

CARBON DIOXIDE CO2 CO2-SS-20 ANALYSER USER MANUAL



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1. INTRODUCTION

The CO2-SS-20 is an handheld Carbon Dioxide (CO₂) analyser, which offers simple and highly accurate CO₂ analysis with fast and intuitive touch screen interface.

The unit has been specially developed to measure, verify and validate CO₂ levels in CO₂ incubators, proving popular in medical departments, research and laboratories. The product is also utilised by field service engineers to repair, validate and calibrate CO₂ incubators and equipment.

Patented dual beam selective infrared sensor technology ensures extremely fast start and minimal warm up time. This advanced equipment offers an host of advantages, as well as ease of use for all personnel, extending appeal of the CO₂-SS-20 into the more traditional areas of CO₂ measurement, including horticulture, air quality and safety.

The CO₂-SS-20 CO₂ Analyser is extremely easy to use but it is essential that these Operating Instructions are read prior to use.

2. Getting Started

2.1 Case contents

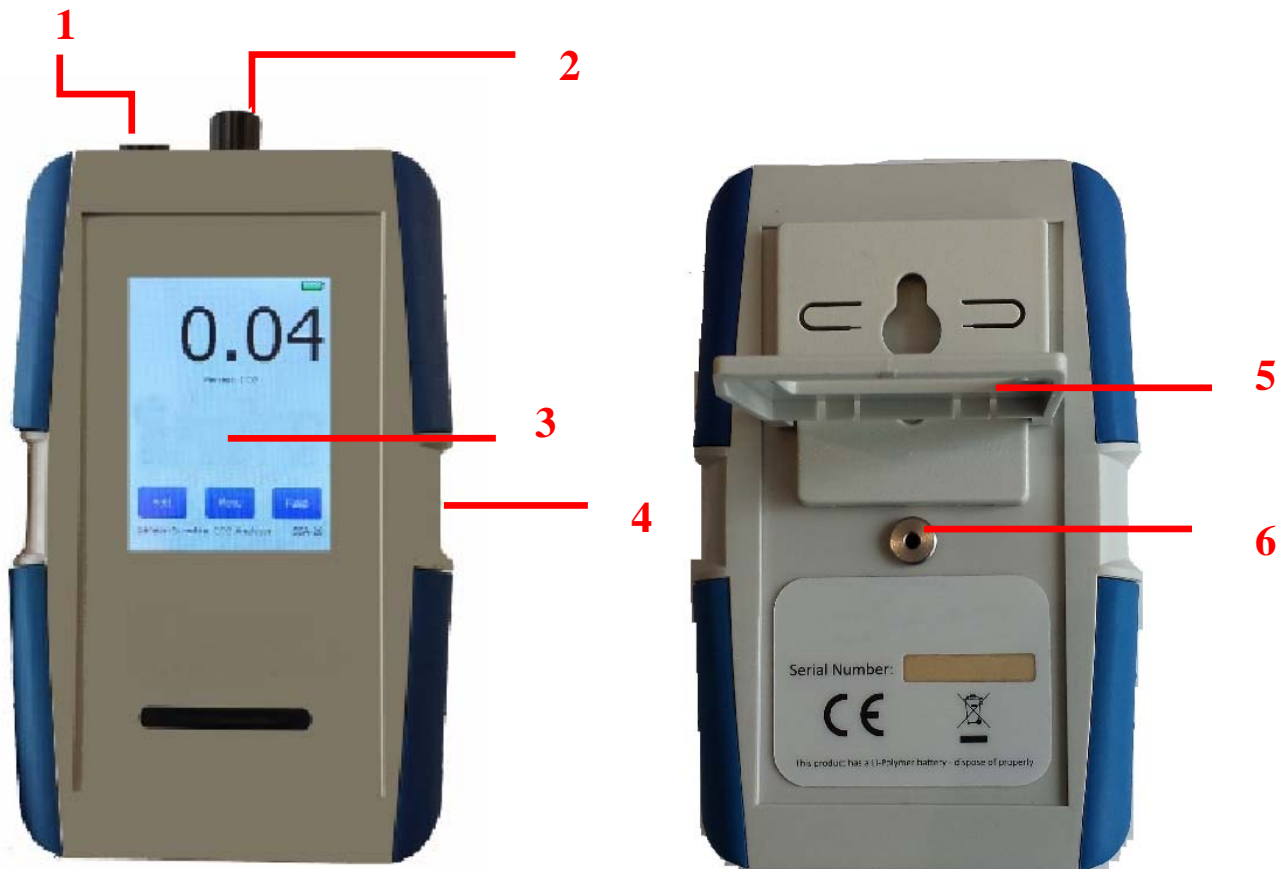
1. CO₂-SS-20 CO₂ Analyser
2. 1 metre of sample tubing with filter and 1 x Spare Filter
3. User Manual
4. Mains charger with UK AC head
5. USB A Male to Right Angle Mini USB
6. US, EU and AU Mains charger heads



