PROTRONIX CL-CO2 Air Quality Sensor User Manual

PROTRONIX
SENSE & EASY

User manual

CL-CO2 | CO2 sensor with 0-10V output and RS485 communication

Room sensor CL-CO2 is used to monitor the air quality inside buildings and effectively control ventilation (HVAC) systems according to current levels of air pollution. The sensor measures the concentration of carbon dioxide (CO2). It can be effectively used in offices, classrooms, shopping centers, homes, restaurants, fitness centers, commercial buildings, etc.

- measures carbon dioxide concentration
- selectable output – analog voltage 0 – 10V or RS485 communication with Modbus RTU protocol
- simple selection of measuring range 400 – 2000 ppm or 400 – 5000 ppm
- suitable for mounting inside an electrical installation box
- maintenance during operation is not required
- long life and stability

Contents

Description:

The measuring of CO2 is based on the principle of infrared radiation attenuation dependence on the CO2 concentration in the air (NDIR). Built-in autocalibration function ensures very good long-term stability.

It is possible to select 0 – 10V analog voltage output or the RS485 data output by a jumper setting on the electronics board. Measuring range can be chosen by jumper setting either 400 – 2000 ppm or 400 – 5000 ppm CO2.

The sensor can efficiently manage ventilation and heat recovery units, based on current air quality. The current air quality can easily be determined by looking at the RGB LED indicator.

For information on the communication protocol, use the document **CL-Modbus-Communication.**
Explanation of abbreviations and technical terms can be found on our website in the **Glossary** section.

Technical data

Parameter	Value	Unit
Supply voltage range	12 – 40 15 – 30	V DC VAC
Average consumption	0,2	W
CO2 measuring range 1)	400 – 2000 / 400 – 5000	ppm
CO2 accuracy 2) for range 400 – 2000 ppm for range 400 – 5000 ppm	± 40 ppm + ±4 % of reading ± 60 ppm + ±4 % of reading	
CO2 startup 3)	max 1	min
CO2 step response 3)	(90 %) 80	s
Working temperature	0 to +50	°C
Working humidity non-condensing	0 – 90 %	RH
Storage temperature	-20 to +60	°C
Expected lifetime	min. 10	years
Ingress protection	IP20	
Dimensions	57,2×44,4×25	mm
RS485 bus 4)		
A-B voltage difference	max 5	V
A-B common input voltage	-7 to 12	V
A-B common output voltage	max 3	V

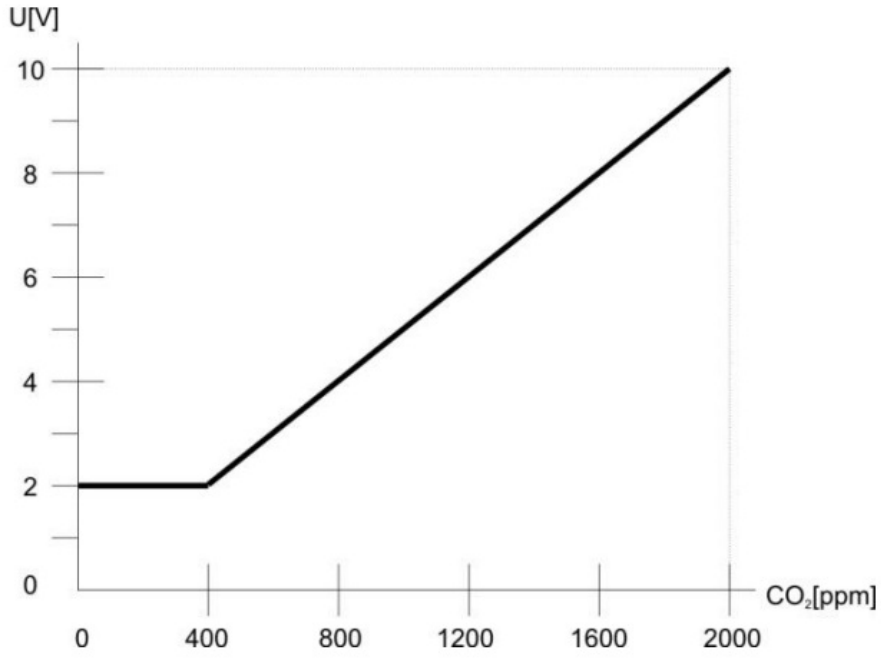
1) Measuring range can be chosen by jumper setting.

2) At 15-30°C, 15-80%RH, 1013Pa.

