





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 CO₂ 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 CO₂ 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 CO₂ 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 CO₂ measurement.



The two ports of MI7O 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 CO₂ 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 = 0) () () () () () () () () () |
| GMPZZI probe | ±(1.5 % of range + 2 % of reading) ²⁾ |
| GMP222 probe | \pm (1.5 % of range + 2 % of reading) ² \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: ¹⁾ 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 |
| Max. 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)Scale0 1 V DCOutput resolution0.6 mVAccuracy0.2 % full scaleTemperature dependence0.002 %/°C (0.01 %/°F) full scaleMinimun load resistor10 kΩ to groundMechanical specificationsHousing 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 duration1 min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw, | Storage temperature | -40 +70 °C (-40 +158 °F) |
| PC 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⁾ .Scale0 1 V DCOutput resolution0.6 mVAccuracy0.2 % full scaleTemperature dependence0.002 %/°C (0.01 %/°F) full scaleMinimun load resistor10 kΩ to groundMechanical specifications.Housing classificationIP54Housing materialsABS/PC blendWeight400 g (14 oz)Compatibility.EMC complianceEN 61326-1, portable equipmentOther.Ispanese, 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 duration.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw, | Inputs and outputs | |
| CableCablePower supplyRechargeable NiMH battery pack with AC adapter or 4 × AA size alkalines, type IEC LR6Analog output: 1)Scale0 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)CompatibilityIP54FMC complianceEN 61326-1, portable equipmentOtherICD 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 min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw, | Max. no of probes | 2 |
| Analog output: 1)Scale0 1 V DCOutput resolution0.6 mVAccuracy0.2 % full scaleTemperature dependence0.002 %/°C (0.01 %/°F) full scaleMinimum load resistor10 kΩ to groundMechanical specificationsHousing classificationHousing materialsABS/PC blendWeight400 g (14 oz)CompatibilityEMC complianceMenu 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 duration1 min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw, | PC interface | |
| Scale0 1 V DCOutput resolution0.6 mVAccuracy0.2 % full scaleTemperature dependence0.002 %/°C (0.01 %/°F) full scaleMinimum load resistor10 kΩ to groundMechanical specificationsHousing classificationHousing naterialsABS/PC blendWeight400 g (14 oz)CompatibilityEMC complianceMenu 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 duration1 min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw, | Power supply | |
| Durb of the second s | Analog output: 1) | |
| Accuracy0.2 % full scaleTemperature dependence0.002 %/°C (0.01 %/°F) full scaleMinimum load resistor10 kΩ to groundMechanical specificationsHousing classificationIP54Housing materialsABS/PC blendWeight400 g (14 oz)CompatibilityEMC complianceEMC 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 duration1 min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw, | Scale | 0 1 V DC |
| Temperature dependence0.002 %/°C (0.01 %/°F) full scaleMinimum load resistor10 kΩ to groundMechanical specificationsIP54Housing classificationIP54Housing materialsABS/PC blendWeight400 g (14 oz)CompatibilityEN 61326-1, portable equipmentOtherEnglish, 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 duration1 min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw, | Output resolution | 0.6 mV |
| 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 |
| Mechanical specificationsHousing classificationIP54Housing materialsABS/PC blendWeight400 g (14 oz)CompatibilityEMC complianceEMC complianceEN 61326-1, portable equipmentOtherMenu languagesLanglish, Chinese, Spanish, Russian, French, Japanese, German, Swedish, FinnishDisplayCD 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 min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw, | Temperature dependence | 0.002 %/°C (0.01 %/°F) full scale |
| Housing classificationIP54Housing materialsABS/PC blendWeight400 g (14 oz)CompatibilityEMC complianceEMC complianceEN 61326-1, portable equipmentOtherEnglish, 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, | Minimum load resistor | 10 kΩ to ground |
| Housing materialsABS/PC blendWeight400 g (14 oz)CompatibilityEMC complianceEMC complianceEN 61326-1, portable equipmentOtherEnglish, 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, | Mechanical specifications | |
| Weight400 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, | Housing classification | IP54 |
| CompatibilityEMC complianceEN 61326-1, portable equipmentOtherEnglish, 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, | Housing materials | ABS/PC blend |
| EMC 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, | Weight | 400 g (14 oz) |
| OtherMenu 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, | Compatibility | |
| 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 duration1 min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw, | EMC compliance | EN 61326-1, portable equipment |
| 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, | Other | |
| 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, | Menu languages | |
| 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 aw, | Display | Graphic trend display of any parameter |
| Logging interval1 s to 12 hLogging duration1 min memory fullResolution0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 aw, | Alarm | Audible alarm function |
| 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 _w , | 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 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 | |
| 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 |
| Spare probe (use the GM70 order form to define measurement range etc.) Others | |
| Spare probe (use the GM70 order form to define measurement range etc.) Others Measurement indicator USB PC connection cable (for use with MI70 Link | MI70 |
| 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) ¹⁾ | MI70 219687 |
| 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) ¹⁾ 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) ¹⁾ 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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