Getting Started

2.2 Device Layout

1. On/Off Button
2. Gas Inlet Luer
3. Touch screen
4. USB/ charging port
5. Tilt stand
6. Gas outlet



Getting Started

2.3 Charging the battery

Use the charger to charge the battery before using it for the first time. A computer can be used to charge the device by connecting via the USB cable.

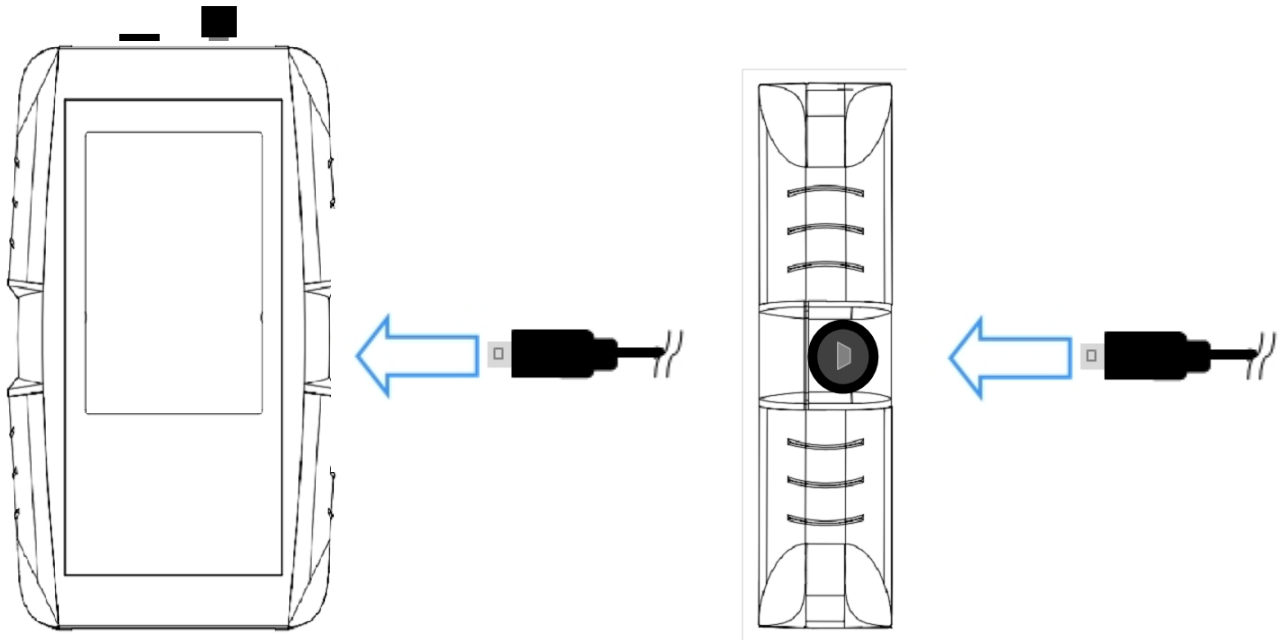
NOTE: The device should always be switched On while charging.

The device can be used while it is charging but it may take longer to fully charge the battery.