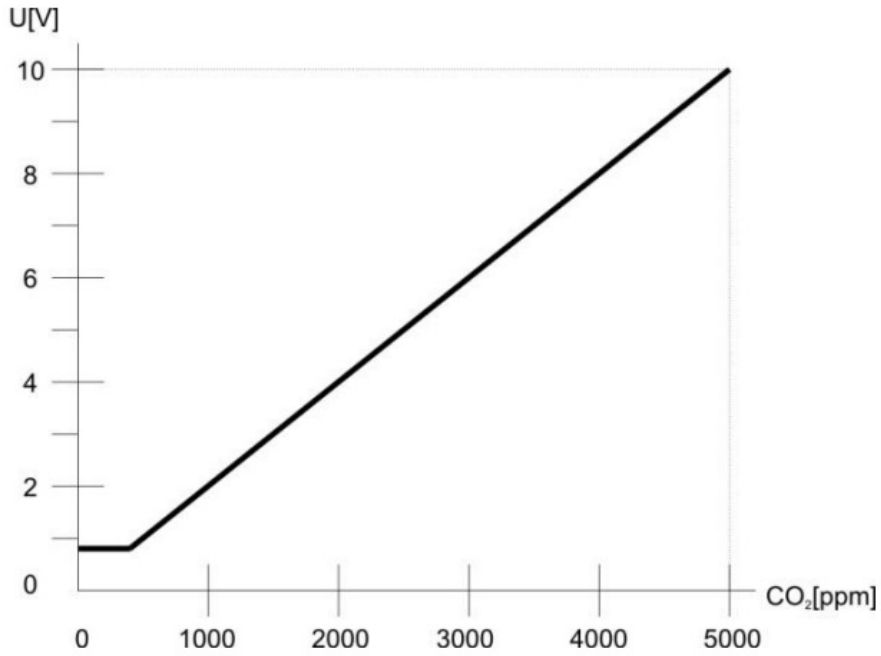
3) Depends on the actual placement and degree of covering the sensor.

4) Not galvanic isolated.

Output voltage dependency on CO2 concentration for chosen range 400 – 2000ppm CO2



Output voltage dependency on CO_2 concentration for chosen range 400 - 5000ppm CO_2



CO2 sensor autocalibration function

Autocalibration compensates for the long-term aging of the key components of the sensor. This function is available only when the sensor power supply is continuous and uninterrupted. Calibration during operation is not necessary.

LED indication description

The indication is active 20min from the sensor supply power-on and then the indication goes out. Subsequently, if in ordinary operation concentration level changes, the according to color lights up only for 1min, otherwise light stays off. It is possible to set an alternative LED indication behavior – see CL-Modbus-Communication.

white	green	red
< 600 ppm CO2	600 až 1200 ppm	> 1200 ppm

White light:

Less than 600 ppm CO2. Maintaining low concentrations of CO2 is not cost-effective – slightly increased concentration does not cause any health complications.

Greenlight:

More than or equal to 600 ppm CO2 and less than or equal to 1200 ppm CO2. Optimal balance of air quality and energy efficiency of ventilation, heating, or air conditioning.

Red light:

More than 1200 ppm CO2. Higher concentration of CO2 – a further increase of CO2 concentrations above this level can cause fatigue, restlessness, and headache. Ventilation is necessary.

Sensor failure indication
The red light is flashing.

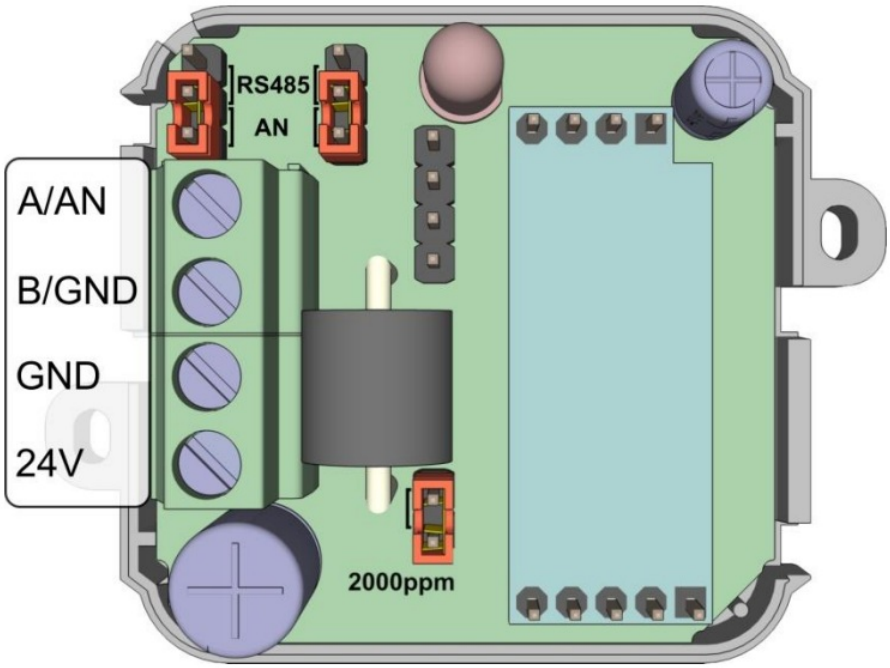
CAUTION:

Warm-up: operational after 1 minute since power on.

