



GMP343 Carbon Dioxide Probe

for Demanding Measurements



Features

- Vaisala CARBOCAP® Sensor, a silicon-based non-dispersive infrared (NDIR) sensor
- Single-beam, dual wavelength CO₂ measurement with no moving parts
- Compensation options for temperature, pressure, humidity and oxygen
- Designed for outdoor use

Vaisala CARBOCAP® Carbon Dioxide Probe GMP343 is an accurate and rugged probe-type instrument for ecological measurements. Typical applications include CO₂ soil respiration, ambient CO₂ monitoring, plant growth chambers, and OEM applications.

Benefits

- Low power consumption and heat emission
- Compact and lightweight
- Excellent accuracy and stability

GMP343 can output both numerically filtered and raw measurement data and it can also compensate the measurement with an internal temperature measurement and user-set relative humidity, pressure and oxygen values.

In combination with an MI70 indicator, GMP343 provides a tool for accurate in-situ measurement. MI70 can be used as a display, communication and data logging device.

Each GMP343 is calibrated using $\pm 0.5\%$ accurate gases at 0 ppm, 200 ppm, 370 ppm, 600 ppm, 1000 ppm, 4000 ppm and 2%. Calibration is also done at temperature points of -30 °C, 0 °C, 25 °C and 50 °C. If needed, the

customer can recalibrate the instrument using the multipoint calibration (MPC) feature allowing up to 8 user-defined calibration points.

Technical Data

Measurement Performance

Measurement range options	0 ... 1000 ppm, 0 ... 2000 ppm, 0 ... 3000 ppm, 0 ... 4000 ppm, 0 ... 5000 ppm, 0 ... 2 %
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Accuracy (Excluding Noise) at 25 °C (77 °F) and 1013 hPa after Factory Calibration with 0.5 % Accurate Gases with Different Range Options

0 ... 1000 ppm	±(3 ppm + 1 % of reading)
0 ... 2000 ppm - 0 ... 2 % ¹⁾	±(5 ppm + 2 % of reading)

Noise (Repeatability) at 370 ppmCO₂

With no output averaging	±3 ppmCO ₂
With 30 s output averaging	±1 ppmCO ₂

Long-term Stability (See Graph 'GMP343 Operating Conditions')

Easy	±2 % of reading ^{2)/} year
Moderate	±2 % of reading ^{2)/} 6 months
Harsh	±2 % of reading ^{2)/} 3 months

Warm-up Time

To full accuracy ±0.5 %	10 min
To full accuracy	30 min

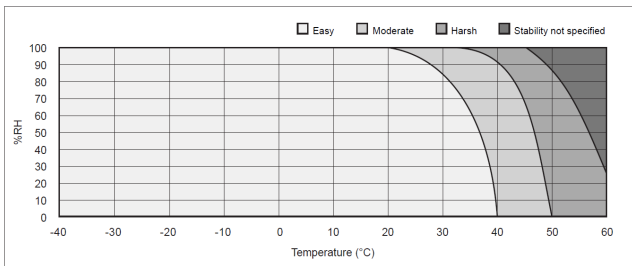
- 1) Accuracy below 200 ppmCO₂ not specified for 2 % range option
2) Always at least ±10 ppmCO₂.

Effect on Accuracy with Temperature Compensation

CO ₂ range options	0 ... 1000 ppm	0 ... 2 000 - 5000 ppm	0 ... 2 %
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Temperature °C (°F)	Accuracy (% of reading) ¹⁾		
+10 ... +40 (+50 ... +104)	±1	±1	±2
+40 ... +60 (+104 ... +140)	±2	±3	±4
-40 ... +10 (-40 ... +50)	±3	±3	±5

- 1) Always at least ±10 ppmCO₂.
Temperature compensation is performed by an integrated Pt1000 element.



GMP343 Operating Conditions

Effect on Accuracy with Pressure Compensation

CO ₂ range options	0 ... 1000 ppm	0 ... 2000 - 2 %
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Pressure (hPa)	Accuracy (% of reading)	
900 ... 1050	±0.5	±1
700 ... 1300	±1	±2

Integrated pressure sensor **not** included in GMP343.

Response Time (90%)

Diffusion Model

Filter attached	Averaging (s)	Response (s)
Yes	0	75
Yes	30	82
No	0	<2
No	30	30

Flow-through Model

Gas flow (l/min)	Averaging (s)	Response (s)
0.3	0	26
0.3	30	44
1.2	0	8
1.2	30	23

Operating Environment

Operating temperature	-40 ... +60 °C (-40 ... +140 °F)
Storage temperature	-40 ... +70 °C (-40 ... 158 °F)
Operating humidity	See graph 'GMP343 Operating Conditions'
Compensated pressure range	700 ... 1300 hPa
Operating pressure	< 5 bar
Gas flow for flow-through model	0 ... 10 liters/min
EMC compliance	EN61326, Generic Environment

Inputs and Outputs

Operating voltage	11 ... 36 VDC
Power consumption	Without optics heating : < 1 W With optics heating : < 3.5 W
Digital outputs	RS-485, RS-232

