OPERATING MANUAL

ECO 421 series
Compact CO_2 monitor with alarm



B-H90.0.0X.DK2-4.1

senseca

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1 About this documentation

1.1 Foreword

Read this document carefully and familiarize yourself with the operation of the device before you use it.
Keep this document ready to hand and in the immediate vicinity of the device so that it is available to the personnel/user for reference at all times in case of doubt.

The user must have carefully read and understood the operating manual before beginning any work.

1.2 Legal notices

The liability and warranty of the manufacturer for damages and consequential damages are voided with misuse, disregarding this document, disregarding safety notices, assignment of inadequately qualified technical personnel and arbitrary modifications of the device.

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 device:

- V1.9 or later

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

Note

For information about the software version, press and hold the ON button to switch on the device for longer than 5 seconds. The series is shown in the main display and the software version of the device is shown in the secondary display

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.

Note

Blue underlining 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 device can only be guaran-teed 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 behavior of the device, personal injury and property damage, the device must be used exclusively as described under intended use.

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

Danger! Danger due to elevated CO_2 concentration

The device is not suitable for use as personal protective equipment (PPE) 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.

ECO 421-02	ECO 421-20	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

Device is not permitted for the area

Expanded measuring range.
The device can be used conditionally

Area of application of the device 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

Danger! Danger of explosion!

Do not use batteries!

This will cause the batteries to heat up during the charging process, causing them to burst and, in the worst case, explode!

Caution!

- Empty or inferior batteries, as well as different states of charge, can lead to leak-age and thus to damage to the device.
  Please also observe the information in the chapter 6 "Operation and maintenance".
- Only use safe USB power supplies to charge the device.
- The CO_2 sensor is sensitive to impact! Strong shocks (e.g. from falling down) can lead to permanently wrong measured values.
  Please also refer to chapter 5.1.3 “Measurement stability”.

Note

This device does not belong in children's hands!

2.4 Intended use

The device 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.

2.5 Qualified personnel

For commissioning, operation and maintenance, the relevant personnel must have adequate knowledge of the measuring process and the significance of the measurements. The instructions in this document must be understood, observed and followed.

In order to avoid any risks arising from interpretation of the measurements in the concrete application, the user must have additional expertise. The user is solely liable for damages/danger resulting from misinterpretation due to inadequate expertise.

3 The device at a glance



LCD Display



Front view



Sensor openings



USB-C socket

3.1 Display elements

	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	Visualization of the CO_2 value

3.2 Connections

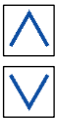
USB-C socket	Charging the batteries

3.3 Operating elements



On / Off button

Press briefly		Switch on the device Activate / deactivate lighting
Long press		Switch off the device
		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



Function button

Press briefly	▶	Freeze measurement (Hold) Call up next parameter
Long press, 2s	▶	Start menu “configuration”, ConF appears in the display
Long press, 4s	▶	Start automatic sensor calibration, the display shows CAL

Operating status ▶ device is in measured value display
device is in a menu

4 Operation

4.1 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
OK	∧ ∨	
InP	**Measuring unit**	
	%.	CO_2 measurement in %
	PPm	CO_2 measurement in ppm
AL.	**Alarm**	
	oFF	No alarm active
	on	Alarm via text insertion, acoustic signal and flashing of the background lighting
	bEEP	Alarm via text insertion and acoustic signal
	Li tE	Alarm via text insertion and flashing of the background lighting
AL1	**Pre-Alarm limit *(only available if AL <> off)***	
	0.000 .. AL2 0 .. AL2	Alarm limit in % or ppm; a pre-alarm is triggered when the value is exceeded
AL2	**Main-alarm limit *(only available if AL <> off)***	
ECO 421-02	AL1 .. 1.000 AL1 .. 10000	Alarm limit in % or ppm, the main alarm is triggered when the value is exceeded
ECO 421-20	AL1 .. 3.200 AL1 .. 19999	Alarm limit in % or ppm, the main alarm is triggered when the value is exceeded
Lcd2	**Mean value**	
	8 h	Time weighted over 8 hours, mean value TWA
	StEL	Time weighted over 15 minutes, mean value STEL
	oFF	Mean value determination deactivated

Parameter	Values	Meaning
PoFF	**Shut-off time**	
	oFF	No automatic shut-off
	0:15, 0:30, 1:00, 4:00, 12:00	Automatic shut-off after a selected time in hours:minutes, during which no buttons have been pressed
Li tE	**Backlight**	
	oFF	Backlight deactivated
	0:15, 0:30, 1:00, 2:00, 4:00	Automatic shut-off of the backlight after a selected time in minutes:seconds, during which no buttons have been pressed
	on	No automatic shut off of the backlight
Ini t	**Factory settings**	
	no	Use current configuration
	YES	Reset device to factory settings. After confirming with the *function-button*, the display shows: Ini t donE

4.2 Call-up of the expanded settings menu

The advanced setting contains the parameters for the adjustment function of the device.

