CHAUVIN ARNOUX

C.A 1510

Measurement of indoor air quality
- CO_2
- Ambient temperature
- Relative humidity

Measure up

Thank you for purchasing a **C.A 1510 indoor air quality meter**.

For best results from your instrument:
■ **read** this user manual carefully,
■ **comply** with the precautions for use.

⚠	WARNING, risk of DANGER! The operator must refer to these instructions whenever this danger symbol appears.
🛈	Useful information or tip.
♵	The product has been declared recyclable after analysis of its life cycle in accordance with the ISO14040 standard.
Eco conception	Chauvin Arnoux has adopted an Eco-Design approach in order to design this appliance. Analysis of the complete lifecycle has enabled us to control and optimize the effects of the product on the environment. In particular this appliance exceeds regulation requirements with respect to recycling and reuse.
CE	The CE marking indicates compliance with the European Low Voltage Directive (2014/35/EU), Electromagnetic Compatibility Directive (2014/30/EU), Radio Equipment Directive (2014/53/EU), and Restriction of Hazardous Substances Directive (RoHS, 2011/65/EU and 2015/863/EU).
UKCA	The UKCA marking certifies that the product is compliant with the requirements that apply in the United Kingdom, in particular as regards Low-Voltage Safety, Electromagnetic Compatibility, and the Restriction of Hazardous Substances.
🗑	The rubbish bin with lines through it indicates that, in the European Union, the product must undergo selective disposal in compliance with Directive WEEE 2012/19/EU. This equipment must not be treated as household waste.

Definition of measurement categories
■ Measurement category IV corresponds to measurements taken at the source of low-voltage installations.
  Example: power feeders, counters and protection devices.
■ Measurement category III corresponds to measurements on building installations.
  Example: distribution panel, circuit-breakers, machines or fixed industrial devices.
■ Measurement category II corresponds to measurements taken on circuits directly connected to low-voltage installations.
  Example: power supply to domestic electrical appliances and portable tools.

PRECAUTIONS FOR USE

This instrument complies with safety standard IEC/EN 61010-1 or BS EN 61010-1 for voltages of 50V in category II.
■ The operator and/or the responsible authority must carefully read and clearly understand the various precautions to be taken in use.
■ Do not use the instrument if it seems to be damaged, incomplete, or poorly closed.
■ Before each use, check the condition of the housing. Any item of which the insulation is deteriorated (even partially) must be set aside for repair or scrapping.
■ Never make measurements in atmospheres contaminated by solvents, which could damage the sensor.
■ All troubleshooting and metrological checks must be performed by competent and accredited personnel.

CONTENTS

1. FIRST USE

1.1. DELIVERY CONDITION

1.1.1. C.A 1510 INDOOR AIR QUALITY METER

The device is anthracite grey. It is delivered in a compact metal carrying case with:
- 2 LR6 batteries
- One mains-USB adapter
- One USB - micro USB cord 1.80 m long
- One getting started guide
- One mini CD containing the Data Logger Transfer software and user's manuals (1 file per language)
- One verification certificate
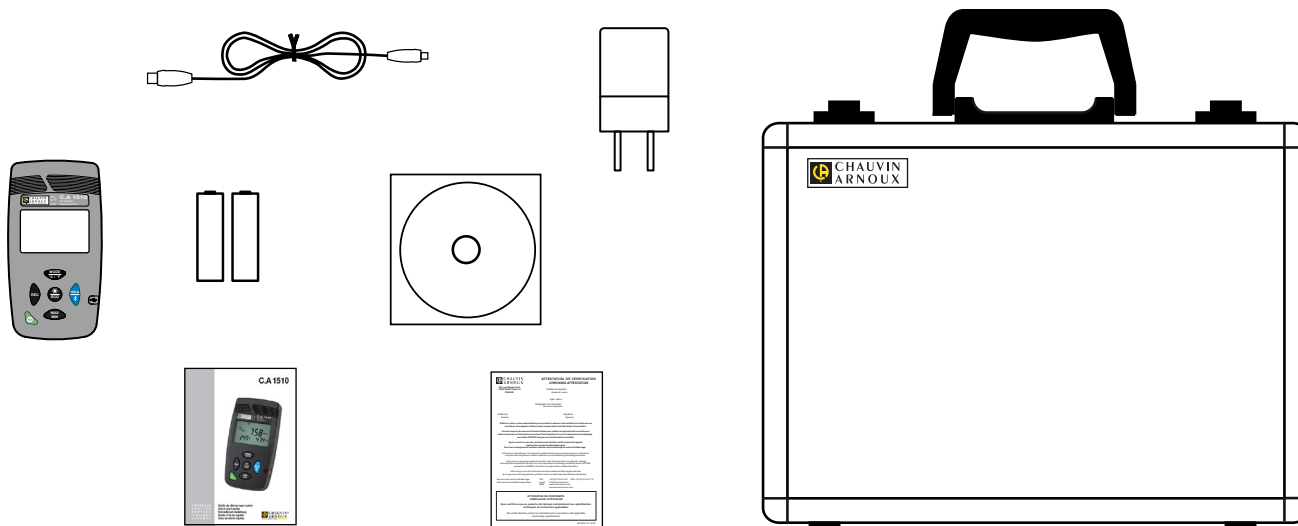
1.1.2. C.A 1510W INDOOR AIR QUALITY METER
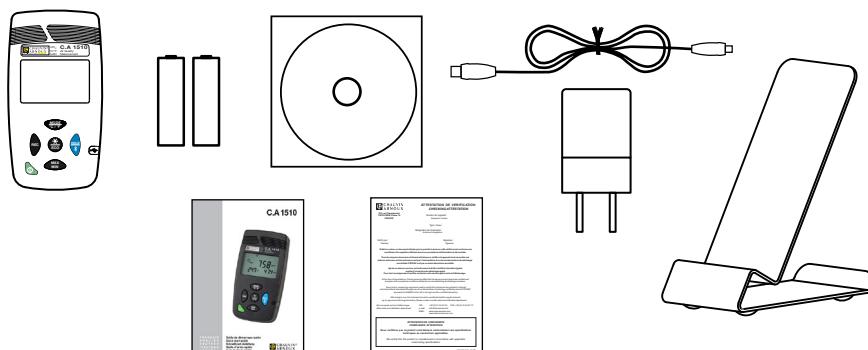
Delivered in a cardboard box with:
- 2 LR6 batteries
- One mains-USB adapter
- One USB - micro USB cord 1.80 m long
- One desktop support
- One getting started guide
- One mini CD containing the Data Logger Transfer software and user's manuals (1 file per language)
- One verification certificate

1.2. ACCESSORIES AND REPLACEMENT PARTS

- Field calibration kit
- Carrying case

- Desktop support
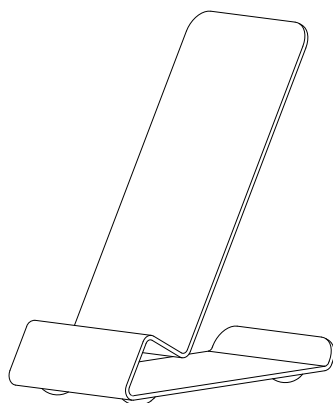
- Wall mount

It is attached to the wall. It can be used to protect the device against theft by adding a padlock.

