



TechGrow HS-1 PORTABLE CO₂ METER



Software version: 1.00

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MANUAL



TechGrow HS-1

USER MANUAL

CONGRATULATIONS!

You have just purchased the TechGrow HS-1 Portable CO₂ meter.

The HS-1 is ideal for measuring the CO₂ value and the temperature in any type of area.

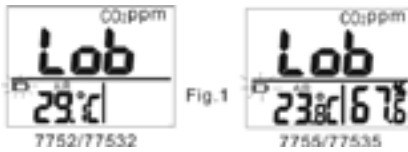
The TechGrow HS-1 Portable CO₂ Meter uses NDIR (Non-Dispersive Infra Red) technology for high-reliability readings.

SPECIAL FEATURES:

- Useable in any room.
- Extremely accurate CO₂ sensor, produced by SenseAir® Sweden, the leading manufacturer in CO₂ measurement.
- The HS-1 measures the CO₂ value and temperature.
- Takes a measurement every second.
- Backlight for working in dark areas.
- CO₂ warning alarm.
- Calibration function for CO₂.
- Powered by 4 x AA batteries.
- CO₂ range: 0-10000 ppm.
- Temperature range: -10° to 60° C.
- Accuracy CO₂ ± 50 ppm or ± 5% of the measurement (0-2000).
- Size 60 x 170 x 55 mm.
- Includes batteries and instruction manual.
- Includes convenient storage case.

POWER SUPPLY

The HS-1 Portable CO₂ meter is powered by 4 x AA batteries. Install the batteries into the battery compartment on the back side and make sure that the batteries make contact correctly. When the battery voltage is low, “LOB” will appear on the LCD display and the HS-1 will beep to indicate that CO₂ measurements have failed. Therefore, measurements will not be displayed. Press any key (except “SET”) to stop the beeping. Replace batteries.



LCD DISPLAY



SYMBOLS:

- HOLD Shows the last CO₂ value and temperature
- MIN/MAX Minimum/Maximum measurements
- LOB Low battery indicator
- AIR Temperature
- °E (C/F) Celsius/Fahrenheit

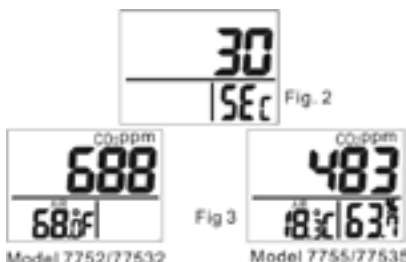
KEYPAD:

- SET: On/Off button, enters set up menu.
- CAL/Esc: Exit set up menu.
- CAL/Esc and MODE: Enters CO₂ calibration by pushing these buttons simultaneously.
- HOLD: Freezes current measurement, switches HOLD function on/off.
- MODE: Activates backlight, selects unit or increases or decreases value in setup.
- DP/WBT: Selects Air-, DP-, WBT temperature display.
- Mnx/AV: Activates MIN/MAX function. Saves and resets MIN/MAX settings. Also shows MIN/MAX values.

OPERATION:

Power ON/OFF

Press “SET” to activate or deactivate the HS-1. When the meter is activated you will hear a short beep. Then the meter runs a 30 second countdown to warm up. After warm up, the normal mode with the current CO₂ value and temperature will appear on the display.





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MEASURING CO₂:

The HS-1 will start measuring after countdown and takes a measurement every second.

NOTE: Keep sufficient distance between faces and the meter because exhaled breath affects the CO₂ value. The HS-1 measurements are very accurately between 0-2500ppm. From 2500ppm and up, the measurements of the CO₂ sensor will be less accurate.



DATA HOLD:

Press “HOLD” to read the measurements. The “HOLD” icon will appear on the left top on the LCD display. All displayed measurements will maintain unchanged. Press “HOLD” again to deactivate this function. .



BACKLIGHT

Press “MODE” for longer than 2 seconds to activate/deactivate the backlight function.

ALARM

The HS-1 also features an audible alarm that gives warnings when the CO₂ value exceeds the maximum (see P1.0 for Alarm setup). The HS-1 will beep (80 db) when the CO₂ value exceeds the set-value and can be switched off by pressing a random key, except “SET”. Restart the HS-1 if the beeping does not stop.

