

GMM220 Series Carbon Dioxide Modules for Demanding OEM Applications

DIFFERENT CONFIGURATIONS TO MEET YOUR DEMANDING APPLICATIONS

The GMM220 series modules are designed for Original Equipment Manufacturers (OEM's) requiring CO₂ measurements in demanding applications. These modules are optimized for integration into equipment for such applications as greenhouse control, incubators, fermenters, and safety alarming. These modules provide high CO₂ measurement accuracy and long term stability over wide temperature and relative humidity ranges. For example, long-term stability is better than $\pm 5\%$ of full-scale readings over a two-year period.

- **GMM221 - for Accurate CO₂ Measurements From 0% to 20%**

This module can be ordered from Vaisala with a detachable probe, 100 mm in length, which has been calibrated to operate within one of the five following concentration ranges:

- 0 to 2% CO₂
- 0 to 3%
- 0 to 5%
- 0 to 10%
- 0 to 20%

These probes are directly detachable from the cable and are truly interchangeable in the field. For example, different probes, each calibrated to a different range, can be swapped in the field to meet different application requirements.

- **GMM222 - for Accurate CO₂ Measurements Up To 10,000 ppm (1%)**

This module can be ordered from Vaisala with a detachable probe, 145 mm in length, which has been calibrated to operate within one of the five following concentration ranges:

- 0 to 2000 ppm CO₂
- 0 to 3000 ppm
- 0 to 5000 ppm
- 0 to 7000 ppm
- 0 to 10,000 ppm

These probes are also directly detachable from the cable and are truly interchangeable in the field. For example, different probes, each calibrated to a different range, can be swapped in the field to meet different application requirements.

- **Different Cable Lengths and Connectors**

- Cables available in 0.6 and two meter lengths
- Connectors between the probe and cable are available in two configurations, straight and 90°, to facilitate ease of installation and increase application flexibility



- **Versatile Design, Interchangeable Probes**

The field interchangeability of the GMM221 and 222 make calibration and field service easy. It is also easy to change the measurement range in the field by simply replacing one probe with another.

Different mounting, power supply, and output options are available.

CARBOCAP – THE SILICON-BASED CO₂ SENSOR

The functioning of the CARBOCAP sensor is based on the absorption of infrared light using a patented leading-edge silicon technology. This solid state sensor provides a reliable and stable constant reference measurement, resulting in excellent stability over time, even with wide temperature variations. Since water vapor, dust, and most chemicals do not effect the measurement, the GMM220 series modules can be used in harsh and humid environments.

TECHNICAL DATA - GMM220 SERIES

Measurement Ranges

GMM221	0...2% CO ₂ 0...3% CO ₂ 0...5 % CO ₂ 0...10% CO ₂ 0...20% CO ₂
GMM222	0...2000 ppm 0...3000 ppm 0...5000 ppm 0...7000 ppm 0...10,000 ppm
Accuracy at 77 °F (+25 °C) against certified factory references	
GMM221	<±[0.02% CO ₂ + 2% of reading]
GMM222	<±[20 ppm CO ₂ + 2% of reading]
(incl. nonlinearity and calibration uncertainty)	
Nonlinearity	<±0.5 %FS
Temperature dependence of output (typical value)	-0.05% FS /°F (-0.1% FS /°C)
Pressure dependence (typ.)	0.15% FS/hPa
Long-term stability	<±5% FS/2 years
Response time (63%)	
GMM221	20 seconds
GMM222	30 seconds

General

Output signals	0...20 or 4...20 mA and 0...1 V or 0...2 V, 0...2.5 V, 0...5 V
Resolution of analog outputs	0.03% FS
Recommended external load:	
current output	max. 200 Ohm
voltage output	min. 1 kohm
Power supply	11...20 VDC or 18...30 VDC
Serial output	@ 5V level
Power consumption	<2.5 W
Warm-up time	15 minutes
Operating temperature Range	-4°...+140 °F (-20°...+60 °C)
Operating humidity range:	
probe	0...100% RH non-condensing
mother board	0...85% RH non-condensing
Probe housing material	PC plastic
Housing classification (probe only)	NEMA 4 (IP 65)
Weight:	
GMM221 (w/2m cable)	max. 175 g
GMM222 (w/2m cable)	max. 200 g

Accessories

GMP221, GMP222	spare probe (use the order form to define measurement range etc.)
GM25245	clips (2 pcs) for attaching the probe
GM45156	mounting flange for the probe 0.6 m cable with straight or 90° connector 2.0 m cable with straight or 90° connector (max. cable length 4 m)
19040GM	serial COM adapter

The GMM221 and GMM222 modules comply with the following EMC standards and have passed the following tests: EN 50081-1 (EN 55022 class B = CISPR 22)

En 50082-1
(IEC 1000-4-2, 4 kV contact, 8 kV air)
(IEC 1000-4-3, 80 - 1000 MHz, 80% AM, 3V/m)
(IEC 1000-4-4, 500V)
(IEC 1000-4-6, 0.15 - 80 MHz, 80% AM, 3V/m)

CARBOCAP® is a registered trademark of Vaisala. Specifications subject to change without prior notice.

GMM221/222

Dimensions in mm

