Carbon Dioxide Module for Demanding OEM Applications

**Features/Benefits**

- Incorporates CARBOCAP® - the silicon based NDIR sensor
- Several measurement ranges to choose from
- IP65 protected probe against dust and spray water
- Interchangeable probes - easy maintenance

For harsh environments

The GMM220 Series Modules are designed for Original Equipment Manufacturers (OEM’s) requiring CO₂ measurements in demanding applications.

The modules are optimized for integration into equipment for greenhouse control, incubators, fermentors, safety alarming and integrated systems. Many advanced features enable trouble-free control of carbon dioxide levels also in demanding applications and harsh environments.

**CARBOCAP® – the silicon based CO₂ sensor**

The GMM220 Series Modules incorporate the new industrial CARBOCAP® Sensor. The patented sensor has unique reference measurement capabilities. Its critical parts are made of silicon; this gives the sensor outstanding stability over both time and temperature. Since water vapor, dust, and most chemicals do not effect the measurement, the GMM220 Series Modules can be used in harsh and humid environments.

**Interchangeable probes**

The GMT220 probes are truly interchangeable. They can be removed and reattached or replaced at any time – without the need for calibration and adjustment. The probes do not only make calibration and field service easy; they also enable a simple change of measurement range by simply replacing one probe with another.

**Different configurations to meet your demanding applications**

The user has a choice of measurement ranges up to 20 % CO₂; the GMM221 for higher and the GMM222 for lower concentrations of CO₂. Different power supply voltages, output options as well as cable lengths, connectors, and mounting gear are also available.
## Technical Data

### Carbon Dioxide

**Measurement Ranges**

<table>
<thead>
<tr>
<th>Model</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMM221</td>
<td>0...2% CO₂</td>
</tr>
<tr>
<td></td>
<td>for high concentrations</td>
</tr>
<tr>
<td></td>
<td>0...3% CO₂</td>
</tr>
<tr>
<td></td>
<td>0...5% CO₂</td>
</tr>
<tr>
<td></td>
<td>0...10% CO₂</td>
</tr>
<tr>
<td></td>
<td>0...20% CO₂</td>
</tr>
<tr>
<td>GMM222</td>
<td>0…2000 ppm</td>
</tr>
<tr>
<td></td>
<td>for low concentrations</td>
</tr>
<tr>
<td></td>
<td>0…3000 ppm</td>
</tr>
<tr>
<td></td>
<td>0…5000 ppm</td>
</tr>
<tr>
<td></td>
<td>0…7000 ppm</td>
</tr>
<tr>
<td></td>
<td>0…10 000 ppm</td>
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</tbody>
</table>

Accuracy at +25 °C against certified factory references:

- GMM221: \( <\pm[0.02\% \text{ CO}_2 + 2\% \text{ of reading}] \)
- GMM222: \( <\pm[20 \text{ ppm CO}_2 + 2\% \text{ of reading}] \)

(incl. repeatability and calibration uncertainty)

**Nonlinearity**: \( <\pm0.5 \%\text{FS} \)

**Temperature dependence of output (typical value)**: \( 0.1 \%\text{FS} /\degree\text{C} \)

**Pressure dependence (typ.)**: \( 0.15\% \text{ of reading/hPa} \)

**Long-term stability**: \( <5 \%\text{FS}/2 \text{ years} \)

**Response time (63%)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Response Time (63%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMM221</td>
<td>20 seconds</td>
</tr>
<tr>
<td>GMM222</td>
<td>30 seconds</td>
</tr>
</tbody>
</table>

### General

**Analog output signals**: 0...20 or 4...20 mA

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

**Power consumption**: <2.5 W

**Warm-up time**: <15 minutes

**Operating temperature range**: -20...+60 °C

**Storage temperature range**: -30...+70 °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): IP65

**Weight:**

- GMM221 (w/2m cable): max. 180 g
- GMM222 (w/2m cable): max. 200 g

**Probe cable length**: 0.6 m, 2 m, 6 m or 10 m

### Accessories

- GMP221, GMP222 spare probe (use the order form to define measurement range etc.)
- 25245GM clips (2 pcs) for attaching the probe
- GM45156 mounting flange for the probe
- GMM220Z600 6.0 m probe cable
- GMM220Z1000 10.0 m probe cable
- 19040GM serial COM adapter

### Electromagnetic compatibility


### Dimensions

Dimensions in mm (inches)