1 Switch the device off.

2 Hold the *down button* and press the *On/Off button* briefly to switch on the device and open the ***expanded settings*** menu.

3 The display shows the first parameter. Release the *down button*.

Parameter	Values	Meaning
		
CAL	**Adjustment**	
	oFF	Adjustment function deactivated
	1.Pt	2-point adjustment
	2.Pt	1-point adjustment
	HArd	Basic sensor adjustment Only 0 ppm or 0.000 % can be selected as a setpoint value for the adjustment, such as, for example on nitrogen or 400 ppm or 0.040 % for adjustment on clean ambient air
C.SL	**Gradient adjustment specification**	
	0.035 .. 1.000 350 .. 10000	Setpoint value in % or in ppm *(at adjustment = 1.Pt or 2.Pt)*
	0.000 / 0.400 0 / 400	Setpoint value in % or in ppm *(at adjustment = HArd)*

5 Measurement Basics

5.1 NDIR CO_2 sensor

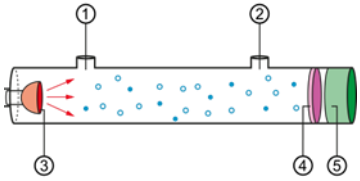
5.1.1 Explanation

The sensors are based on non-dispersive infrared sensor technology, NDIR.

This is the most widely used sensor technology for CO_2 measurement.

The principle of the NDIR sensor is that an IR light source is focusses so that an optical beam is created, which passes through the existing gas, including CO_2. After an optical band pass filter is passed, an IR sensor measures the level of IR light, wherein the CO_2 values in the optical path are displayed.

5.1.2 Design



1 Gas inlet
2 Gas outlet
3 IR lamp
4 Optical filter
5 Thermopile detector

A sensor module with single-channel detectors is used for the device.

Note

A micro light bulb is used as an IR radiation source. It emits a broadband spectrum. The sensor is long-lasting and maintenance-free.

5.1.3 Measurement stability

In order to be able to maintain the specified accuracy for many years to come, regular adjustment must be carried out depending on the required accuracy.

If the device is handled with care, an interval of 1 year is sufficient - however, rough operating conditions can also shorten this period.

Caution!

The CO_2 sensor is sensitive to impact! Strong shocks (e.g. from falling down) can lead to a permanent detuning of the detector and thus to incorrect measured values (measured value too low!!).

If this is the case, a "basic sensor calibration" must be carried out (see chapter 6.2.3).

5.2 Alarms

- pre-alarm
  - warns when the limit is exceeded, depending on the setting, via text insertion, flashing of the backlight and/or with a brief tone.
  - When the pre-alarm is triggered, it can be muted for 5 minutes. To do this, press any key. The display shows CLr AL1.
- main alarm
  - warns when the limit is exceeded, depending on the setting, via text insertion, rapid flashing of the backlight and/or with a continuous tone

5.3 Special functions

5.3.1 8 hour average value TWA („time-weighted-average")

If the special function "averaging TWA" was selected in the configuration menu, the TWA value is displayed alternately with 8 H in the secondary display.

Determination: The display value is calculated from the averaged measurements of the last 8 hours.

The determination of the measured values starts when the device is switched on, regardless of whether the display of the value in LCD.2 is active.
Resetting the value is only possible by switching off the device.

Note

Since there is already at least 400 ppm CO_2 in the fresh air, the starting value for the mean value calculation is not 0 but 400.

5.3.2 15 minute average value STEL („short-term exposure limit")

If the special function "averaging STEL" was selected in the configuration menu, the STEL value is displayed alternately with STEL in the secondary display.

Determination: The display value is calculated from the averaged measurements of the last 15 minutes.

The determination of the measured values starts when the device is switched on, regardless of whether the display of the value in LCD.2 is active.
Resetting the value is only possible by switching off the device.

