

AL-439-00-868 EnoSense® CO2

Product data sheet

Page 1 of 8

AL-439-00-868 EnOcean sensor "EnoSense® CO2" / CE

CO2 sensor, energy self-sufficient with solar cell
(optional: batteries, 2x AAA), EnOcean 868 MHz / CE
Article no. 12590 (white) / 12619 (black)

Interfaces:

Integrated sensors for CO2, temperature, relative humidity and air pressure

EnOcean (internal antenna), power supply: solar cell, optional batteries 2x AAA, 67 x 116 x 23 mm



Front / side



Rear, with wall bracket



The energy self-sufficient sensor (optional: batteries, 2x AAA) of type **AL-439-00-868 EnoSense® CO2** is used to measure the following values:

- CO2 (0 .. 10.000 ppm)
- Relative humidity (0 ... 99 %)
- Temperature (0 ° ..+ 80 °C)
- Air pressure (850 .. 1105 hPa)

Note: The available data depends on the selected EEP.

AL-439-00-868 EnoSense® CO2

Product data sheet

Page 2 of 8

Technical data

Interfaces

Type	EnOcean
Quantity	1
Transmit / receive center frequency	868.3 MHz ASK
Frequency range used	868.0 - 868.6 MHz
Maximum transmission power	+5 dBm

Sensor: CO2

Measuring range	0 .. 10,000 ppm
Accuracy	typ. +/- (30 ppm +3% of measured value) max. +/- (45 ppm +3% of measured value)
Max. resolution	1 ppm

Sensor: Temperature

Measuring range	0 .. +80 °C
accuracy	typ. +/- 0.2 °C max. +/- 0.4 °C
resolution	1/10 °C
Long-term drift	Type. < 0.02 °C / year

Sensor: Rel. humidity

Measuring range	0 .. 99%
Accuracy	typ. +/- 2.0 % max. +/- 3.5 %
Resolution	0.5 %
Long-term drift	Type. < 0.25 % / year

Sensor: Air pressure

Measuring range	850 .. 1105 hPa
Accuracy	+/- 0.3 hPa

User interfaces

Service button	Yes, actuation through hole in the rear panel
Service LED	Yes, internal (green)

Housing, dimensions and weights

Housing	PC
Weight	111 g incl. batt. 88 g without battery
Dimensions	approx. 67 x 116 x 24 mm

Power supply

Power supply	Integrated solar cell
Batteries	Optional, 2x AAA

Ambient conditions

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

Standards / approvals

CE	2014/53/EU RED Directive 2011/65/EU + Annex 2015/863/EU RoHS-3 Directive
----	--

Table of supported EEP (EnOcean Equipment Profile)**Transmit / TX**

No.	EEP	EEP Description	Transmit ID
1	(47-)D1-09-01 (MSC)	• CO2 measured value 0 ... 5,000 ppm • Humidity 0 ... 100 % • Temperature 0 ... 50 °C • Air pressure 850 ... 1100 hPa • CAP voltage (energy storage) 0 ... 5.1 V • Solar voltage 0 ... 5.1 V • Battery voltage 0 ... 5.1 V	EURID
2	A5-09-04	• CO2 measured value 0 ... 2,550 ppm • Humidity 0 ... 100 % • Temperature 0 ... +51 °C	EURID
3	D2-14-59	• CO2 measured value 0 ... 10,000 ppm • Humidity 0 ... 100 % • Temperature 0 ... +80 °C	EURID

Receive / RX

No.	EEP	Description
-	-	-

MSC Data structure

Data field	CO2	Humidity	Temp.	CAP voltage	Solar voltage	Batt. voltage	Abs. pressure
Offset	16	32	40	49	57	65	72
Size	16	8	9	8	8	8	8
Range min / max	0 / 5000	0 / 200	0 / 500	0 / 255	0 / 255	0 / 255	0 / 255
Scale min / max	0 / 5000	0 / 100	0 / 50	0 / 5.1	0 / 5.1	0 / 5.1	850 / 1105
unit	-ppm	%	-°C	-V	V	V	hPa
Meaning	CO2 level	Rel. humidity	Temp.	Cap. voltage	Solar voltage	Batt. voltage	Abs. air pressure

Device description

Energy supply

The EnoSense® CO2 is self-powered via the integrated solar cell if the ambient light allows. In addition, the device can be powered by 2 AAA batteries.

EnOcean

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

Mechanics / mounting

The device can be mounted on the wall using the wall bracket supplied. Mounting with an adhesive strip is also possible thanks to the smooth back of the device. It should be mounted at a typical height of approx. 1.75 m.

Functions of the EnoSense® CO2 / measurement technology

CO2 measurement, incl. temperature, humidity and abs. air pressure

The device transmits the measured values for CO2, rel. humidity, temperature and abs. air pressure every 5 minutes if the energy level is sufficient. In the dark, the device reduces the transmission interval to approx. 60 minutes after approx. 2 hours to save energy.

Monitoring the supply voltages and energy levels / maintenance

Selected EEP = D1-09-02 (MSC)

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

Selected EEP = D2-14-59

The three relevant energy levels or voltages are transmitted cyclically as SIG telegrams as follows:

MID 0x06:	CAP voltage (energy storage)
MID 0x0D:	Solar voltage
MID 0x10:	Battery voltage

Calibration of the CO₂ measurement

The device does not automatically calibrate the CO₂ measurement in the current device version (automatic calibration is possible on request, please contact our sales department).

If the measured value deviates significantly from the expected measured value, recalibration may be necessary.

