



GMP252 Carbon Dioxide Probe

for ppm-Level Measurements



Features

- Measurement range
0 ... 10 000 ppmCO₂
- Intelligent, stand-alone probe with analog and digital outputs
- Can be connected to Indigo 200 Series host devices
- Wide operating temperature range -40 ... +60 °C
- IP65 classified housing
- 2nd-gen proprietary CARBOCAP® technology
- 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

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.

Benefits

- Superior long-term stability
- Reliable and accurate
- Calibration certificate included

GMP252 is suitable for harsh and humid CO₂ measurement environments where stable and accurate ppm-level CO₂ measurements are needed. 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 GMP252.

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 ppmCO₂ 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.

GMP252 is resistant to dust and most chemicals, such as, H₂O₂ and alcohol-based cleaning agents.

Ease of Use

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 CO₂ measurement, analog current and voltage outputs as well as digital RS-485 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

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

Technical Data

Measurement Performance

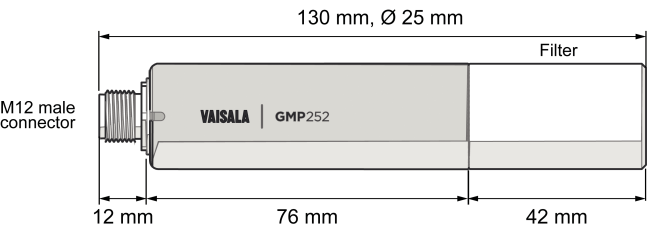
Measurement range	0 ... 10 000 ppmCO ₂ (up to 30 000 ppmCO ₂ with reduced accuracy)
Accuracy at 25 °C and 1013 hPa (incl. Repeatability and Non-Linearity)	
0 ... 3000 ppmCO ₂	±40 ppmCO ₂
3000 ... 10 000 ppmCO ₂	±2 % of reading
Up to 30 000 ppmCO ₂	±3.5 % of reading
Calibration Uncertainty	
at 2000 ppmCO 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 Dependence 0 ... 10 000 ppmCO₂	
with compensation, -10 ... +50 °C	±0.05 % of reading/°C
with compensation, -40 ... +60 °C	< ±0.1 % of reading/°C
without temperature compensation at 2000 ppmCO ₂ (typical)	-0.5 % of reading/°C
Pressure Dependence	
with compensation at 0 ... 10 000 ppmCO ₂ , 500 ... 1100 hPa	±0.015 % of reading/hPa
without compensation (typical)	+0.15 % of reading/hPa
Humidity Dependence	
with compensation, 0 ... 10 000 ppmCO ₂ , 0 ... 100 %RH	±0.7 % of reading (at 25 °C)
without compensation (typical)	+0.05 % of reading/%RH
O₂ Dependence	
with compensation, 0 ... 10 000 ppm %CO ₂ , 0 ... 90 %O ₂	±0.6 % of reading (at 25 °C)
without compensation (typical)	-0.08 % of reading/%O ₂
Start-Up, Warm-Up and Response Time	
Start-up time at 25 °C	< 12 s
Warm-up time for full spec.	< 2 min
Response time (T90) with standard filter	< 1 min
Response time (T90) with spray shield	< 3 min
Flow-Through Option	
Response time (T90) with > 0.1 l/min	30 s
Flow rate dependence < 1 l/min flow	no effect
Flow rate dependence 1 ... 10 l/min flow	< 0.6% of reading l/min
Gas flow operating range	< 10 l/min
Gas flow recommended range	0.1 ... 0.8 l/min

Operating Environment

Operating temperature of CO ₂ measurement	-40 ... +60 °C
Storage temperature	-40 ... +70 °C
Humidity	0 ... 100 %RH, non-condensing
Condensation prevention	Sensor head heating when power on
EMC compliance	EN61326-1, Generic Environment
Chemical tolerance (temporary exposure during cleaning)	<ul style="list-style-type: none">• H₂O₂ (2000 ppm, non-condensing)• Alcohol-based cleaning agents (for example ethanol and IPA)• Acetone• Acetic acid
Pressure	
Compensated	500 ... 1100 hPa
Operating	< 1.5 bar

Mechanical Specifications

Weight, probe	58 g
Connector type	M12 5-pin male
IP rating, probe body	IP65
Materials	
Probe housing material	PBT plastic
Filter	PTFE
Connector	Nickel plated brass
Dimensions	
Probe diameter	25 mm
Probe length	130 mm



Inputs and Outputs

Digital output	Over RS-485: <ul style="list-style-type: none"> • Modbus • Vaisala Industrial Protocol
Analog output	<ul style="list-style-type: none"> • 0 ... 5/10 V (scalable), min load 10 kΩ • 0/4 ... 20 mA (scalable), max load 500 Ω
Operating voltage	
With digital output in use	12 ... 30 VDC
With voltage output in use	12 ... 30 VDC
With current output in use	20 ... 30 VDC
Power consumption	
Typical (continuous operation)	0.4 W
Maximum	0.5 W
When connected to Indigo 200 transmitter	
Analog output	3 voltage (V) or current (mA) outputs: <ul style="list-style-type: none"> • 0 ... 10 VDC / 0 ... 5 VDC / 0 ... 1 VDC / 1 ... 5 VDC (min load 1kΩ) • 0 ... 20 mA / 4 ... 20 mA (max load 500 Ω)
Relays	2 configurable relays
Power supply input	Nominal 24 V, range: <ul style="list-style-type: none"> • 15 ... 40 VDC • 20 ... 28 VAC
Power consumption	Max. 3.5 W (transmitter + probe total max. consumption)

Spare Parts and Accessories

Porous sintered PTFE filter for GMP252	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
Flow-through adapter with gas ports	ASM212011SP
USB cable for PC connection	242659
MI70 connection cable for probe	CBL210472
Flat cable for GMP250 probes, M12 5-pin	CBL210493SP
Probe mounting clips (2 pcs)	243257SP
Probe mounting flange	243261SP
Calibration adapter	DRW244827SP
Spray shield	ASM212017SP
Radiation shield DTR250	DTR250