- Mains adapter with USB cable
- USB-Bluetooth adapter

For accessories and replacement parts, visit our website:
www.chauvin-arnoux.com

2. PRESENTATION

2.1. INTRODUCTION

Carbon dioxide is a colourless and odourless gas. It is not toxic, but at high concentrations can interfere with mental concentration and cause headaches. Outdoor air contains approximately 0.04% (400 ppm)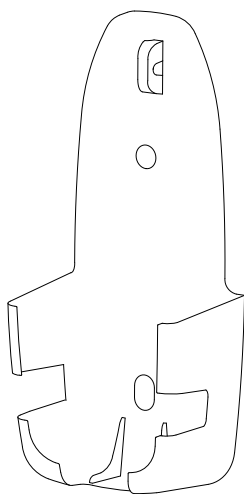 CO_2. In an indoor environment, human activity (breathing) can rapidly increase this concentration to values in excess of 1000 ppm (for example in meeting rooms or school classrooms). It is for this reason that the level of CO_2 is an excellent indicator of the efficacy of the renewal of indoor air.

The ambient temperature and relative humidity are two more important quantities in the monitoring of indoor air quality. Beyond certain values, they can cause discomfort and favour the propagation of moulds that release allergenic or irritant substances into the air.
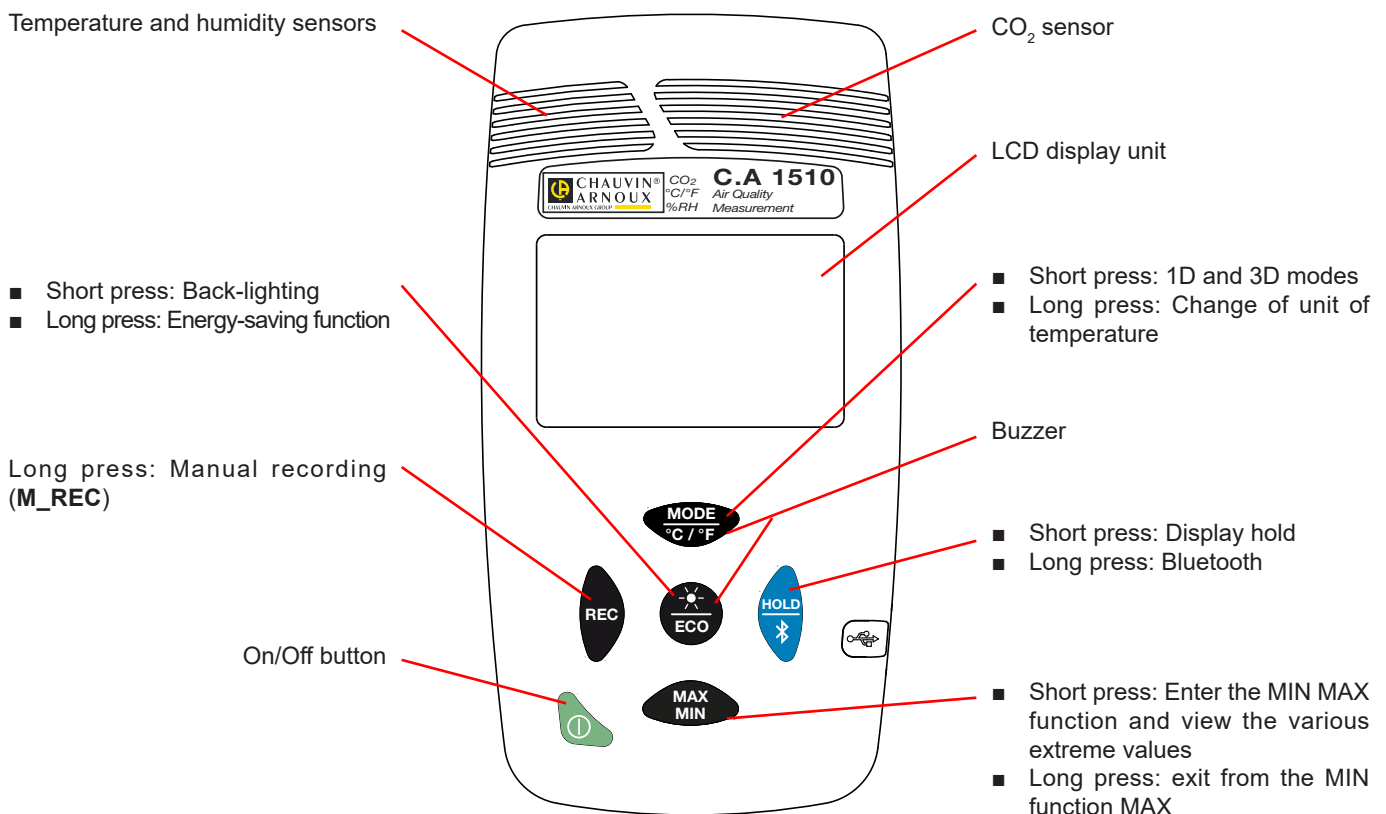
The C.A 1510 is an instrument for measuring physical quantities that combines the following functions:
■ Measurement of the concentration of carbon dioxide in the air (CO_2);
■ Measurement of the ambient temperature;
■ Measurement of the relative humidity;

It works out air quality criteria based either on the level of CO_2 or on a combination of the three physical quantities measured.

The device is a response to decree no. 2012-14 of 5 January 2012 concerning the evaluation of means of ventilation and the measurement of pollutants in the context of measurements of CO_2.

2.2. FRONT VIEW

Temperature and humidity sensors

CO_2 sensor

LCD display unit

■ Short press: Back-lighting
■ Long press: Energy-saving function

■ Short press: 1D and 3D modes
■ Long press: Change of unit of temperature

Buzzer

Long press: Manual recording (**M_REC**)

■ Short press: Display hold
■ Long press: Bluetooth

On/Off button

■ Short press: Enter the MIN MAX function and view the various extreme values
■ Long press: exit from the MIN function MAX

MODE °C / °F

REC

ECO

HOLD

MAX MIN

CHAUVIN® ARNOUX
CHAUVIN ARNOUX GROUP
C.A 1510
CO_2
°C/°F
%RH
Air Quality
Measurement

> ℹ️ On the keys, the function written above the line is invoked by a short press, the function written below the line by a long press.

2.3. SIDE AND BACK VIEWS

Notch for hanging up the device.

Non-skid pads.

Magnet for attachment to a metallic surface.

Chauvin Arnoux
www.chauvin-arnoux.com
MADE IN FRANCE
2 X IEC LR6 (AA)

Battery compartment cover.

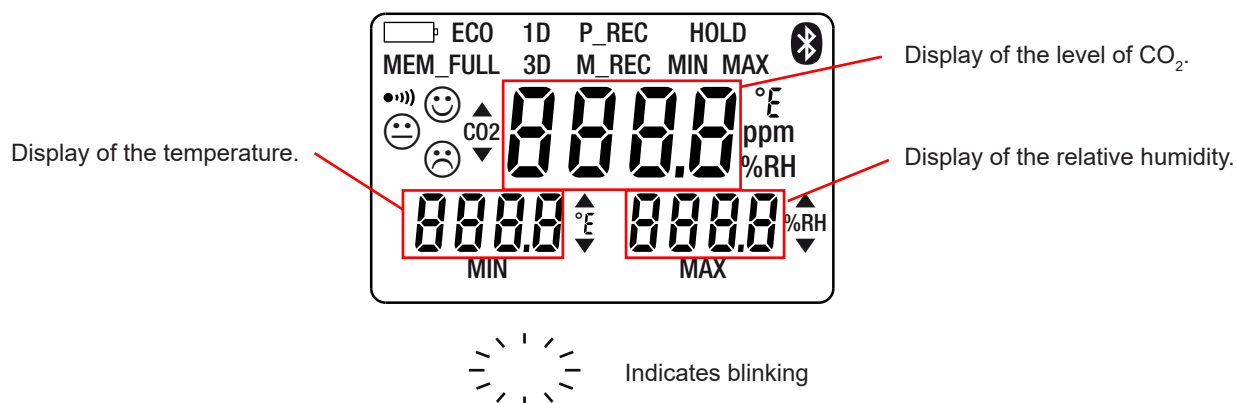Micro - USB connector.

