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



*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).*

### 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 using the interchangeable probes
- Suitable for field checking of fixed $CO_2$ instruments
- Short warm-up time
- Compact and versatile

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 and industrial applications, and as a tool for checking fixed $CO_2$ instruments.

The GM70 has a short warm-up time and is ready for use almost immediately. It has a menu-based interface, a graphical LCD display and data logging capability. The optional MI70 Link Windows® software in combination with a USB connection cable provides an easy way to handle data in a PC environment.

## Vaisala CARBOCAP® technology

The GM70 incorporates the advanced Vaisala CARBOCAP® sensor that has unique reference measurement capabilities. The measurement accuracy 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 $CO_2$ transmitters.

## Interchangeable probes

The GM70 uses the same probes as Vaisala CARBOCAP® Carbon Dioxide Transmitter Series GMT220 and Modules Series GMM220. By plugging different probes into the handle or pump, the user can easily change the measurement range of the GM70.

The meter can also be used as a calibration check instrument for Vaisala's GM20 and series, GMT/M220 fixed $CO_2$ instruments. GMP220 probes can even be adjusted by using the GM70 meter.

The GM70 has two probe inputs. Vaisala's relative humidity and dewpoint probes can also be used simultaneously with $CO_2$ measurement.

# Technical data

## CO2 volume concentration measurement

| Measurement ranges | |
|---|---|
| High concentrations | 0 ... 2 % |
| short probe (GMP221) | 0 ... 3 % |
| | 0 ... 5 %, 0 ... 10 %, 0 ... 20 % |
| Low concentrations | 0 ... 2000 ppm |
| long probe (GMP222) | 0 ... 3000 ppm, 0 ... 5000 ppm, |
| | 0 ... 7000 ppm, 0 ... 10,000 ppm |

Accuracy (including repeatability, non-linearity and calibration uncertainty) at 25 °C and 1013 hPa

| | |
|---|---|
| GMP221 | ±(1.5% of range + 2% of reading) |

(applies for concentrations above 2% of full scale)

| | |
|---|---|
| GMP222 | ±(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 |
| Response time (63 %) | |
| GMP221 | 20 seconds |
| GMP222 | 30 seconds |
| Warm-up time | 30 seconds, 15 minute 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 casing |
| 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 |

## MI70 Indicator general

| | |
|---|---|
| Menu languages | English, Chinese, French, Spanish, German, Japanese, Russian, Swedish, Finnish |
| Display | LCD with backlight, graphic trend display of any parameter, character height up to 16 mm |
| Max. no. of probes | 2 |
| Power supply | Rechargeable NiMH battery pack with AC-adapter |
| Analog output | 0 ... 1 VDC |
| Output resolution | 0.6 mV |
| PC interface | MI70 Link software with USB or serial port cable |
| 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 8h at +20 °C (+68 °F) |
| with pump | better than 5h at +20 °C (+68 °F) without load |
| Data logging use | up to a month, depending on logging interval |

## Electromagnetic compatibility

EN 61326-1, Portable Equipment.

## Accessories

| | |
|---|---|
| Connection cable for fixed $CO_2$ instruments GMT220, GMM220, GMD20 and GMW20 | GMA70 |
| MI70 Link software with USB cable | 219687 |
| MI70 Link software with serial port cable | MI70LINK |
| Analog output cable for 0 ... 1 VDC | 27168ZZ |
| Calibration adapter | 26150GM |
| Carrying case | MI70CASE |
| Battery, NiMH 4.8V | 26755 |
| Spare probe | GMP221, GMP222 |
| (use the order form to define measurement range etc.) | |
| Nafion Membrane Tubing | 212807GM |