

NL-ECO-RH-BA | Room relative humidity sensor with BOOST regime and alarm

Room sensor NL-ECO-RH-BA serves for continuous air quality monitoring inside buildings and for effective ventilation (HVAC) systems control according to actual level of air pollution. Sensor continuously monitors relative humidity (RH) in air. It can be effectively used in offices, schools, classrooms, shopping centers, homes, restaurants, fitness centers, commercial buildings, etc.

- › measures relative humidity in air
- › LED indication with automatic turn off according to ambient light (at night)
- › sound signalization – alarm
- › BOOST regime
- › analog voltage output 0-10V
- › output relay NO/C
- › maintenance or calibration not required during operation
- › long-term stability
- › expected lifetime >10 years



Description

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

The sensor has one analog output for the actual concentration of RH.

Ventilation, air conditioning and heat recovery units can be directly controlled based on the output signal of the sensor in very efficient way.

The trigger level of RH output relay can be set by a rotary element in the entire measuring range. Relay switching can be indicated by a short (1,5s) sound signal 1x per minute, if the function is allowed. BOOST regime allows you to manually set the ventilation to maximum power. Detailed description of functions can be found further in this manual. Current air quality can be easily checked by three LED indicators. When ambient light is dimmed, the indicators turn off automatically to not disturb you when falling asleep.

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

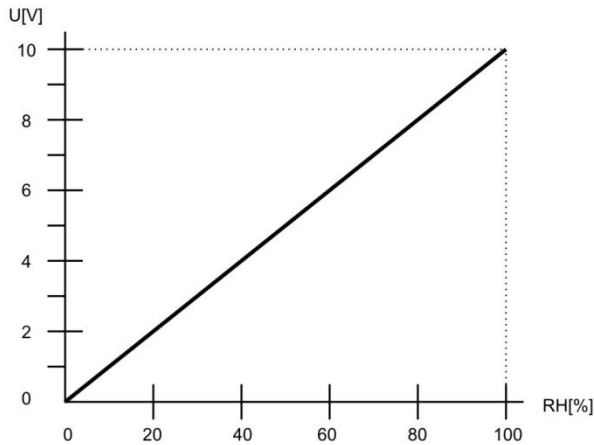
Technical data

| Parameter | Value | Unit |
|---------------------------------|------------|-------------|
| Supply voltage range | 12 – 35 | V DC |
| | 12 – 24 | V AC |
| Consumption | max 1,5 | W |
| RH measuring range | 0 – 100 % | RH |
| RH accuracy 0 – 90 % | ± 5 % | RH |
| RH accuracy 90 – 100 % | ± 6 % | RH |
| RH switching hysteresis | 5 % | RH |
| Voltage output | 0 – 10 | V DC |
| Max. switching voltage | 250/30 | V AC / V DC |
| Max. switching current | 5/5 | A AC / A DC |
| Working humidity non condensing | 0 – 90 % | RH |
| Working temperature | 0 to +50 | °C |
| Storage temperature | -20 to +60 | °C |
| Expected lifetime | 10 | years |
| Ingress protection | IP20 | |
| Dimensions | 90x80x31 | mm |



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Analog output value versus RH level



LED indication description

White LED lights:



Less than 40% RH.

- low concentrations of RH. too dry air feels cooler person perceives as compared to the same hot air with high relative humidity, dryness of mucous membranes - respiratory problems

Green LED lights:



More than or equal to 40% RH and less than or equal to 60% RH.

- optimal relative humidity to human stay

Yellow LED lights:



More than 60% RH.

- too high humidity, the risk of mold growth and associated health complications

Sensor start after power on

All three LEDs are shining simultaneously in the meantime, pending the availability of the first measured value. But no longer than 10 seconds.

