GREISINGER
○ Member of GHM GROUP

Quick reference guide

EN

G 1910 series

Compact CO2 monitor with alarm

Table of contents

1   About this documentation

1.1   Purpose of the document

- This document is intended as a quick reference option.

- It does not replace the operating manual.

- For this reason, read the operating manual before operating the product for the first time.

1.2   Legal notices

This document is entrusted to the recipient for personal use only. Any impermissible transfer, duplication, translation into other languages or excerpts from this operating manual are prohibited.

The manufacturer assumes no liability for print errors.

1.3   Further information

Software version of the product:

- V1.6 or later

Link to the complete operating manual:

http://www.greisinger.de

For the exact product name, refer to the type plate on the rear side of the product.

2 Safety

2.1 Explanation of safety symbols

> ⚠ **DANGER**

This symbol warns of imminent danger, which can result in death, severe bodily injury, or severe property damage in case of non-observance.

> ⚠ **CAUTION**

This symbol warns of potential dangers or harmful situations, which can cause damage to the device or to the environment in case of non-observance.

> ❶ **NOTE**

This symbol indicates processes, which can have a direct influence on operation or can trigger an unforeseen reaction in case of non-observance.

2.2 Foreseeable misuse

The fault-free function and operational safety of the product can only be guaranteed if applicable safety precautions and the device-specific safety instructions for this document are observed.

If these notices are disregarded, personal injury or death, as well as property damage can occur.

⚠ **DANGER**

Incorrect area of application!

In order to prevent erratic behaviour of the product, personal injury and property damage, the product must be used exclusively as described in the chapter Description in the operating manual.

- The product is not suitable for use in explosion-prone areas!
- The product must not be used for diagnostic or other medical purposes on patients!
- The product is not intended to come into direct contact with food!
- For measurements requiring devices that are subject to authorisation or special approvals, this product is not a substitute for such products and can only be used as an aid in preparatory or comparison measurements!

⚠ **DANGER**

Danger due to elevated CO_2 concentration

The product is not suitable for use as personal protective equipment with elevated CO_2 levels. However, it can indicate an elevated CO_2 value. The measured value appears in the display as a % or ppm value.

G 1910-02	G 1910-20	CO_2 concentration		Effect
		%	ppm	
		20		Death within a few seconds
		10		Loss of consciousness, death, dizziness, vomiting, headaches, reduced blood flow to brain
		4.0		IDLH - immediate danger to life and health
		3.0		Normal exhalation concentration, elevated breathing and pulse rate
		2,0	20,000	
		1.0	10,000	Possible shortness of breath
		0.5	5000	TWA – Maximum for working conditions
		0.1 .. 0.2	1000 .. 2000	Recommended maximum value in public areas
		0.04	400	Fresh air

Product is not permitted for the area

Expanded measuring range. The product can be used conditionally

Area of application of the product with specified accuracy

The values are guideline values. Depending on the health condition and duration of exposure, problems can also occur below the indicated concentrations under certain circumstances.

2.3   Safety instructions

❶ NOTE

This product does not belong in children's hands!

2.4   Intended use

The product is designed exclusively for measurements in ambient air and environments with slightly elevated CO_2 concentrations in areas that are not harmful to the health. It is designed to be carried on the body for mobile use. The user can be warned optically and acoustically of elevated CO_2 concentrations based on variable alarm limits. Example applications for this are:

−   Use as a monitor for recording of the mean value weighted over 8 hours (TWA) or 15 minutes (STEL).

−   Monitoring of air quality.

3   The product at a glance

3.1   The G 1910 series

LCD Display

Front view

Sensor openings

Micro USB socket

3.2   Display elements

Display

Charge status display	Evaluation of the charge status
Unit display	Display of units or type of mode, min/max/hold
Main display	Measurement of the current CO_2 value
Auxiliary display	Display of the mean value
Bar graph	Visualisation of the CO_2 value

3.3   Operating elements

 On / Off button

Press briefly	Switch on the product
	Activate / deactivate lighting
Long press	Switch off the product
	Reject changes in a menu

Up / Down button

Press briefly	Display of the min/max value
	Change value of the selected parameter
Long press	Reset the min/max value of the current measurement
Both simultaneously	Rotate display, overhead display

Function key

Press briefly	Freeze measurement (Hold)
	Return to measurement display
	Call up next parameter
Long press, 2s	Start menu configuration, $ConF$ appears in the display

3.4   Connections

Micro USB socket	Charging the batteries

4   Measurement Basics

For additional information, refer to the operating manual!

