

EN

OPERATING MANUAL
CO₂ AIR QUALITY DATA
LOGGER

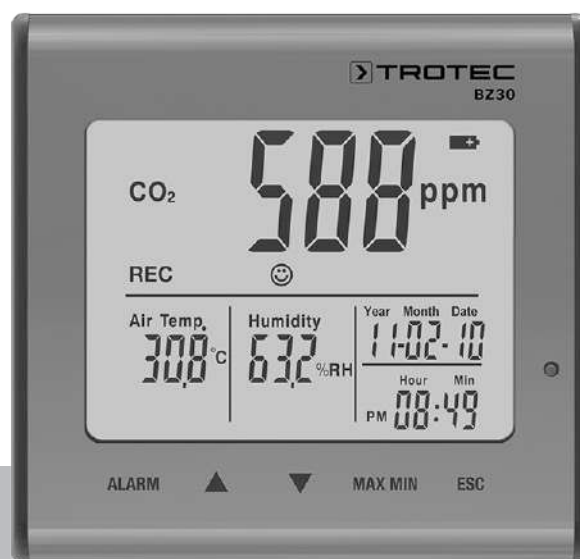


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You can download the current version of the operating manual and the EU declaration of conformity via the following link:



BZ30



<https://hub.trotec.com/?id=39963>

Notes regarding the operating manual

Symbols



Warning of electrical voltage

This symbol indicates dangers to the life and health of persons due to electrical voltage.



Warning

This signal word indicates a hazard with an average risk level which, if not avoided, can result in serious injury or death.



Caution

This signal word indicates a hazard with a low risk level which, if not avoided, can result in minor or moderate injury.

Note

This signal word indicates important information (e.g. material damage), but does not indicate hazards.



Info

Information marked with this symbol helps you to carry out your tasks quickly and safely.



Follow the manual

Information marked with this symbol indicates that the operating manual must be observed.

Safety

Read this manual carefully before starting or using the device. Always store the manual in the immediate vicinity of the device or its site of use!



Warning

Read all safety warnings and all instructions.

Failure to follow the warnings and instructions may result in electric shock, fire and / or serious injury.

Save all warnings and instructions for future reference.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

- Do not use the device in potentially explosive rooms.
- Do not use the device in aggressive atmosphere.
- Do not immerse the device in water. Do not allow liquids to penetrate into the device.
- The device may only be used in dry surroundings and must not be used in the rain or at a relative humidity exceeding the operating conditions.
- Protect the device from permanent direct sunlight.
- Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in legible condition.
- Do not open the device.
- Observe the storage and operating conditions as given in the Technical data chapter.

Intended use

Only use the device for measuring and recording the air quality (CO₂ level), indoor temperature and humidity within the measuring range specified in the technical data. Observe and comply with the technical data.

To use the device for its intended use, only use accessories and spare parts which have been approved by Trotec.

Improper use

Do not use the device in potentially explosive atmospheres, for measurements in liquids or at live parts. Trotec accepts no liability for damages resulting from improper use. In such a case, any warranty claims will be voided. Any unauthorised modifications, alterations or structural changes to the device are forbidden.

Personnel qualifications

People who use this device must:

- have read and understood the operating manual, especially the Safety chapter.

Residual risks



Warning of electrical voltage

There is a risk of a short-circuit due to liquids penetrating the housing!
Do not immerse the device and the accessories in water. Make sure that no water or other liquids can enter the housing.



Warning of electrical voltage

Work on the electrical components must only be carried out by an authorised specialist company!



Warning of electrical voltage

Before any work on the device, remove the mains plug from the mains socket and the battery from the device!
Hold onto the mains plug while pulling the power cable out of the mains socket.



Warning of explosive substances

Do not expose the battery to temperatures above 45 °C! Do not let the battery come into contact with water or fire! Avoid direct sunlight and moisture. There is a risk of explosion!



Warning

Risk of suffocation!
Do not leave the packaging lying around. Children may use it as a dangerous toy.



Warning

The device is not a toy and does not belong in the hands of children.



Warning

Dangers can occur at the device when it is used by untrained people in an unprofessional or improper way! Observe the personnel qualifications!



Caution

Lithium-ion batteries might catch fire in case of overheating or damage. Ensure a sufficient distance to heat sources, do not subject lithium-ion batteries to direct sunlight and make sure not to damage the casing. Do not overcharge lithium-ion batteries. Only use smart chargers that switch off automatically when the battery is fully charged. Charge lithium-ion batteries in due time before they are discharged completely.



