

CO<sub>2</sub> SENSORS

CO<sub>2</sub> sensor  
**CO2-1**



CO<sub>2</sub> sensor  
**CO2-2**



■ **Application**

The sensor is designed for indoor carbon dioxide concentration measurement and respective air capacity regulation through the control output signal to the fan. Air capacity control based on CO<sub>2</sub> concentration is an efficient energy saving solution.

■ **Design and compatability**

The sensor has two separate outputs: a normally opened dry relay contact and an analogue output 0...10 V (this output is adjustable for 2...10 V/0...20 mA/4...20 mA). The relay output is used to turn the fan on/off depending on indoor CO<sub>2</sub>-concentration and the analogue output is used for smooth fan speed control for a fan with EC-motor or a fan with extra speed controller with 0-10 V input, refer to RS...TA or VFED. In case of smooth fan speed control the fan speed varies proportionally to carbon dioxide

emissions. The relay and analogue outputs make the sensor compatible with any ventilation system. The integrated self-calibration system ensures reliable sensor operation during the sensor service life.

■ **Modifications**

The sensor is available in two modifications: CO2-1 and CO2-2. The CO2-1 model incorporates LED lights for CO<sub>2</sub> concentration and operation buttons indicating the level of three operation modes: 1 – on, 2 – off, 3 – operation by CO<sub>2</sub> concentration. The button is used to switch the ventilation system on or off when CO<sub>2</sub>-based ventilation control is not required. The CO2-2 model has no LED-lights and on/off button. The model is applied for premises requiring permanent ventilation, i.e. at school classes and other public premises.

■ **Mounting and power supply**

The sensor is designed for wall surface mounting. 24 VAC low current power supply.. If power supply 24 V is not available, connect the TRF plug that is offered as an accessory.

■ **Accessories**

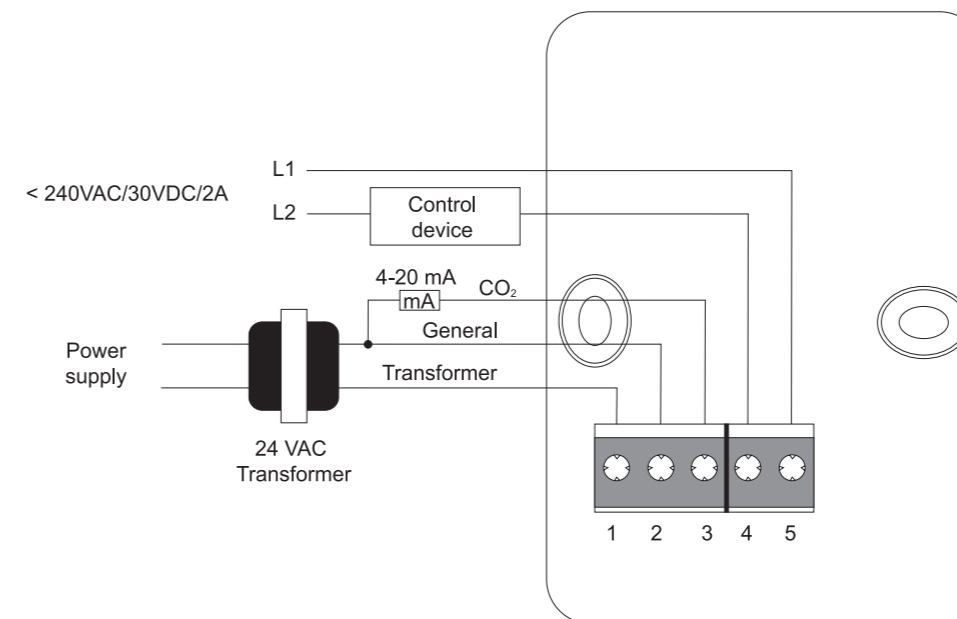
Power supply unit is applied for connection of the sensor to 220 V (model **TRF-220/24-1,6**) or 120 V (**TRF-120/24-1,6**) AC power mains.



**Technical data:**

Parameters	Value
Power supply / consumption	24 VAC (50/60 Hz ± 10%), 24 VDC/1.6 W Max
Gas detection analyzer	Non-dispersive infrared detector (NDIR) with self-calibration system
CO <sub>2</sub> measuring range	0–2,000 ppm (parts per million)
Accuracy at 25 °C, 2,000 ppm	±30 ppm + 3 % of reading
Response time	max. 2 min
Warm up time for each turning-on	2 hours (first time), 2 minutes (operation)
Analogue output	0–10VDC (default), 4–20mA selectable by jumpers
On/Off output	1X2A switch load Four set points selectable by jumpers
6 LED lights for CO <sub>2</sub> concentration indication (for model CO2-1)	1st green indicator lights when CO <sub>2</sub> concentration is below 600 ppm; 1st and 2nd green indicators light when CO <sub>2</sub> concentration is 600–800 ppm; 1st yellow indicator lights when CO <sub>2</sub> concentration is 800–1200 ppm; 1st and 2nd yellow indicators light when CO <sub>2</sub> concentration is 1200–1400 ppm; 1st red indicator lights when CO <sub>2</sub> concentration is 1400–1600 ppm; 1st and 2nd red indicators light when CO <sub>2</sub> concentration is above 1600 ppm
Operating conditions / storage recommendations	0–50 °C; 0–95 % RH non condensing/0–50 °C
Weight / Dimensions	0.120 kg/100 mm x 80 mm x 30 mm

**Sensor wiring diagram**



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