AUTO POWER OFF

The HS-1 will be deactivated automatically after 20 minutes of no activity. To disable this function, press “SET” and “HOLD” simultaneously for 2 seconds to reactivate the HS-1, until “n” appears on the display. NOTE: the Auto sleep function will be stopped during the calibration mode

SETUP

Press “SET” in normal mode for more than 1 second to access the setup mode. To exit the setup mode, press “CAL/Esc” in P1.0 or P3.0 and the HS-1 will return to normal mode.

P1.0 CO₂ ALARM

In the setup mode, “P1.0” and “AL” are shown on the LCD display.

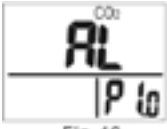


Fig. 10



Fig. 11

Press “MODE” to increase the value or press DP/WBT to decrease value. With every push on these buttons, the alarm will be increased or decreased with 100 ppm from 100 to 9900 ppm. When the desired alarm value is set, press “Mnx /AV” to save or press “CAL/Esc” to return to “P1.0” saving all settings.

P3.0 TEMPERATURE SCALE (°C OR °F)

Press “MODE” or “DP/WBT” in “P1.0” to enter “P3.0” to adjust the temperature scale. Press “Mnx/AV” in front of “P3.1” with the blinking °C bottom left of the LCD display (to switch between °C or °F, press “MODE” or “DP/WBT”). Next, press “Mnx/AV” to save or press “CAL/Esc” to return to “P3.0” without saving any settings.

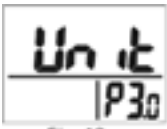


Fig. 12

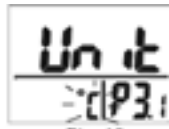


Fig. 13

CO₂ CALIBRATION

The meter is calibrated at 400ppm at the factory.

Only calibrate the sensor if you suspect a deviation. Our experience has shown that the SenseAir® sensors that we use can function for two years without calibration, easily.

The sensors are calibrated at the factory with the highest accuracy, but it may occur that after one year the sensor shows a deviation and has to be calibrated again.

WARNING:

Do NOT calibrate the meter in an area of which the CO₂ value is unknown. Otherwise, the meter will be calibrated automatically as 400ppm, which will lead to inaccurate measurements. It is advised to conduct a manual calibration in outdoor air when the weather is sunny.

+Place the HS-1 on the calibration site.

+Activate the HS-1 and press “CAL/Esc” and “MODE” simultaneously to enter the CO₂ calibration menu.

+400ppm and “CAL” are now blinking on the LCD display while the calibration is busy.

+Wait for 5 minutes until the blinking stops and the calibration is finished and returns to normal mode.

To stop the calibration, you can deactivate the HS-1 at any moment. NOTE: make sure that the batteries are full during calibration to prevent interruption or failed calibration.



Fig. 14



TechGrow HS-1

USER MANUAL

PROBLEM SOLVING:

-The meter does not activate:

Press "SET" for longer than 3 seconds and try to reactivate the HS-1. Also, check if the batteries are placed correctly..

-Slow reaction:

Check if the air ducts on the back of the meter are not blocked.

-Errors:

E01: CO2 sensor is damaged.

E02: The value is under range (probably due to incorrect calibration).

E03: The value is above range.

E07: Too low voltage to measure CO2. Replace batteries.

E17: Retry calibration.

E31: Temperature sensor is damaged or defective.

[illegible]



A handheld orange device with a digital display showing '7.8' and '23.5'. It has several buttons and a probe at the top.

- Compact and accurate portable handmeter
- Measures CO₂ value and temperature
- CO₂ warning alarm
- Calibration function for CO₂

Portable CO₂ Meter HS-1



A white wall-mounted device with a circular sensor and a small display. A SIM card is visible in a slot on the left.

- Placeable in any room
- Works using standard text messages
- Manageable by up to 3 different people
- Up to 8 different contacts for alarms

Alarm detector AM-1



A small white device with a digital display showing '895 PPM'. It has two black knobs and a green logo that says 'TechGrow T-Micro'.

- Plug & Play
- Extremely accurate CO₂ sensor
- Smallest of its kind
- Easy to use

CO₂ Controller T-Micro



A white rectangular device with two blue connectors on the front. One is labeled '12V' and the other '12V/600W'.

- Back-up for up to 24 hours
- Works with any 12 Volt car battery
- Installed in a couple of minutes
- Optional: Mobile phone feedback module

Powerbox PB-600