

# IR 24

## Highly Selective, Substance Specific IR Sensor



- No false response due to interfering contaminants
- Extremely stable, low maintenance system
- MWG with infrared (NDIR) sensor
- One-person calibration on site
- Output 0.2–1 mA or 4–20 mA

# Remote Sensor with NDIR Sensor for Carbon Dioxide (CO<sub>2</sub>)



## CO<sub>2</sub>—a toxic hazard

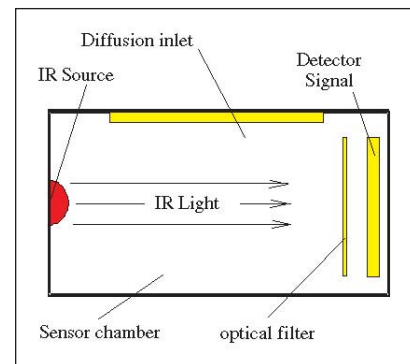
Carbon dioxide (CO<sub>2</sub>) is often used as a work medium, or is stored, shipped, or generated as a by-product of certain industrial applications. The specific characteristics of CO<sub>2</sub> make this gas a hidden danger.

Carbon dioxide is odorless, tasteless, and undetectable to human senses. CO<sub>2</sub> is considerably heavier than air and can rapidly build to dangerous concentrations in holes, sewers, or cellars. Concentrations as low as 4 percent volume can be toxic, and 8 percent volume CO<sub>2</sub> can cause death. Carbon dioxide also displaces the oxygen content in the ambient air, which may lead to asphyxiation.

GfG Instrumentation's fixed gas warning systems allow continuous monitoring of gas hazards to ensure that countermeasures can be taken in time. A fixed gas monitoring system consists of a remote sensor which is connected by a cable to a controller such as the GMA 011, GMA 100, or GMA 300. The controller powers the remote sensor and evaluates its measurement signals.

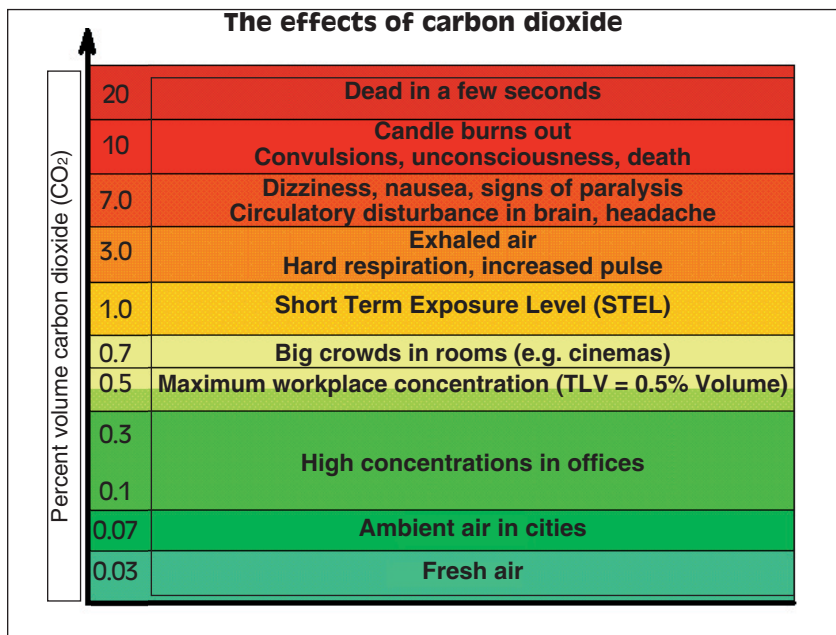
## IR 24 for CO<sub>2</sub>

The remote sensor with its sensor cell is mainly responsible for the reliability of a gas monitoring system. The sensor is installed wherever CO<sub>2</sub> may be present. Even the lowest gas concentrations can be detected and transmitted to a central control station as current or voltage signals which are proportional to the actual gas concentration.



## IR 24 detection principle: infrared light

Since carbon dioxide (CO<sub>2</sub>) absorbs light in the infrared spectral range, the NDIR method used in the GfG sensor can measure the carbon dioxide concentration precisely and reliably. Infrared light is sent through the sensor chamber. Carbon dioxide absorbs a part of this light in a narrow spectral range, and the remaining light is measured at the detector. The difference between the light sent and received is proportional to the gas concentration. Water vapor or other gases that can be present in the sensor chamber do not affect the light absorption in this spectrum band.