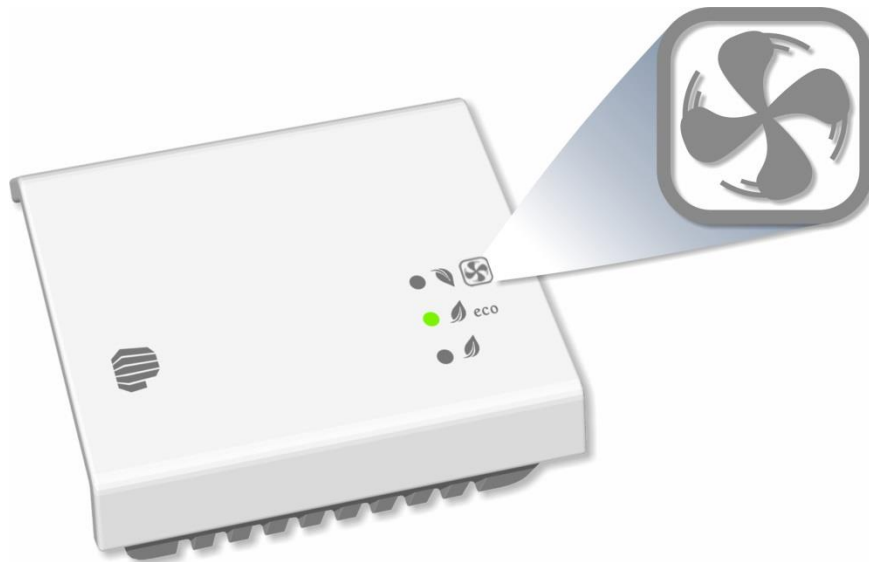
Sensor failure indication

All three LED's lights up at the same time permanently.



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BOOST regime and alarm setting touch button



BOOST regime

This regime serves to set the sensor controlled ventilation to maximum power regardless of the actual RH level. In this regime the relay contacts are closed and output is set to maximum 10V DC.

BOOST regime is activated by a short touch of the button with fan symbol.
The siren beeps briefly to confirm that the button has been touched.
Active BOOST regime is indicated by yellow LED blinking – therefore the actual concentration is not indicated.

The regime is deactivated by repeating the procedure the same way. If the BOOST regime is not deactivated by user, it will be deactivated automatically after 20 minutes.

Sound signalization – alarm

Main function of sound signalization is to indicate that the set RH level is exceeded, i.e. relay contacts are closed. Alarm function is activated and deactivated by the touch button.

For activation/deactivation of sound signalization hold your finger on the touch button with fan symbol on it.

At first siren beeps 1x shortly, then after 5s it beeps once per 1s for 5s. If it stops beeping after this action, alarm was just deactivated. If it will beep continuously, alarm was just activated. Now the button can be released.

