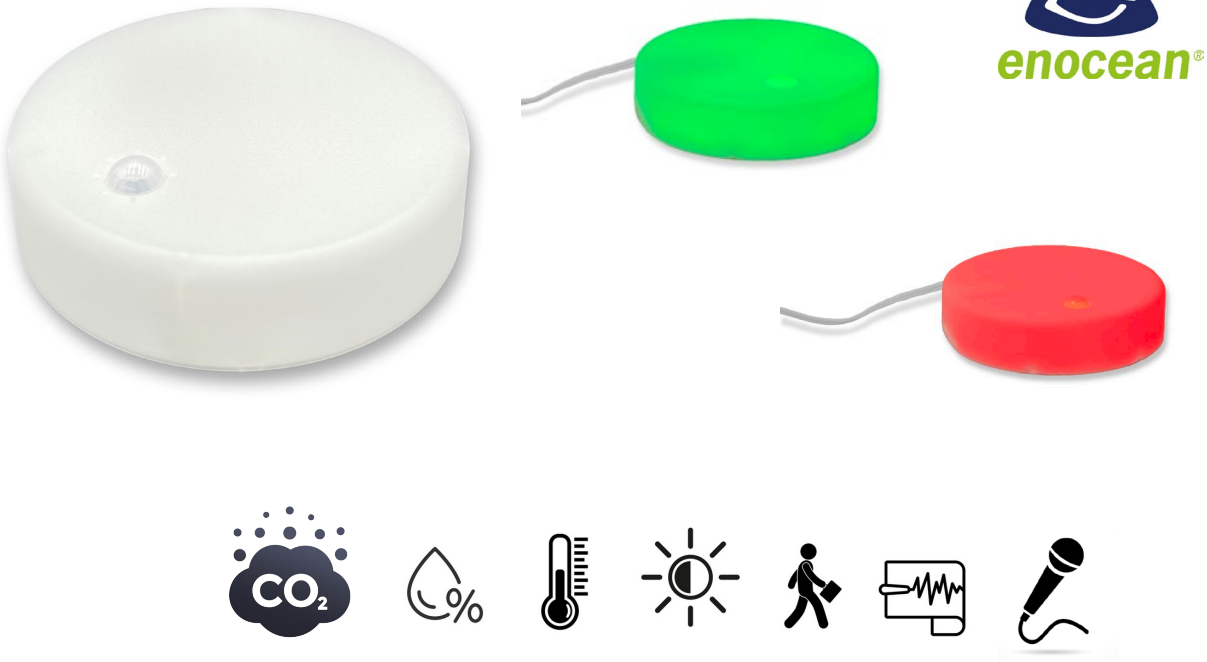
# AL-602-02-902 EnoPuck CO2 NOISE / FCC

## $CO_2$ – “traffic light” / Sound pressure level / Multi-sensor, RGB-Led, EnOcean, +12 V DC
## Item nr. 12562

Interfaces:
Sensors for CO2, sound pressure level, temperature, rel. Humidity, acceleration / vibration, movement / PIR,
1x EnOcean bi-directional (internal antenna), supply: +12 V DC, 100 mm x 28 mm



The CO2 traffic light of the type **AL-602-02-902 EnoPuck® CO2 NOISE / FCC** offers the possibility of being used both as a stand-alone solution and in connection with building automation as a multi-sensor and LED light display.

In addition tot he EnoPuck® CO2, it measures also the Sound Pressure Level in d dBSPL-

The individual solution measures and displays the CO2 measured value in the form of a traffic light (green / yellow / red), whereby the limit values, colors and brightness of the LEDs can be configured at any time using the BL-PC-FLEX-2 software (pre-setting of the limit values from Factory = from 1000 yellow / from 2000 ppm red, others on request).



Paffrather Str. 140, 51465 Bergisch Gladbach
Hauptstraße 76, 32479 Hille
info@deuta-controls.de; www.deuta-controls.net

Tel.:+49 2202 285 57- 61
Tel: +49 5734 51466 - 0
Fax:+49 5734 51466 - 28

The technical data of the sensors are as follows:

- • CO2: 0 - 2,550 ppm

In addition to being used as a pure CO2 traffic light, additional sensors are integrated:

- Sound pressure level 35.0 – 80.3 dBSPL
- Temperature: 0 - 50 ° C
- Humidity: 0 - 95%
- PIR sensor: 100 degree opening angle, range 3 to 5 meters
- Vibration: sensitivity 0.061 g
- Brightness: 0 - 64,000 lux