IMPORTANT NOTE: Use only the approved chargers, batteries, and cables. Unapproved chargers or cables can cause the battery to explode or damage the device.

Charging with the charger

Connect the USB cable to the USB power adaptor and then plug the end of the USB cable into the CO2-SS-20 USB port.



IMPORTANT NOTE: Connecting the charger improperly may cause serious damage to the device. Any damage caused by misuse is not covered by the warranty.

Checking the battery charge status

When charging the device the battery charge status icon will appear in the middle of the screen:



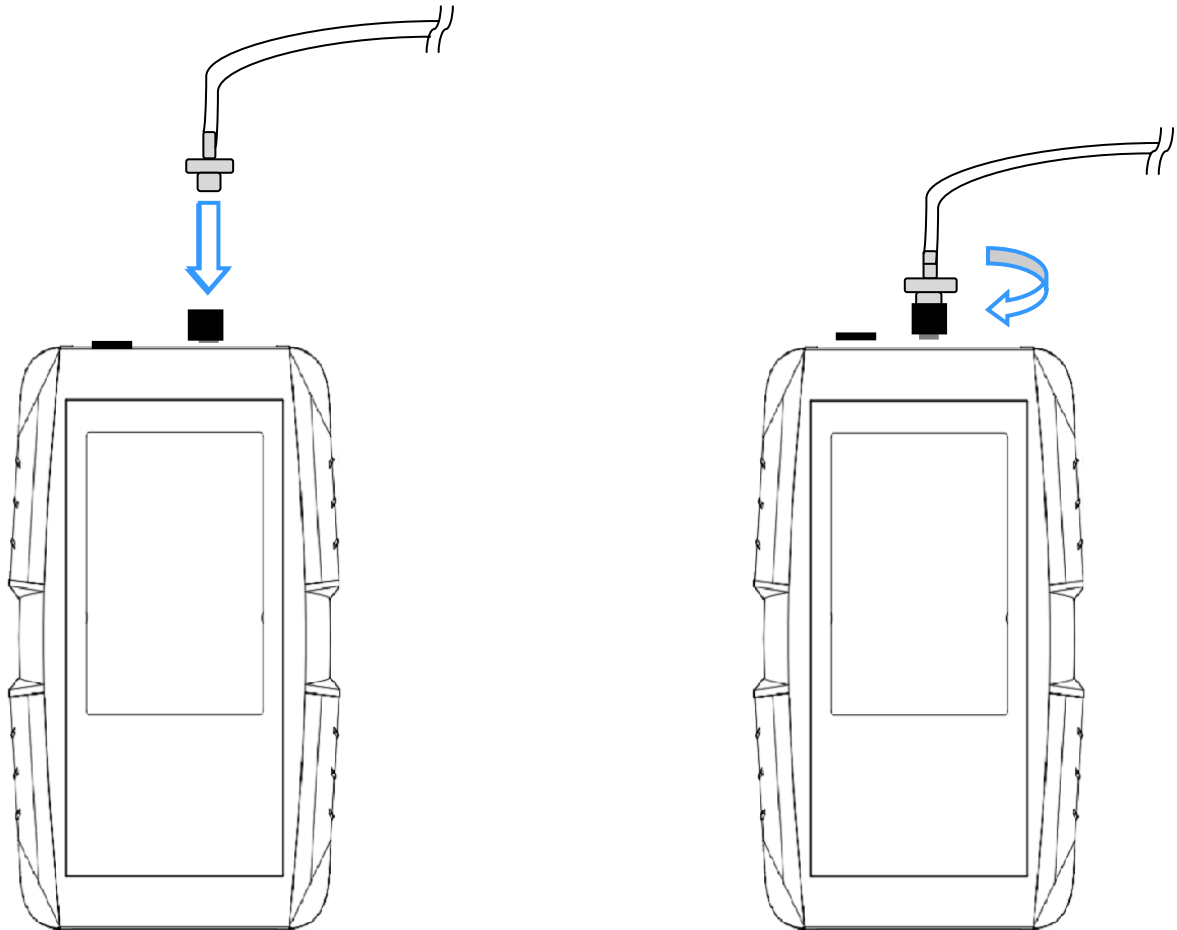
After fully charging, disconnect the device from the charger.