Caution

Keep a sufficient distance from heat sources.

Note

To prevent damages to the device, do not expose it to extreme temperatures, extreme humidity or moisture.

Note

Do not use abrasive cleaners or solvents to clean the device.

Information about the device

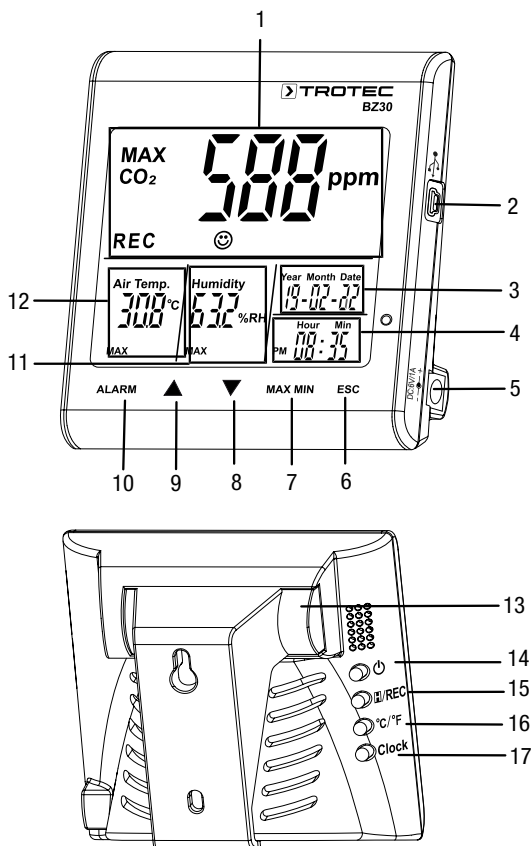
Device description

The CO₂ air quality data logger is a mains-powered measuring device with additional battery and a comprehensive range of measurement and analysis options.

It comes with the following functional properties and equipment features:

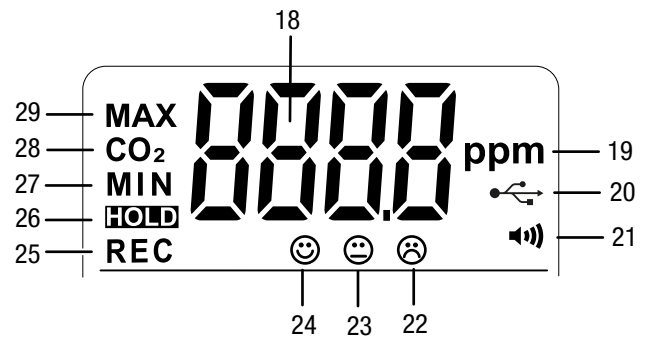
- NDIR measurement of carbon dioxide concentrations in the room air
- Simultaneous indication of CO₂ values, room temperature, humidity level, date and time
- Minimum and maximum value function for CO₂, air temperature and humidity
- Carbon dioxide alarm function with acoustic alarm for freely definable limit value
- Additional CO₂ indicator icon (feel-good indication)
- Autonomous long-term recording of carbon dioxide concentration, room temperature and humidity
- Memory for 50,000 measured values
- Freely definable saving interval from 1 second to 12 hours
- USB interface for measuring data transfer
- PC analysis software

Device depiction



No.	Designation
1	Main display
2	USB interface
3	Date indication
4	Time indication
5	Power adapter input
6	ESC button
7	MAX MIN button
8	▼ button
9	▲ button
10	ALARM button
11	Relative humidity indication
12	Temperature indication
13	Battery compartment
14	⏻ button (switch-on / switch-off)
15	📄 / REC button
16	°C/°F button
17	Clock button

Main display



No.	Designation
18	Measured CO ₂ value
19	Unit measured CO ₂ value (parts per million)
20	USB interface indication
21	Alarm activated indication
22	Feel-good indication: poor air quality
23	Feel-good indication: average air quality
24	Feel-good indication: good air quality
25	REC indication (measured value detection enabled)
26	HOLD indication (freezing displayed values)
27	MIN indication (display of minimum values)
28	CO ₂ indication (display of CO ₂ value)
29	MAX indication (display of maximum values)

