



# GMD110 Duct Carbon Dioxide Transmitter

For demanding ventilation applications



## Features

- Designed for highly reliable CO<sub>2</sub> measurement in air ducts
- Vaisala CARBOCAP® sensor
- ± 40 ppm CO<sub>2</sub> accuracy
- Excellent long-term stability
- Analog and Modbus RTU output options
- IP65-rated housing
- Traceable calibration (certificate included)

GMD110 is a high-accuracy duct transmitter for measuring carbon dioxide in air-handling systems and ventilation ducts. The transmitter is equipped with the renowned CARBOCAP® sensor that has unique accuracy and measurement stability, which supports precise and reliable controls of HVAC systems even in demanding conditions and sites.

The transmitter belongs to Vaisala HMDW110 Transmitter Series, which include transmitters for duct mounting, IP65-rated wall transmitters, immersion temperature transmitters and outdoor transmitters with integrated radiation shields.

### Highly accurate, highly reliable

The duct-mounted transmitter GMD110 is designed to measure carbon dioxide in demanding HVAC applications. With the outstanding accuracy of measurement, it is an ideal choice for demand-controlled ventilation systems even in challenging conditions.

CO<sub>2</sub> concentration is measured inside the duct without risks for leaks or wrong flow direction affecting the measurement. The temperature and flow dependencies of the sensor are negligible, and the measurement accuracy is not affected by dust, water vapor, or chemicals.

### Stable measurement

The high quality and excellent stability of the measurement enables precise and reliable controls of HVAC systems, even in demanding conditions or sites. The transmitter is equipped with the renowned CARBOCAP® sensor that has

unique capabilities in terms of precision and stability of the measurement. Its structure and reference measurement capabilities make this single-beam, dual-wavelength NDIR sensor extremely stable and reliable.

### Traceable accuracy

All GMD110 transmitters are individually adjusted and delivered with a traceable (ISO9001) calibration certificate. If required later on, the transmitter can also be field-calibrated using a Vaisala handheld meter or Vaisala Insight PC software.

# Technical data

## Measurement performance

Measurement range	0 ... 10 000 ppm CO <sub>2</sub> Orderable with analog output scaled to 0 ... 2000 ppm, 0 ... 5000 ppm, or 0 ... 10 000 ppm
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### Accuracy <sup>1)</sup>

0 ... 3000 ppm CO <sub>2</sub>	±40 ppm CO <sub>2</sub>
3000 ... 10 000 ppm CO <sub>2</sub>	±2 % of reading

### Calibration uncertainty

at 2000 ppm CO <sub>2</sub>	±31 ppm CO <sub>2</sub>
at 10 000 ppm CO <sub>2</sub>	±105 ppm CO <sub>2</sub>

### Long-term stability

0 ... 3000 ppm CO <sub>2</sub>	±60 ppm CO <sub>2</sub> /year
3000 ... 6000 ppm CO <sub>2</sub>	±150 ppm CO <sub>2</sub> /year
6000 ... 10 000 ppm CO <sub>2</sub>	±300 ppm CO <sub>2</sub> /year

### Temperature dependence 0 ... 10 000 ppm CO<sub>2</sub>

-10 ... +50 °C	±0.05 % of reading/°C
-40 ... +60 °C	< ±0.1 % of reading/°C

### Pressure dependence

Typical	+0.15 % of reading/hPa
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### Start-up, warm-up, and response time

Start-up time at +25 °C	< 12 s
Warm-up time for full specification	< 2 min
Response time (T <sub>90</sub> )	< 1 min

<sup>1)</sup> At 25 °C and 1013 hPa (incl. repeatability and non-linearity).

## Operating environment

Operating temperature	-20 ... +60 °C (-4 ... +140 °F)
Storage temperature	-40 ... +60 °C (-40 ... +140 °F)
Humidity	0 ... 95 %RH, non-condensing
Condensation prevention	Sensor head heating when power on
IP rating	IP65

## Mechanical specifications

Probe diameter	25 mm (0.98 in)
Probe length	126 mm (4.96 in)
Weight	215 g (0.47 lb)
Screw terminal wire size	0.5 ... 2.5 mm <sup>2</sup> (AWG 24 ... 14)
Housing color	White (RAL9003)
Mounting methods	Screws or optional mounting flange 243261SP
<b>Materials</b>	
Probe	PBT polymer
Probe filter	PTFE
Housing	PC + 10 %GF (UL-V0 approved)

## Inputs and outputs

Output parameter	Carbon dioxide (ppm)
Output modes	0/4 ... 20 mA, scalable, max. load 500 Ω 0 ... 5/10 V, scalable, min. load 10 kΩ RS-485 with Modbus RTU
Power consumption	0.5 W typical, 1.1 W max.
<b>Supply voltage</b>	
With current output	20 ... 30 V DC
With voltage output or RS-485	12 ... 30 V DC
<b>Digital communication</b>	
Interface	RS-485, non-isolated, no line termination
Default serial settings	19200 bps N 8 2
Protocol	Modbus RTU
Modbus device address	240
<b>Service port</b>	
Connector	M8 4-pin male
Compatibility	<ul style="list-style-type: none"> <li>Indigo80 handheld indicator <sup>1)</sup></li> <li>MI70 handheld indicator <sup>2)</sup></li> <li>Vaisala Insight PC software <sup>3)</sup></li> </ul>

<sup>1)</sup> Requires M12-M8 cable 262195SP.

<sup>2)</sup> Requires connection cable 219980SP.

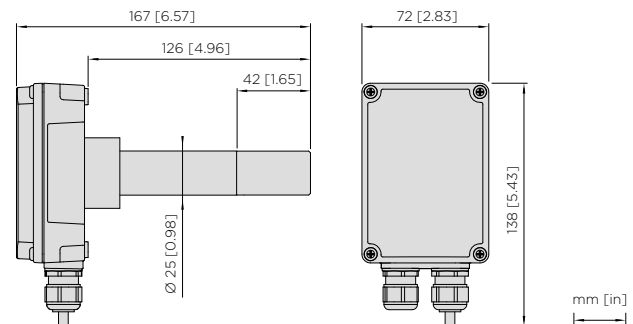
<sup>3)</sup> Requires USB adapter USB2 with M12-M8 cable 262195SP. Vaisala Insight software for Windows is available at [www.vaisala.com/insight](http://www.vaisala.com/insight).

## Compliance

EU directives and regulations	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU) amended by 2015/863
EMC compatibility	EN 61326-1, basic electromagnetic environment
Compliance marks	CE, RCM

## Accessories and spare parts

Probe mounting flange	243261SP
Conduit fitting + O-ring (M16 × 1.5 / NPT1/2")	210675SP
Conduit fitting + O-ring (M16 × 1.5 / PG9, RE-MS)	210674SP
USB adapter for Insight and M12 - M8 cable	USB2 and 262195SP
Connection cable for GM70 (MI70) handheld meter	219980SP
Calibration adapter	DRW244827SP
Porous sintered PTFE filter	DRW244221SP



GMD110 dimensions