Note

Since there is already at least 400 ppm CO_2 in the fresh air, the starting value for the mean value calculation is not 0 but 400.

6 Operation and maintenance

6.1 Operating and maintenance notices

Caution Damage to the sensor

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

- Protect the device from impact and falling!
- The measurements must be checked after the device falls or is jarred. If the values deviate, a basic sensor adjustment must be carried out!

Note

- The device must be handled with care and used in accordance with the technical data. Do not throw or strike.
- If the device 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 recharge-able batteries.

6.2 CO_2 calibration

In order to improve the accuracy, the carbon dioxide sensor can be adjusted.

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.

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.

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

To start the calibration, press the *Function key* for 4 seconds.
For further information, please refer to the following chapter for the adjustment selected in the ***Expanded settings*** menu.

After the calibration is finished CAL donE is displayed.

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

If the calibration is not completed successfully an error message is displayed. CAL Err. appears in the display. *(See chapter 7 "*Error and system messages*")*
Confirm the error message pressing the *Function key*. The device restarts. The values of the last correctly performed calibration are restored.

6.2.1 1-point adjustment

Used for optimization of the accuracy at the adjustment point. The best possible accuracy can be achieved even with elevated CO_2 concentrations

Required material:

- Clean ambient air or test gas (>350 ppm) for gradient correction
- Gas extraction device, if applicable

In order to conduct a CO_2 adjustment, proceed as follows.

1. Press the *Function key* for 4 seconds to start the calibration. ConF appears in the display first, then CAL.
2. 1-point calibration is started. [.SL appears in the display.
3. The device determines a stable value first. If the measured value is outside of the value range integrated in the device, the display flashes briefly and an acoustic signal is issued every 10 s.
4. If the display flashes briefly, an acoustic signal sounds and the bar display blinks, a stable correct value has been achieved.
5. 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.

6.2.2 2-point adjustment

Used for optimization of the accuracy for extreme requirements over a wide measuring range beginning from 0 ppm.

Required material:

- Test gas (>350 ppm) for gradient correction
- Test gas 0 ppm CO_2 for zero point
- Gas extraction device

In order to conduct a CO_2 adjustment, proceed as follows.

1. Press the *Function key* for 4 seconds to start the calibration. ConF appears in the display first, then CAL.
2. 2-point calibration is started. C.oF appears in the display.
3. Allow the test gas to flow at about 0.5 l/min at 0 ppm of CO_2.
   The device deter-mines a stable value first. If the measured value is outside of the value

range integrated in the device, the display flashes briefly and an acoustic signal is issued every 10 s.

4 If a stable correct value is reached, the display flashes briefly, an acoustic signal sounds and the bar indicator blinks.
C.SL appears in the display.

5 Remove the test gas and connect a second test gas to the extraction device. The device determines a stable value first. If the measured value is outside of the value range integrated in the device, the display flashes briefly and an acoustic signal is issued every 10 s.

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

7 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.

8 Remove the extraction device.

The 2-point adjustment is finished

6.2.3 Basic sensor adjustment

Used to reset the sensor in case of deviations beyond the normally expected deviations. The values of all prior adjustments are reset and cannot be restored. A plausibility check of the carbon dioxide concentrations does not take place. De-pending on the setting, it can be adjusted either to 0 ppm (e.g. nitrogen) or to 400 ppm of fresh outside air (or 400 ppm of CO_2 test gas). Ensure that the setting of the gradient compensation setpoint [.SL was entered correctly in the "*Expanded set-tings menu*".

If reliable values can no longer be displayed, we recommend performing basic sensor adjustment of the zero point at 0 ppm CO_2 with nitrogen and a possibly necessary additional gradient compensation via 1-point adjustment.

If incorrect values are displayed after the adjustment, e.g. Err.2 at 0 ppm CO_2, the adjustment must be repeated.

Required material:

- Clean ambient air or
- Test gas 0 ppm CO_2 for basic sensor calibration at 0 ppm
- Gas extraction device, if applicable

In order to conduct a CO_2 adjustment, proceed as follows.

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

2 Basic sensor adjustment is started. KARD appears in the display.

3 Depending on the specification C.SL, let the test gas with 0 ppm CO_2 flow in at approx. 0.5 l/min or move the device into clean ambient are with 400 ppm CO_2.
The device determines a stable value first. If the displayed measurement is outside of the

measuring range of the sensor, the device cannot perform stability recognition. It must be ensured that the carbon dioxide concentration at the sensor is stable before the adjustment is started.

