

NLB-CO2+RH+T-5-MRF | Combined battery powered CO₂/RH/T MRF sensor

The NLB-CO2+RH+T-5-MRF is a wireless room sensor and is intended for continuous monitoring of indoor air quality and for effective control of ventilation (HVAC) systems according to the current air quality. The sensor monitors the concentration of carbon dioxide (CO₂), relative humidity (RH) and air temperature (T). It is used in households, offices, schoolrooms, shopping centers, restaurants, fitness centers, commercial buildings, etc. for efficient control of ventilation systems.

- › Monitors CO₂, RH and T
- › Wireless communication with a receiver
- › Battery powered
- › Easy installation
- › Maintenance during operation is not required
- › Long battery lifetime

Description

The measuring of CO₂ is based on an optical principle (NDIR) using advanced optical chamber. Built-in auto-calibration function ensures excellent long term stability and accuracy.

Measurement of the relative humidity is based on the principle of capacitive polymer sensor.

Individual quantities (CO₂, RH, T) are available on the receiver either via RS485 serial interface with Modbus communication or via two analog outputs (CO₂ and RH).

The sensor efficiently controls ventilation systems, based on current room air quality.

Low battery power is indicated by a built in LED indicator.

Explanation of abbreviations and technical terms can be found on our website in the [Glossary](#) section.



Technical data

Parameter	Value	Unit
Power supply - 2xAA	1,5	V
Battery life	24 ¹⁾	months
CO ₂ measuring range	400 – 2000/5000 ²⁾	ppm
CO ₂ accuracy	± 35 ppm ± 5 % of reading	
RH measuring range	0 – 100 %	RH
RH accuracy 0 – 90 %	± 5 %	RH
RH accuracy 90 – 100 %	± 6 %	RH
T measuring range	0 – 50	°C
T accuracy	± 0,45	°C
Working humidity non condensing	0 – 95 %	RH
Working temperature	0 to +50	°C
Storage temperature	-20 to +60	°C
Expected lifetime	min. 10	years
Ingress protection	IP20	
Dimensions	90x80x31	mm
Adjustable broadcasting period	1 to 35	minutes

¹⁾ Applies to a minimum broadcasting period of 5 minutes with original batteries.

²⁾ Range up to 5000 ppm CO₂ is available only via serial interface.



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CO₂ sensor autocalibration function

Autocalibration algorithm compensates long-term aging of the key components of the sensor. This function is available only when sensor power supply is uninterrupted. Calibration during operation lifetime is not necessary.

LED indication description

Turning on the sensor:

The sensor is turned on by inserting the batteries. Immediately after inserting the batteries, the currently set period of measurement and broadcasting of measured values is indicated in minutes by the number of flashes of built in LED. After that, each transmission of measured values is indicated by a series of three flashes of the LED. After ten data telegrams, this indication is automatically turned off to save battery.

Setting the measurement and data transmission period

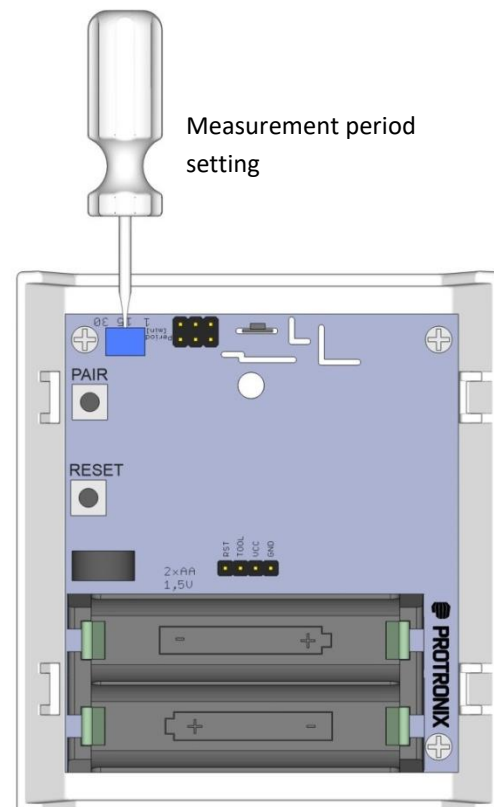
After disassembling the sensor box, it is possible to set the measurement and data transmission period using a rotary element. The period can be set in the range of 1-35 minutes with a step of 30 seconds from the left end position (1 minute) to the right end position (35 minutes). The period change will only take effect after the following telegram will be sent. To ensure the longest possible battery life, it is advisable to set the measurement period as long as possible. The default broadcast period setting is 10 minutes. By pressing the RESET button, it is possible to reset the sensor's power supply at any time and find out the set period using the LED indicator, as described in the previous paragraph.