5 Operation and maintenance

5.1 Operating and maintenance notices

⚠ **CAUTION**

Damage to the sensor

A sensitive optical sensor is installed in the product. The sensor parameters can change due to impact or falling. This can result in incorrect measurements.

– Protect the product from impact and falling!

– The measurements must be checked after the product falls or is jarred. If the values deviate, a basic sensor adjustment must be carried out!

🛈 **NOTE**

The product must be handled with care and used in accordance with the technical data. Do not throw or strike.

🛈 **NOTE**

If the product is stored at a temperature above 50 °C, or is not used for an extended period of time, the batteries must be removed or recharged regularly. This prevents leaks from the rechargeable batteries and increases the life of the rechargeable batteries.
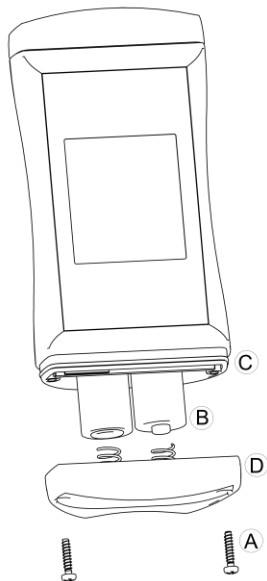
5.2 Battery

5.2.1 Charge status display

For additional information, refer to the operating manual!

5.2.2 Charging the batteries

For additional information, refer to the operating manual!

5.2.3 Rechargeable battery replacement

Only use new, high-quality and suitable NiMH rechargeable batteries!

– NiMH rechargeable batteries

For additional information, refer to the operating manual!

5.3 CO_2 calibration

For additional information refer to the operating manual!

In order to improve the accuracy, the carbon dioxide sensor can be calibrated. In order to conduct a CO_2 calibration, proceed as follows.

ⓘ **NOTE**

Calibration can be carried out in clean ambient air or with test gases (optionally available gas extraction device recommended). 1-point calibration at any arbitrary point and

2-point calibration at 0 ppm and an arbitrary point are both possible. Refer to the operating manual for the 2-point calibration!

For automatic calibration, open the *Calibration* menu.

- The product is switched on.

- Clean ambient air or test gas for gradient correction

- Gas extraction device, if applicable

1. Press the *Function key* for 4 seconds to start the calibration. $ConF$ appears in the display first, then CAL.

2. 1-point or 2-point calibration is started. This depends on what was adjusted in the *Expanded settings* menu.

3. $C.SL$ appears in the display for 1-point calibration.

4. The product determines a stable value first. If the measured value is outside of the value range integrated in the product, the display flashes briefly and an acoustic signal is issued every 10 s.

5. If the display flashes briefly, an acoustic signal sounds and the bar display blinks, a stable correct value has been achieved.

6.   You can change the value of the gradient compensation with the *up key* and *down key*. Otherwise, confirm the preadjusted value with the *function key*. The 1-point calibration is finished.

ⓘ   NOTE

Current test gases normally have accuracies of ± 2 %. This tolerance must be taken into consideration with the measurement uncertainty. The specifications on the analysis certificate must always be observed.

ⓘ   NOTE

For information about the available calibration settings, refer to Configuring parameters of the configuration menu.

After the calibration is finished ⎍⎍⎍ ⎍⎍⎍⎍ is displayed.

Then, the current measurement is shown in the display again.

If the calibration is not completed successfully an error message is displayed. ⎍⎍⎍ ⎍⎍⎍. appears in the display. See Error and system messages [▶ 18]. Confirm the error message pressing the *Function key*. The product restarts. The values of the last correctly performed calibration are restored.