Technical data

Parameter	Value
Model	BZ30
Article number	3.510.205.015
Weight (packaging excluded)	approx. 245 g
Dimensions (length x width x height)	90 mm x 110 mm x 98 mm
Display	LCD (monochrome)
Carbon dioxide (ppm)	
Carbon dioxide sensor	NDIR sensor (non-dispersive infrared)
Measuring range	0 to 9999 ppm
Accuracy	±5 % or ±75 ppm
Resolution	1 ppm
Relative humidity	
Measuring range	0.0 % RH to 99.9 % RH
Accuracy	± 5 % RH
Resolution	0.1 %
Air temperature	
Measuring range	-5 °C to 50 °C or 23°F to 122 °F
Accuracy	±1 °C or ±1.8 °F
Measuring range resolution	0.1 °C/ °F
Ambient conditions	
Operation	-5 °C to 50 °C or 23 °F to 122 °F and 90 % RH (non-condensing)
Storage	-5 °C to 50 °C or 23 °F to 122 °F and 90 % RH (non-condensing)
Power supply	1 x 3.7 V Li-ion battery or 230 V power adapter
Memory organisation	
Sampling interval	> 1 s
Saving interval	> 1 s
Memory	50,000 measured values

Scope of delivery

- 1 x Measuring device BZ30
- 1 x 3.7 V Li-ion battery
- 1 x Power adapter
- 1 x USB connection cable
- 1 x CD-ROM with Smartgraph PC software
- 1 x Operating manual

Transport and storage

Note

If you store or transport the device improperly, the device may be damaged.

Note the information regarding transport and storage of the device.

Transport

The supplied Li-ion batteries are subjects to the requirements of dangerous goods legislation.

Observe the following when transporting or shipping Li-ion batteries:

- The user may transport the batteries by road without any additional requirements.
- If transport is carried out by third parties (e.g. air transport or forwarding company), special requirements as to packaging and labelling must be observed. This includes consulting a dangerous goods specialist when preparing the package.
 - Only ship batteries if their housing is undamaged.
 - Mask open terminals with tape and pack the battery in a way that it cannot move inside the packaging.
 - Please also observe any other national regulations.

The manufacturer packed the device to the best of his abilities to protect it against transport damage.

Storage

When the device is not being used, observe the following storage conditions:

- dry and protected from frost and heat
- protected from dust and direct sunlight
- The storage temperature is the same as the range given in the Technical data chapter.
- When storing the device for an extended period of time, remove the battery/batteries.

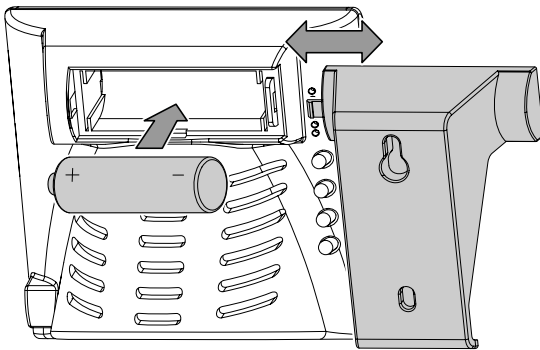
Operation

Inserting the battery

Insert the battery into the device before first use. The scope of delivery includes a 3.7 V battery. This battery is not intended for long-term power supply, but merely for bridging short power interruptions.

Proceed as follows to insert the battery:

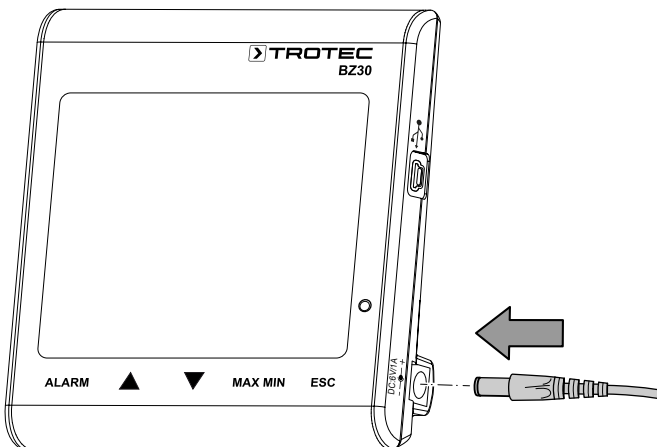
1. Push the suspension bracket of the battery compartment at the rear of the device to the right.
2. Insert the battery into the device with correct polarity (+/-).