Instrument closing screw.
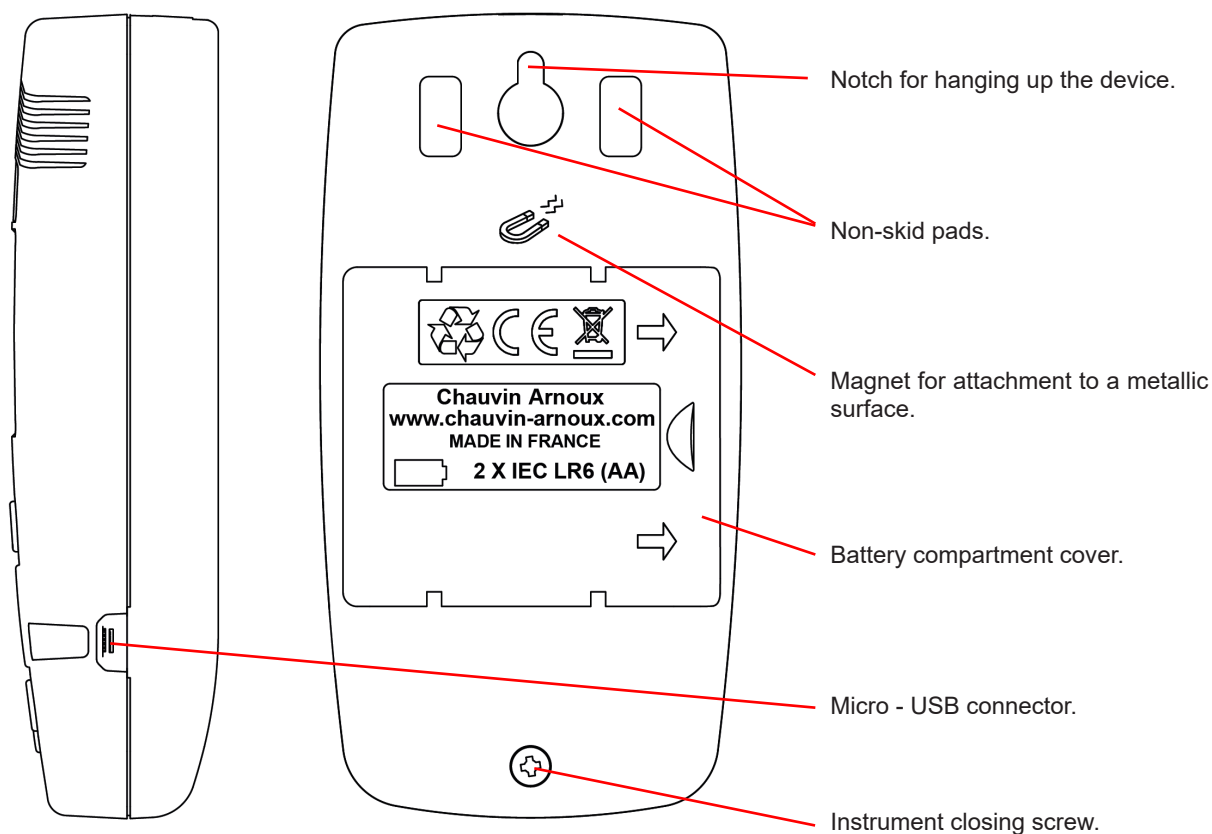
2.4. INTERNAL SOFTWARE VERSION

Certain instrument functions depend on the internal software version. It is therefore important to know it.

To determine the internal software version of your instrument:
■   Turn it on by pressing the On / Off button.
■   Press the **ECO** button. Hold it down and press the **REC** button at the same time.
■   The internal software version is displayed for 2 seconds, then the instrument resumes normal operation.

2.5. THE DISPLAY UNIT

Display of the level of CO_2.

Display of the temperature.

Display of the relative humidity.

Indicates blinking

Symbols	Designation
MEM_FULL	Memory full.
1D	Surveillance of the level of CO_2.
3D	Surveillance of crossing of CO_2, temperature, and humidity comfort zone thresholds.
MAX	Maximum value.
MIN	Minimum value.
ECO	Energy-saving operating mode.
P_REC	Programmed recording Blinking: waiting to start recording Steady: recording.
M_REC	Manual recording.
HOLD	Hold of the display.
MIN MAX	MIN MAX function: detection of minimum and maximum values.
ppm	Unit of concentration of CO_2 in the air in parts per million.
●)))	Buzzer active.
✷	Bluetooth Blinking: waiting for connection Steady: connected
🔋	Blinking: Batteries low Steady: Indicator of external power supply by connection of the mains adapter or of the USB connection.
▲	Overshoot of high threshold.
▼	Overshoot of low threshold.
☺☺☹	Indication of air quality and of the temperature/humidity zone of comfort.

3. USE IN STAND-ALONE MODE

The instrument can operate in two modes:
- the stand-alone mode described in this section,
- the record mode, in which it is controlled by a PC. This mode is described in the next section.

3.1. INSTALLING THE BATTERIES

See §6.2.

3.2. SWITCHING THE DEVICE ON

- For internal software version below 5.0:
  When battery voltage is low, the ▭ symbol blinks. Then when the battery voltage is too low to ensure proper operation of the instrument, it displays **bAtt** and then turns off after 15 seconds.
- Pour le logiciel interne version 5.0 :
  When the battery voltage is too low to ensure proper operation of the instrument, it displays **bAtt** and then turns off after 5 seconds.

3.3. SWITCHING THE DEVICE OFF

3.3.1. MANUAL SWITCHING OFF
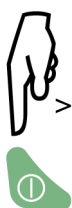
> 2s

Manual switching off is blocked if a programmed recording session (P_REC) is in progress.

3.3.2. AUTOMATIC SWITCHING OFF

In the portable mode, the device switches itself off automatically after 15 minutes of inactivity.

Automatic switching off is de-activated in the other modes (1D or 3D, ECO, P_REC), and in the MIN MAX and M_REC functions, if the Bluetooth or USB link is active or if the device is connected via the USB mains adapter.

3.4. MAKING A MEASUREMENT

When the device is switched on, CO_2 is displayed during the wait for the first measured of CO_2 value; access to the keys is disabled until this first value is displayed on screen. The measurements are then displayed automatically on screen.

ⓘ If the device is exposed to large variations of temperature, after the temperature stabilizes, wait 20 minutes before starting the measurements.

The device has 4 operating modes:
- The portable mode,
- The 1D and 3D modes
- The ECO mode
- The P_REC mode

It also has several functions that can be used in the various modes:
- The MIN MAX function
- The HOLD function
- The M_REC function
- The backlighting function

3.5. PORTABLE MODE

The portable mode is the mode the device starts up in. It is in this mode that the device makes the most measurements: one every 15 seconds. It is therefore highly responsive to changes in air quality.

This mode is used to inspect several rooms one after another. Install the device in a room and wait for the CO_2 measurement to stabilize (approximately 10 minutes).
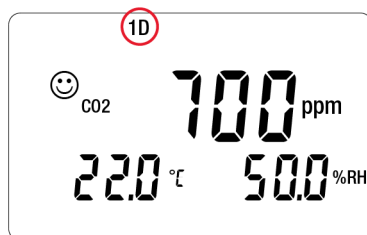
3.6. 1D AND 3D SURVEILLANCE MODES

- 1D mode: surveillance of the level of CO_2.
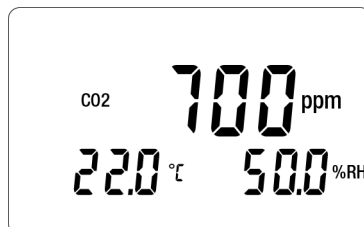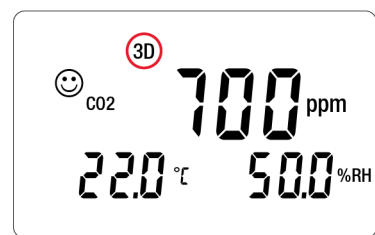- 3D mode: surveillance of 3 parameters: level of CO_2 and hygrothermal comfort zone.