6   Operation

6.1   Opening the configuration menu

1.   Press the *Function key* for 2 seconds to open the **Configuration** menu.

2.   *ConF* appears in the display. Release the *Function key*.

Parameter	Values	Meaning
▶	▲ ▼	
Input		
InP		
	%	CO_2 measurement in %
	PPm	CO_2 measurement in ppm
Alarms		
AL.		
	oFF	No active alarm
	on	Alarm alerting via text display, acoustic signal and flashing of the backlighting
	bEEP	Alarm alerting via text display and acoustic signal
	LiGE	Alarm alerting via text display and flashing of the backlighting

AL1		Depending on the setting of the parameter value *InP*
	0.000 .. AL.2	Min. alarm limit in % or ppm; a pre-alarm is triggered when the value is exceeded
	0 .. AL2	
		When the pre-alarm is triggered, it can be muted for 5 minutes. To do this, press any key. The display shows *Clr AL1*.
AL2		Depending on the setting of the parameter value *InP*
G 1910-02	*AL1 .. 1.000* in %	Max. alarm limit, the main alarm is triggered when the value is exceeded
G 1910-02	*AL1 .. 10000* in ppm	Max. alarm limit, the main alarm is triggered when the value is exceeded
G 1910-20	*AL1 .. 19999* in ppm	Max. alarm limit, the main alarm is triggered when the value is exceeded
G 1910-20	*AL1 .. 3.200* in %	Max. alarm limit in %; the main alarm is triggered when the value is exceeded

Mean value

Lcd.2

	8 h	Time weighted over 8 hours, mean value TWA
	StEL	Time weighted over 15 minutes, mean value STEL
	oFF	Mean value determination deactivated

Shut-off time

PoFF

oFF	No automatic shut-off
0:15 0:30 1:00 4:00 12:00	Automatic shut-off after a selected time in hours and minutes, during which no buttons have been pressed

Backlight

Li tE

oFF	Backlight deactivated
0:15 0:30 1:00 4:00	Automatic shut-off of the backlight after a selected time in minutes and seconds, during which no buttons have been pressed
on	No automatic shut off of the backlight

Factory settings

Ini t

no	Use current configuration
YES	Reset product to factory settings. *Ini t donE* appears in the display

6.2   Call-up of the expanded settings menu

For information refer to the operating manual!

7   Error and system messages

Display	Meaning	Possible causes	Remedy
----	No signal from the sensor Measurement far outside of the measuring range	Sensor not ready CO_2 concentration too high Defective sensor adjustment Sensor defect	Wait the start-up time of the sensor Place the product in clean outdoor air Perform sensor adjustment Send in for repair
----	The display value could not be determined	Sensor not ready Sensor defect	Wait the start-up time of the sensor Send in for repair
No display, unclear characters or no response when buttons are pressed	Rechargeable battery depleted System error Product is defective	Rechargeable battery depleted Error in the product Product is defective	Charge battery Replace rechargeable battery Send in for repair
bAt Lo	Rechargeable battery depleted	Rechargeable battery discharged Rechargeable battery defect	Charge battery Replace rechargeable battery
CAL Err.1	Zero point adjustment defective	Incorrectly measured CO_2 concentration for adjustment	Expose sensor to a test gas with 0 ppm CO_2
CAL Err.2 CAL Err.3	Defective gradient compensation	Incorrectly measured CO_2 concentration for adjustment Incorrect CO_2 concentration	Expose sensor to a test gas with known CO_2 concentration Enter correct value

CAL Err.S	Time for stability recognition exceeded	Stability recognition lasts longer than 10 minutes	Provide a consistent flow with a constant CO_2 concentration
Err.1	Measuring range exceeded	Measurement too high	Stay within allowable measurement range
		Defective sensor adjustment	Perform sensor adjustment
		Sensor defect	Send in for repair
Err.2	Measuring range is undercut	Defective sensor adjustment	Perform sensor adjustment
		Sensor defect	Send in for repair
Err.7	Sensor error	Defective sensor adjustment	Perform sensor adjustment
		Sensor defect	Send in for repair
Err.t	Temperature error	Permissible temperature range during charging exceeded or undercut	Charging of battery only at 0 .. 40 °C
			Bring product to room temperature and restart charging process
SYS Err	System error	Error in the product	Switch product on/off
		Sensor defect	Replace rechargeable batteries
			Send in for repair
StAb	No measurement change within 2 minutes	Product in extremely constant environment	Place the product in clean outdoor air
		Sensor defect	Perform sensor adjustment
			Send in for repair

