

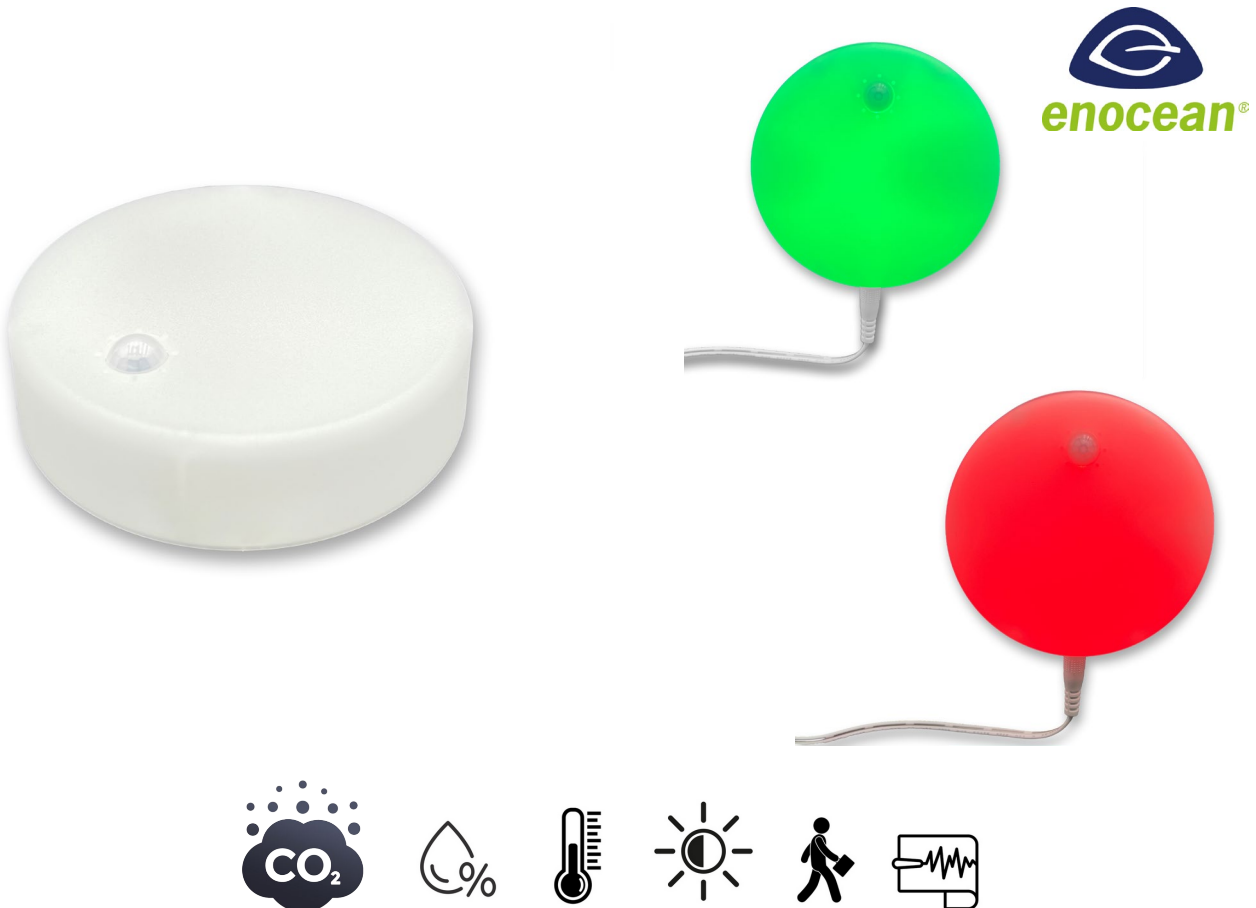
## AL-602-01-921 EnoPuck® CO2

**EnOcean Sensor, CO2 – “traffic light” with multi-sensor and RGB-Led**  
**External power supply +12 V DC, EnOcean 921.7 MHz / TAIWAN**

**Part no. 12776**

Interfaces:

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



The CO2 traffic light of the type AL-602-01-921 EnoPuck CO2 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.

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).

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:

- 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 is configured wirelessly using the BL-PC-FLEX-2 software. The only connection of the EnoPuck CO2 is the power supply with +12 V DC.

In addition to the optional acoustic warning, there is also a buzzer in the device that can be linked to the events.

## Technical data

### Interfaces

Type	EnOcean
Number	1
Operating frequency	921.7 MHz
Transmission power	0 dBm
Modulation type	FSK
Number of channels	Ch 24 (921,7 MHz)
Transfer / data rate	125 kbit/s

#### Sensors: CO<sub>2</sub>

Measuring range	0 – 2.550 ppm
Accuracy	± 30 ppm abs., ± 3 % of meas. Val. (@ 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 %

#### 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

### Power supply

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

### Dimensions and weight

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

### Environmental conditions

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

### Tests / approvals

	Will be updated finally

## 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.)

### Notice:

The EnoPuck CO2 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** 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.

## LED, RGB

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

## Functionality of the EnoPuck CO<sub>2</sub>

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### Measurement of CO<sub>2</sub> concentration and color display (RGB)

The EnoPuck CO<sub>2</sub> continuously measures the CO<sub>2</sub> 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 CO<sub>2</sub> (as well as that of every other measured value) via EnOcean can be configured via BL-PC-FLEX-2.

### Re-calibration of the CO<sub>2</sub> measured value

If the EnoPuck CO<sub>2</sub> has been exposed to mechanical stress such as impact, strong vibration or a fall, the measurement of the CO<sub>2</sub> value may no longer be correct.

In this case, manual calibration of the CO<sub>2</sub> sensor in the EnoPuck CO<sub>2</sub> is required.

Please proceed as follows:

1. Find a suitable location where the EnoPuck can measure CO<sub>2</sub> outside air (no drafts). Make sure that the device is never exposed to moisture or rain.

2. Supply the EnoPuck CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> starts to flash blue.

1. The calibration process takes 10 minutes. You can now release the button.

Wait until the process is finished. The purpose of the waiting time is to create the same CO<sub>2</sub> concentration inside the EnoPuck CO<sub>2</sub> 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 CO<sub>2</sub> concentration in the outside air.

2. As soon as the calibration has been successfully completed, the EnoPuck CO<sub>2</sub> lights up green continuously.

3. Disconnect the EnoPuck CO<sub>2</sub> from the plug-in power supply. After the restart, the EnoPuck CO<sub>2</sub> is ready for operation again.

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

## Measurement of rel. Humidity, temperature

The EnoPuck CO2 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 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 continuously measures the ambient brightness. The measurement of the brightness is made possible by the fact that the EnoPuck CO2MIC automatically switches the LEDs off and on again briefly when the measured value is to be transmitted.

## Receipt of EnOcean wireless telegrams

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

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

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## Sending of EnOcean wireless telegrams

The measured values for humidity, CO2 and temperature 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 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.





## Dimensions:

Diameter: 100 mm; height: approx. 28 mm



(Note: Pictures similar, label on the rear view shows EU-Version)

## Ordering information

Part name	Part nr.	Part description
AL-602-01-921 EnoPuck CO2 / NCC / TAIWAN	12776	CO2 traffic light, RGB LED, table version; Multisensor for sound pressure level, CO2, humidity, temperature, vibration, PIR; supply voltage 12 V DC (+/-%); EnOcean 921 MHz, NCC, TAIWAN, dimensions 100 x 28 mm, housing PC white opaque; incl. plug-in power supply 12 V DC

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