

**CDR 010N**

## Features

- CO<sub>2</sub> range 0-2000 ppm
- Output 0-10 Vdc
- Power supply 24 Vac/dc
- Accuracy ± 30 ppm ± 3% of measured value
- Optical NDIR sensor (non-dispersive Infra-red technology)
- Automatic calibration

## Description

The maintenance-free microprocessor-controlled room CO<sub>2</sub> transmitter CDR 010N with automatic calibration (fixed) is used for recording the CO<sub>2</sub> content of the air within a range of 0-2000 ppm

The measurement value is converted into standard signal of 0-10 Vdc.

Elegant enclosure made of plastic, with snap-on lid, based with 4-hole attachment, for installation on vertically or horizontally installed flush mounted boxes, with predetermined breaking point for surface-mounted connection.

The CO<sub>2</sub> content of the air is measured using an optical NDIR sensor (non-dispersive infra-red technology).

The detection range of the CO<sub>2</sub> sensor is calibrated for standard applications such as monitoring residential rooms and conference rooms.

Room ventilation on an as-needed basis, improved well-being and customer benefit, increased comfort as well as reduced operating costs through energy conservation.

## Ordering

Type no.	Description
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<b>CDR 010N</b>	Room CO <sub>2</sub> transmitter 0-10 Vdc, 0-2000 ppm
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**Technical data**

Voltage supply	24 Vac/dc (+/-10%)
Power consumption	< 1.5W / 24 Vdc typical < 2.9 VA / 24 Vac typical Peak current 200 mA
Sensor	optical NDIR sensor (non-dispersive infra-red technology) with automatic calibration
Measuring range	0-2000 ppm jumper selectable
Output	0-10 Vdc
Measuring Accuracy	± 30 ppm ± 3% of measured
Temperature dependence	± 5 ppm / °C or ± 5% of measured value / °C (which ever is higher)
Pressure dependence	±0.13% / mm Hg
Long-term stability	< 2 % in 15 years
Gas exchange	by diffusion
Warm up time	approx. 1 hour
Ambient Temperature	-10 to +60 °C
Response time	approx. 1 minute
Electrical connection	0.14 - 1.5 mm <sup>2</sup> , via screw terminals
Enclosure	plastic, material ABS. color pure white (similar to RAL 9010)
Dimensions	85 x 85 x 27 mm
Installation:	wall mounting or on in-wall flush box, Ø 55 mm, base with 4-hole for mounting on vertically or horizontally installed in-wall flush boxes for cable entry from the back, with predetermined breaking point for on-wall cable entry from top/bottom in case of plain on-wall installation
Protection class	III (according to EN 60 730)
Protection type	IP 30 (according to EN 60 529) enclosure only!
Standards	CE conformity, electromagnetic compatibility according to EN 61 326, EMC Directive 2004/30/EU, Low Voltage Directive 2014/35/EU.

## Mounting and Installation

### ATTENTION !

The minimum CO<sub>2</sub> concentration of outside air in leafy, hardly industrialized areas is approx. 350 ppm (output voltage = 1.75 V with MR = 0-2000 ppm).

The gas inter-exchange in the sensor element happens by diffusion. Depending on the changes to the concentration and the flow velocity of the air surrounding the sensor, the reaction of the device to the change of concentration may take place with a delay. It is essential to choose an installation location for the device in which the air stream flows around the sensor. Otherwise the gas exchange may be considerably delayed or prevented.

### Automatic calibration of the carbon dioxide measurement – ABC logic (default)

The automatic background logic is a self-calibrating mechanism that is suitable for use in applications in which the CO<sub>2</sub> concentration regularly drops to fresh air level (350-400 ppm). This should typically happen at times during which the rooms are unoccupied. The sensor reaches its normal accuracy after 24 hours of continuous operation in an environment which has been exposed to a fresh air supply of 400 ppm CO<sub>2</sub>. The deviation error remains minimal with at least 4 cases of sensor exposure to fresh air within 21 days. The ABC logic requires continuous operating cycles of longer than 24 hours in order to function properly.

### Manual calibration of carbon dioxide measurement

Manual calibration can be carried out independently of the DIP switch position (ABC logic). Sufficient fresh air (CO<sub>2</sub> content = 500 ppm) must be provided before and after the calibration procedure! The calibration procedure is started by pressing the "ZERO" button (for approx. five seconds). This is signalled via the flashing LED. Then calibration takes place. During this phase, the LED is continuously active and a 600 second countdown runs. The LED is deactivated after successful calibration.