8   Technical data

G 1910-02

Measuring range (specified accuracy)		0 .. 2000 ppm	0.000 .. 0.200 %
Measuring range (not specified)			0.000 .. 1.000 %
Accuracy		± 70 ppm ± 3 % measurement	
Measuring cycle		2 seconds	
Display		3-line segment LCD, additional symbols, illuminated (adjustable white, permanent illumination)	
Additional functions		Min/Max/Hold	
		TWA calculation / STEL	
		2-stage alarm (optical and acoustic)	
Adjustment		1-point, 2-point and basic sensor adjustment	
Housing		Break-proof ABS housing	
	Protection rating	IP30	
	Dimensions L*W*H [mm] and weight	108 * 54 * 28 mm without measuring cell or kink protection	
		180 g, incl. battery and measuring cell	
Operating conditions		0 to 50 °C; 0 to 85 % r.h. (non-condensing)	
Storage temperature		-20 to 70 °C	

Current supply		2*AA-NiMH batteries (included in delivery)
	Current require-ment/ Rechargeable bat-tery life	approx. 50 mA, approx. 60 mA with lighting Life approx. 24 hours with NiMH batteries (without backlight) charging time of about 8 hours
	Battery indicator	4-stage charge status indicator, Charge indicator for low charge level: "BAT LO"
	Plug connector	Micro USB socket (not a data connection)
Auto-power-OFF function		The device switches off automatically if this is acti-vated
Directives and standards		The devices conform to the following Directives of the Council for the harmonisation of legal regula-tions of the Member States: 2014/30/EU EMC Directive 2011/65/EU RoHS Applied harmonised standards: EN 61326-1:2013 Emission limits: Class B Immunity according to Table 2 Additional errors: < 1 % FS EN 50581:2012 The device is intended for mobile use and/or sta-tionary operation in the scope of the specified oper-ating conditions without further limitations.

G 1910-20

Measuring range (specified accuracy)	0 .. 19999 ppm	0.000 .. 2.000 %
Measuring range (not specified)		0.000 .. 3.200 %
Accuracy	± 0.02 % ± 3 % measurement	
Measuring cycle	2 seconds	
Display	3-line segment LCD, additional symbols, illuminated (adjustable white, permanent illumination)	
Additional functions	Min/Max/Hold TWA calculation / STEL 2-stage alarm (optical and acoustic)	
Adjustment	1-point, 2-point and basic sensor adjustment	
Housing		Break-proof ABS housing
	Protection rating	IP30
	Dimensions L*W*H [mm] and weight	108 * 54 * 28 mm without measuring cell or kink protection 180 g, incl. battery and measuring cell
Operating conditions	0 to 50 °C; 0 to 85 % r.h. (non-condensing)	
Storage temperature	-20 to 70 °C	

Current supply		2*AA-NiMH batteries (included in delivery)
	Current requirement/ Rechargeable battery life	approx. 50 mA, approx. 60 mA with lighting
		Life approx. 24 hours with NiMH batteries (without backlight) charging time of about 8 hours
	Battery indicator	4-stage charge status indicator,
		Charge indicator for low charge level: "BAT LO"
	Plug connector	Micro USB socket (not a data connection)
Auto-power-OFF function		The device switches off automatically if this is activated
Directives and standards		The devices conform to the following Directives of the Council for the harmonisation of legal regulations of the Member States:
		2014/30/EU EMC Directive
		2011/65/EU RoHS
		Applied harmonised standards:
		EN 61326-1:2013 Emission limits: Class B Immunity according to Table 2 Additional errors: < 1 % FS
		EN 50581:2012
		The device is intended for mobile use and/or stationary operation in the scope of the specified operating conditions without further limitations.

9   Service

9.1   Manufacturer

If you have any questions, please do not hesitate to contact us:

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