4 If a stable correct value is reached, the display flashes briefly, an acoustic signal sounds and the bar indicator blinks.

5 Remove the extraction device, if applicable.

The basic sensor adjustment is finished

6.2.4 Notes on the use of the gas sampling extraction device

For adjustment with reference gas, the sensor openings of the device must be covered and a connection piece screwed in. We offer corresponding sets for this purpose

- Remove plug
- Place gas orifice on gas inlet holes
- Screw in the Quickconnect adapter

After the adjustment, remove the Quickconnect adapter and the gas orifice and close the opening with the plug or the screw plug included in the adjustment set.







6.3 Battery

6.3.1 Charge status display

If the battery status display blinks, the batteries are depleted and must be re-charged. However, the device will still operate for a certain length of time.

If the BAT display text appears in the main display, the rechargeable battery voltage is no longer adequate for operation of the device. Now the rechargeable battery is fully depleted.

If the frame flashes when the charge level indicator is full, a charging error (too high voltage, impermissible temperature) has been detected.

6.3.2 Charging the batteries

- Charge via USB-C socket with the accompanying cable.
- Must be operated on a USB port or USB mains adapter with an output voltage of 4.75 V .. 5.25 V, which can deliver a current of 500 mA.
- The charging process is visualized in the charge status display.
- If the charging process has concluded bAt FuLL is shown in the display.
- Charging at room temperature in a range of 0 .. 40 °C is permitted.
- The device can heat up during charging. Max. up to 50 °C.
- Charging time approx. 8 hours.
- The charging time can take longer in ambient temperatures above 30 °C.
- The rechargeable battery temperature is monitored. At temperatures below 0 °C and above 50 °C, the charging is interrupted.
- In order to protect the batteries, the charging process is not started when the charge cable is plugged in, if fully charged batteries are detected based on the voltage monitor

6.3.3 Rechargeable battery replacement

Danger Danger of explosion!

Using damaged or unsuitable rechargeable batteries can generate heat, which can cause the rechargeable batteries to crack and possibly explode!

- Only use high-quality and suitable NiMH rechargeable batteries!
- Do not use batteries!

Caution! Damage!

If the rechargeable batteries have different charge levels, leaks and thus damage to the device can occur.

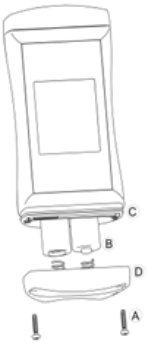
- ▶ Only use new, high-quality rechargeable batteries!
- ▶ Do not use different types of rechargeable batteries!
- ▶ Remove depleted rechargeable batteries and dispose of them at a suitable collection point.

Note

Unnecessary unscrewing endangers the protection against moisture and should therefore be avoided.

Read the following handling instructions before replacing batteries and follow them step by step.

If disregarded, the device could be damaged or the protection from moisture could be diminished.



1. Unscrews the Phillips screws (A)and remove the cover.
2. Carefully replace the two Mignon AA rechargeable batteries (B). Ensure that the polarity is correct! It must be possible to insert the batteries in the correct position without using force.
3. The O-ring (C) must be undamaged, clean and positioned at the intended depth.
4. Fit the cover (D) on evenly without much force. The O-ring must remain at the intended depth!
   Check the position of the USB socket!
5. Tighten the Phillips screws (A).

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 device 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 Device is defective	• Rechargeable battery depleted • Error in the device	▶ Charge or replace rechargeable battery ▶ Send in for repair
bAt Lo	Rechargeable battery depleted	• Battery discharged • Battery defect	▶ Charge battery ▶ Replace rechargeable battery
Err.1	Measuring range exceeded	• Measurement too high • Defective sensor adjustment • Sensor defect	▶ Stay within allowable measurement range ▶ Perform sensor adjustment ▶ Send in for repair
Err.2	Measuring range is undercut	• Defective sensor adjustment • Sensor defect	▶ Perform basic sensor adjustment ▶ Send in for repair
Err.7	Sensor error	• Defective sensor adjustment • Sensor defect	▶ Perform sensor adjustment ▶ Send in for repair
SYS Err	System error	• Error in the device • Sensor defect	▶ Switch device on/off ▶ Recharge or replace rechargeable batteries ▶ Send in for repair