3. Close the battery compartment by pushing the bracket on the battery compartment in the opposite direction.

Connecting the power adapter

Prior to use, connect the device to the mains using the supplied power adapter.



Start-up

Press the \odot button at the rear of the device for approx. 1 second to switch the device on. The device will then start a warm-up phase lasting 120 seconds.

Setting date and time

Press and hold the *Clock* button for approx. 4 seconds to set time and date. The day indication starts flashing. Press the button again to switch between year, month, day, hours and minutes. Press one of the buttons \blacktriangle or \blacktriangledown to increase or decrease the number flashing on the display. To exit the setting mode and to save the entered value press the *ESC* button once you have set the correct date and time.



Info

You can modify the order of day, month and year within the supplied software. For more detailed information please refer to the "Using the software" section.

Hold function

Press the \blacksquare button (hold) to permanently indicate or "freeze" the displayed values.



Info

In recording mode: Press and hold the \blacksquare / *REC* button to stop recording.

Alarm function

The device features an alarm function that indicates when a previously set CO_2 threshold is exceeded.

Please proceed as follows to enable the alarm function:

1. Press the *ALARM* button.
 - \Rightarrow The alarm function is enabled and the alarm symbol \llcorner appears on the display. As soon as the measured value exceeds the previously set limit value, an acoustic alarm signal will be emitted and the buttons below the display start to flash in red.
2. Press the button again to exit or disable the alarm mode.

Setting the limit value for the alarm function

Please proceed as follows to set a new limit value:

1. Press and hold the *ALARM* button for approx. 5 seconds.
 - \Rightarrow The previously set limit value appears on the display and the displayed alarm symbol \llcorner flashes.
2. Press \blacktriangle or \blacktriangledown to increase or reduce the decrease the displayed number.
3. Then you can press the *ESC* button to exit the mode and to adopt the set value or to change the limit values for the feel-good indication $\odot \odot \odot$.

Adjusting the limit values for the feel-good indication

Note:

This setting can only be adjusted in the setting mode for the alarm threshold! After having set an alarm threshold, do not press the *ESC* button but rather the *ALARM* button again for a brief moment. The lower limit value for the feel-good indication will be displayed and the icons of the feel-good indication ☺ ☺ ☺ start to flash.

1. Press ▲ or ▼ to increase or reduce the lower limit value for the feel-good indication.
2. Press the *ALARM* button to switch over to setting the upper limit value.
3. Press ▲ or ▼ to increase or reduce the upper limit value for the feel-good indication.
4. Press the *ESC* button to exit the mode and to adopt the set value.

Displaying the minimum / maximum value

The device saves the highest and lowest display values. To call up these values, please proceed as follows:

1. Press the *MAX MIN* button.
 - ⇒ *MAX* appears on the display and the highest measured values for carbon dioxide, temperature and relative humidity will be displayed as well.
2. Press the button again to view the minimum values (*MIN*).
3. Press the *ESC* button to exit this mode.

Background illumination

The background illumination will be switched on in addition by pressing either *ALARM*, *MAX MIN*, ▲ or ▼. The background illumination goes out after approx. 20 seconds of non-use. Press the *ESC* button to exit this mode.

Setting the °C/°F indication

Press the °C/°F button at the rear of the device to switch between an indication in degrees Celsius and degrees Fahrenheit.

Starting a recording

Press and hold the *REC* button at the rear of the device for approx. 5 seconds to record the measured values.

Note:

If you want to start a new recording, you first have to save or delete measured values already saved on the device. For more detailed information please refer to the "Using the software" section.

Using the software

There is a multi-data logger software included in the scope of delivery. You can use it to read and process measuring device data when the device is connected to a computer or notebook. Data can be graphically displayed directly in the software or visualised in an Excel sheet or similar programme. The main functions are all included in the main window.

Required operating system:

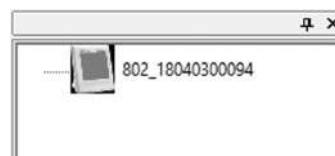
Windows 2000 / Windows XP / Vista / Windows 7 / Windows 8 / Windows 10

Minimum hardware requirements:

PC or notebook with Pentium 90 MHz or higher, 32 MB RAM; at least 7 MB of free hard disk space for the installation of the multi-data logger software. Recommended screen resolution: 1280 x 1024 with high colour resolution (32 bit).

