NOVOS 3 (EPD) LRW

Radio room sensor optional with E-paper display

thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
Issue date: 02.10.2024 • A141

» APPLICATION

LoRaWAN® Room sensor with recording room temperature, humidty, CO2 or motion detection (variant dependent), optional with E-paper display to show the measured values. The transmission of the acquired measured values is done via LoRaWAN® wireless technology.

» TYPES AVAILABLE

Room sensor LRW

- NOVOS 3 Temp_rH LRW*
- NOVOS 3 Occ Temp_rH LRW
- NOVOS 3 Occ Lum Temp_rH LRW
- NOVOS 3 CO2 Temp_rH LRW*
- NOVOS 3 CO2 Occ Lum Temp_rH LRW

** optional available with E-Paper Display*

» 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

»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

»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 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.

»INFORMATION ABOUT SELF-CALIBRATION FEATURE CO2

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 (dust / fingerprints e.g.)
- Abrasive chemicals
- Environmental influences (high humidity / condensation on measuring element)

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

»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

Enclosure	PC V0, pure white, design cover (optional)
Protection	IP20 according to DIN EN 60529
Ambient condition	-20..+70 °C, max. 85% rH non-condensing, with CO2 sensor operating temperature range 0..+50 °C
Mounting	surface mounted on flush-mounting box (Ø=60 mm) or to be mounted flat onto the surface using screws, base part can be mounted and wired separately
Measuring variables *(type dependend)*	Temperature | humidity | CO2 | motion detection
Display *(optional)*	ePaper display, as measured value display

» LoRaWAN®

Radio technology	LoRaWAN®
LoRaWAN version	1.0.4
Device class	Class A
Frequency	EU868 (863-870 MHz)
Max. transmission power	+14 dBm (25 mW)
Receiver sensitivity	-137 dBm
Antenna	internal send- / receiver antenna
LoRaWAN Features	Over The Air Activation (OTAA), Adaptive Data Rate (ADR)
Data transmission *(configurabel)*	Heartbeat interval (default: 1440 min), Measurement-interval (default: 1 min), hysteresis transmission behavior,

Power supply	1x AA Batterie 1,5-3,6V (Alkaline or Lithium)
Battery life	+/- 5 years (depending on device configuration, network setup, battery-type* and ambient conditions)

** 3,6V Lithium battery (compared to 1,5V alkaline) recommended to increase battery life*

» NOVOS 3 Temp rH

Measuring variables	Temperature, Humidity
Accuracy temperature	±0,4K (typ. at 21 °C)
Accuracy humidity	±2% between 30..70% rH (typ. at 21 °C)

» NOVOS 3 CO2

Measuring variable	CO2
Accuracy CO2	±50 ppm +3 % of reading (typ. at 21 °C, 50% rH, 1015 hPa)

» NOVOS 3 OCC

Measuring variable	Movement
Detection range	Ø=5 m at approx. 2,5 m installation height (max. 5m)
Sensor	PIR (passive Infrared)

» NOVOS 3 Lum

Measuring values	Light
Measuring range light	0-65535 Lux
Accuracy light* *(Values in Lux)*	±5% of value range

Value range		
0 – 200	1.000 - 2.000	10.000 – 20.000
200 - 1.000	2.000 - 10.000	20.000 – 50.000

**Accuracy depends on used value range. Sensor uses value range depending on detected light.*

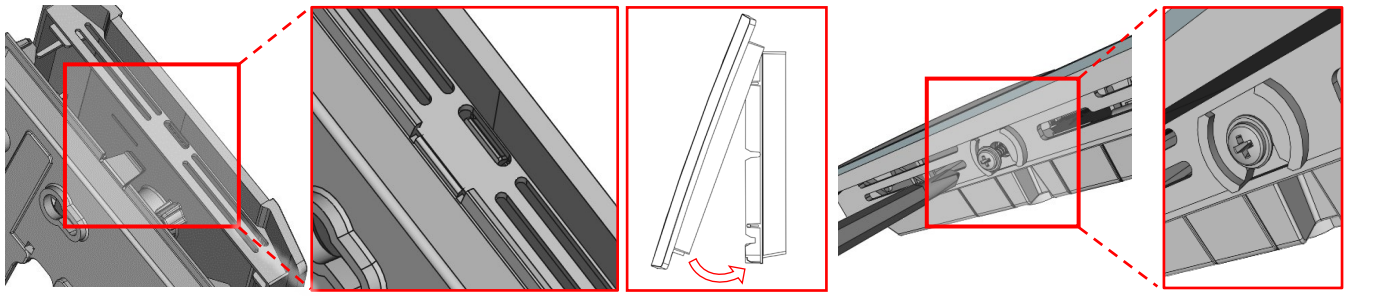
»MOUNTING ADVICES

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.

