





# 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<sub>2</sub> 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<sub>2</sub> 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<sub>2</sub> 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<sub>2</sub> measurement.



The two ports of MI7O allow measuring  $\text{CO}_2$  and  $\text{RH}/\text{T}_d$  simultaneously

#### **Benefits**

- Proven Vaisala CARBOCAP® reliability
- Wide selection of measurement ranges
- Easy recalibration using the interchangeable probes
- Suitable for field checking of fixed CO<sub>2</sub> instruments
- Short warm-up time
- Compact and versatile

### MI70 Link Windows® software

The optional MI70 Link Windows<sup>®</sup> 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 <sub>2</sub> , 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 = 0) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )
GMPZZI probe	±(1.5 % of range + 2 % of reading) <sup>2)</sup>
GMP222 probe	$\pm$ (1.5 % of range + 2 % of reading) <sup>2</sup> $\pm$ (1.5 % of range + 2 % of reading)
GMP222 probe	±(1.5 % of range + 2 % of reading)
GMP222 probe Temperature dependence, typical	±(1.5 % of range + 2 % of reading) −0.3 % of reading/°C
GMP222 probe Temperature dependence, typical Pressure dependence, typical	±(1.5 % of range + 2 % of reading) -0.3 % of reading/°C +0.15 % of reading/hPa
GMP222 probe Temperature dependence, typical Pressure dependence, typical Long-term stability	±(1.5 % of range + 2 % of reading) -0.3 % of reading/°C +0.15 % of reading/hPa
GMP222 probe Temperature dependence, typical Pressure dependence, typical Long-term stability Measurement environment	±(1.5 % of range + 2 % of reading) -0.3 % of reading/°C +0.15 % of reading/hPa < ±5 %FS / 2 years -20 +60 °C (-4 +140 °F) +15 +40 °C (+59 +104 °F) with
GMP222 probe Temperature dependence, typical Pressure dependence, typical Long-term stability Measurement environment Operating temperature	±(1.5 % of range + 2 % of reading) -0.3 % of reading/°C +0.15 % of reading/hPa < ±5 %FS / 2 years -20 +60 °C (-4 +140 °F) +15 +40 °C (+59 +104 °F) with GM70PUMP