Pairing the sensor with the receiver

- First, it is necessary to activate the pairing mode on the receiver or on all receivers with which we want to pair the selected sensor (please see the user manual for the receiver).
- Then press and hold on the PAIR button on the sensors for at least 10 seconds until LED indicates sending of pairing telegram.

- Then release the button and pairing is completed.
- We can find out whether the sensor has been paired by the fact that the receiver indicates the reception of the pairing telegram with the LED RF and subsequently indicates the normal operating mode (the receiver automatically ends the pairing mode after successfully received the pairing telegram).

Buttons and setting elements layout:



Battery replacement

LED indicates low battery as follows:

Battery capacity below 20%:

If less than 20% of the battery is left, the LED indicates this state by flashing once per hour, always immediately after data transmission.

Battery capacity below 5%:

If there is less than 5% battery left, the LED will indicate this status every time data telegram is sent.

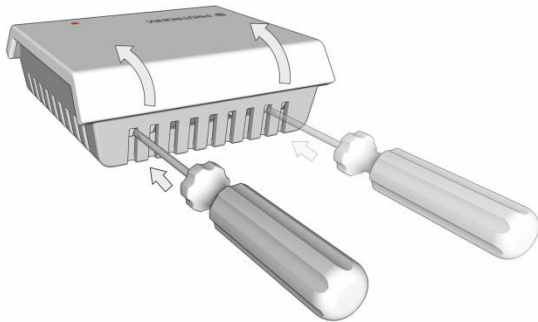
To ensure the best possible battery life, we recommend using branded AA batteries.



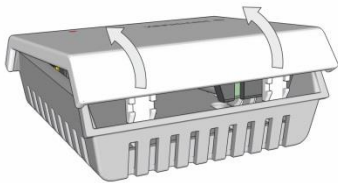
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Sensor box disassembly

Push on the two locks with a flat head screwdriver to release the upper part of the box. Then, tilt it in the indicated direction (see the picture below).



Continue to move the upper part with all the electronics until it is separated from the lower part.



Box color

Front: white - RAL9016

Base: gray - RAL7035

Way to use

The product is intended for indoor use only. You can learn more about the [recommendations for sensor placement](#) on our web pages.

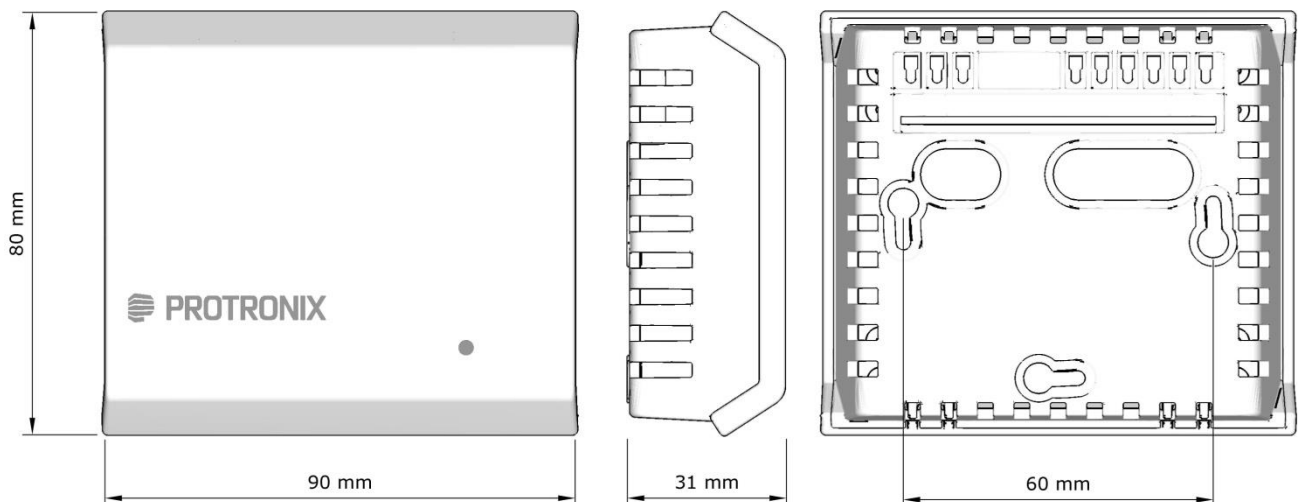
CAUTION:

It is necessary to avoid severe mechanical shock of the sensor.

End of product life

Discard the product in according to the electronic waste law and the EU directives.

Dimensions



The producer reserves the right of technical changes in order to product improvements its properties and functions without previous notice.

