

CO₂ TRANSMITTERS



TRANSMITTERS TO DETECT CARBON DIOXIDE (CO₂)

- Measure carbon dioxide (CO₂), carbon monoxide (CO) and temperature (T)
- Infrared measurement technology (NDIR)
- Automatic calibration eliminates maintenance requirements
- CO₂ Measurement ranges from 0...40,000 ppm (0...4 %vol)
- Suitable for Commercial and Industrial applications where good indoor air quality is critical
- Analog output signals
- Available with relays, display and alarms
- Power supply 24 VDC/AC
- Range of application 0...50 °C (30...120 °F) / 0...95 %RH



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BE PRECISE: ADVANTAGES AT A GLANCE

Carbon dioxide (CO₂) is a colorless and odorless gas that can only be detected with a measuring instrument and which is dangerous and can be fatal for humans and animals in high concentrations. CO₂ transmitters enable air monitoring in commercial and residential buildings, underground garages and tunnels, hospitals, greenhouses, transportation and storage areas.

CF5, CO₂ AND TEMPERATURE TRANSMITTERS

Applications

For ventilation control in residential properties, offices, classrooms, cinemas, hospitals, etc.

Features

- Measurement range CO₂: 0...3,000 ppm / temperature: 0...50 °C / 30...120 °F
- Measurement technique: infrared (NDIR) with automatic calibration
- Accuracy: ±30 ppm
- Power supply: 16...29 VDC/AC
- Output 1 (0...2,000 ppm): 0/2...10 VDC or 0/4...20 mA
- Output 2 (0...50 °C): 0/2...10 VDC or 0/4...20 mA
- Range of application: 0...50 °C (30...120 °F) / 0...95 %RH
- Maintenance: not necessary
- Lifetime: >15 years



CF5-W-Disp

Order code	Description
CF5-W	Installed in the environment to be monitored
CF5-W-Disp*	Dimensions: 120 x 82 x 30 mm Enclosure protection: IP30
CF5-D	Duct mount design for insertion into ducts and vents
CF5-D-Disp*	Dimensions: 142 x 84 x 46 mm / Probe 245 x 22 x 15 mm Enclosure protection: IP65

*includes LCD display



CF5-D-Disp

CF3, CO₂ TRANSMITTERS

Applications

For ventilation control in residential properties, offices, classrooms, cinemas, public rooms, etc.

Features

- Measurement range: 0...2,000 ppm
- Measurement technique: infrared (NDIR) with automatic calibration
- Accuracy: ±30 ppm
- Power supply: 16...29 VDC/AC
- Output 1 (0...2,000 ppm): 0...10 VDC
- Output 2 (0...2,000 ppm): 4...20 mA (no output 2 in CF3-W-EU(US)-Disp-FLI)
- Range of application: 0...50 °C (30...120 °F) / 0...95 %RH
- Maintenance: not necessary
- Lifetime: >15 years

Order code	Description
CF3-W-EU CF3-W-EU-Disp*	Installed in the enthronement to be monitored and fits directly on standard EU surface-mounted boxes Dimensions: 100 x 80 x 28 mm Enclosure protection: IP30
CF3-W-US CF3-W-US-Disp*	Installed in the enthronement to be monitored and fits directly on standard US surface-mounted boxes Dimensions: 130 x 85 x 30 mm Enclosure protection: IP30
CF3-D CF3-D-Disp*	Duct mount design for insertion into ducts and vents Dimensions: 142 x 84 x 46 mm / Probe 245 x 22 x 15 mm Enclosure protection: IP65
CF3-W-EU-Disp-FLI*	Measures the CO ₂ concentration in rooms and emits an audible and visual alarm (fresh air indicator) when a value of 1,400 ppm is exceeded. Mute button on the side of the housing. Fits directly on standard EU surface-mounted boxes. Dimensions: 100 x 80 x 28 mm Enclosure protection: IP30
CF3-W-US-Disp-FLI*	Measures the CO ₂ concentration in rooms and emits an audible and visual alarm (fresh air indicator) when a value of 1,400 ppm is exceeded. Red mute button on the front of the housing. Fits directly on standard US surface-mounted boxes. Dimensions: 130 x 85 x 30 mm Enclosure protection: IP30



CF3-W-EU-Disp



CF3-W-US-Disp



CF3-D-Disp



CF3-W-EU-Disp-FLI



CF3-W-US-Disp-FLI

*includes LCD display

CF8, TRANSMITTERS FOR SPECIAL APPLICATIONS

Devices

Model **AL (Alarm)** is equipped with two relays that can be connected to an alarm system. It measures CO₂ in very high concentrations.