Getting Started

2.4 Connecting the tubing and filter


IMPORTANT NOTE: Always ensure that the filter provided is used.

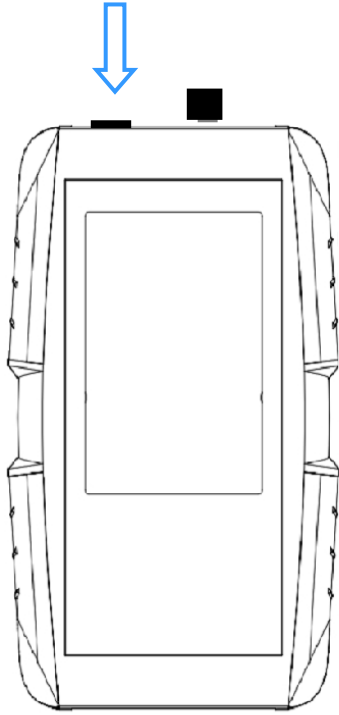
Connect the filter and tube to the gas inlet luer connector. Push the filter onto the luer and twist clockwise to lock.




3. Operation

3.1 Switching the unit ON/OFF

Press the  button. The unit is now switched on.







After being turned on, the unit will start up within 6 seconds and the current CO₂ measured value will be displayed.

To turn the analyser off, press the  button again.

3.2 Indicator icons

The icons displayed on the screen provide information about the status of the device. The icons listed in the table below are most common.

Icon	Meaning
	Battery power level
	Pump running
	Measurement 'Hold' enabled
	Battery level low connect charger

3. Operation

3.3 Home Screen layout

The Home screen is the starting point to access all of the device's features. It displays the currently measured "PERCENT CO2" level, indicator icons, Hold, Menu and Pump buttons.

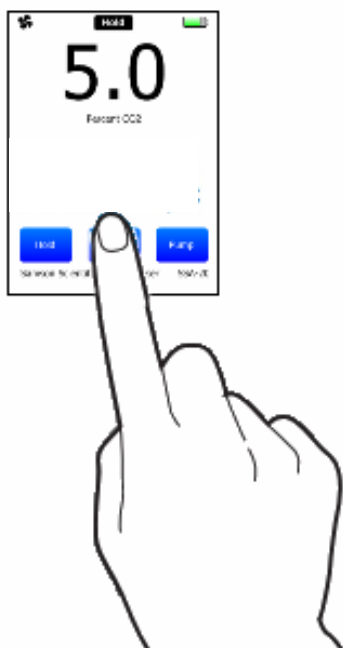


3.4 Using the touch screen

IMPORTANT NOTE: Use only fingers to use the touch screen.

- Do not allow the touch screen to come into contact with other electrical devices as electrostatic discharges could cause the touch screen to malfunction.
- Do not allow the touch screen to come into contact with water. The touch screen may malfunction in humid conditions or when exposed to water.
- To avoid damaging the touch screen, do not tap it with anything sharp or apply excessive pressure to it with your fingertips.

To operate any of the on-screen buttons, tap it with a finger.