All measured values are transmitted via EnOcean. The EnoPuck CO2 NOISE is configured wirelessly using the BL-PC-FLEX-2 software. The only connection of the EnoPuck CO2 NOISE is the power supply with +12 V DC.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# Technical data

## Interfaces

| | |
|---|---|
| Type | EnOcean |
| Number | 1 |
| Transmit / receive center frequency | 902.875 MHz |
| Frequency range used | 902.875 – 902.875 MHz |
| Maximum transmission power | + 94 dBµV/m |

### Sensors: $CO_2$

| | |
|---|---|
| Measuring range | 0 – 2.550 ppm |
| Accuracy | ± 30 ppm abs.,<br>± 3 % of meas. Val.<br>(@ 25 °C, range 400 – 10.000 ppm) |
| Repeatability | 10 ppm |
| Temperature stab. | 2,5 ppm / °C |
| Response time | Typ. 25 s |

### Sensors: Rel. humidity

| | |
|---|---|
| Measuring range | 0 – 95 % |
| accuracy | ± 2 % |
| Repeatability | 0,1 % |
| Response time | Typ. 8 s |

### Sensors: Temperature

| | |
|---|---|
| Measuring range | 32 – 122 °F |
| Accuracy | ± 0,5 °F |
| Repeatability | 0,1 °F |
| Response time | Typ. 2 s |

### Sensors: Accelerometer

| | |
|---|---|
| Measuring range | ± 8 g |
| Sensitivity | 0,061 mg |

### Sensors: Motion/ PIR

| | |
|---|---|
| Detection angle | Radial, 100 degrees |
| Detection area | 3 – 5 m |

### Sensors: Brightness

| | |
|---|---|
| Measuring range | 0 – 64.000 lux |
| Accuracy | ± 10 % |

### Sensors: Sound pressure level

| | |
|---|---|
| Measuring range | 35.0 – 80.3 dBSPL |
| Accuracy | ± 10 % |

### User interfaces

| | |
|---|---|
| Service button | Yes |
| Service LED | - |
| Buzzer | Yes |

### Housing / Connection technology

| | |
|---|---|
| Connection technology | Round socket for connecting the power supply unit (low voltage hollow plug) |
| Housing | Plastic, PC, translucent, white |



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## Power supply

| | |
|---|---|
| Supply voltage | 12 V DC |
| Power consumption | Typ. 1,5 W, max. 5 W |

## Environmental conditions

| | |
|---|---|
| Operating temperature | 0..50 °C |
| Storage temperature | -20..+70 °C |
| Humidity | 0..99% relative humidity, non-condensing |
| Protection class | IP20 |

## Dimensions and weight

| | |
|---|---|
| Weight | 150 g |
| Dimensions | Diameter: 100 mm, height: 28 mm |

## Tests / approvals

| | |
|---|---|
| FCC Rule parts | 15.249 |



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## Table of supported EEP (EnOcean Equipment Profile)

### Transmit / TX

| Nr. | EEP | Description | Tx-ID |
|---|---|---|---|
| 1 | A5-09-04 | CO2-Sensor (Humidity, CO2, temperature) | Base-ID + 100 (dec.) |
| 2 | A5-07-01 | Occupancy sensor with supply voltage monitor (PIR, Vibration) | Base-ID + 101 (dec.) |
| 3 | A5-08-01 | Brightness | Base-ID + 102 (dec.) |
| 4 | D2-14-52 | Sound pressure level (+Temp, Brightness, Presence) | Base-ID + 103 (dec.) |

### Notice:

The EnoPuck CO2 NOISE sends with the EnOcean Base-ID + 100 / EEP A5-09-04, with the Base-ID + 101 / EEP A5-07-01 and the Base-ID +102 / A5-08-01. It is therefore not necessary to configure or select the EEP.

### Receive / RX

| Nr.. | EEP | Description |
|---|---|---|
| 1 | F6-02-01 | Light and Blind Control - Application Style 1 |
| 2 | F6-02-02 | Light and Blind Control - Application Style 2 |
| 3 | F6-02-03 | Light Control - Application Style 1 |
| 4 | A5-07-01 | Occupancy with Supply voltage monitor |
| 5 | A5-07-02 | Occupancy with Supply voltage monitor |
| 6 | A5-07-03 | Occupancy with Supply voltage monitor and 10-bit illumination measurement |
| 7 | A5-06-01 | Brightness sensor, range 300lx to 60.000lx |
| 8 | A5-09-04 | CO2-Sensor (Humidity, CO2, temperature) |

## Short description

### Power supply

The EnoPuck CO2 NOISE is supplied with a voltage of 12 V DC via the plug-in power supply included in the scope of delivery. The power consumption is typically 1.5 W.

