## VAISALA

# GMP252 Carbon Dioxide Probe for ppm-Level Measurements



The GMP252 – the intelligent ppm-level probe for measuring CO<sub>2</sub>.

The Vaisala CARBOCAP® Carbon Dioxide Probe GMP252 is a new intelligent probe for measuring carbon dioxide. This robust, stand-alone measurement device is designed for use in agriculture, refrigeration, greenhouses and demanding HVAC applications. It is suitable for harsh and humid CO<sub>2</sub> measurement environments where stable and accurate ppm-level CO<sub>2</sub> measurements are needed. The GMP252 is based on Vaisala's unique, second-generation CARBOCAP® technology that enables exceptional stability. A new type of infrared (IR) light source is used instead of the traditional incandescent light bulb, which extends the lifetime of the GMP252.

The GMP252 incorporates an internal temperature sensor for compensation of the  ${\rm CO_2}$  measurement according to ambient temperature. The

effects of pressure and background gas can also be compensated for. The measurement range is  $0 \dots 10\ 000\ \mathrm{ppmCO_2}$  and the sensor can be used for measurements even up to  $30\ 000\ \mathrm{ppm\ CO_2}$  with reduced accuracy. The operating temperature range of the probe is wide and the probe housing is classified as IP65. Condensation is prevented as the internal sensor head is heated.

The GMP252 is resistant to dust and most chemicals, such as,  $\rm H_2O_2$  and alcohol-based cleaning agents.

#### Ease of Use

The GMP252 is a compact probe that is easy and fast to install in a number of ways. It's easy to plug in and plug out. The surface of the probe is smooth, which makes it easy to clean. The probe provides several outputs for the  $\mathrm{CO}_2$  measurement, analog current and voltage outputs

#### Features/Benefits

- Measurement range0 ... 10 000 ppmCO<sub>2</sub>
- Intelligent, stand-alone probe with analog (V, mA) and digital outputs (RS485 with Vaisala protocol or Modbus)
- Can be connected to the Indigo 201 host device
- Superior long-term stability with the 2nd-gen proprietary CARBOCAP® technology
- Wide operating temperature range -40 ... +60 °C
- IP65 classified housing
- Full temperature and pressure compensations
- Integrated temperature measurement for CO<sub>2</sub> compensation purposes
- Compensations for background gases: O<sub>2</sub>, and humidity
- Sensor head heated to prevent condensation
- Calibration certificate included
- Applications: agriculture, refrigeration, greenhouses and demanding HVAC applications

as well as digital RS485 with Modbus protocol.

The GMP252 probe can also be connected to the Indigo 201 host device to extend its features, for example, for a display or relays.

#### **Applications**

The GMP252 is ideal for agriculture, refrigeration, greenhouses and demanding HVAC applications where stable and accurate ppm-level  $\mathrm{CO}_2$  measurements are needed.

### **Technical Data**

#### **Performance**

Measurement range 0 ... 10 000 ppmCO<sub>2</sub> with reduced accuracy 0 ... 30 000 ppmCO<sub>2</sub> Accuracy (including repeatability and non-linearity) at 25 °C and 1013 hPa 0 ... 3000 ppmCO<sub>9</sub> ±40 ppmCO<sub>a</sub> 3000 ... 10 000 ppmCO<sub>9</sub> ±2% of reading Up to 30 000 ppmCO<sub>o</sub> ±3.5% of reading Calibration uncertainty at 2000 ppmCO<sub>2</sub> ±18 ppmCO<sub>2</sub> at 10 000 ppmCO<sub>o</sub> ±66 ppmCO<sub>o</sub> Long-term stability 0...3000 ppmCO ±60 ppmCO<sub>o</sub>/year 3000 ... 6000 ppmCO<sub>2</sub> ±150 ppmCO<sub>2</sub>/year 6000 ... 10 000 ppmCO<sub>2</sub> ±300 ppmCO<sub>2</sub>/year Temperature 0 ... 10 000 ppmCO<sub>9</sub> with compensation, +10 ... +50 °C < ±0.05% of reading / °C with compensation, -40 ... +60 °C <±0.1% of reading/°C Pressure dependence with compensation at 0 ... 10 000 ppmCO<sub>0</sub>, 500 ... 1100 hPa ±0.015% of reading / hPa Start-up time at 25 °C < 12 sWarm-up time (for full specifications) < 2 min Response time (T90) with standard filter < 1 min FLOW-THROUGH OPTION Response time (T90) with > 0.1 l/min  $30 \, \mathrm{s}$ Flow rate dependence < 1 l/min flow no effect 1 ... 10 l/min < 0.6% of reading l/min Gas flow < 10 l/min Operating range 0.1 ... 0.8 l/min Recommended range

#### **Operating Environment**

Operating temperature	-40+60 °C
Storage temperature	-40+70 °C
Pressure (compensated)	500 1100 hPa
operating	< 1.5 bar
Humidity	0 100 %RH, non-condensing
Condensation prevention	

sensor head heating when power is on

Chemical tolerance (temporary exposure during cleaning)

 ${\rm H_2O_2}$  (2000 ppm) non-condensing; alcohol-based cleaning agents (e.g. ethanol and IPA);

acetone; acetic acid

Electromagnetic compatibility EN61326-1, Generic Environment

#### **Inputs and Outputs**

Operating voltage	_
when digital output in u	se 12 30 VDC
when voltage output in	use 12 30 VDC
when current output in	use 20 30 VDC
Digital output	RS485 (Modbus, Vaisala Protocol)
Analog outputs	$0 \dots 5/10 \text{ V (scalable)}, \text{min. load } 10 \text{ k}\Omega$
	$0/4 \dots 20$ mA (scalable), max. load $500~\Omega$
Power consumption	0.4 W in continuous operation

#### **Mechanics**

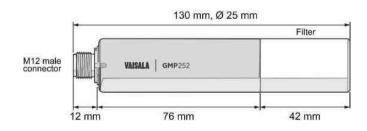
Probe housing material	PBT plastic
Filter material	PTFE
Connector	Nickel plated brass, M12 / 5 pin
Housing classification	IP65
Weight	
probe	58 g

#### **Spare Parts and Accessories**

Porous sintered PTFE filter	DRW244221SP
Flow-through adapter	ASM212011SP
Probe cable with open wires (1.5 m)	223263SP
Probe cable with open wires and 90° plug (0.6 m)	244669SP
Probe cable with open wires (10 m)	216546SP
Probe mounting clips (2 pcs)	243257SP
Probe mounting flange	243261SP
USB cable for PC connection	242659
MI70 connection cable for probe	CBL210472
Flat cable	CBL210493SP
Calibration adapter	DRW244827SP

#### **Dimensions**

Dimensions in mm





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