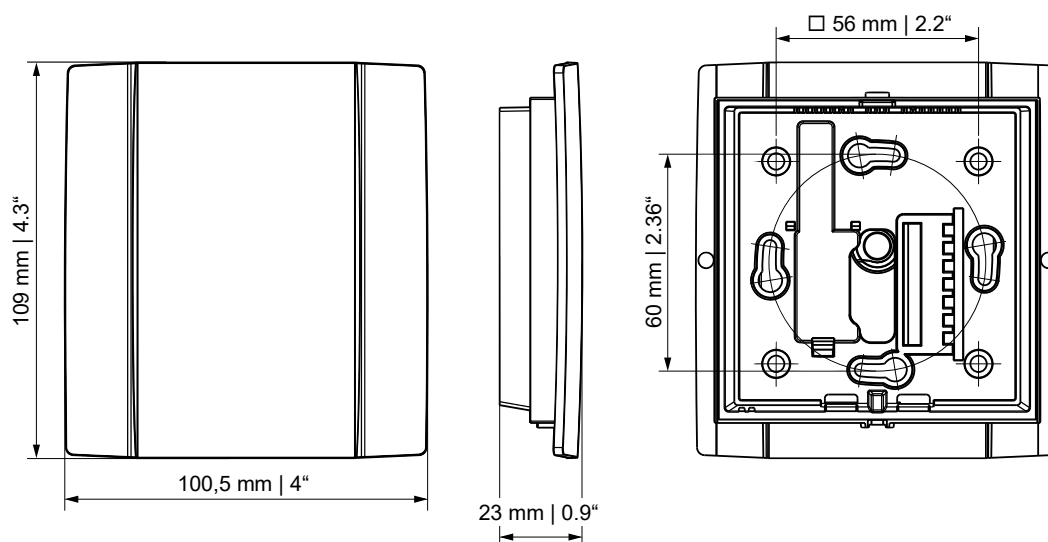
Housing open / close

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



» DIMENSIONS (MM)



» ACCESSORIES (INCLUDED IN DELIVERY)

Adhesive foil for fixing the base plate
Battery ER14505 (Lithium Thionyl chloride 3,6V AA)

Item No. 773386
Item No. 759182

» ACCESSORIES (OPTIONAL)

Rawlplugs and screws (2 pcs. each)

Item No. 102209

» NOTES ON DISPOSAL



The crossed-out wheellie 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