Display	Meaning	Possible causes	Remedy
StAb	No measurement change within 2 minutes	• Device in extremely constant environment • Sensor defect	▶ Bring about a change in the measured value *1 ▶ Send in for repair
*1 When measuring in air: create air movement or breathe on the sensor. If the error persists, switch the device off / on			
Calibration errors			
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.5	Time for stability recognition exceeded	• Stability recognition lasts longer than 10 minutes	▶ Provide a consistent flow with a constant CO_2 concentration
Charging errors			
Frame of battery indicator flashes	Charging error detected	• Battery voltage to high • Permissible temperature range during charging exceeded or under-cut	▶ Check if rechargeable batteries are really inserted - replace battery - Send in for repair ▶ Bring device to prem. Temperature (0 .. 40°C) and restart charging process
Err.t	Temperature error	• Permissible temperature range during charging exceeded or under-cut	▶ Charging of battery only at 0 .. 40 °C ▶ Bring device to room temperature and restart charging process
Err.C	Battery error	• Battery defect, • too much battery ageing, • Wrong battery type	▶ Use new, high-quality NiMH batteries.

8 Technical data

ECO 421-02		
Measuring range (specified accuracy)	0 .. 2000 ppm CO_2	0.000 .. 0.200 % CO_2
Measuring range (not specified)	0 .. 10000 ppm CO_2	0.000 .. 1.000 % CO_2
Accuracy	± 70 ppm ± 3 % of measurement.	

ECO 421-20		
Measuring range (specified accuracy)	0 .. 19999 ppm CO_2	0.000 .. 2.000 % CO_2
Measuring range (not specified)		0.000 .. 3.200 % CO_2
Accuracy	± 200 ppm ± 3 % of measurement	

Measuring cycle		2 seconds
Display		3- line segment LCD, additional symbols, illuminated (adjustable white, permanent illumination)
Standard functions		Min/Max/Hold
Activatable special functions		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	108 * 54 * 28 mm
	Weight	140 g incl. rechargeable batteries
Nominal temperature		25 °C
Operating conditions		0 to 50 °C; 0 to 85 %RH (non-condensing)
Storage temperature		-20 to 70 °C
Current supply		2 * AA-NiMH batteries (included in delivery)
	Current requirement	approx. 50 mA, approx. 60 mA with lighting

	Battery life	approx. 24 hours with NiMH batteries (without backlighting) (charging time approx. 8 hours)
	Charging connection	USB-C socket (not a data connection)
	Battery indicator	4-stage battery status indicator, Replacement indicator for depleted batteries: "BAT LO"
	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 harmonization of legal regulations of the Member States: • 2014/30/EU EMC Directive • 2011/65/EU RoHS Applied harmonized standards: • EN IEC 61326-1:2021 Emission limits: Class B Immunity according to Table 1 Additional errors: < 1 % FS • EN IEC 63000:2018 The device is intended for mobile use and/or stationary operation in the scope of the specified operating conditions without further limitations.

9 Disposal

Separation by material and recycling of device components and packaging must take place at the time of disposal. The valid regional statutory regulations and directives applicable at the time must be observed.

Note



The device must not be disposed of with household waste. Return it to us, freight prepaid. We will then arrange for the proper and environmentally-friendly disposal.

- ▶ Private end users in Germany have the possibility of dropping off the device at the municipal collection center. Batteries must be removed beforehand!
- ▶ Please dispose of defect rechargeable batteries at the collection points intended for this purpose.

10 Service

10.1 Manufacturer

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

11 Accessories

11.1 Spare parts:

AA-AKKU	Art. no. 478760	NiMH battery AA, 1.2V (2 pieces)

11.2 Accessories:

G1000_BASE	Art. no. 481885	Table stand / wall bracket
GZ-12	Art. no. 479183	Gas bottle with 12 l test gas: 5000 ppm CO_2
GZ-18	Art. no. 476698	Gas bottle with 12 l test gas: N_2 for CO and CO_2-Calibration at 0 ppm
GZ-19	Art. no. 476699	Calibration set for ECO 420, ECO 421 and G 1910: MiniFlo for 12 l gas bottles, quick connect adapter 4 mm, screw plug, gas screen
GZ-20	Art. no. 479767	Gas connection for ECO 420, ECO421 and G 1910: quick connect adapter 6 mm, replacement screw plug, gas screen
GKK 1002	Art. no. 411907	case (235 x 185 x 48 mm)

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