Model **GH (Greenhouse)** is equipped with an extra dust and water filter and is suitable for adverse ambient conditions.

Applications	Ventilation control in underground garages, transport/storage, vehicle terminals, tunnels, etc.	Ventilation control in greenhouses and harsh environments
		
Model	AL (Alarm)	GH (Greenhouse)
Measurement range CO ₂	0...4 %vol (0...40,000 ppm)	
Accuracy	±200 ppm	
Temperature measurement range	—	0...50 °C (30...120 °F)
Power supply	16...29 VDC/AC	
Output 1 (0...4 %vol)	0/2...10 VDC or 0/4...20 mA	
Output 2 (0...4 %vol)	0/2...10 VDC or 0/4...20 mA	—
Output 2 (0...50 °C)	—	0/2...10 VDC or 0/4...20 mA
Output 3 (CO ₂)	Relay 1: open <1.4 %, closed >1.5 %	Relay 1: open <1.9 %, closed >2.0 %
Output 4 (CO ₂)	Relay 2: open <2.9 %, closed >3.0 %	—
Dimensions	142 x 84 x 46 mm	
Enclosure protection	IP54	
Range of application	0...50 °C (30...120 °F) / 0...95 %RH	
Communication	MODBUS	
Maintenance	Is not necessary for normal indoor applications. Certain industrial applications require annual calibration.	
Lifetime	>15 years	
Order code	CF8-W-Disp-AL	CF8-W-Disp-GH

CF8, TRANSMITTERS FOR SPECIAL APPLICATIONS

Devices

Model **CO (Carbon Monoxide)** is suitable for closed rooms in which a combustion process takes place.

Model **IN (Incubator)** is suitable for measurements in incubators or climate chambers.

Applications	Monitoring of carbon monoxide and carbon dioxide in underground garages, tunnels, mines, large halls, with relays for CO ₂ and CO alarm systems.	Ventilation control in incubators and environmental chambers
		
Model	CO (Carbon Monoxide)	IN (Incubator)
Measurement range CO ₂	0...3,000 ppm	0...3 %vol (0...30,000 ppm)
Measurement range CO	0...100 ppm	—
Accuracy CO ₂	±30 ppm	±200 ppm
Accuracy CO	±10 ppm	—
Power supply	16...29 VDC/AC	
Output 1 (0...100 ppm CO)	0/2...10 VDC or 0/4...20 mA	—
Output 1 (0...3 %vol CO ₂)	—	2...10 VDC or 4...20 mA
Output 2 (0...2,000 ppm CO ₂)	0/2...10 VDC or 0/4...20 mA	—
Output 2 (0...2 %vol CO ₂)	—	0...5 VDC or 0...10 mA
Output 3, relay	open >35 ppm (CO) and >1'500 ppm (CO ₂) closed <30 ppm (CO) and <1'400 ppm (CO ₂)	—
Dimensions	142 x 84 x 46 mm	Ø 40 x 102 mm
Enclosure protection	IP54	
Range of application	0...50 °C (30...120 °F) / 0...95 %RH	
Communication	MODBUS, RS-485 (optional)	—
Maintenance	Is not necessary for indoor applications. Industrial applications may require annual calibration.	
Lifetime	>5 years (limited by the CO probe)	>15 years
Order code	CF8-W-Disp-CO	CF8-D/W-IN

THE FUNDAMENTALS OF CO₂

Carbon dioxide (CO₂) is a colorless and odorless gas that exists in the earth's atmosphere and which is dangerous in high concentrations. The proportion of CO₂ in natural ambient air is about 0.04 % or 400 ppm. When humans and animals exhale this gas, it is quickly mixed with the ambient air, as well as in rooms that are well ventilated.

A high CO₂ content becomes apparent in humans through rapid fatigue and loss of concentration. The negative effects become noticeable more quickly in small rooms in which there are many people or that are not well ventilated.

Modern climate control systems measure not only parameters such as relative humidity and temperature, but also CO₂ content. The concentration of CO₂ is regarded as an important indicator for the quality of room air.

Guidelines

350 - 450 ppm	400 - 1,200 ppm	> 1,000 ppm	5,000 ppm (0.5 %vol)	38,000 ppm (3.8 %vol)	> 100,000 ppm (10 %vol)
Fresh air outdoors	Room air	Fatigue and loss of concentration become apparent	Maximum permissible value at the workplace during an 8-hour workday	Breathing air (direct exhalation)	Nausea, vomiting, loss of consciousness and death

Measurement technique

The measurement technique is based on non-dispersive infrared (NDIR) technology.

Calibration

All sensors are calibrated they have a lifetime of more than 15 years in normal indoor applications.

The automatic baseline correction means the sensors require no further calibration.

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