### EnOcean

The integrated EnOcean transceiver enables bi-directional communication with sensors, a higher-level controller and the configuration software BL-PC-FLEX-2 and EnOcean USB stick.



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### LED, RGB

The lighting takes place via RGB LEDs, which shine into the housing from below.

## Functionality of the EnoPuck CO2 NOISE

### Measurement of CO2 concentration and color display (RGB)

The EnoPuck CO2 NOISE continuously measures the CO2 concentration of the ambient air and switches the LEDs to green, yellow or red (or any self-configured color value) if the configured limit values are exceeded.

The transmission interval of the measured value CO2 (as well as that of every other measured value) via EnOcean can be configured via BL-PC-FLEX-2.

### Re-calibration of the CO2 measured value

If the EnoPuck CO2 NOISE has been exposed to mechanical stress such as impact, strong vibration or a fall, the measurement of the CO2 value may no longer be correct. In this case, manual calibration of the CO2 sensor in the EnoPuck CO2 is required.

Please proceed as follows:

1. Find a suitable location where the EnoPuck can measure CO2 outside air (no drafts). Make sure that the device is never exposed to moisture or rain.

2. Supply the EnoPuck CO2 via the plug-in power supply. Do not disconnect the power supply until the end of the process.

3. Press the service button continuously for at least 8 seconds:

   - After 2 seconds the EnoPuck CO2 flashes red. This signals that calibration will be carried out if you press it again. If you let go now, the process will be canceled.

   - After 6 seconds the EnoPuck CO2 starts to flash blue. The calibration process takes 10 minutes. You can now release the button.

4. Wait until the process is finished. The purpose of the waiting time is to create the same CO2 concentration inside the EnoPuck CO2 as in the outside air. At the end of the time, the value then measured is used as the reference value of 400 ppm. This is the typical CO2 concentration in the outside air.

5. As soon as the calibration has been successfully completed, the EnoPuck CO2 NOISE lights up green continuously.

6. Disconnect the EnoPuck CO2 NOISE from the plug-in power supply. After the restart, the EnoPuck CO2 NOISE is ready for operation again.

7. In the event of an error, it lights up red continuously. Please disconnect the EnoPuck CO2 NOISE from the supply and in this case repeat the calibration process again.

## Measurement of rel. Humidity, temperature

The EnoPuck CO2 NOISE continuously measures the rel. Humidity and temperature. The measured values are sent together with the CO2 value.

## Detection of movement and vibration

The EnoPuck CO2 NOISE uses an integrated acceleration sensor and a PIR sensor integrated in the top to continuously monitor the environment for movement or vibration, such as the table top at the installation site. As soon as one of the two events (vibration and / or detection PIR) occurs, a message “movement detected” is sent immediately.

## Measurement of the ambient brightness

The EnoPuck CO2 NOISE continuously measures the ambient brightness. The measurement of the brightness is made possible by the fact that the EnoPuck CO2 NOISE automatically switches the LEDs off and on again briefly when the measured value is to be transmitted.

## Measurement of Sound pressure level

The EnoPuck CO2 NOISE measures the noise level in a configurable time interval.

## Receipt of EnOcean wireless telegrams

The EnoPuck CO2 NOISE is configured wirelessly using the BL-PC-FLEX-2 configuration software. The device is detected as such by the software and displayed in the project explorer.

When the three color channels of an EnoPuck CO2 NOISE are controlled by a higher-level controller, all functions of the software are then available.

## Sending of EnOcean wireless telegrams

The measured values for humidity, CO2, temperature and Sound Pressure Level are transmitted for each sensor at separately configurable intervals using the BL-PV-FLEX-2 software.
A message from the motion detection (vibration and motion detector) is also sent immediately.