Establishing communication

1. Use the supplied cable to connect the logger to the USB interface of your PC. Several loggers can be connected to one PC at the same time.
2. Run the multi-data logger software.
3. When the connection has been established successfully, the respective icon for the logger is displayed in the *Instrument* field.




Importing recorded data



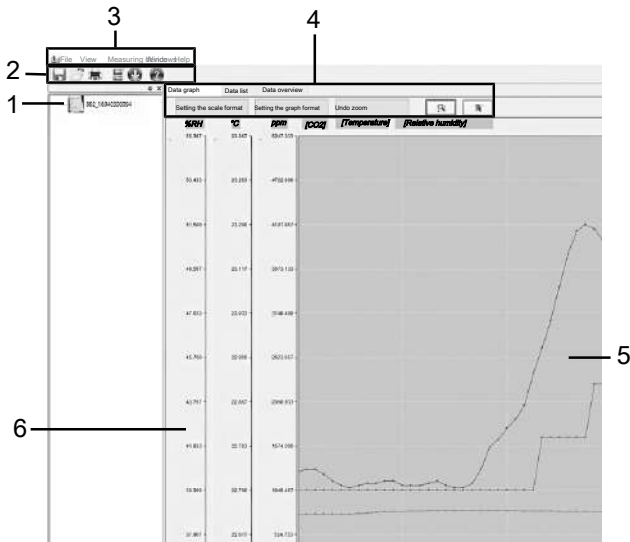
Info

Prior to readout, the recording mode must be terminated (*REC* button on the device)! To do so, follow the instructions in the software.

There are two options to import recorded data from the logger:

1. Select the logger icon in the *Instrument* field. Right-click your mouse to open a dialog box. There, select the *Read data logger data* menu item to import the data.
2. Alternatively, you can click on the  icon in the toolbar to read data recorded by the logger.
 - ⇒ After the measured values have been successfully transferred, the data graph window opens. The graph shows three channels: *CO2* (red), *temperature* (green) and *relative humidity* (blue).

Data graph window



No.	Designation
1	Instruments section: Displays the connected devices. You can left-click a device to select it.
2	Toolbar section: For more detailed information please refer to the "Toolbar" section.
3	Main menu section: For more detailed information please refer to the "Main menu" section.
4	Diagram control section: For more detailed information please refer to the "Diagram control" section.
5	Data graph: Displays the value trends for CO ₂ , temperature and relative humidity.
6	Scales: Displays the measuring ranges for relative humidity, temperature and CO ₂ -values.

Toolbar

In the following you will find information regarding the subitems of the toolbar (2).

Button	Function
	Opens the dialog window for saving. Files are saved in ".AsmData" and ".xls" formats.
	Opens the dialog window for opening files. Files in ".AsmData" format can be opened.
	Opens the dialog window for printing files.
	Opens the dialog window for adjusting the settings.
	Starts data import from the selected device.
	Opens the help.

Main menu

In the following you will find information regarding the subitems of the main menu (3).

File	
Open	Opens an existing file.
Save	Saves recorded data to the hard disk.
Print	Opens the dialog window for printing the graph, list or data summary.
Print preview	Opens the print preview for graph or list.
Print settings	Opens the dialog window for changing printer or print options.
Last file	Calls the previously edited file.
Exit	Exits the application. Prompts to save the documents.

View	
Toolbar	Shows or hides the toolbar.
Status bar	Shows or hides the status bar.
Measuring devices	Shows or hides the window for the measuring instrument.

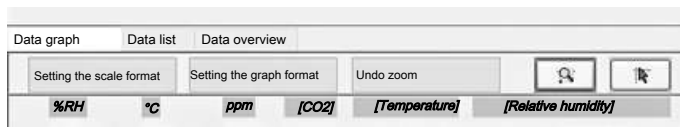
Measuring device	
Read measuring device data	Imports data from the data logger.

Windows	
New window	Opens a new window for the active document.
Cascade windows	Arranges the windows of the open files overlapping.
Tile windows	Arranges the windows of the open files side by side without overlapping.

Help	
About data loggers	Shows details about the version of the multi-data logger software.
Help topics	Opens the software help.