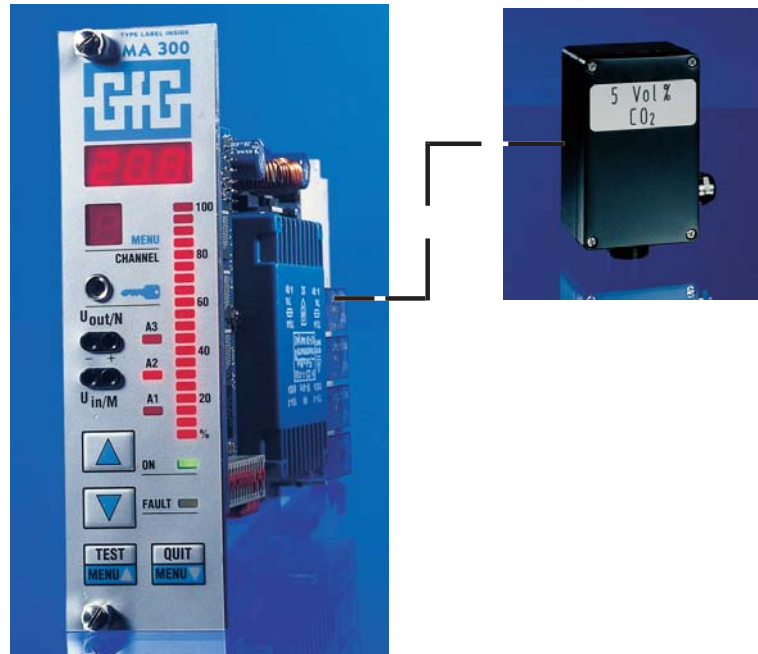
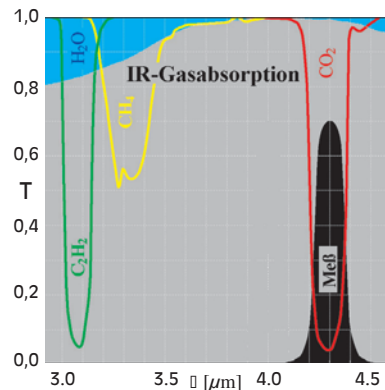


## Safe measurement results

Measurements using the precision of light allow high reliability and repeatability. THE IR principle is as precise as a fingerprint in criminology. Only carbon dioxide influences the measurement. This prevents false alarms by other gas components. GfG Instrumentation remote sensors include an electronic circuit for voltage stabilization of the output signal and temperature compensation. This ensures stable measurements over wide temperature ranges.

## Durable construction for long lifetime

The IR 24 does not contain any moving parts that are subject to wear and tear, ensuring a long lifetime, and low maintenance costs. More safety is provided by the permanent self-check and function test of the GMA controller. Sensor and electronics are protected in a solid enclosure from dust and water according to IP 54. This ensures that



water cannot enter the detector, even in wet environments.

## Easy handling

Behind a service lid on the front of the IR 24 are potentiometers and test connectors for easy adjustment of zero point and detection range. This allows one-person calibration on-site and reduces service down-time.

## Quality control adds more safety

All remote sensors are made by GfG Instrumentation and have to pass a 100% quality and function test. All sensors are shipped pre-calibrated.

An authorized GfG Instrumentation specialist makes the final adjustments during system installation.

## IR 24 features

- Selective NDIR detection principle
- Extended sensor life for long-term economy
- Easy handling
- Signal output either 0.2–1 mA or 4–20 mA
- Potentiometers for easy adjustment of zero point and detection range
- Connectors for test of output signal
- Solid aluminum casing, IP 54
- High reliability and repeatability of measurement results
- Wide detection range

# Technical Data

## Remote sensor (MWG) 2490 IR

**Gas**

Carbon dioxide (CO<sub>2</sub>)

**Range**

0 to 5% volume  
(other ranges on request)

**Detection Principle**

NDIR, single beam system, temperature compensated

**Gas Supply**

Diffusion

**Response Time**

TAlarm less than 25 seconds

**Expected Sensor Life**

5 years

**Humidity**

0 to 99% r.h., non-condensing

**Pressure**

920 to 1,100 hPa

**Ambient Temperature**

+4 to 104 °F (-20 to +40 °C)

**Casing Protection**

IP 54

**Cable**

3-wire transmitter, cable gland: PG 9, threaded

**Output Signal**

0.2 to 1 mA or 4 to 20 mA

**Power Supply**

18 to 26 V, 100 mA  
Supply by e.g. GfG Instrumentation  
GMA controllers

**Dimensions**

0.4x5.7x3.1 inches (10x145x80 mm) (WxHxD)

**Weight**

31.5 ounces (900 grams)

**Ordering Information**

2491001 MWG 2491  
2492001 MWG 2492

**Accessories**

Sensor cable  
Protective casing  
Sampling system

**Thermostat Control**

An electronic thermal circuitry guarantees a constant temperature at the sensor. This ensures high measurement accuracy even if the ambient temperature changes, and prevents condensation on the optical components.

*Specifications subject to change without notification*

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**GfG Instrumentation**

Tel: (800) 959-0329 or (734) 769-0573  
Fax: (734) 769-1888  
E-mail: [info@gfg-inc.com](mailto:info@gfg-inc.com)  
Website: [www.gfg-inc.com](http://www.gfg-inc.com)