3. Operation

3.5 Sampling/Measuring Mode

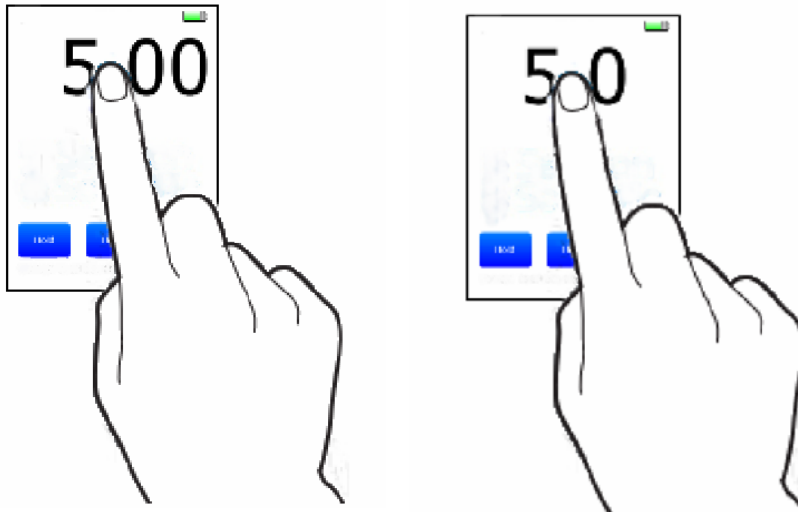
IMPORTANT NOTE: Always ensure that the filters provided are used and replaced regularly

IMPORTANT NOTE: Before each day of use, we recommend that the unit is zeroed in air by following the “Calibrate in Air” procedure in Section 4. Calibration.

To turn on the integral gas pump, briefly press the **Pump** button.
To turn off the pump, again briefly press the **Pump** button.

3.6 Resolution adjustment

To adjust the measurement resolution from 1 decimal place to 2 decimal places tap the “Percent CO2” area of the screen:



3.7 Measurement procedure

When sampling the CO₂ level of a CO₂ Incubator, connect the unit tubing to the sample port and press the **Pump** button to turn on the metering gas pump.

A sample of the atmosphere from the CO₂ Incubator will then be drawn in through the tube and the “PERCENT CO₂” reading will start to change as the gas to be measured is drawn into the unit.

Monitor the reading until it stabilises. This will typically take around 90 seconds.

Take note of the reading and press the **Pump** button to turn off the metering gas pump.

IMPORTANT NOTE: As the atmosphere in an incubator is normally kept at a high humidity, we recommend that you DO NOT leave the analyser sampling on a humidified incubator for longer than 2 minutes. After sampling on a humidified Incubator for a long period, we recommend that you continue to run the analyser pump in air for 30 seconds to flush out any humidity which could have built up inside the sensor.

4. Calibration

IMPORTANT NOTE: Before each day of use, we recommend that the unit is zeroed in air by following the “Calibrate in Air” procedure below.

ZERO CALIBRATION

The analyser can be calibrated in clean outside air or by using Nitrogen.

Calibrate in Air

IMPORTANT NOTE: It is essential to ensure that the unit is in clean air in an outdoor environment before attempting an air calibration and ensure your exhaled breath does not affect the procedure. Failure to adhere to these guidelines could result in an incorrect calibration result.

- From the home screen, press **Menu**
- Press **Calibrate in Air** and follow the on screen instructions.
- Press the **Pump** button and run the pump for 1 minute. When the reading has stabilised, press **Calibrate** and the unit will adjust the level to atmospheric CO₂ 0.04%.
- Press the **Pump** button to switch off the pump.
- Press the **Back** button two times to return to the home screen.

Calibrate in Nitrogen

- From the home screen, press **Menu**
- Press **Calibrate in Nitrogen** and follow the on screen instructions.
- Connect a Nitrogen source with pressure set no higher than 0.3L/min and press the **Pump** button.
- Run the pump for 90 seconds and when the reading has stabilised press **Calibrate** and the unit will adjust the level to CO₂ 0.00%.
- Press the **Pump** button to switch off the pump.
- Press the **Back** button two times to return to the home screen.

Reference to Calibrated Gas

NOTE: There should be no need to Reference the analyser to a calibrated gas mixture between service intervals but if you do wish to verify the calibration using a calibrated gas mixture, it is essential to ensure that the unit is zeroed in clean air in an outdoor environment before referencing. Ensure your exhaled breath does not affect the procedure during the air calibration, as failure to adhere to these guidelines could result in an incorrect calibration result.