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 press of the button:	The EnoSense® CO ₂ switches to operating mode. This is confirmed by the LED flashing briefly once (250 ms). A learning telegram is also sent. The EEP A5-09-04 is selected as the EEP.
-------------------------------	---

Device in operating mode:

Hold button < 5 s:	LED flashes slowly (5x briefly), no function is executed
Hold button > 5 s and < 10 s	Fast flashing of the LED. If the button is now released, the EnoSense® CO ₂ starts the calibration. Calibration is completed after 10-15 minutes.
Hold button > 10 s	The LED goes out. If the button is now released within the next 2 seconds, the EnoSense® CO ₂ switches to sleep mode. This is required, among other things, for shipping the device by air freight.

Selecting the device profile / EEP

- | | |
|-------------------------------|--|
| 1x Short press of the button: | Activates EEP: MSC(47-) D1-09-01
The EnoSense® CO2 sends a learning telegram after 4 seconds. This is confirmed by the LED flashing briefly once (250 ms). |
| 2x short button press: | Activates EEP: A5-09-04 (CE devices only)
The EnoSense® CO2 sends a learning telegram after 4 seconds. Confirmation is given by 2x short flashes of the LED (250 ms). |
| 3x short button press: | Activates EEP: D2-14-59 (CE devices only)
The EnoSense® CO2 sends a learning telegram after 4 seconds. This is confirmed by the LED flashing briefly 3 times (250 ms). |

Switching sleep mode on / off

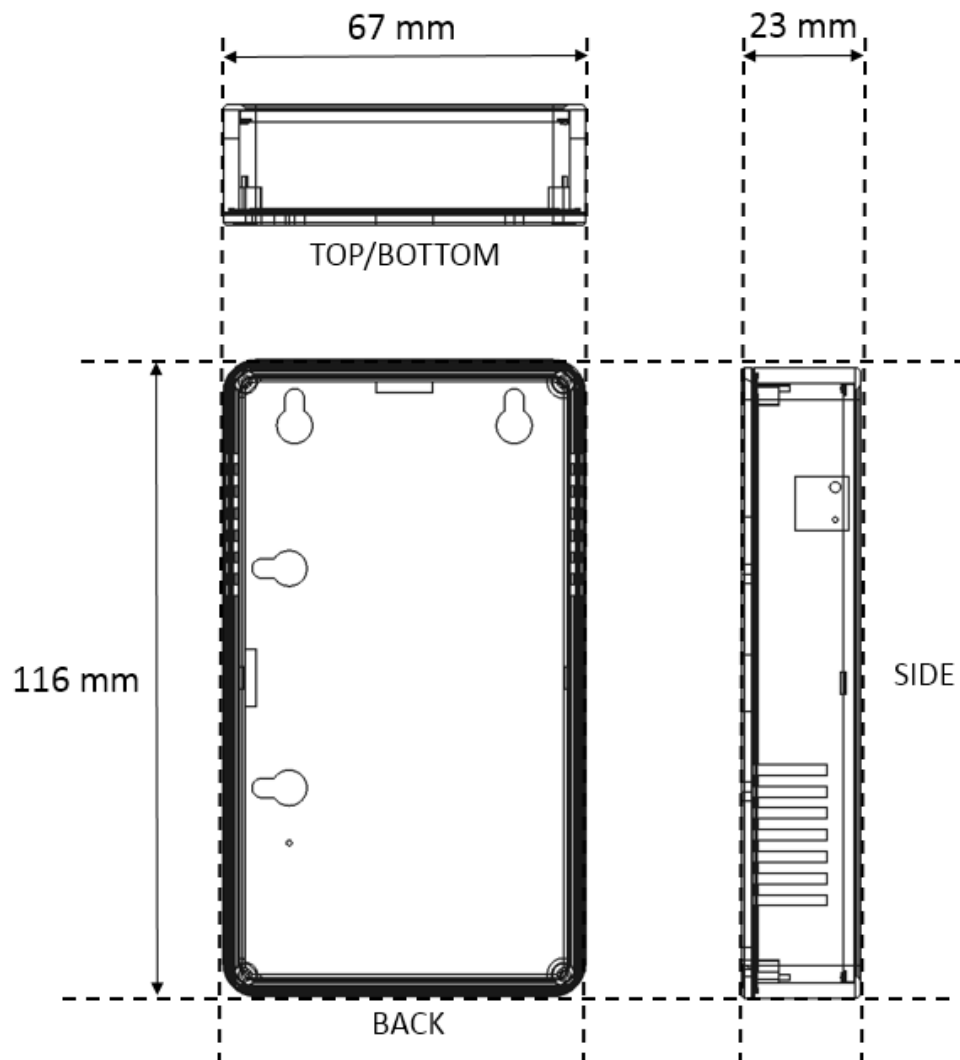
Switch off sleep mode:

- | | |
|-------------------------------|---|
| 1x short press of the button: | The EnoSense® CO2 switches to operating mode (see above). |
|-------------------------------|---|

Switch on sleep mode:

- | | |
|--------------------|--|
| Hold button > 10 s | The LED goes out. If the button is now released within the next 2 seconds, the EnoSense® CO2 switches to 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 designation	Item no.	Item description
AL-439-00-868 EnOcean sensor "EnoSense® CO2 " / white / CE	12590	Sensor EnOcean "EnoSense® CO2 ", for measuring CO2, temperature, relative humidity and abs. air pressure; for wall mounting with/without bracket; EEP: 47-D1-09-01, A5-09-04 or D2-14-59, selectable; power 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, temperature, relative humidity and abs. air pressure; for wall mounting with/without bracket; EEP: 47-D1-09-01, A5-09-04 or D2-14-59, selectable; power 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 para. 4:

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

EU Declaration of Conformity

Hereby, DEUTA Controls GmbH declares that the radio equipment type AL-439-00-868 EnoSense® CO2 is in compliance 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 section (Doc. EUDC2022_313).

Version 08, 01.08.2025