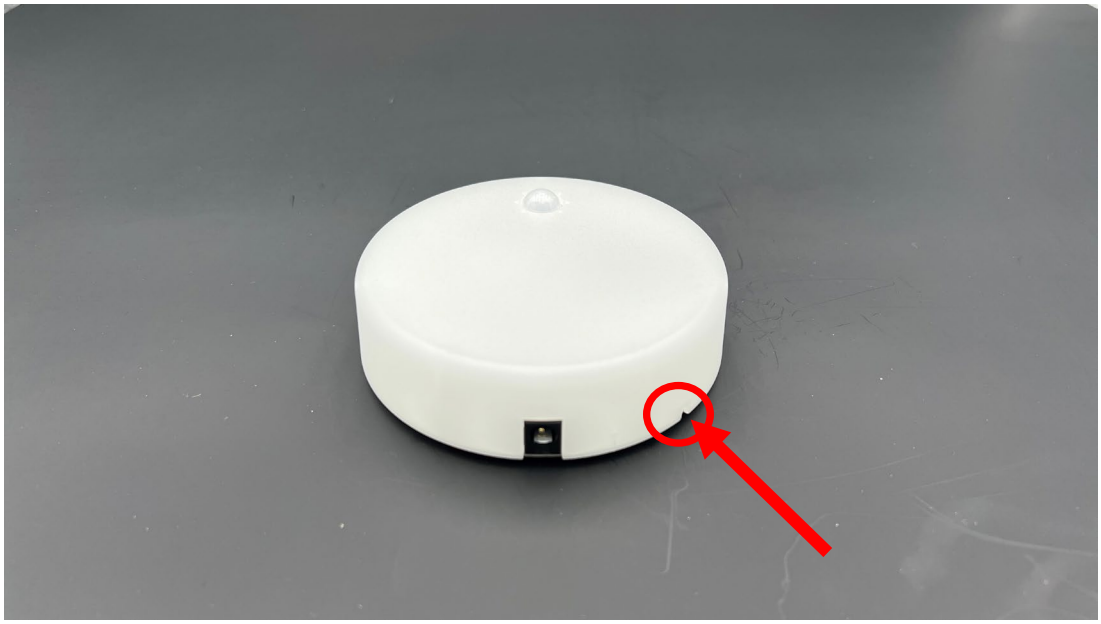
## Sending the learning telegrams

The EnoPuck CO2 NOISE has a service button in the device. This is located on the side, approx. 3 cm to the right of the socket for the plug-in power supply, and can be operated with a paper clip, for example:

If the button is pressed 1x briefly within 2 seconds, a learning telegram for the EEP A5-09-04 is sent after the 2 seconds have elapsed.

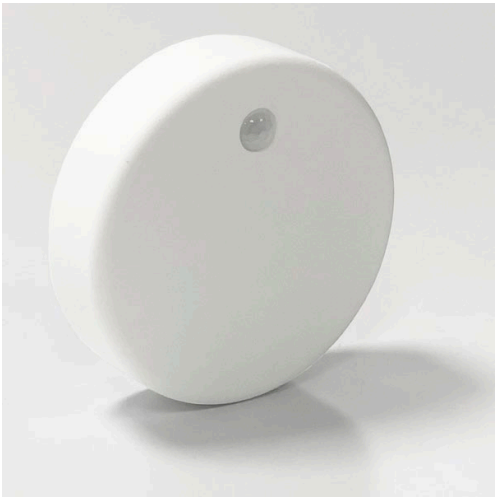
If the button is pressed 2x briefly within 2 seconds, a learning telegram for the EEP A5-07-01 is sent after the 2 seconds have elapsed.

If the button is pressed 3x briefly within 2 seconds, a learning telegram for the EEP A5-08-01 is sent after the 2 seconds have elapsed.



## Dimension:

Diameter: 100 mm; height: approx. 28 mm



## Ordering information

| Part name | Part nr. | Part description |
|---|---|---|
| **AL-602-02-902 EnoPuck CO2 NOISE / FCC** | 12563 | CO2 traffic light, EnoPuck CO2 NOISE, RGB-LED, EnOcean 902 MHz,Multi-sensors for CO2, humidity, temperature, vibration, PIR, Sound Pressure Level, Supply voltage 12 V DC (+/-%), dimensions 100 x 18 mm, Housing: PC white diffuse; incl. plug-in power supply 12 V DC; |
| **AL-490-01-868 EnOcean USB-Stick 902 MHz FCC / US** | 12649 | EnOcean USB stick, 902 MHz, FCC, for PC, to use the software BL-PC-FLEX-2 or with VL-7xx HMI / operator panel, operating temperature:0 ..+40 ° C; rel. hum. 0..93% r.H .; internal antenna; |

## FCC (United States) Regulatory Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

## ISED Regulatory Statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1 . This device may not cause interference.

2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada

applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage.

2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Version 05, 07.09.2023