### Putting in operation

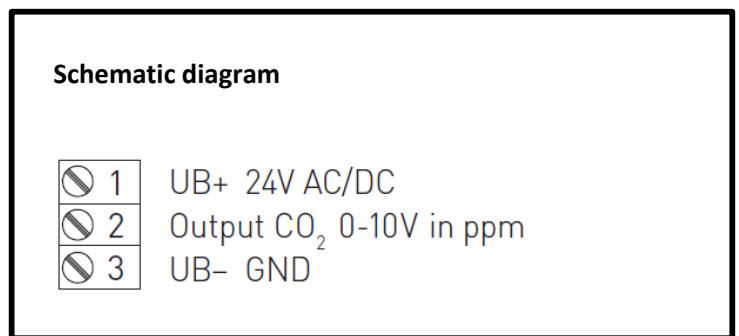
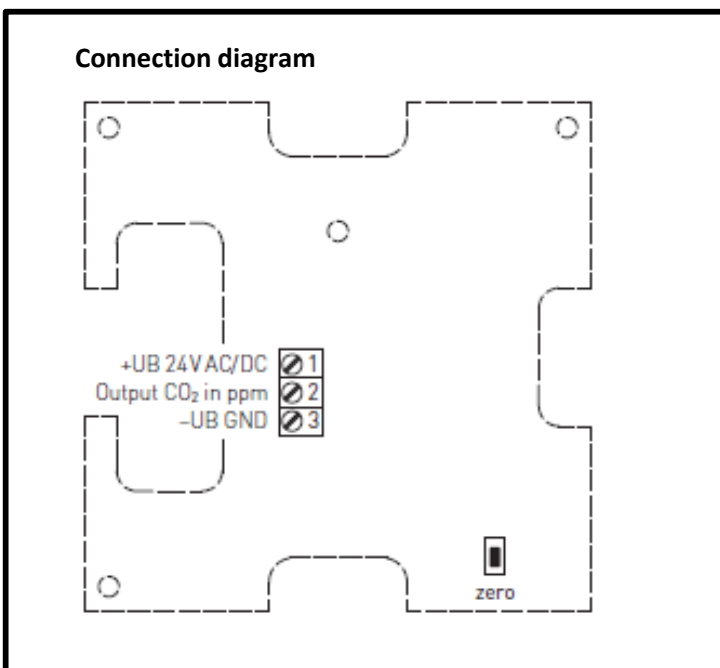
After switching on the device, a self-test and tempering period follows. This procedure takes 30-50 minutes depending on ambient conditions. Afterwards, it is mandatory to run the manual calibration procedure. Thereafter the ABC logic may be activated.

### Switching point setting

A potential-free changeover contact is available as a switch output. A switching point between 10 % and 95 % of the measuring range can be selected using the SET potentiometer. The 10 % value is added to the fresh air limit of 400 ppm for CO<sub>2</sub>. (600-1900 ppm with MR = 0-2000 ppm)

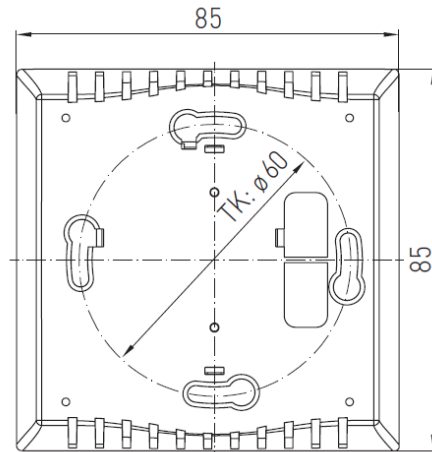
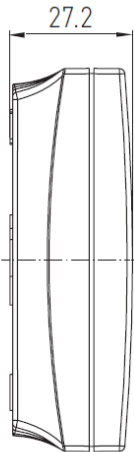
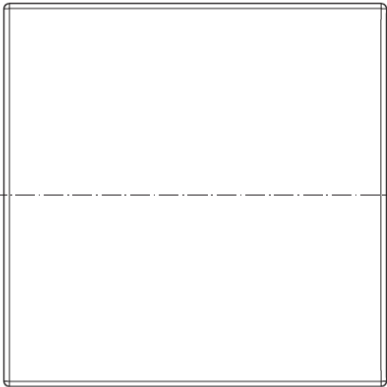
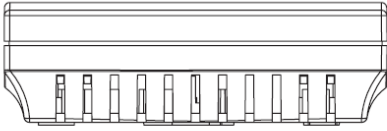
### Offset

Each measuring channel has a separate offset potentiometer for subsequent adjustment of the measurement. The adjusting range is ± 10 % of the measuring range.



**Dimensions**

Plastic ABS enclosure



We reserve the right to make changes in our products without any notice which may effect the accuracy of the information contained in this leaflet.