

## GMM112 Carbon Dioxide Module for HVAC Applications



The Vaisala CARBOCAP® Carbon Dioxide Module GMM112 is a basic CO<sub>2</sub> measurement module.

Most of us spend 90% of our time indoors. Consequently, good indoor air quality is important to our wellbeing. All human beings produce carbon dioxide gas by respiration, thus the carbon dioxide level can be used as an indicator for indoor human presence. A high CO<sub>2</sub> level is a sign of poor ventilation and often an indication of other unpleasant odors in the air. In many buildings the ventilation need varies throughout the day. Demand controlled ventilation is an economical way to ensure good air quality.

The Vaisala CARBOCAP® CO<sub>2</sub> sensors have been proven to be accurate and durable. They have an excellent long-term stability, which decreases maintenance. The

superior performance of Vaisala CARBOCAP® sensors results largely from the stable reference provided by the electrically tunable Fabry-Perot Interferometer (FPI).

The tunable FPI filter measures CO<sub>2</sub> absorption, and simultaneously a reference wavelength. This internal reference measurement compensates effectively for any changes in the optical path, such as light source intensity changes and contamination. In the HVAC market, this type of reference measurement is a unique feature to Vaisala CARBOCAP® products, distinguishing them from competitors' comparative products that do not have a reference measurement at all, or have an indirect reference measurement,

### Features/Benefits

- Compact, OEM module for demand-controlled ventilation and other CO<sub>2</sub> measurement applications
- Incorporates Vaisala CARBOCAP®, the silicon based NDIR sensor with unique internal referencing
- Advanced, single-beam, dual wavelength measurement with no moving parts
- Excellent long-term stability
- Ideal for ventilation control in all types of occupied spaces

which is based on an assumed background CO<sub>2</sub> levels. In buildings with around-the-clock occupancy (e.g. hospitals, work-places, residential buildings, retirement homes), the assumed background CO<sub>2</sub> level reference is simply not applicable. The true internal reference measurement of Vaisala CARBOCAP® CO<sub>2</sub> transmitters provides years of stable CO<sub>2</sub> measurements.

The GMM112 Carbon Dioxide Module is designed especially for DCV (Demand Controlled Ventilation) applications with two optional CO<sub>2</sub> measurement ranges of 0...2000 ppm and 0...5000 ppm.

# Technical data

## Performance

CO <sub>2</sub> -measurement range	0 ... 2000 ppm 0 ... 5000 ppm
Accuracy (including repeatability, non-linearity and calibration uncertainty)	± (2,5 % of range + 3 % of reading)
Long-term stability	± 5 % of range/5 years
Response time T90	1 min
Temperature dependence, typical	-0,35 % of reading / °C
Pressure dependence, typical	+0,15 % of reading/hPa
Warm-up time	1 min, 10 min for full. specification
Product lifetime	> 10 years

## Operating environment

Temperature	-5 ... +45 °C (23 ... 113 °F)
Humidity	0 ... 85 % RH
Pressure	700 ... 1200 hPa
Electromagnetic compatibility	Complies with EMS standard EN61326-1:1997 + Am1:1998, Generic Environment

## Inputs and outputs

Operating voltage	24 V (±20 %) AC/DC
Power consumption	< 2 W
Outputs	4 ... 20 mA, 0 ... 10 V, RS-485, 2-wire, non-isolated

## Dimensions

Dimensions in mm

