

GMP252 Carbon Dioxide Probe for ppm-Level Measurements



The GMP252 – the intelligent ppm-level probe for measuring CO₂.

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 CO₂ measurement environments where stable and accurate ppm-level CO₂ 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 CO₂ measurement according to ambient temperature. The effects of pressure and background gas can also be compensated for. The measurement range is 0 ... 10 000 ppmCO₂ and the sensor can be used for measurements even up to 30 000 ppm CO₂ 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, H₂O₂ 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

Features/Benefits

- Measurement range 0 ... 10 000 ppmCO₂
- Intelligent, stand-alone probe with analog (V, mA) and digital outputs (RS485 with Vaisala protocol or Modbus)
- 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 CO₂ compensation purposes
- Compensations for background gases: O₂, and humidity
- Sensor head heated to prevent condensation
- Calibration certificate included
- Applications: agriculture, refrigeration, greenhouses and demanding HVAC applications

in and plug out. The surface of the probe is smooth, which makes it easy to clean. The probe provides several outputs for the CO₂ measurement, analog current and voltage outputs as well as digital RS485 with Modbus protocol.

Applications

The GMP252 is ideal for agriculture, refrigeration, greenhouses and demanding HVAC applications where stable and accurate ppm-level CO₂ measurements are needed.

Technical Data

Performance

Measurement range	0 ... 10 000 ppmCO ₂
with reduced accuracy	0 ... 30 000 ppmCO ₂
Accuracy (including repeatability and non-linearity)	
at 25 °C and 1013 hPa	
0 ... 3000 ppmCO ₂	±40 ppmCO ₂
3000 ... 10 000 ppmCO ₂	±2% of reading
Up to 30 000 ppmCO ₂	±3.5% of reading
Calibration uncertainty	
at 2000 ppmCO ₂	±18 ppmCO ₂
at 10 000 ppmCO ₂	±66 ppmCO ₂
Long-term stability	
0 ... 3000 ppmCO ₂	±60 ppmCO ₂ /year
3000 ... 6000 ppmCO ₂	±150 ppmCO ₂ /year
6000 ... 10 000 ppmCO ₂	±300 ppmCO ₂ /year
Temperature 0 ... 10 000 ppmCO ₂	
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 ₂ ,	
500 ... 1100 hPa	±0.015% of reading / hPa
Start-up time at 25 °C	< 12 s
Warm-up time (for full specifications)	< 2 min
Response time (T90) with standard filter	< 1 min

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)	H ₂ O 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 use	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 ... 5/10 V (scalable), min. load 10 kΩ 0/4 ... 20 mA (scalable), max. load 500 Ω
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
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
M170 connection cable for probe	CBL210472
Flat cable	CBL210493SP
Calibration adapter	DRW244827SP

Dimensions

Dimensions in mm



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