The declared accuracy is reached after 10 days of continuous power supply.

It is necessary to avoid severe mechanical and temperature shock of the sensor that has a negative effect on sensor accuracy.

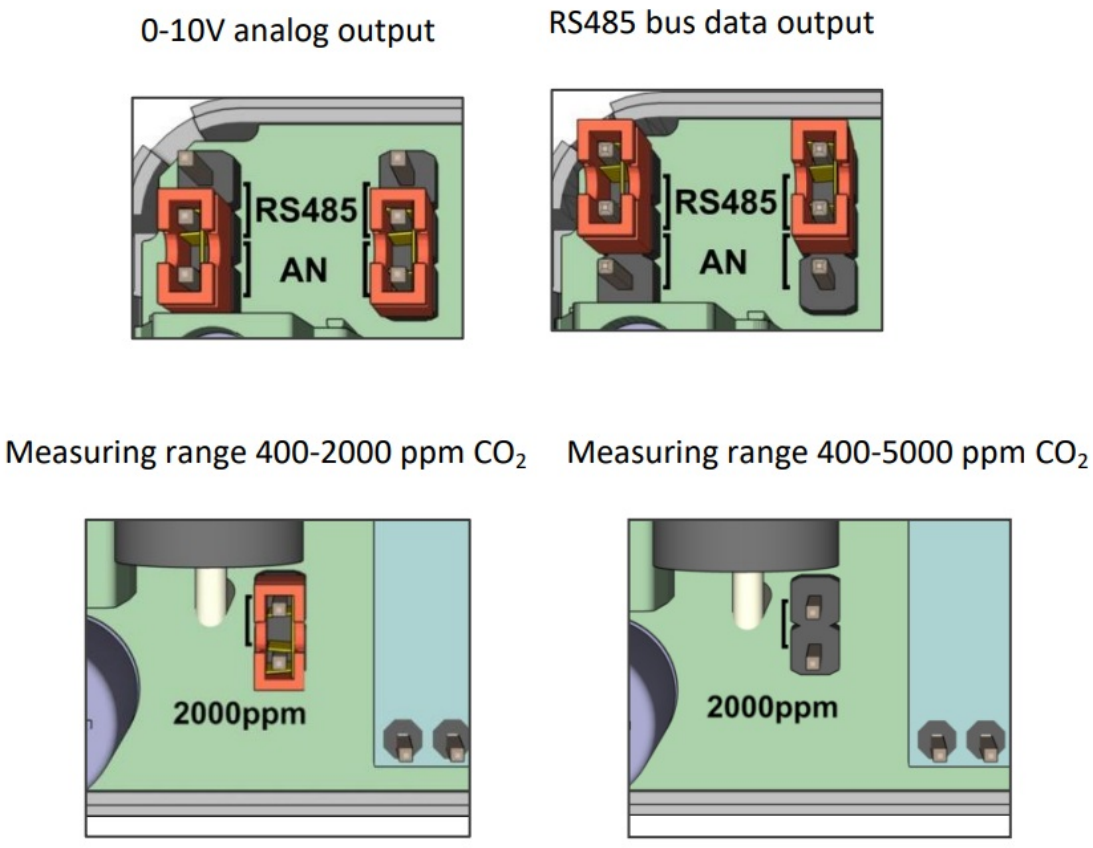
Electronic board controls and terminals



Terminals

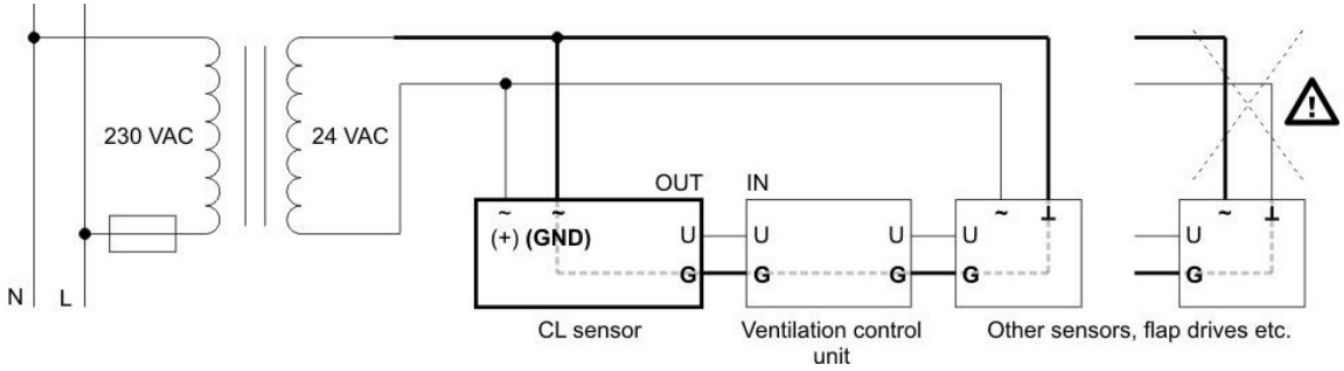
A/**AN** RS485 signal line A / analog output 0-10V
B/**GND** RS485 signal line B / analog output GND
GND supply AC or DC (-) minus pole, GND
24V supply AC or DC (+) plus pole

Jumpers on the electronics board for the output type and measuring range selection

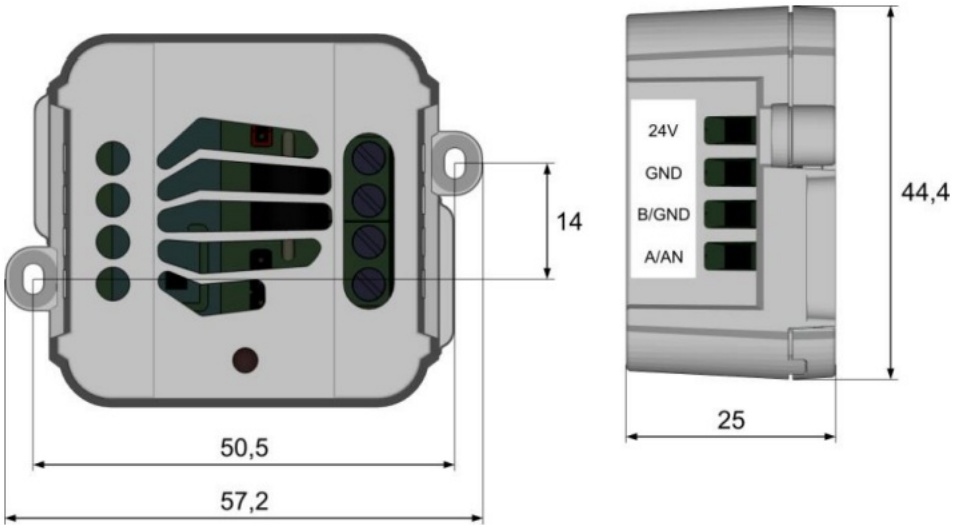


If you connect other devices to the same AC power source as the CL sensor, it is necessary to meet the GND