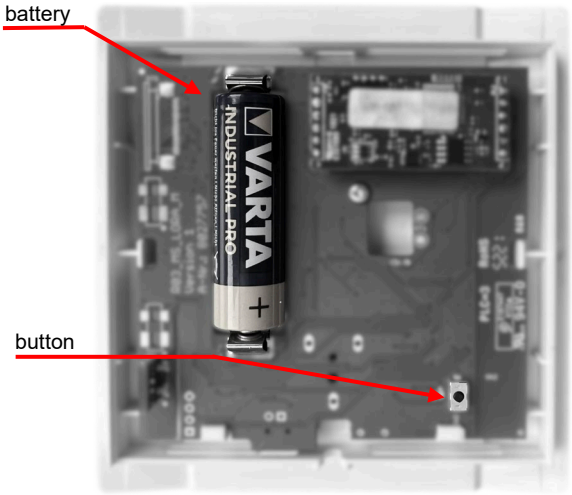
Housing open / close

Snap the upper part of the housing into the locking lug on the upper side. *(Observe the circuit board!)*	Close device.	Fix the upper part of the housing on the underside with the screw included in the delivery.



»BATTERY INSTALLATION

Position the battery as shown in the picture.
(Observe battery polarity)



»CONFIGURATION

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

Device connection	Micro-USB cable	Bluetooth radio	LoRaWAN® downlink
			
Configurations-software	PC/Notebook with uConfig software	Smartphone/Tablet with LRWApp	LoRaWAN Infrastructure

The configuration app with the corresponding instructions can be downloaded from the Google Play Store or the Apple App Store.

»ADVICE FOR COMISSIONING:

The LoRaWAN credentials required for commissioning can be read out via the uConfig software or the LRWapp. On request, the LoRaWAN credentials can also be provided in digital form. For this purpose, please contact your respective contact person.

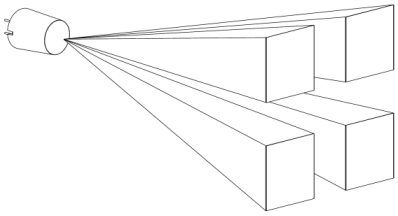
»INFORMATION ABOUT LORAWAN SPECIFICATION

The Thermokon LoRaWAN specification can be downloaded from our website.

»ADVICE FOR BLUETOOTH CONFIGURATION

Press the button to start Bluetooth communication. After pressing the button, a connection can be established via the app within approx. 20 seconds. This is indicated by a flashing LED.

»FUNCTIONAL DESCRIPTION NOVOS OCC



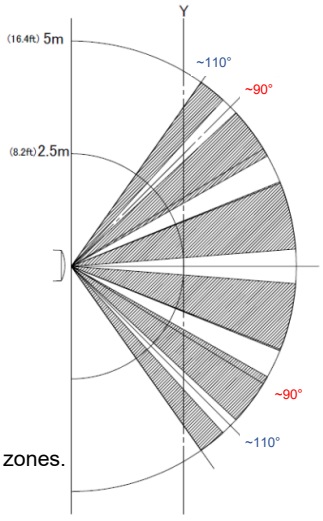
The sensor lense divides the detection area in 32 measurement areas. The sensor detects changes in infrared radiation that occur when an object* (or person) moves that has a different IR temperature than its surroundings

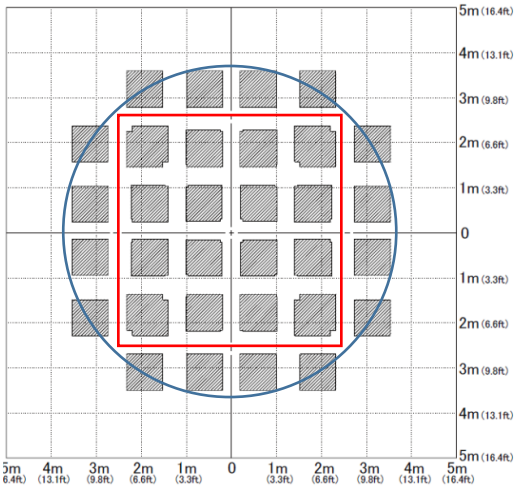
* Object properties:	
Temperature difference (between object and environment)	> +4°C
Object-speed	> 1,0 m/s
Object-size	> 700x250 mm

The motion detector should not be mounted near disturbing heat sources (e.g. lamps, radiators, fans etc.) to avoid false alarms:
Fast temperature changes on the environment can trigger false alarms.