The audible and/or visual warnings alert you to overshoots.
The level of CO_2 is measured every minute.

3.6.1. ACTIVATION OF THE 1D AND 3D MODES

Activation of the 1D mode.

Activation of the 3D mode.

Deactivation of the 3D mode.

3.6.2. OPERATION OF THE VISIBLE AND AUDIBLE WARNINGS

1D mode: Activation of the visual (and, if activated, audible) warnings during overshoots of the CO_2 thresholds.

- S1 = Low threshold = 1000 ppm
- S2 = High threshold = 1700 ppm

In internal software versions 4.14 and above, these thresholds can be programmed. To change them, simply modify the CO2limit. csv file in the memory of the device. Connect the C.A 1510 to a PC using a USB cable (see §4.3).

| **i** | Do not modify the CO2limit.csv file when recording is in progress. |

You must observe the following rules:
- S1 ≤ S2,
- S1 and S2 between 0 and 5000 ppm.

After modifying the CO2limit.csv file: .
- Eject the device from the file explorer,
- Unplug the USB cord,
- Switch the device off and back on to apply the new thresholds.

1D mode: Activation of the visual (and, if activated, audible) warnings during overshoots of the CO_2 thresholds.

|	
Level of CO_2 < S1	■ Back-lighting off ■ Air quality indicator: good
S1 < Level of CO_2 < S2	■ Blinking orange back-lighting ■ Arrow indicating overshoot of the CO_2 threshold ■ Air quality indicator: average **i** The back-lighting is off in ECO mode.
Level of CO_2 > S2	■ Blinking red back-lighting ■ Arrow indicating overshoot of the CO_2 threshold ■ Air quality indicator: poor **i** The back-lighting is off in ECO mode.

3D mode: Activation of the visual (and, if activated, audible) warnings during overshoots of the temperature, humidity, and/or CO_2 comfort zones.

Example of display with no overshoot of the CO_2, temperature, and humidity comfort zones	 ■ Back-lighting off ■ Optimum comfort zone indicator: ☺
Example of display with overshoot of the temperature and humidity thresholds	 ■ Blinking red back-lighting ■ Arrow in the direction of the overshoot for each quantity outside the comfort zone. ■ "Outside optimum comfort zone" indicator: ☹ <hr>ℹ The back-lighting is off in ECO mode.

ℹ For the **1D** and **3D** modes, if the buzzer is active, it will sound intermittently upon the appearance of the ☹ symbol.

The Porcher diagram defines the hygrothermal comfort zones
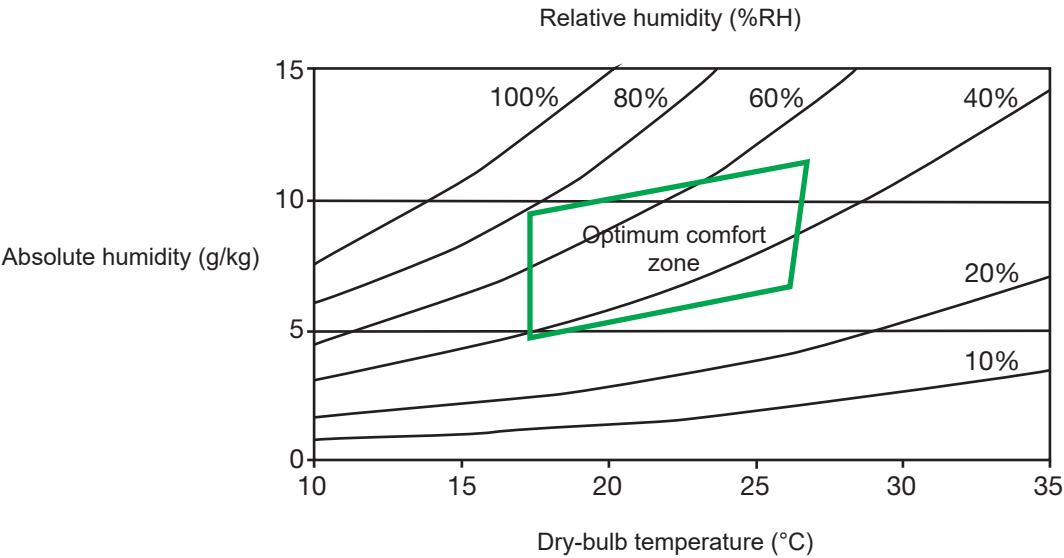
3.7. ECO MODE (ENERGY SAVING)

The ECO mode is used when the device is left to measure the air quality in a room over a longer period.
The backlighting and the buzzer are deactivated, and CO_2 is measured only once every 10 minutes. This saves the batteries.

In addition, the device sets itself to sleep mode at night, from 4:30 p.m. to 8:30 a.m. These times can be programmed using the Data Logger Transfer software provided with the device (see § 4.5).

To stop the function
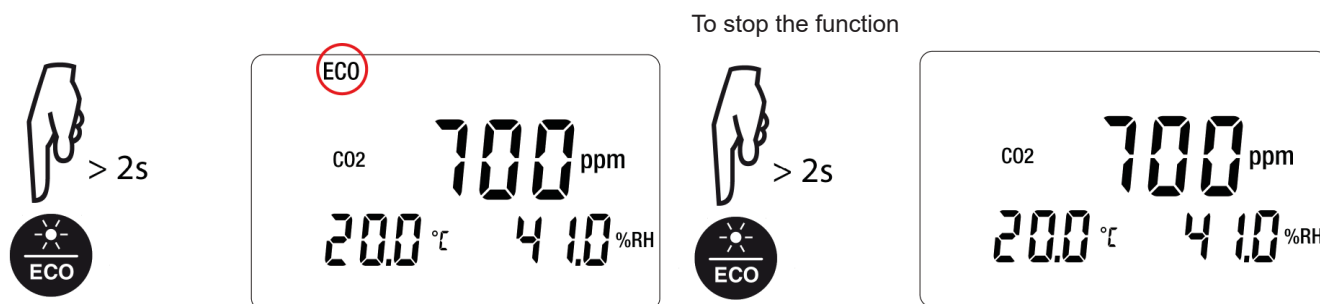
| i | In the ECO mode, the measurement is more sensitive to instantaneous variations of CO_2. For example, if the user breathes near the device, it may throw off the measurement. It will be necessary to wait for the next measurement to recover the true concentration of CO_2 in the room. |

3.8. P_REC MODE (PROGRAMMED RECORDING)

When the device is connected to a PC, you can program a recording session (see §3). There are two types of programmed recording sessions:

■ Locked recording, in which the device displays nothing except the **P_REC** symbol (blinking before recording starts, then steady while recording) and the keys are inactive.
At the end of recording, the device switches itself off.
■ Unlocked recording, in which the device displays the measurements. The **P_REC** symbol is displayed, blinking before recording starts, then steady while recording. The device operates normally. It is not possible to change the mode, but the MIN MAX, HOLD and backlighting functions can be used.

| i | Pressing the 🔘 button has no effect. |

3.9. MIN MAX FUNCTION

This function displays the maximum and minimum measured values in addition to the current value: the device compares each new measurement to those displayed. If the new measurement is greater than the former MAX value or less than the former MIN value, it replaces them in the display.

