

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) operating | 500 ... 1100 hPa < 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 ... 30VDC |
| when voltage output in use | 12 ... 30VDC |
| when current output in use | 20 ... 30VDC |
| 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