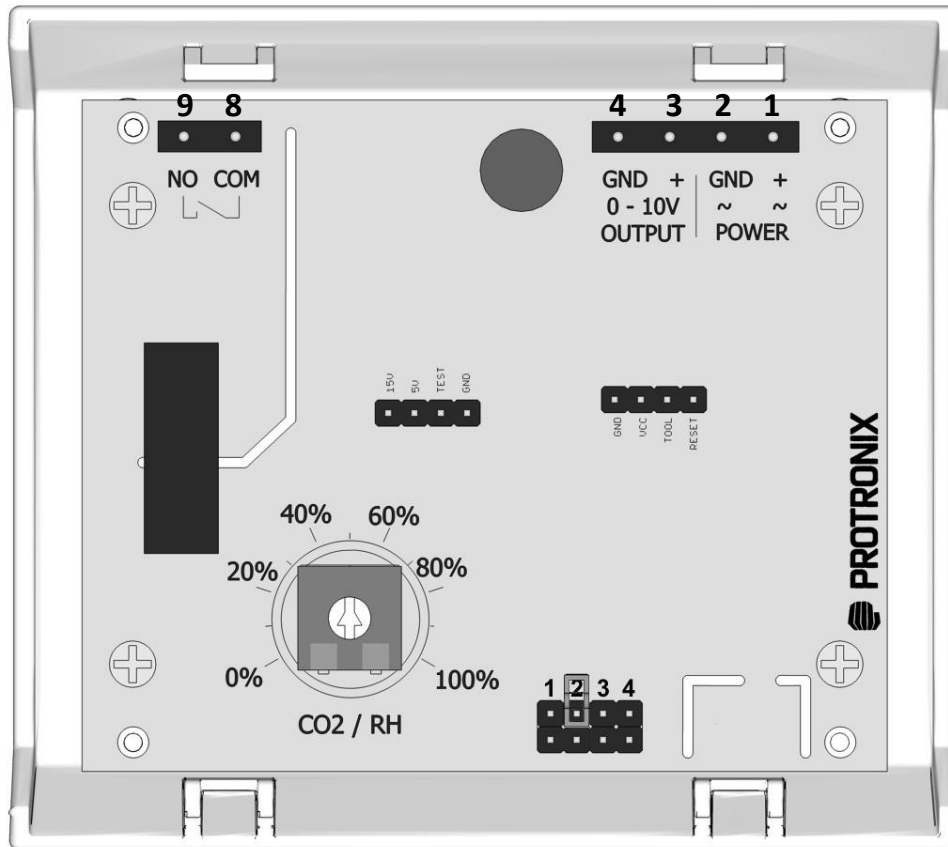
From factory the alarm is set as active.

If the automatic mode of LED signalization is selected, alarm will be active only when the LED signalization is active – i.e. during daytime. At night, when the ambient lighting decreases and the signalization is turned off as such, alarm is also deactivated. If the LED indication is set to “always”, LED signalization and alarm will be active constantly, even in the dark. In both cases the condition is activation of alarm by the touch button.



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Electronic board controls and terminals



Terminals

POWER

| | |
|----------|-------------------------------------|
| 1. ~ + | supply AC or DC (+) plus pole |
| 2. ~ GND | supply AC or DC (-) minus pole, GND |

OUTPUT

| | |
|--------|--------------------------|
| 3. + | analog output 0-10 V |
| 4. GND | output – minus pole, GND |



| | |
|--------|-------------------------------------|
| 8. COM | output relay, common contact |
| 9. NO | output relay, normally open contact |

Jumpers

| jumper | meaning | fitted | not fitted |
|--------|---|--------|------------|
| 2 | LED indication | always | automatic |
| 3 | this positions are not for user setting | | |
| 4 | | | |
| 1 | | | |

Factory setting

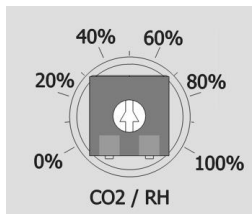
| | |
|-----------------|-----------|
| LED indication | automatic |
| Switching level | 50% |



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Setting the relay switching level using rotary selector

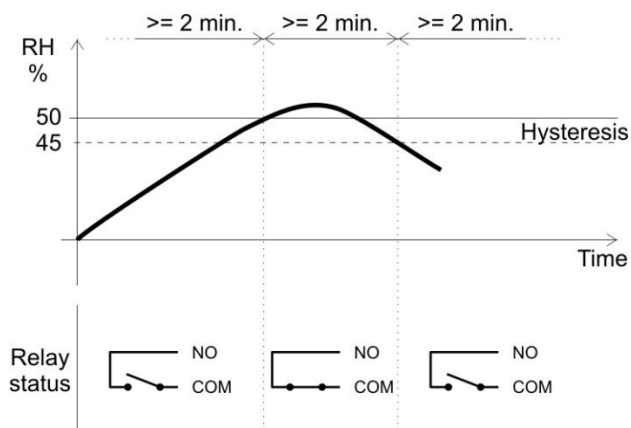
The 0 - 100% selector setting corresponds to the value of RH measuring range – see example below.