| i | The MIN MAX function cannot be used in the 1D and 3D modes. |

Entering the MIN MAX function.
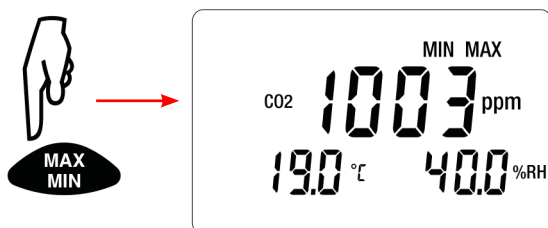
Display of MIN MAX CO₂
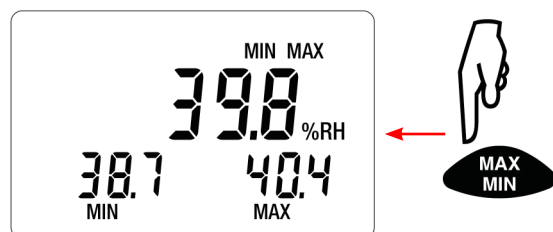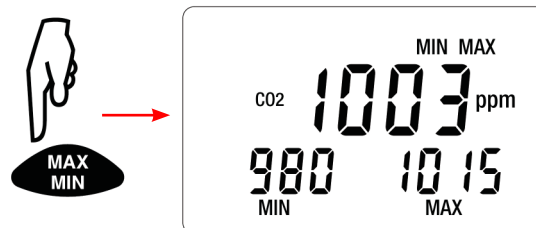
Display of MIN MAX in humidity
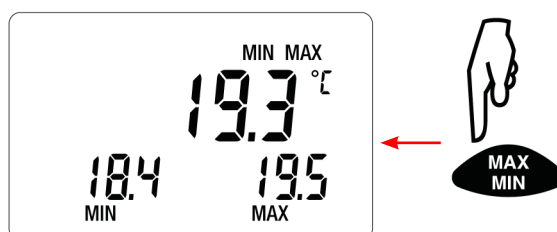
Display of MIN MAX in temperature

When the **MIN MAX** function is activated, recording of the minimum and of the maximum starts but the display of the three quantities measured makes it possible to continue using the device normally.

> 2s   To stop the MIN MAX function.

3.10. HOLD FUNCTION (HOLDING THE MEASUREMENT)

Pressing **HOLD** freezes the digital display on the last measurement displayed. Activating the function does not entail interruption of recording or of the current mode, but access to the other functions of the device is disabled.

To stop the function

3.11. M_REC FUNCTION (MANUAL RECORDING)

You can start recording manually and all data measured are recorded in the device at the rate determined by the mode in progress (see the table in §5.2).

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i It is possible to record manually whatever mode is in progress (except **P_REC**). But once recording is in progress, it is no longer possible to change modes.
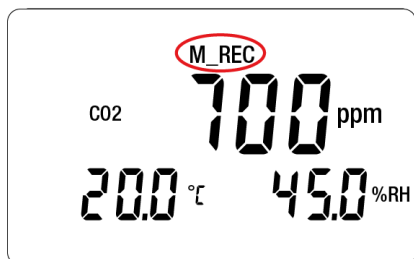
To stop recording
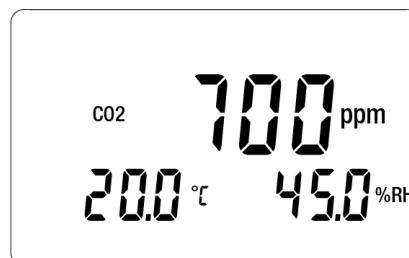
3.12. BACK-LIGHTING FUNCTION

To activate and de-activate back-lighting.

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i The back-lighting switches itself off automatically after 10 seconds.

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i It is impossible to activate the back-lighting in the ECO mode.

3.13. ACTIVATION OF THE AUDIBLE WARNING (BUZZER)

Activation
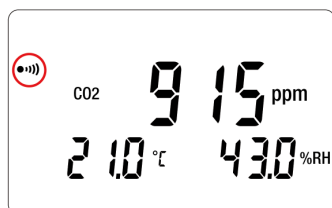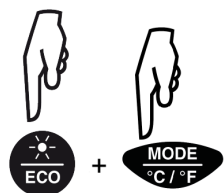
Deactivation
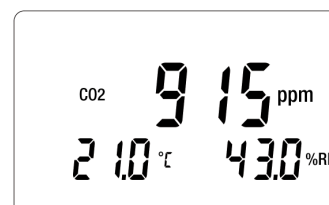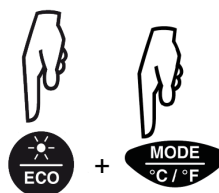
First press the **ECO** key, then, while keeping it pressed, press the **MODE** key.

Repeat the operation.

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i There is no buzzer if the ECO mode is active.

3.14. CHANGE OF UNIT OF TEMPERATURE
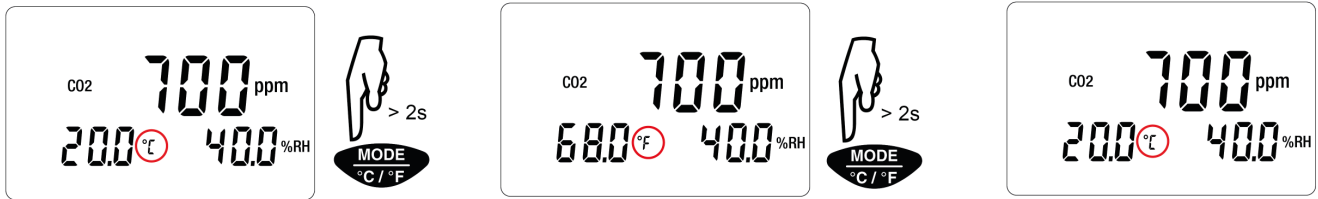
The choice of unit of temperature is preserved when the device is switched off.

3.15. DISPLAY OF ERRORS AND ANOMALIES OF OPERATION

3.15.1. OL SYMBOL

The OL symbol appears on screen when the measurement leaves the range covered by the device. In other words when:

- CO_2 > 5,000 ppm
- T < -10 °C or T > 60°C
- HR < 5% or HR > 95%

3.15.2. ERRORS

The instrument detects errors and displays them as Er.XX. The main errors are the following:

E02: There is a problem with the CO_2 measurement. Switch the device off and back on. If the error persists, the device must be sent in for repair..

E03 and **E14**: There is a problem accessing the storage memory. Turn the instrument off and on again. If the error persists, format the memory. To do this, connect the instrument to a PC using the supplied USB-micro USB cord.

E07, **E08** and **E09**: There is a problem with the internal clock. Replace the batteries. If the error persists, the instrument must be send for repair.

E036: the programmed thresholds in the file are inconsistent or out of bounds (see §3.6.2). The device ignores it and uses the default thresholds.

3.15.3. MEM_FULL SYMBOL

When the memory is full, the **MEM_FULL** symbol appears on screen.
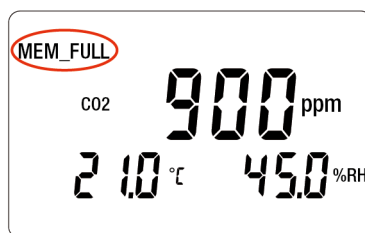
Any recording in progress is then stopped, and it is impossible to restart recording before emptying the memory.

4. USE IN RECORDING MODE

The instrument can operate in two modes:
- the stand-alone mode described in the previous section,
- the record mode, in which it is controlled by a PC. This mode is described below.

4.1. CONNECTION

The device has 2 communication modes:
- A USB link via a USB-micro USB cord,
- A Bluetooth wireless link.

4.2. GET DATA LOGGER TRANSFER SOFTWARE

Visit our web site to download the latest version of the application software:
www.chauvin-arnoux.com

Go to the **Support** tab, then **Download our software**. Then search on the name of your instrument.

