

# GM70 Hand-Held Carbon Dioxide Meter for Spot-Checking Applications



## Features/Benefits

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

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

The Vaisala CARBOCAP® Hand-Held Carbon Dioxide Meter GM70 is a user-friendly meter for demanding spot measurements in laboratories, greenhouses and mushroom farms. The meter can also be used in HVAC applications, industrial health investigations and as a tool for checking fixed CO<sub>2</sub> instruments.

### Vaisala CARBOCAP® technology

The GM70 incorporates the advanced Vaisala CARBOCAP® Sensor. The patented sensor has unique reference measurement capabilities. Its critical parts are made of silicon; this gives the sensor outstanding stability over both time and temperature. In addition, the measurement accuracy of the sensor is not affected by dust, water vapor or most chemicals.

The GM70 has a two-year recommended calibration interval.

### Two sampling methods

The handle is for hand-held diffusion sampling. The 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.

Due to its short warm-up time, the GM70 is ready for use almost immediately. The menu-based interface is easy to use, and a graphical LCD display with data logger function makes the handling of

measurement data convenient. The optional MI70 Link Windows® software provides an easy way to handle data in the PC environment.

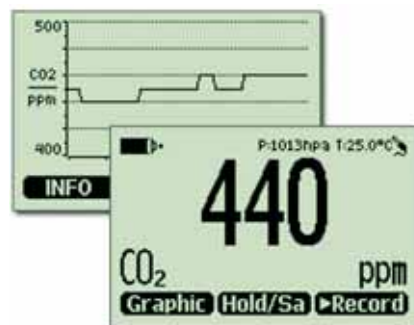
### Interchangeable probes

The GM70 uses the same probes as Vaisala CARBOCAP® Carbon Dioxide Transmitter Series GM220 fixed CO<sub>2</sub> instruments. By plugging different probes into the handle or pump, the user can easily change the measurement range.

### Two inputs provide flexibility

The GM70 has two probe inputs. This allows differences to be measured, and is also a practical feature when checking probes against a calibrated probe. Vaisala's relative humidity and dewpoint probes can also be used simultaneously.

The meter can also be used as a calibration check instrument for Vaisala's GM20 and GM220 fixed CO<sub>2</sub> instruments. GM220 probes can even be adjusted by using the GM70 meter.



GM70 displays CO<sub>2</sub> concentration both numerically and graphically.

# Technical Data

## CO<sub>2</sub> volume concentration measurement

Measurement range	
High concentrations short probe (GMP221)	0...2% CO <sub>2</sub> 0...3% CO <sub>2</sub> 0...5% CO <sub>2</sub> 0...10% CO <sub>2</sub> 0...20% CO <sub>2</sub>
Low concentrations long probe (GMP222)	0...2000 ppm CO <sub>2</sub> 0...3000 ppm CO <sub>2</sub> 0...5000 ppm CO <sub>2</sub> 0...7000 ppm CO <sub>2</sub> 0...10,000 ppm CO <sub>2</sub>
Error at 25 °C against certified factory references (incl. repeatability and calibration uncertainty)	
GMP221	< ±[0.02% CO <sub>2</sub> + 2% of reading]
GMP222	< ±[20 ppm CO <sub>2</sub> + 2% of reading]
Non-linearity	< ±1% of FS
Temperature dependence	0.1% of FS/°C (0.05% of FS/°F) (typical)
Pressure dependence (typical)	0.15% of reading/hPa
Long-term instability	< ±5% of FS/2 years
Response time (63%)	
GMP221	20 seconds
GMP222	30 seconds
Warm-up time	30 seconds, 15 minutes full specifications

## Measurement environment

Temperature	-20...+60 °C (-4...+140 °F)
Relative humidity	0...100 %RH non-condensing
Operation pressure	700...1300 hPa
Flow range (diffusion sampling)	0...10 m/s

## Probe, handle & pump general

Sensor	Vaisala CARBOCAP®
Housing material	
GMP221/222 probe	PC plastic
GMH70 handle	ABS/PC blend
GM70 Pump	aluminium IP54
Storage temperature	-30...+70 °C (-22...+158 °F)
Storage humidity	0...100 %RH non-condensing
Weight	
GMH70 with GMP221/222 probe	230 g
GM70 Pump with GMP221/222 probe	700 g

## Dimensions

GMH70 handle with probe	
length, short probe (GMP221)	270 mm (10.6 in.)
length, long probe (GMP222)	350 mm (13.8 in.)
Space required for GM70 pump	
length (with long probe & cable)	300 mm (12 in.)
width	85 mm (3.3 in.)
height	36 mm (1.4 in.)
MI70 indicator	
length	200 mm (7.87 in.)
width	80 mm (3.1 in.)
height	43 mm (1.7 in.)

## MI70 Indicator general

Menu languages	English, French, Spanish, German, Swedish, Finnish
Display	LCD with backlight, graphic trend display of any parameter, character height up to 16 mm
Probe inputs	1 or 2
Power supply	Rechargeable NiMH battery pack with AC-POWER
Analog output	0...1 VDC
Output resolution	0.6 mV
Data interface	RS232
Data logging capacity	2700 points
Alarm	Audible alarm function
Operating temperature range	-10...+40 °C (+14...+104 °F)
Operating humidity range	non-condensing
Housing material	ABS/PC blend
Housing classification	IP54
Weight	400 g

## Battery operation time

Continuous use	
with handle	better than 8 h at +20 °C (+68 °F)
with pump	better than 5 h at +20 °C (+68 °F) without load
Data logging use	up to 30 days

## Electromagnetic compatibility

Complies with the following standard:  
EN 61326-1:1997 + Am1:1998 + Am2:2001, Electrical equipment for measurement, control and laboratory use - EMC requirements - Generic Environment.

## Accessories

Connection cable for fixed CO <sub>2</sub> instruments	GMA70
GMT220, GMM220, GMD20 and GMW20	27168ZZ
Analog output cable for 0...1 VDC analog output	MI70LINK
Windows® software, includes PC connection cable	26150GM
Field-check adapter	MI70CASE
Carrying case	



The GM70 in pump-aspirated mode is used for example to check incubators in the field.

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