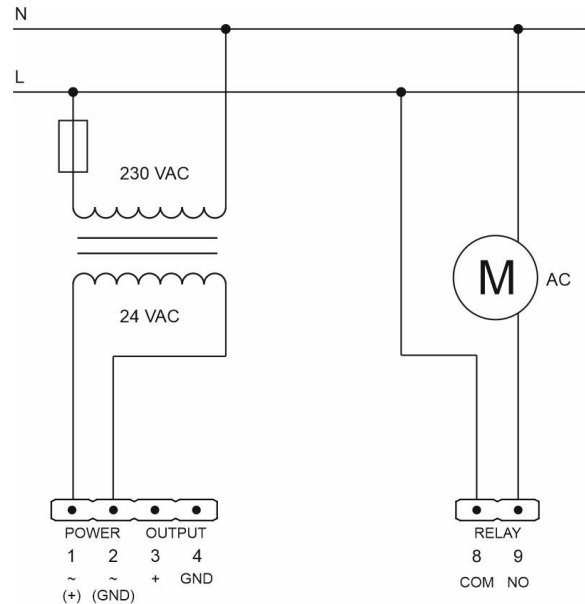
The relay switches on when the level measured value rises above the level of the rotary selector.
The relay switches off when the level measured value falls below the level of the rotary selector minus hysteresis value of 5% from measuring range.
Minimal lag between changes in state relays are 2 minutes.

| Selector value | RH |
|----------------|-------|
| 0 % | 0 % |
| 10 % | 10 % |
| 20 % | 20 % |
| 30 % | 30 % |
| 40 % | 40 % |
| 50 % | 50 % |
| 60 % | 60 % |
| 70 % | 70 % |
| 80 % | 80 % |
| 90 % | 90 % |
| 100 % | 100 % |

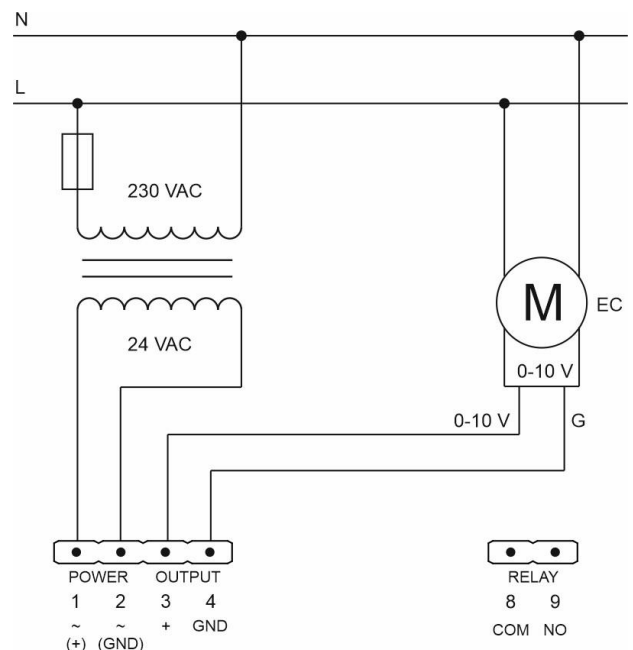
Relay switching example – hysteresis 5% RH, selected switching level value 50% (50% correspond to 50% RH)