Download the software, then install it on your PC.

| i | You must have administrator privileges on your PC to install the Data Logger Transfer software. |

Minimum computer requirements:
- Windows 7 (32/64 bits)
- 2 GB of RAM
- 200 MB of disc space

Windows® is a registered trade mark of Microsoft®.

| i | Do not connect the instrument to the PC until you have installed the Data Logger Transfer software. |

4.3. USB LINK

Long-press the ⏻ key to switch the instrument on.

Once the Data Logger Transfer software has been installed, connect the instrument to the PC using the supplied USB-micro USB cord.
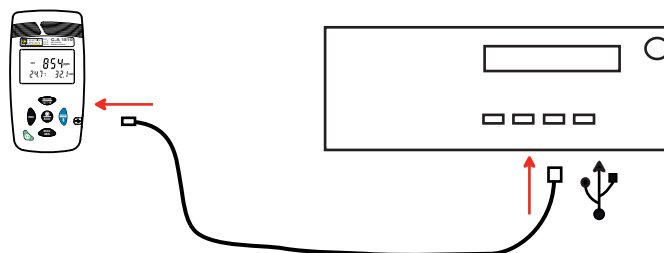
It is treated as a USB key and you can access its content. But to read the records, you must use the Data Logger Transfer software.

4.4. BLUETOOTH LINK

The instrument has a Bluetooth link.
- Activate Bluetooth on your PC. If your PC does not have a Bluetooth link, you can add a board or Bluetooth adapter connected to a USB port (see § 1.2).

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i   Since Windows 7 does not manage Bluetooth, a specific USB/Bluetooth adapter must be used (see §1.2).

- Switch the instrument on by a long press on the ⏻ key, then activate the Bluetooth link by a long press on the ✳ key. The ✳ symbol is displayed.
- In the Windows bar, look for the Bluetooth logo, right-click on it, and choose **Add a device**.
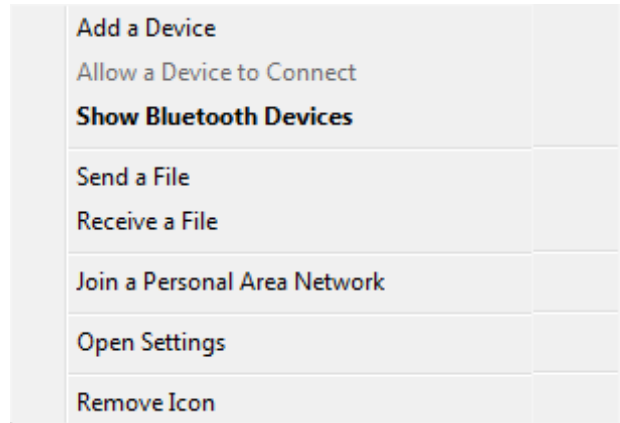
- If the Bluetooth logo is not present, go to Peripherals and printers in the Windows menu. Then choose **Add a device**.
- The PC searches its environment for Bluetooth-compatible devices. When the C.A 1510 is detected, select it and click on **Next**.
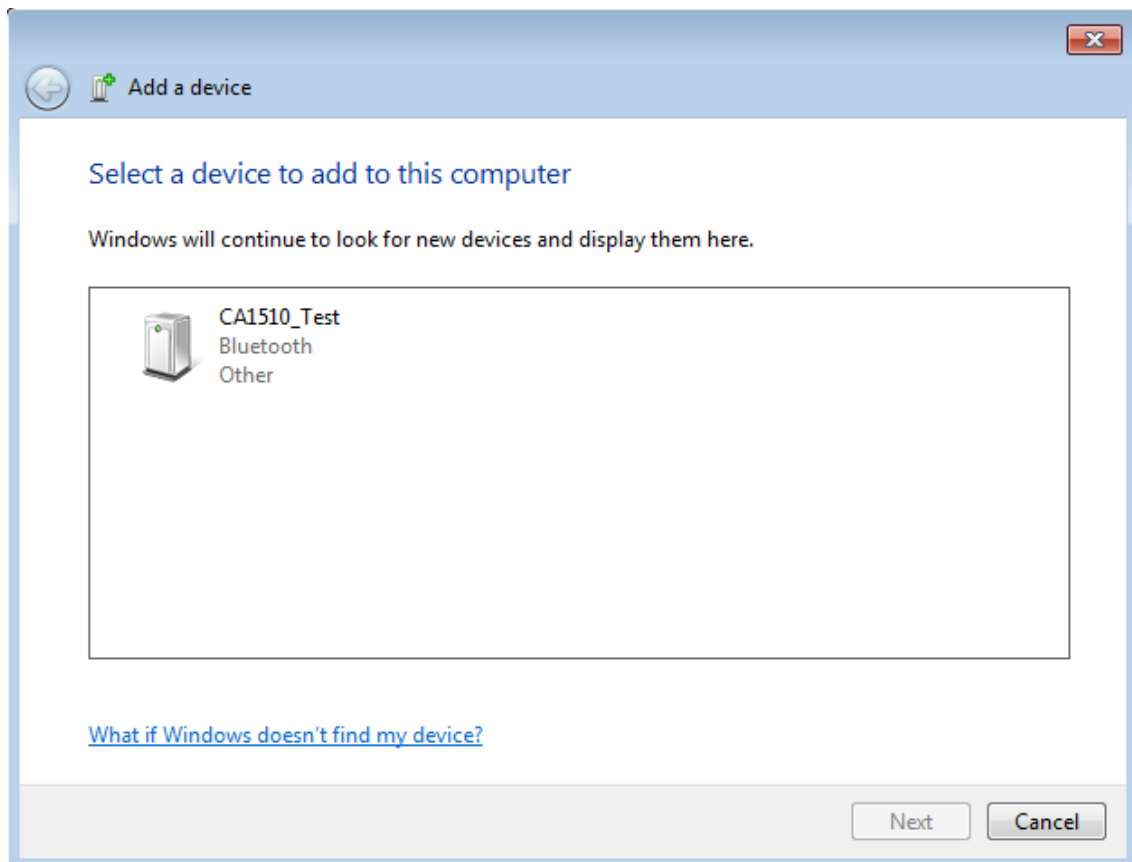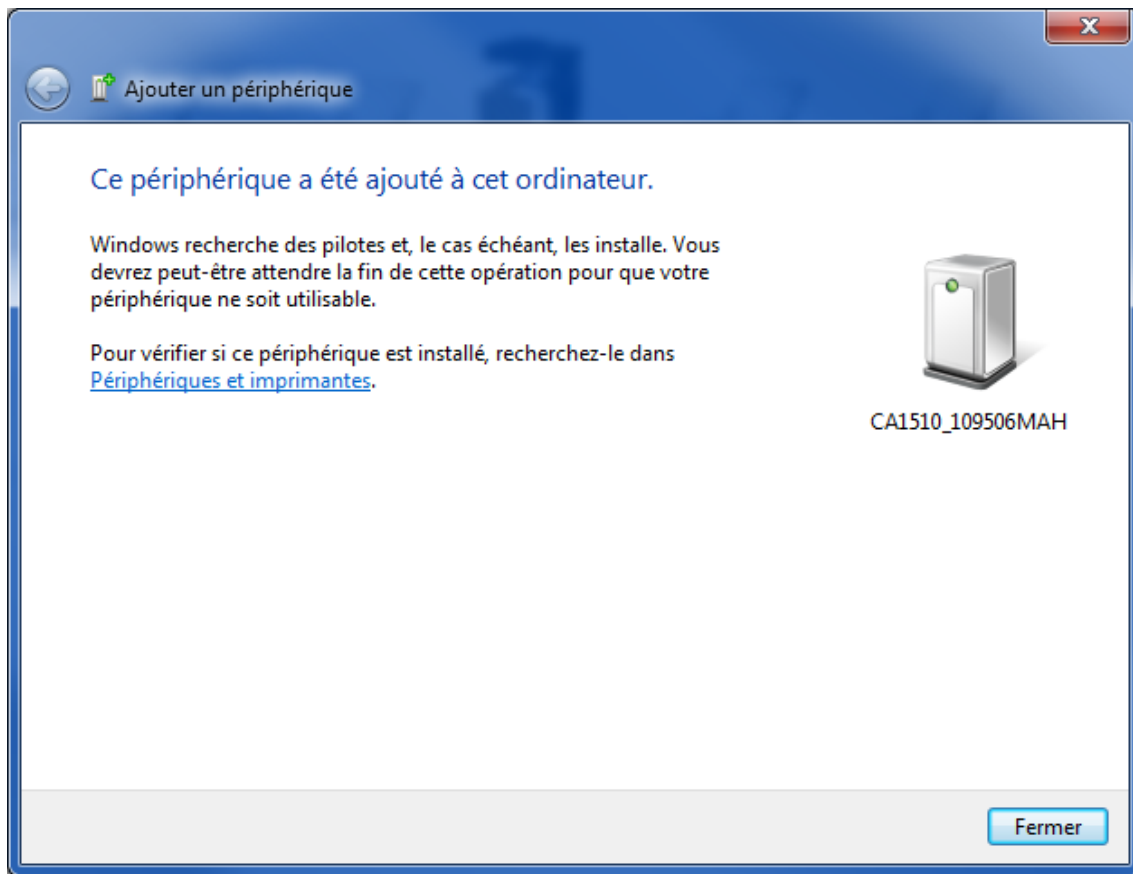
If a coupling code is requested, enter 1111.