Diagram control

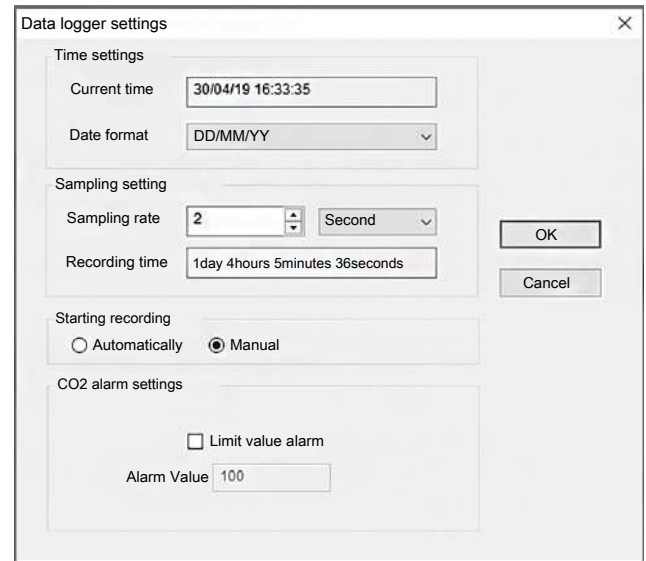
In the following you will find information regarding the subitems of the diagram control section (4).



Button	Function
<i>Data graph</i>	Displays the graph with the recorded values for CO ₂ , temperature and relative humidity.
<i>Setting the scale format</i>	Opens the dialog window for adjusting the horizontal and vertical scales of the individual channels.
<i>Data list</i>	Changes from the graphic display of the measured values to a list indicating the individual measuring points.
<i>Data overview</i>	Displays a summary of the gathered data.
<i>Setting the graph format</i>	Opens the dialog window for adjusting the background colour, grid lines and depiction of the three channels.
<i>Undo zoom</i>	Indicates the total view of the data graph.
<i>Zoom</i>	Allows to zoom into sections of the graph.
<i>Cursor</i>	Allows to select individual data points.

Adjusting the data logger settings

Click the icon on the toolbar (2) to open the *Data logger settings* dialog window.



- Time settings**
 The current system time is displayed in the *Current time* field.
 The date format can be set as *year/month/day*, *month/day/year* or *day/month/year*.
- Sampling setting**
 The *Sampling setting* field prompts the device to record the measured values at a certain frequency. In the combo box on the left, you can enter a specific value for the sampling rate. From the combo box on the right, you can select the time unit. The *Recording time* combo box shows the maximum recording time (depends on the set sampling rate).
- Starting recording**
 The *Manual* and *Automatic* selection options allow for the user to start data logging immediately after exiting the setting window (*Automatic*) or to manually start at a later point in time by pressing the respective button (*Manual*).
- CO2 alarm settings**
 If the *Limit value alarm* checkbox is checked, the user can enter the alarm value (in ppm). If the respective measured value is beyond the alarm limit, the device triggers an alarm.

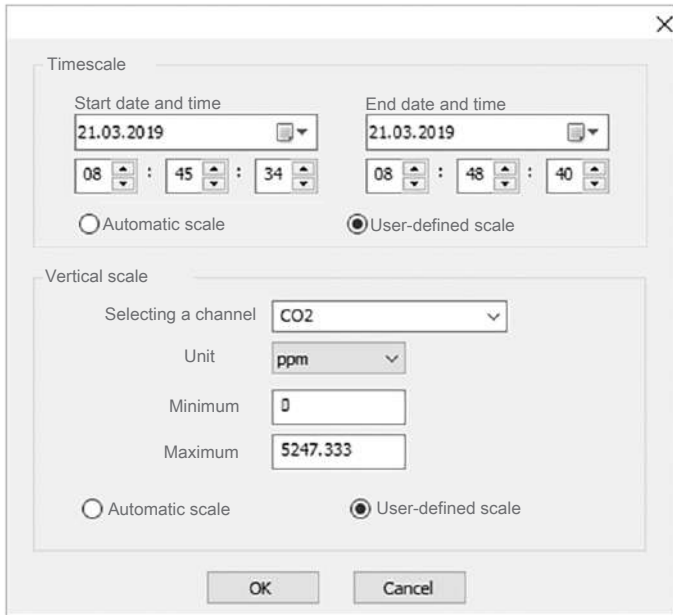


Info

Prior to setting the logger to recording mode, the logger settings [Data logger settings] must always be made first! In this process, it is irrelevant whether the settings are changed or remain the same. All saved data are permanently deleted when set-up is complete. To save those data before they are deleted, click *Cancel* and then download the data.