- From the home screen, press **Menu**
- Press **Reference to Calibrated Gas** and follow the on screen instructions.
- Connect a calibration gas supply with pressure set no higher than 0.3L/min and press the **Pump** button.
- Enter the value of the calibration gas cylinder by using the **Down** and **Up** buttons. The default value is 5.00 but this value can be adjusted to any level from 0-21%.
- Run the pump for 90 seconds and when the reading has stabilised, press **Calibrate** and the unit will adjust the measured level to CO₂ 5.00%.
- Press the **Pump** button to switch off the pump.
- Press the **Back** button two times to return to the home screen.

5. Available Analysers & Accessories

CO2 Analyser Accessories	Part Number
CO2-SS-20 CO2 Analyser with hard case	20-001
Spare Inlet filter pack (2 filters)	20-005
Spare length of sample tubing with filter	20-006
Car charging adapter	20-007
Spare mains charger kit	20-008
Annual Calibration	20-009
Full service & Calibration	20-SERV
Hard Carry Case	20-CASE

6. Service, Factory Calibration, Technical Support & Warranty

Servicing

There are no user-serviceable parts inside the CO2 Analyser. Unauthorised removal of the rear cover of the unit will invalidate the warranty.

Your CO2 analyser should be regularly calibration checked - a range of calibration check gases can be supplied directly by Air Products plc (details on request). We recommend the analyser is serviced at regular intervals (twelve months) – servicing is available from Euro-Gas.

The inline filter, connecting to the gas inlet port must be replaced when the PTFE membrane becomes contaminated or saturated with moisture. New filters are available from Euro-Gas.

Getting Technical Support

If you have questions about the use or features of your CO2 Analyser or have any issues, please email: sales@euro-gasman.com. When contacting us for support, please include as much information as you can, along with the Serial Number of your unit. This will allow us to help you more quickly.

Warranty

Euro-Gas warrants this unit to be free of defects in materials and workmanship for a period of 12 months from date of despatch. If the unit malfunctions, it should be returned to the factory for evaluation. Upon examination by Euro-Gas, if the unit is found to be defective within the warranty period, it will be repaired or replaced at no charge. Our WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorised modification.

This WARRANTY is VOID if the unit shows any evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion, current, heat, moisture, vibration, improper specification, misapplication, misuse or other operating conditions outside of the manufacturer's control. The warranty excludes:

damages attributable to improper use, normal wear and defects that have only a negligible influence on the device's value or suitability for use.

Liability for the functioning of the CO2-SS-20 unit shall pass at all events to the owner or operator if the unit is improperly maintained or repaired or if it is used other than for its intended purpose. Euro-Gas accepts no liability for damage caused by failure to observe the above information. The warranty expires in the event that work is carried out by agents we have not authorised or if parts are used other than original spare parts.

Claims under the warranty may be made in all countries where this device is sold by authorised dealers.

In the event of any claim under the warranty, please return the device to us. The buyer shall bear the costs of transportation and the risk while the device is in transit. The execution of work under the warranty does not affect the warranty period in any way. The above information does not extend the conditions of warranty and liability contained in the Terms and Conditions of Sale and Delivery of Euro-Gas Management Services Limited.

Packaging & Transportation

This unit is supplied together with these operating instructions. Please check the packaging for any damage when the product is delivered and report any damage immediately to the forwarding agency and dealer. Do not throw or drop, as the unit may be damaged or scratched. Protect against wet conditions, humidity, dirt and dust.

This device is a measuring instrument with sensitive electronic components. When returning it, please use the appropriate class of packaging according to the applicable regulations.

Disposal

Obsolete devices should be rendered unusable and disposed of according to the relevant regulations. Please contact your local authority for information about disposal.

The data contained in this document is believed to be accurate and reliable. The data given is for guidance only. Euro-Gas Management Services Ltd accepts no liability for any consequential losses, injury or damage resulting from the use of this datasheet or the information contained in it. Customers should test the equipment under their own conditions to ensure that the equipment is suitable for their own requirements and in accordance with the plans and circumstances of the specific project and any standards/regulations pertaining to the country in which the units will be utilised. This datasheet is not intended to form the basis of a contract and in the interest of product improvement, Euro-Gas reserves the right to alter design features and specifications without notice.
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