The instrument is then ready to communicate with the PC.

4.5. DATA LOGGER TRANSFER SOFTWARE

Once the instrument has been connected to the PC, whether by USB or by Bluetooth, open the Data Logger Transfer software.

> **i** For context-sensitive information about the use of the Data Logger Transfer software, refer to the **Help** menu.

4.5.1. CONNECTING THE INSTRUMENT

- To connect an instrument, click **Add an instrument**, then choose the type of connection (USB or Bluetooth).
- A window opens with a list of all instruments connected to the PC.
  The name of the instrument will be formed from the model of the instrument and the warranty number: CA 1510 - 123456ABC
  You can personalize your instrument by adding a name, by clicking on ⚒ or 🔧 .
- Choose your instrument in the list. The software then displays complete information about the instrument and its measurements in progress.

4.5.2. DATE AND HOUR

The Instrument menu 🕐 lets you set the your instrument's date and time.
These cannot be changed while recording or when a recording session has been scheduled.
By clicking ⚒ , you can choose the date and time display formats.

4.5.3. CONFIGURE THE ECO MODE

The ECO mode optimizes the product's consumption. For the operating time range programming window, go to the **Device**, **Configure ECO mode** menu.

The default operating times in ECO mode can be modified.

4.5.4. PROGRAMMED RECORDING SESSIONS

By clicking 🔴, you can program a recording session. Assign a name to the recording session. Then enter a starting date and time and an ending date and time or a duration. The maximum duration of a recording session depends on the memory available.

Choose a sampling period. The possible values are: 1 min, 2 min, 5 min, 10 min, 20 min, 30 min, 1 hour and 2 hours. The shorter the sampling period, the larger the recorded file.

Before and after the recording session, if the instrument is switched on, the sampling period will be that of the measurement mode (see 5.3).

If the instrument is off when recording starts, it switches itself on by itself. Then it displays the measurement, which it refreshes at each sampling period.

i	Before starting a recording session, make sure that the battery life is sufficient, or else connect the instrument to an external power supply to a wall outlet using a micro USB cord.

4.5.5. READING THE RECORDS

The Data Logger Transfer software lets you read the records made. Click **Recorded Sessions** under the name of your instrument to obtain a list of the records.

If the instrument turns off while recording, either because the batteries are discharged or due to the external power supply being lost, **ERR_BAT** is appended to the file name.

4.5.6. EXPORTING RECORDS

Once the list of the records is displayed, choose the one you want to export and convert it into a word-processing document (docx) or a spreadsheet (xlsx), in order to be able to use it in the form of reports or curves.

4.5.7. REAL-TIME MODE

Click Real-time data under the name of your instrument to see the measurements being made on the instrument as they are made.

4.5.8. FORMATTING THE MEMORY OF THE INSTRUMENT

The internal memory of the instrument is already formatted. But if there is a problem (if it becomes impossible to read or to write), it may be necessary to reformat it (in Windows).

i	In this case, all of the data will be lost.

- Format the device in the file explorer,
- Eject the device from the file explorer,
- Unplug the USB cord,
- Switch the device off and back on.

5. SPECIFICATIONS

5.1. REFERENCE CONDITIONS

Influence quantities	Reference conditions
Supply voltage	3 ± 0.5 V
Air pollution	no pollution (CO, solvents, etc.)

5.2. MEASUREMENT CHARACTERISTICS

5.2.1. CO_2 MEASUREMENTS

Type of sensor   Dual-beam infrared cell
Measuring principle   Non-dispersive infrared (NDIR) technology
Measurement range   0 to 5.000ppm
Intrinsic uncertainty   ±3% ±50 ppm at 25°C and 1013 mbar; in ECO mode, ±3% ±80 ppm at 25°C and 1013 mbar
Response time at 63%   195 seconds
Resolution (R)   1ppm

5.2.2. INFLUENCES ON THE MEASUREMENTS OF CO_2.

The influence of the temperature is ± 1 ppm/°C from -10 to +45°C.

The influence of the atmospheric pressure is:
- For internal software version below 5.0 $CO_{2\ real} = CO_{2\ measured}$ x (1 + (1013-P) x 0,0014)   with P= pressure in mbar.
- For version 5.0 internal software: $CO_{2\ real} = CO_{2\ measured}$ x (1 ± (1013-P) x 0,00014)   with P= pressure in mbar.

5.2.3. TEMPERATURE MEASUREMENTS

Type of sensor   CMOS
Measurement range   -10 to +60°C
Intrinsic uncertainty   ±0.5°C at 50% RH
Influence of relative humidity   ±0.5°C ±R from 10 to 40% RH
                                   Outside of the range stated above, ±0,032 x (T-25°C) ± R
Resolution (R)   0.1°C or 0.1°F

5.2.4. HUMIDITY MEASUREMENT

Type of sensor   Capacitive
Measurement range   5 to 95 %RH
Intrinsic uncertainty   ± 2 %RH ± R from 10 to 90 % RH
                             ± 3 %RH ± R outside of the range stated above.
Resolution (R)   0.1 %RH
Measurement hysteresis   ± 1 %RH
                             Note: Prolonged exposure to values outside the 10% to 80% range may lead to a measurement bias of as much as ± 3 %RH. This bias disappears after 5 days at between 20 and 30°C and 40 and 75% RH.
Rate of increase of intrinsic uncertainty   < 0.5 %RH/year.