Adjusting the scale setting

Click the *Set scale format* button to adjust the horizontal and vertical graph scales. The *Scale format* dialog window opens.



1. Setting the horizontal scale

Scaling of the horizontal axis is executed in the *Timescale* section. To determine the endpoints of the horizontal axis, select the indicated endpoints from the drop-down menus for date and time selection.

Automatic scale:

The starting point of the horizontal scale corresponds to the start time of the logger data file; the endpoint correspondingly being the end time of the logger data file.

User-defined scale:

Starting point and endpoint of the horizontal scale can be adjusted through the respective user settings.



Info

When user-defined scaling is selected and the input starting point is earlier than the start time of the logger data file, the starting point of the graph time scale is used as the start time for the logger data file.

When user-defined scaling is selected and the input starting point is later than the end time of the logger data file, the endpoint of the graph time scale is used as the end time for the logger data file.

2. Setting the vertical scale

Scaling of the vertical axis is executed in the *Vertical scale* section. First, select the measurement channel and then the measuring unit. Set minimum and maximum value.

Automatic scale:

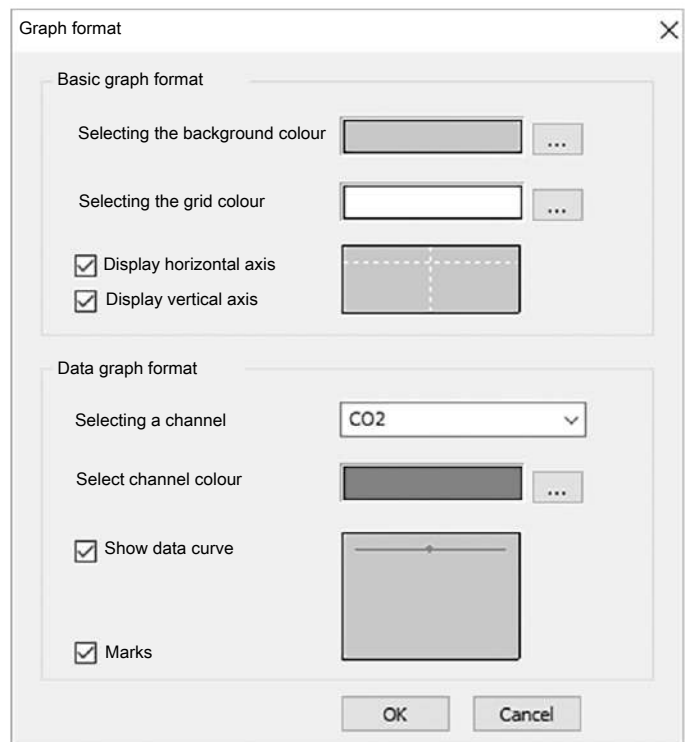
If you select this option, the vertical scale automatically adjusts depending on the logged data.

User-defined scale:

If you select this option, the vertical scale is adjusted as per the user settings.

Setting the graph format

Click the *Set graph format* button to adjust the graphing options for the graph. The *Graph format* dialog window opens.



The basic settings for all three channels are made in the *Basic graph format* section.

1. Selecting the background colour:

Click the button to adjust the background colour. You can choose a basic colour or create a new colour pressing the *Define colours* button.

2. Adjusting the grid colour

Click the button to adjust the grid colour. You can choose a basic colour or create a new colour pressing the *Define colours* button.

3. Showing/hiding the grid lines

Check or uncheck the checkboxes to show or hide the horizontal and vertical grid lines.

The settings for the different channels are made in the *Data graph format* section.

1. Selecting a channel
Select one of the three channels to make settings for that channel.
2. Changing the channel colour
Click the button to adjust the channel colour. You can choose from various basic colours or create a new colour pressing the *Define colours* button.
3. Showing and hiding data curve and marks
Check or uncheck the checkboxes to hide and show the data curve and the marks of individual data points.