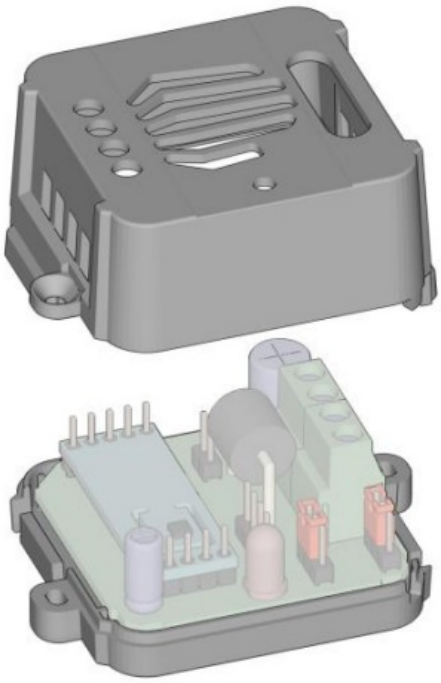
wiring of all analog inputs and outputs, as well as power wires.



Dimensions (mm)



Sensor assembly



Box color

Black

Way to use
The product is intended for indoor use only. You can read the recommendations for sensor placement on our web pages.

End of product life
Discard the product according to the electronic waste law and the EU directives.

The producer reserves the right of technical changes in order to produce improvements in its properties and functions without previous notice.

www. Protonix.CZ/en/
www.careforair.EU/en/

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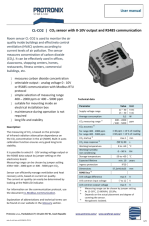
Documents / Resources

	**PROTRONIX CL-CO2 Air Quality Sensor** [pdf] User Manual CL-CO2, Air Quality Sensor