Analog Outputs

Current output range	4 ... 20 mA
Current output resolution	14 bits
Current output maximum load	800 Ω at 24 VDC, 150 Ω at 10 VDC
Voltage output range	0 ... 2.5 V, 0 ... 5 V
Voltage output resolution	14 bits (13 bits with 0 ... 2.5 V)
Voltage output minimum load	Minimum load : 5 kΩ

Mechanical Specifications

Housing	Anodized aluminium
Filter cover	PC
Cable connector type	8-pin M12
Weight (probe only)	360 g

IP Rating

Housing (cable attached)	IP67
Diffusion filter (weather protection)	IP65
Diffusion filter (sintered PTFE)	IP66

Spare Parts and Accessories

Wall mount bracket	GMP343BRACKET
Mounting flange	GMP343FLANGE
Standard diffusion filter (weather protection, IP65) with filter cover	GMP343FILTER
Diffusion filter (sintered PTFE filter, IP66) with filter cover	215521
Calibration adapter (for the diffusion model)	GMP343ADAPTER
Junction box	JUNCTIONBOX-8
Probe cables	2 m (6 ft 7 in): GMP343Z200SP 6 m (19 ft 8 in): GMP343Z600SP 10 m (32 ft 10 in): GMP343Z1000SP
PC connection cable, 2 m (6 ft 7 in)	213379
MI70 connection cable, 2 m (6 ft 7 in)	DRW216050SP
USB adapter (USB-D9 Serial connection cable)	219686
Soil adapter kit for horizontal positioning	215519
Soil adapter kit for vertical positioning	215520



Vaisala CARBOCAP® Carbon Dioxide Probe GMP343

		Fill here										PRICE
Vaisala CARBOCAP® Carbon Dioxide Probe	GMP343										0	
Sampling method	diffusion <i>flow through</i>	A										
Measurement range of the probe:	0...1000 ppm CO ₂	1										
	0...2000 ppm CO ₂	2										
	0...3000 ppm CO ₂	3										
	0...4000 ppm CO ₂	4										
	0...5000 ppm CO ₂	5										
	0...2 % CO ₂ *	6										
Analog output selection **	0...5 V	A										
	0...2.5 V	B										
	4...20 mA	C										
Digital output selection	RS232	1										
	RS485 ***	2										
Probe cable	none	N										
	<i>probe cable (with M12 type female connector), 2 m</i>	A										
	<i>probe cable (with M12 type female connector), 6 m</i>	B										
	<i>probe cable (with M12 type female connector), 10 m</i>	C										
Measurement indicator MI70 and accessories	none	0										
	<i>MI70 indicator and interface cable, 2 m ****</i>	1										
	<i>MI70 interface cable, 2 m</i>	2										
Calibration accessories	none	N										
	<i>calibration adapter for diffusion model</i>	A										
	<i>PC connection kit*****</i>	B										
	<i>calibration adapter for diffusion model and PC connection kit*****</i>	C										
Mounting accessories	none	0										
	<i>mounting flange</i>	1										
Wiring accessories	none	N										
	<i>junction box</i>	A										
Special features	none	0										
User's Guide	no User's Guide	A										
	English	B										
	Japanese	J										
											TOTAL	
											QTY	
											TOTAL VALUE	

Selections in bold are included in the prices of the basic versions.

Selections in italic are available at an extra price.

Example of order code:

GMP343 A 1 A 1 A 0 A 0 A 0 0 B

End customer: _____

Notes for the selections:

* Accuracy below 200 ppmCO₂ not specified for the 2% range option

** The analog output type (current or voltage mode) may be selected and re-scaled using PC connection cable by customer

*** If the selection is RS485, the device may be powered up in the RS232 service mode for user settings. See User's Guide for details.

**** The selection includes:

- MI70 indicator with a rechargeable battery
- AC adapter with AUS, EUR, UK, and US plugs
- MI70Link software with RS232 cable (PC <-> MI70)
- 2 m interface cable (GMP343 <-> MI70)

***** The selection includes PC connection cable (213379) and USB adapter (USB-D9 Serial connection cable, 219686)

Note: following accessories are also available as a spare parts:

ACCESSORY

Wall mount bracket
Mounting flange
Standard diffusion filter (IP65) + filter cover
Diffusion filter (sintered filter, IP66) + filter cover
Calibration adapter
Junction box
Probe cable (with M12 type female conn.), 2 m
Probe cable (with M12 type female conn.), 6 m
Probe cable (with M12 type female conn.), 10 m
PC connection cable
Interface cable for MI70, 2 m
USB adapter (USB-D9 Serial connection cable)
Soil adapter kit for horizontal positioning
Soil adapter kit for vertical positioning

CODE:

GMP343BRACKET
GMP343FLANGE
GMP343FILTER
215521
GMP343ADAPTER
JUNCTIONBOX-8
GMP343Z200SP
GMP343Z600SP
GMP343Z1000SP
213379
DRW216050SP
219686
215519
215520

NOTE:

Included in the default configuration

Included in the default configuration of diffusion model

Includes sintered PTFE filter

Includes sintered PTFE filter