

AL-439-00-868 EnoSense® CO2

Product data sheet

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AL-439-00-868 EnOcean Sensor “EnoSense® CO2” / CE

CO2 Sensor, energy harvesting with solar cell,
(optional: batteries, 2x AAA), EnOcean 868 MHz / CE
Part nr. 12590 (white) / 12619 (black)

Interfaces:

Integrated sensors for CO2, temperature and rel. humidity,
1x EnOcean (internal antenna), supply: solar cell, optional batteries 2x AAA, 67 x 116 x 23 mm



Front view



Rear view, with wall bracket (left)



The self-powered (optional with backup batteries) AL-439-00-868 EnoSense® CO2 sensor is used to measure the following values:

- CO2 (0 .. 5.000 ppm)
- Rel. humidity (0 .. 99 %)
- Temperature (0°.. +50 °C)

Technical data

Interfaces

Type	EnOcean
Number	1
Transmit / Receive frequency	868.3 MHz ASK
Occupied frequency band	868.0 – 868.6 MHz
Maximum	+5 dBm

Sensor: CO2

Measuring range	0 .. 5.000 ppm
Accuracy	typ. +/- (30 ppm +3% of reading) max. +/- (45 ppm +3% of reading)
Resolution	1 ppm
Response time	30 s

Sensor: Temperature

Measuring range	0 °.. +50 °C
Accuracy	typ. +/- 0.2 °C max. +/- 0.4 °C
Resolution	1/10 °C
Response time	< 30 s
Long term drift	Typ. < 0.02 °C / year

Sensor: Rel. humidity

Measuring range	0 .. 99%
Accuracy	typ. +/- 2.0 % max. +/- 3.5 %
Resolution	0.5 %
Response time	< 8 s
Long term drift	Typ. < 0.25 % / year

User interfaces

Service button	Yes, operated through a hole in the back panel
Service LED	Yes, internal (green)

Housing

Material	PC
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Power supply

Power supply	Integrated solar cell
Batteries	Optional, 2x AAA

Environmental conditions

Operating	0° .. +50 °C
Storage	-15° .. +60 °C
Humidity	0 .. 99 % rel. humidity, non condensing
Protection class	IP20

Dimensions and weight

Weight	111 g incl. batt 88 g without batt.
Dimensions	67 x 116 x 24 mm

Standards / approvals

CE	2014/53/EU RED directive 2011/65/EU + Annex 2015/863/EU RoHS-3 directive
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Table of supported EEP (EnOcean Equipment Profile)

Transmit / TX

Nr.	EEP	Description	TX-ID
1	(47-)D1-09-10 (MSC)	<ul style="list-style-type: none"> • CO2 • Humidity • Temperature • CAP voltage (energy buffer) • Solar voltage • Battery voltage 	EURID

Receive / RX

Nr..	EEP	Description
-	-	-

MSC data structure

Data field	CO2	Humidity	Temp.	CAP voltage	Solar voltage	Batt. voltage
Offset	16	32	40	49	57	65
Size	16	8	9	8	8	8
Range min / max	0 / 5000	0 / 200	0 / 500	0 / 255	0 / 255	0 / 255
Scale min / max	0 / 5000	0 / 100	0 / 50	0 / 5.1	0 / 5.1	0 / 5.1
Unit	-ppm	%	-°C	-V	V	V
Meaning	CO2 level	Rel. humidity	Temp.	Cap. voltage	Solar voltage	Batt. voltage

Device description

Power supply

When ambient light (daylight or artificial light) is sufficient, the EnoSense® CO2 is powered exclusively by the integrated solar cell. In addition, the device can be equipped with two batteries (AAA) to support the solar cell.

EnOcean

The integrated EnOcean transceiver cyclically transmits the measured values to a building management system using unidirectional EnOcean communication.

Mechanics / assembly

The device can be attached to the wall using the enclosed wall bracket. Mounting with an adhesive strip is also possible thanks to the smooth back of the device.

The assembly should take place at a typical height of approx. 1.75 m.

Functions of the EnoSense® CO2 / measurement technology

CO2 measurement, including temperature and humidity

If the energy level is sufficient, the device sends all 5 minutes the measured values for CO2, rel. humidity and temperature.

After 2 hours of darkness, the device reduces the transmission interval to an interval of approx. 60 minutes to save energy.

Supply voltage monitoring / maintenance

To support remote maintenance, the values of the supply voltage and the current solar voltage are measured and send via EnOcean in every message.

Calibration of the CO2 measurement

The device does not perform an automatic calibration of the CO2 measurement.

If the measured value deviates significantly from the expected measured value, a new calibration may have to be carried out.

For this purpose, the EnoSense® CO2 has a service button and a service LED (green) inside. This button is used, among other things, to trigger a calibration.

The button can be pressed with a thin wire, such as a paper clip, without opening the device.

Device in Sleep-Mode:

1x short button press:	The EnoSense® CO2 switches to operating mode. This is confirmed by 1x short blink of the LED (250 ms). In addition, a learn telegram is send.
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Device in operating mode:

1x short button press:	The EnoSense® CO2 sends a learning telegram. This is confirmed by 1x short blink of the LED (250 ms).
Hold button < 5 s:	Slow blinking of the LED (5x), no function is executed.
Hold button > 5 and < 10 s	Rapid blinking of the LED. If you now release the button, the EnoSense® CO2 starts the calibration. Calibration is complete after 10 – 15 minutes.
Hold button > 10 s	The LED switches off. If the button is now released within the next 2 seconds, the EnoSense® CO2 switches to the so-called sleep mode. This is required, among other things, for shipping the device by air freight.