»DETECTION RANGE (NOVOS 3-OCC)

Detection range	
Detection distance*	5 m max.
Field of view horizontal	< 90° / 110°
Field of view vertical	< 90° / 110°
Detection zone	32

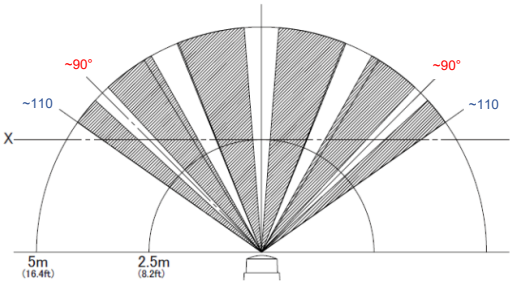




An detection distance of 2,5 m results in a square detection zone of approx. 5 x 5 m, or a circular detection zone of approx. Ø 7 m divided in 32 measuring zones.

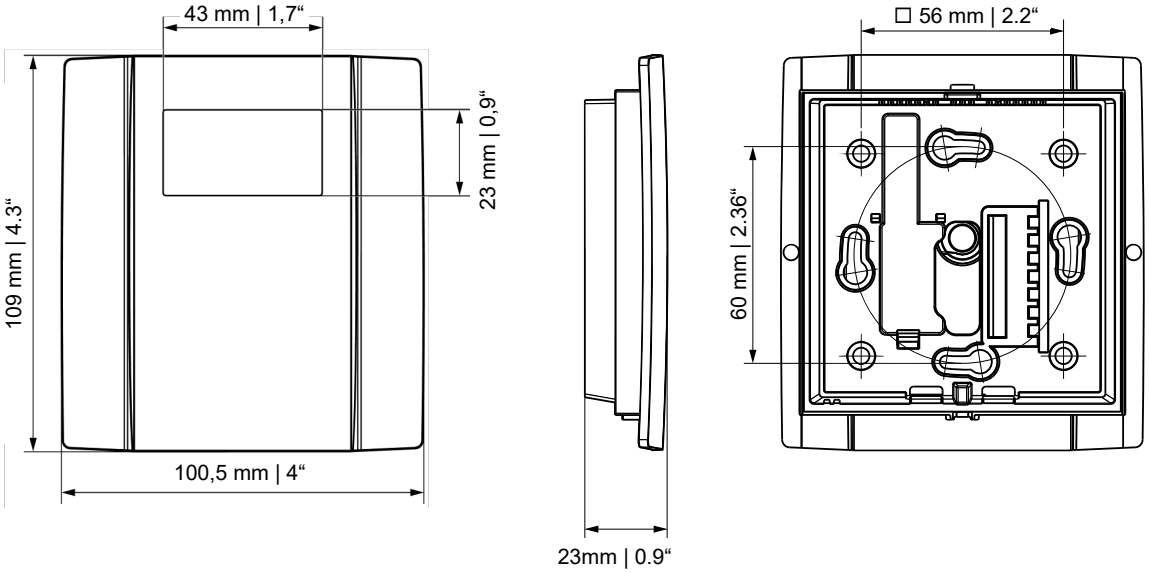
Formula: tan(field of view/2)*detection distance =Radius detection range

** The specified ranges refer to average conditions and are approximate values.*



Function test
A function test ensures that a movement is located in the optical detection area of the sensor. Walk through the detection area after integrating the device in a LoRaWAN® Network and check whether a radio telegram was send.

»DIMENSIONS (MM | IN.)



»ACCESSORIES (SCOPE OF DELIVERY)

battery 1,5V AA	Item-No.: 459099

»ACCESSORIES (OPTIONAL)

Rawplugs and screws (2 pcs. each)	Item No. 102209
Mounting bracket (surface mounted) white	Item No. 795050
Mounting bracket (surface mounted) black	Item No. 795074