VAISALA

GM70 Handheld Carbon Dioxide Meter

For spot-checking applications

The Vaisala CARBOCAP® Handheld Carbon Dioxide Meter GM70 is the demanding professional's choice for handheld carbon dioxide measurement. The meter consists of the indicator (center) and probe, used either with the handle (left) or pump (right).

Features

- Two optional sampling methods: diffusion or pump aspiration
- User-friendly meter with multilingual user interface
- Numerical and graphical display of measurements
- Data can be logged and transferred to PC via MI70 Link software
- Multiprobe operation: Vaisala's relative humidity and dew point probes can be used simultaneously with CO_2 measurement

GM70 is a user-friendly meter for demanding spot measurements in laboratories, greenhouses, incubators, and mushroom farms. The meter can also be used in HVAC and industrial applications, and as a tool for checking fixed CO_2 instruments.

Vaisala CARBOCAP® technology

GM70 incorporates the advanced CARBOCAP sensor that has unique reference measurement capabilities. The measurement accuracy is not affected by dust, water vapor or most chemicals. The meter has a two-year recommended calibration interval.

Two sampling methods

The handle is for handheld diffusion sampling. GM70 pump enables pump-aspirated sampling from locations difficult to access otherwise. It is also ideal for comparisons with fixed CO_2 transmitters.

Interchangeable probes

By plugging a different GMP220 series probe into the handle or pump, the user can easily change the measurement range of GM70.

The meter can also be used as a calibration check instrument for Vaisala's fixed CO_2 instruments. GMW90 and GMP220 probes can also be adjusted by using the GM70 meter. GM70 has two probe inputs. Vaisala's relative humidity and dew point probes can also be used simultaneously with CO_2 measurement.

The two ports of MI70 allow measuring CO_2 and RH/T_d simultaneously

Benefits

- Proven Vaisala CARBOCAP® reliability
- Wide selection of measurement ranges
- Easy recalibration using the interchangeable probes
- Suitable for field checking of fixed CO_2 instruments
- Short warm-up time
- Compact and versatile

MI70 Link Windows® software

The optional MI70 Link Windows® software and the USB connection cable form a practical tool for transferring logged data and real time measurement data from GM70 to a PC.

Technical data

GMP220 probe measurement performance

Response time (63 %)	GMP221 probe: 20 s GMP222 probe: 30 s
Warm-up time	30 s (15 min to full specification) 30 min to full specification with GM70PUMP
Sensor type	CARBOCAP®
Measurement ranges	
High concentrations of CO_2, short probe (GMP221)	0 ... 2 %, 0 ... 3 %, 0 ... 5 %, 0 ... 10 %, 0 ... 20 %
Low concentrations of CO_2, long probe (GMP222)	0 ... 2000 ppm, 0 ... 3000 ppm, 0 ... 5000 ppm, 0 ... 7000 ppm, 0 ... 10 000 ppm
Accuracy (at 25 °C and 1013 hPa) [1]	
GMP221 probe	±(1.5 % of range + 2 % of reading) [2]
GMP222 probe	±(1.5 % of range + 2 % of reading)
Temperature dependence, typical	−0.3 % of reading/°C
Pressure dependence, typical	+0.15 % of reading/hPa
Long-term stability	< ±5 %FS / 2 years
Measurement environment	
Operating temperature	−20 ... +60 °C (−4 ... +140 °F) +15 ... +40 °C (+59 ... +104 °F) with GM70PUMP
Relative humidity	0 ... 100 %RH, non-condensing
Operating pressure	700 ... 1300 hPa
Flow range (diffusion sampling)	0 ... 10 m/s

1) Including repeatability, non-linearity and calibration uncertainty.
2) Applies to concentrations above 2 % of full scale.

GMP220, GMH70, and GM70PUMP mechanical specifications

Probe cable length	1.9 m (6.2 ft)
IP rating	
GMH70 handle	IP65
GM70PUMP	IP54
Housing material	
GMP221 and GMP222 probe	PC plastic
GMH70 handle	ABS/PC blend
GM70PUMP	Aluminum casing
Weight	
GMH70 with GMP221/GMP222 probe	230 g (8 oz)
GM70PUMP with GMP221/GMP222 probe	700 g (25 oz)
Storage	
Storage temperature	−30 ... +70 °C (−22 ... +158 °F)
Storage humidity	0 ... 100 %RH, non-condensing