Including repeatability, non-linearity and calibration uncertainty.
 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 temperature-10 +40 °C (+14 +104 °F)Operating humidity0 100 %RH, non-condensingStorage temperature-40 +70 °C (-40 +158 °F)Inputs and outputs2Max. no of probes2PC interfaceMI70 Link software with USB or serial port cablePower supplyRechargeable NiMH battery pack with AC adapter or 4 × AA size alkalines, type IEC LR6Analog output: <sup>1)</sup> 1 V DCOutput resolution0.6 mVAccuracy0.2 % full scaleTemperature dependence0.002 %/°C (0.01 %/°F) full scaleMinimum load resistor10 kΩ to groundMechanical specificationsIP54Housing classificationIP54Housing materialsABS/PC blendWeight400 g (14 oz)CompatibilityEMC complianceEnglish, Chinese, Spanish, Russian, French, Japanese, German, Swedish, FinnishDisplayLCD with backlight Graphic trend display of any parameter Character height up to 16 mm (0.63 in)AlarmAudible alarm functionData logging capacity2700 real time data pointsLogging interval1 s to 12 hLogging duration1 min memory fullResolution.0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw, i 0.01 %CO2	Operating environment	
Storage temperature-40 +70 °C (-40 +158 °F)Inputs and outputsMax. no of probes2PC interfaceMI70 Link software with USB or serial port cablePower supplyRechargeable NiMH battery pack with AC adapter or 4 × AA size alkalines, type IEC LR6Analog output: 1)0 1 V DCScale0 1 V DCOutput resolution0.6 mVAccuracy0.2 % full scaleTemperature dependence0.002 %/°C (0.01 %/°F) full scaleMinimum load resistor10 kΩ to groundMechanical specificationsIP54Housing naterialsABS/PC blendWeight400 g (14 oz)CompatibilityENG 1326-1, portable equipmentOtherJapanese, German, Swedish, FinnishDisplayLCD with backlight Graphic trend display of any parameter Character height up to 16 mm (0.63 in)AlarmAudible alarm functionData logging capacity2700 real time data pointsLogging duration1 s to 12 hLogging duration1 min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw,	Operating temperature	-10 +40 °C (+14 +104 °F)
Inputs and outputsMax. no of probes2PC interfaceMI7O Link software with USB or serial port cablePower supplyRechargeable NiMH battery pack with AC adapter or 4 × AA size alkalines, type IEC LR6Analog output: 1).Scale01 V DCOutput resolution0.6 mVAccuracy0.2 % full scaleTemperature dependence0.002 %/°C (0.01 %/°F) full scaleMinimum load resistor10 kΩ to groundHousing classificationIP54Housing materialsABS/PC blendWeight400 g (14 oz)CompatibilityEN 61326-1, portable equipmentOther.Menu languagesEnglish, Chinese, Spanish, Russian, French, Japanese, German, Swedish, FinnishDisplayLCD with backlight Graphic trend display of any parameter Character height up to 16 mm (0.63 in)AlarmAudible alarm functionData logging capacity2700 real time data pointsLogging interval1 s to 12 hLogging duration1min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw,	Operating humidity	0 100 %RH, non-condensing
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Minimum load resistor10 kΩ to groundMechanical specificationsHousing classificationIP54Housing materialsABS/PC blendWeight400 g (14 oz)CompatibilityEMC complianceEN 61326-1, portable equipmentOtherMenu languagesEnglish, Chinese, Spanish, Russian, French, Japanese, German, Swedish, FinnishDisplayLCD with backlight Graphic trend display of any parameter Character height up to 16 mm (0.63 in)AlarmAudible alarm functionData logging capacity2700 real time data pointsLogging interval1 s to 12 hLogging duration1 min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw,	Accuracy	0.2 % full scale
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Logging duration1 min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw,	Data logging capacity	2700 real time data points
Resolution         0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 a <sub>w</sub> ,	Logging interval	1 s to 12 h
	Logging duration	1 min memory full
	Resolution	

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

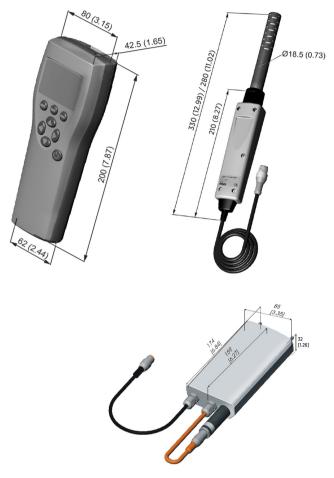
### MI70 battery operation time

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





Instrument Expert Original factory packaging www.dorgean.com



#### Dimensions in mm (inches)

#### **Spare parts and accessories**

Connection cables	
Analog output cable for 0 1 V DC	27168ZZ
Connection cable for fixed CO <sub>2</sub> 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	
Probe accessories	
Spare probe (use the GM70 order form to define measurement range etc.)	GMP221, GMP222
Spare probe (use the GM70 order form to define	GMP221, GMP222
Spare probe (use the GM70 order form to define measurement range etc.)	GMP221, GMP222 MI70
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Spare probe (use the GM70 order form to define measurement range etc.) Others Measurement indicator USB PC connection cable (for use with MI70 Link software) <sup>1)</sup> Rechargeable battery for MI70, NiMH 4.8 V	MI70 219687 26755
Spare probe (use the GM70 order form to define measurement range etc.) Others Measurement indicator USB PC connection cable (for use with MI70 Link software) <sup>1)</sup> Rechargeable battery for MI70, NiMH 4.8 V Calibration adapter for GMP220 series probes	MI70 219687 26755 26150GM

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



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