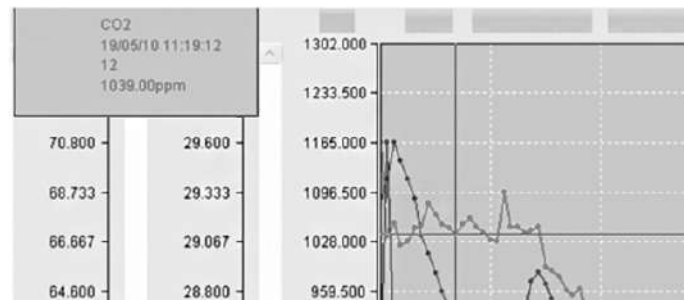
Zooming

1. Zooming in
Click the button to select zoom mode. Define the starting point of the zoom window by left-clicking. Left-click again to define the endpoint of the zoom window. Use the left and bottom scrollbars to shift the pane.
2. Zooming out
Click the *Undo zoom* button to show the total view.

Displaying individual data points

There are two options to display individual data points:

1. Selecting a data point
Click the button to enable the function. Then left-click a data point to display the properties of that data point. If you hold onto the mouse button while moving the cursor to the right, left, upwards or downwards, the crosshairs always remain on the respective measurement curve section that has been selected with the mouse at the beginning.



2. Calling the data list
Click the *Data list* button to display all data points of the recording. The individual data points are numbered consecutively. CO₂ value, temperature and relative humidity are indicated for every data point.

		CO2(ppm)		
1	21/03/19 08:45:34	770.00	22.70	40.70
2	21/03/19 08:45:36	770.00	22.70	40.80
3	21/03/19 08:45:38	770.00	22.70	40.80
4	21/03/19 08:45:40	771.00	22.70	40.60
5	21/03/19 08:45:42	770.00	22.70	40.30
6	21/03/19 08:45:44	770.00	22.70	40.10
7	21/03/19 08:45:46	770.00	22.70	40.00
8	21/03/19 08:45:48	772.00	22.70	40.10
9	21/03/19 08:45:50	780.00	22.70	40.20
10	21/03/19 08:45:52	786.00	22.70	40.20
11	21/03/19 08:45:54	793.00	22.70	40.30
12	21/03/19 08:45:56	797.00	22.70	40.30
13	21/03/19 08:45:58	800.00	22.70	40.10
14	21/03/19 08:46:00	802.00	22.70	40.10
15	21/03/19 08:46:02	805.00	22.70	40.10
16	21/03/19 08:46:04	807.00	22.70	40.20
17	21/03/19 08:46:06	808.00	22.70	40.30
18	21/03/19 08:46:08	808.00	22.70	40.10
19	21/03/19 08:46:10	808.00	22.70	40.00
20	21/03/19 08:46:12	807.00	22.70	40.00
21	21/03/19 08:46:14	807.00	22.70	40.20
22	21/03/19 08:46:16	807.00	22.70	40.80
23	21/03/19 08:46:18	807.00	22.70	41.80
24	21/03/19 08:46:20	807.00	22.70	42.10

Displaying the data overview

Click the *Data overview* button to call a summary of the measurement series.

Maintenance and repair

Charging the battery

The battery should be charged within the scope of initial start-up and when the battery is low. To do so, connect the supplied power adapter to the device and to the mains. Information on how to insert the battery into the device is provided in the chapter Operation.

Cleaning

Clean the device with a soft, damp and lint-free cloth. Make sure that no moisture enters the housing. Do not use any sprays, solvents, alcohol-based cleaning agents or abrasive cleaners, but only clean water to moisten the cloth.

Repair

Do not modify the device or install any spare parts. For repairs or device testing, contact the manufacturer.

Disposal



The icon with the crossed-out waste bin on waste electrical or electronic equipment stipulates that this equipment must not be disposed of with the household waste at the end of its life. You will find collection points for free return of waste electrical and electronic equipment in your vicinity. The addresses can be obtained from your municipality or local administration. For further return options provided by us please refer to our website <https://de.trotec.com/shop/>.

The separate collection of waste electrical and electronic equipment aims to enable the re-use, recycling and other forms of recovery of waste equipment as well as to prevent negative effects for the environment and human health caused by the disposal of hazardous substances potentially contained in the equipment.



In the European Union, batteries and accumulators must not be treated as domestic waste, but must be disposed of professionally in accordance with Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators. Please dispose of batteries and accumulators according to the relevant legal requirements.

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