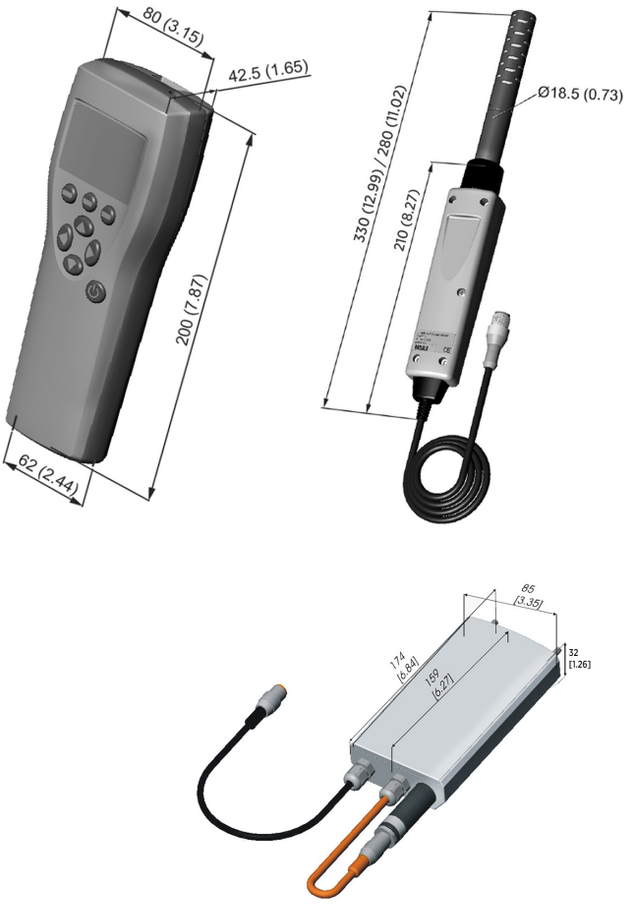
MI70 measurement indicator

Operating environment	
Operating temperature	−10 ... +40 °C (+14 ... +104 °F)
Operating humidity	0 ... 100 %RH, non-condensing
Storage temperature	−40 ... +70 °C (-40 ... +158 °F)
Inputs and outputs	
Max. no of probes	2
PC interface	MI70 Link software with USB or serial port cable
Power supply	Rechargeable NiMH battery pack with AC adapter or 4 × AA size alkalines, type IEC LR6
Analog output: [1]	
Scale	0 ... 1 V DC
Output resolution	0.6 mV
Accuracy	0.2 % full scale
Temperature dependence	0.002 %/°C (0.01 %/°F) full scale
Minimum load resistor	10 kΩ to ground
Mechanical specifications	
Housing classification	IP54
Housing materials	ABS/PC blend
Weight	400 g (14 oz)
Compatibility	
EMC compliance	EN 61326-1, portable equipment
Other	
Menu languages	English, Chinese, Spanish, Russian, French, Japanese, German, Swedish, Finnish
Display	LCD with backlight Graphic trend display of any parameter Character height up to 16 mm (0.63 in)
Alarm	Audible alarm function
Data logging capacity	2700 real time data points
Logging interval	1 s to 12 h
Logging duration	1 min ... memory full
Resolution	0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 a_w, 10 ppm / 0.01 %CO_2

1) The specifications apply only when analog output is enabled for the handheld meter.

MI70 battery operation time

Typical charging time	4 hours
Operation times	
Continuous use (with handle)	Better than 8 h at +20 °C (+68 °F)
Continuous use (with pump)	Better than 5 h at +20 °C (+68 °F) without load
Data logging use (one probe)	Up to 30 days depending on logging interval



Dimensions in mm (inches)

Spare parts and accessories

Connection cables	
Analog output cable for 0 ... 1 V DC	27168ZZ
Connection cable for fixed CO_2 instruments GMT220, GMM220, GMD20, and GMW20 series	GMA70
Connection cable for GMP343	DRW216050SP
Connection cable for GMW90 series	219980SP
Connection cable for GMP250 series	CBL210472
Probe extension cable (10 m (33 ft))	213107SP
Flat cable for GMP220 series probes, M12/8-pin	238651
Carrying cases	
Weatherproof carrying case	MI70CASE3
Soft carrying case for diffusion handle and probe	MI70SOFTCASE
Probe accessories	
Spare probe (use the GM70 order form to define measurement range etc.)	GMP221, GMP222
Others	
Measurement indicator	MI70
USB PC connection cable (for use with MI70 Link software) [1]	219687
Rechargeable battery for MI70, NiMH 4.8 V	26755
Calibration adapter for GMP220 series probes	26150GM
Nafion™ membrane tubing	212807GM
Aspiration pump for GM70	GM70PUMP
GM70 replacement handle	GMH70

1) Vaisala MI70 Link software for Windows is available at www.vaisala.com/mi70link.

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