5.2.5. INFLUENCE OF THE TEMPERATURE ON THE RELATIVE HUMIDITY MEASUREMENT

Relative humidity (%)

RH \ Temp (°C)														
±5	±5	±5	±4	±4	±3	±4	±4	±4	±4	±4	±4	±4	±5
±5	±5	±4	±3	±2	±2	±2	±3	±3	±3	±3	±4	±4	±4
±5	±4	±4	±3	±2	±2	±2	±3	±3	±3	±3	±4	±4	±4
±4	±4	±4	±3	±2	±2	±2	±3	±3	±3	±3	±3	±3	±4
±4	±4	±4	±3	±2	±2	±2	±3	±3	±3	±3	±3	±3	±3
±4	±4	±4	±3	±2	±2	±2	±3	±3	±3	±3	±3	±3	±3
±4	±4	±3	±3	±2	±2	±2	±2	±3	±3	±3	±3	±3	±3
±4	±3	±3	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±3
±4	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±3
±4	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±3
±4	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±3
±4	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±3	±3
±4	±3	±3	±2	±2	±2	±2	±2	±2	±2	±2	±2	±3	±3
±4	±3	±3	±2	±2	±2	±2	±2	±2	±2	±2	±2	±3	±3
±4	±4	±3	±2	±2	±2	±2	±3	±3	±3	±3	±3	±3	±3
±4	±4	±4	±3	±2	±2	±2	±3	±3	±3	±3	±3	±3	±3
±5	±4	±4	±3	±2	±2	±2	±3	±3	±3	±3	±3	±4	±4
±8	±5	±5	±4	±3	±2	±3	±4	±4	±4	±4	±4	±4	±4
±8	±8	±8	±6	±5	±3	±5	±5	±5	±5	±5	±5	±5	±5

Relative humidity axis: 0–100 %. Temperature axis: 0–70 °C.

5.3. MEASUREMENT MODES

Measurement modes	Displayed value	Rate of display of CO_2	Rate of polling of the temperature and relative humidity sensors
Portable	Average of 11 successive measurements	Every 15 seconds	Every 2 seconds
1D and 3D	Average	Every minute	Every 2 seconds
ECO	Instantaneous, not averaged	Every 10 minutes	Every 5 seconds
P_REC	Average	User-programmable	User-programmable

5.4. POWER SUPPLY

Batteries: 2x1.5V AA/LR6
                 CR1225 for the internal clock

Mean battery life (without backlighting and Bluetooth):
■   In portable mode: 15 days
■   In 1D 3D mode: 45 days
■   In ECO mode: approximately 1 year
■   In P_REC 10 minutes mode: 45 days

It is possible to use rechargeable storage batteries but the life between charges will be shorter.

Connected to mains using the mains--micro USB adapter provided. The batteries are not used while the device is connected to mains.

5.5. RECORDING

Memory: 1,000,000 measurements (8 MB)
FAT12 Format

5.6. ENVIRONMENTAL CONDITIONS

Use indoors
Operating range   -10 to +60°C and 5 to 95%RH
Range in storage (without battery)   -20 à +60°C
Altitude   <2.000m

5.7. BLUETOOTH LINK

Bluetooth 2.1
Class 1
Band: 2 400 – 2 483.5 MHz
Nominal output power: +12dBm

The instruments are in compliance with directive RED 2014/53/EU and with FCC regulations.

The Bluetooth module is certified in compliance with the FCC regulations under number QOQBT121.

5.8. MECHANICAL CHARACTERISTICS

Dimensions (L x W x H)   125 x 65.5 x 32 mm
Weight   approximately 190 g
Protection class   IP 40 per IEC60529.
                                 IK 04 per IEC50102
Free fall test   Per IEC/EN 61010-2-030 or BS EN 61010-2-030

5.9. COMPLIANCE WITH INTERNATIONAL STANDARDS

Compliant with IEC/EN 61010-2-030 or BS EN 61010-2-030 safety standard for voltages of 50V in category II.

5.10. ELECTROMAGNETIC COMPATIBILITY

Emissions and immunity in an industrial setting compliant with IEC/EN 61326-1 or BS EN 61326-1.

6. MAINTENANCE

⚠️ Except for the batteries, the instrument contains no parts that can be replaced by personnel who have not been specially trained and accredited. Any unauthorized repair or replacement of a part by an "equivalent" may gravely impair safety.

6.1. CLEANING

Disconnect the instrument completely and switch it OFF.

Use a soft cloth, dampened with soapy water. Rinse with a damp cloth and dry rapidly with a dry cloth.

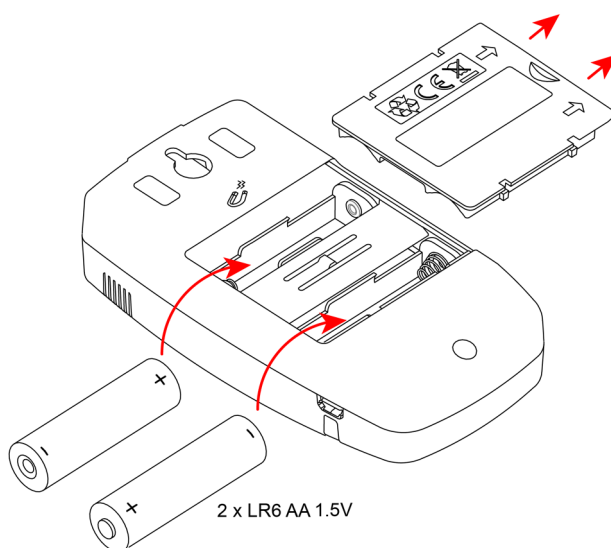Take care to keep the sensor intakes perfectly clean.

6.2. REPLACEMENT OF THE BATTERIES

The ▭ symbol indicates that the batteries are spent and must be changed.

To replace the batteries, proceed as follows:
■   Switch the device off.
■   Slide the battery compartment cover off.

2 x LR6 AA 1.5V

- ■ Remove the old batteries.

🗑 Spent batteries must not be treated as ordinary household waste. Take them to the appropriate recycling collection point.
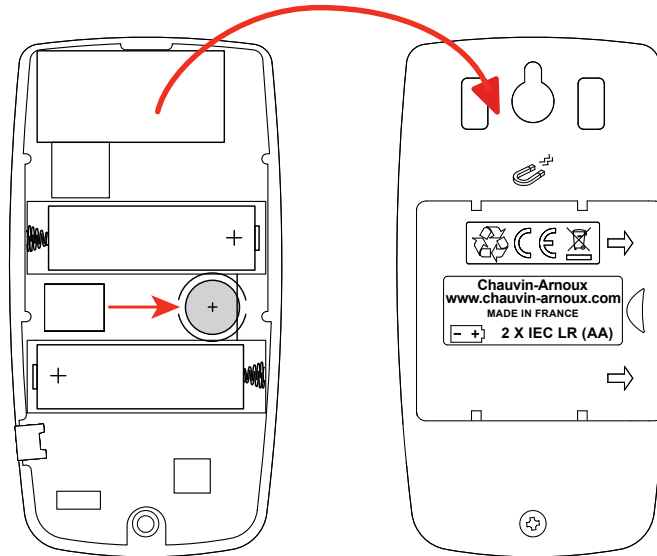

- ■ Insert the new batteries with the correct polarity.
- ■ Close the battery compartment cover: make sure that it is completely and correctly closed.

6.3. REPLACING THE INTERNAL CLOCK BATTERY

To replace the internal clock button battery:
- ■ Turn the instrument off and turn it over.
- ■ Unscrew the instrument closing screw.
- ■ Remove the back.

- ■ Remove the used button battery by lifting it and replace it with the new batter, respecting the polarity.

🗑 Spent batteries must not be treated as ordinary household waste. Take them to the appropriate recycling collection point.

- ■ Replace the back of the instrument, making sure it is fully and correctly closed.
- ■ Tighten the screw.

7. WARRANTY

Except as otherwise stated, our warranty is valid for **24 months** starting from the date on which the equipment was sold. The extract from our General Conditions of Sale is available on our website.
www.group.chauvin-arnoux.com/en/general-terms-of-sale

The warranty does not apply in the following cases:

- Inappropriate use of the equipment or use with incompatible equipment;
- Modifications made to the equipment without the explicit permission of the manufacturer's technical staff;
- Work done on the device by a person not approved by the manufacturer;
- Adaptation to a particular application not anticipated in the definition of the equipment or not indicated in the user's manual;
- Damage caused by shocks, falls, or floods.

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