Turn sleep mode on/off

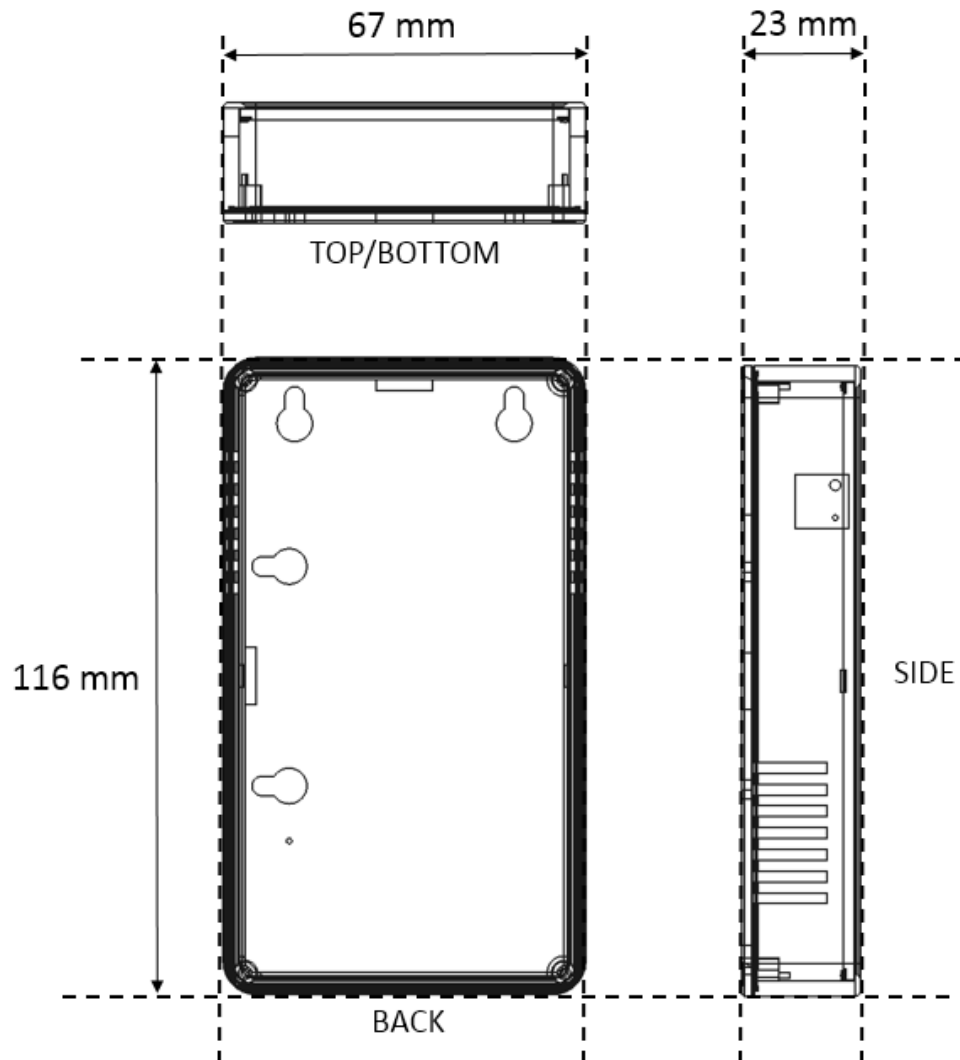
Turn off sleep mode:

1x short button press: The EnoSense® CO2 switches to operating mode.

Turn on sleep mode:

Hold button > 10 s The LED switches off. If the button is now released within the next 2 seconds, the EnoSense® CO2 switches to the so-called sleep mode. This is required, among other things, for shipping the device by air freight.

Dimensions: 67 mm x 116 mm x 23 mm



Ordering information

Article name	Part nr.	Part description
AL-439-00-868 EnOcean Sensor „EnoSense® CO2 “ / white / CE	12590	Sensor EnOcean "EnoSense® CO2 ", for measuring CO2, temp. and rel. Humidity; for wall mounting with/without holder; EP: 47-D1-09-01; Supply: internal solar cell, dimensions 67 x 116 x 23mm, EnOcean 868 MHz, CE, Housing: PC, white (similar to RAL 9010 / pure white); incl. wall bracket
AL-439-00-868 EnOcean Sensor „EnoSense® CO2“ / black / CE	12619	Sensor EnOcean "EnoSense® CO2 ", for measuring CO2, temp. and rel. Humidity; for wall mounting with/without holder; EP: 47-D1-09-01; Supply: internal solar cell, dimensions 67 x 116 x 23mm, EnOcean 868 MHz, CE, Housing: PC, signal black (RAL 9004); incl. wall bracket

Note according to FuAG §20 paragraph 4:

This device is only approved for operation within the member states of the European Union.

EU Declaration of Conformity

DEUTA Controls GmbH hereby declares that the radio system type AL-439-00-868 EnoSense® CO2 complies with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following Internet address: www.deuta-controls.de in the Service/Downloads area (doc. EUDC2022_313).

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