Sensor connection using the output relay

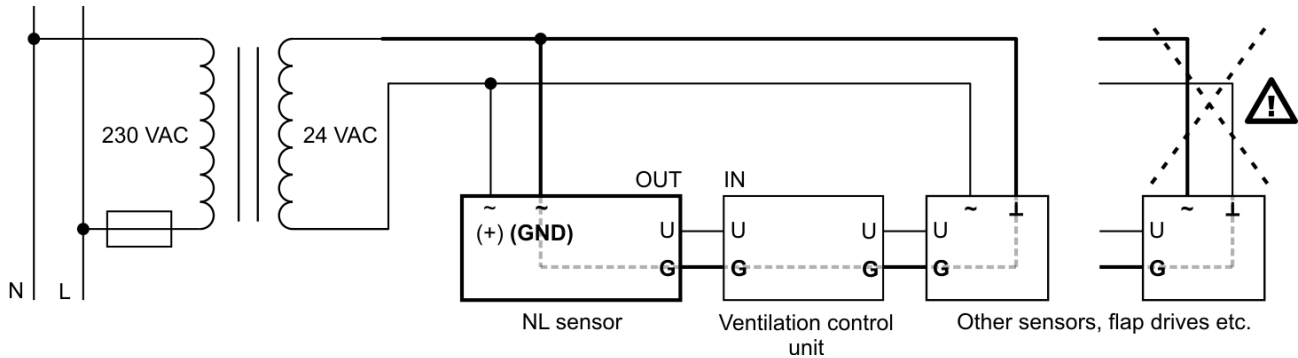


Sensor connection - direct EC motor control using signal 0-10 V

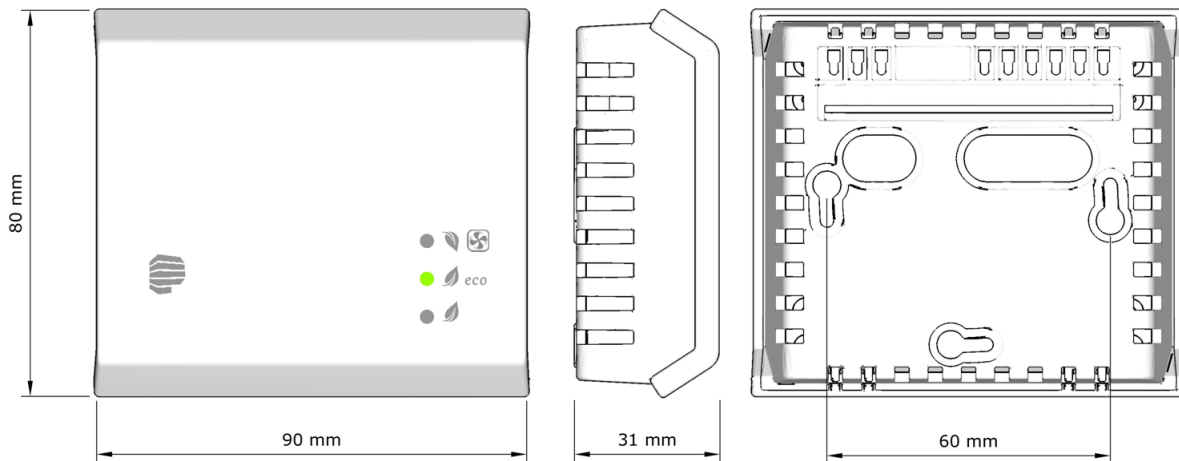


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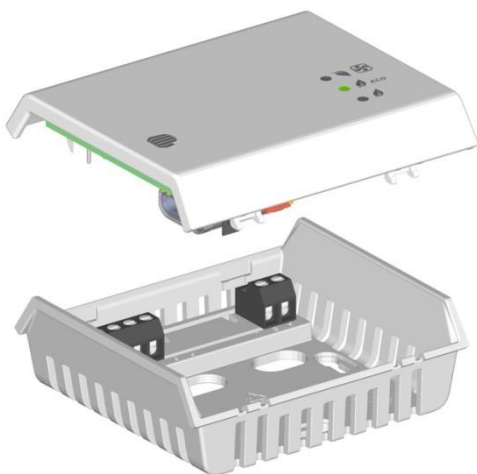
If you connect other devices or more sensors to the same AC power source as the NL sensor, it is necessary to meet GND wiring of all analog inputs and outputs, as well as power wires.



Dimensions



Sensor assembly



Box color

Front: white - RAL9016. Base: gray - RAL7035.

Way to use

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

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

