



Vent Check Pro (CO + CO₂)



- Triple reading and display of CO₂, CO and temperature
- NDIR sensor for CO₂ detection
- Datalogging capability (downloadable via USB)
- Statistics of weighted averages
- BS8494 compliant (from 10 - 60 °C)
- Backlight for working in dark areas
- Programmable and audible warning alarms
- Easy manual fresh air correction on CO₂
- PC connection via USB interface
- With hard case and power adaptor
- Can be used with rechargeable batteries

Operation

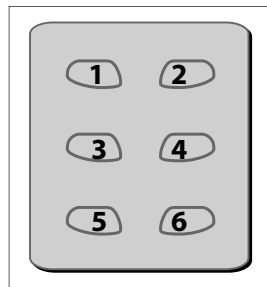
Press button 1 to turn the meter on and off.

After a 30 second warm-up the meter is ready to use and will display the normal operating screen (Fig. 2). To skip the warm up, press and hold button 6 for 2 seconds. It is advisable, however, to allow the unit to perform its full setup.

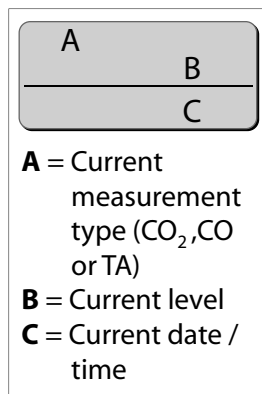
During operation the display will automatically cycle through the current level of CO₂ and CO. Press button 5 to see the current air temperature.

Pressing button 6 will cycle through minimum, maximum, average and current readings. In this mode the time at the bottom will change to show you how long you have been in this mode. cycle through the minimum, maximum and average readings of each parameter automatically. To return to normal mode, press button 3.

Pressing button 2 will hold all current readings and HOLD flashes in the top left of the screen. Press again to exit hold mode.



Keypad (Fig. 1)



Normal Operation (Fig.2)

Pressing any button will turn the backlight on for 10 seconds.

The unit will turn off automatically after 20 minutes of inactivity. To override this function, turn the unit off then restart it by holding down button 2 then turning it on with button 1.

The meter will take a new reading every second. When the operating conditions change, the unit will respond in 30 seconds for CO₂.

When battery supply is low, 'Lob' will be displayed. Change the batteries or connect the DC adaptor.

NOTE: Do not hold the meter close to the face as exhalation can affect CO₂ readings.

Recording (Manual)

The Vent Check Pro can manually record up to 99 points of data.

In normal mode, press button 4 to record a data point. The REC icon flashes on screen for about 3 seconds and the screen displays the data point number (1 - 99). Each point recorded contains information on the current CO₂, CO and air temperature.

You can view all manually recorded data points at any time by using button 5. Press and hold it for 2 seconds

or more until 'Recall' appears on screen.

Press buttons 2 and 4 to cycle up and down through all recorded data points stored on the unit. The data point number will appear on screen first, followed by the stored reading. Pressing button 5 will then cycle through each parameter. The time at which the data was recorded will also appear at the bottom of the screen.

To exit the recall mode, press button 3.

Recording (Automatic)

As well as recording data manually, the Vent Check Pro also allows you to datalog automatically. The unit can store up to 30,000 data points (10,000 data points each for CO₂, CO and temperature). The sampling rate can be altered in the advanced setup menu and can be set from 1 second to 4 hours, 59 minutes and 59 seconds.

To begin datalogging press button 3 for 2 seconds. The REC icon will flash at the bottom of the screen. Pressing button 3 again for 2 seconds will stop the datalogger. NOTE: Each time you start the datalogger you will overwrite the previously recorded data.

During datalogging you can still cycle through all three parameters.

Setup

To enter setup, make sure the unit is turned off then press and hold button 1 for more than a second. To exit this at any time, simply press button 3.

There are six setup options within this menu;

- **CLr** - Clears all manually stored data points
- **ALAr** - Determines the CO & CO₂ alarm threshold
- **unit** - Changes the display between °C and °F
- **rATE** - Sets the sampling rate for the datalogger
- **PrES** - Pressure compensation for CO₂ measurement
- **rtC** - Sets the date and time for the unit

Use buttons 2 and 4 to cycle through each of the six options and their parameters and then button 6 to confirm a selection.

CLr

To delete all manually stored data points scroll to 'yes' and confirm your selection. Press button 3 at any time to escape back to the top menu.

ALAr

To set the audible alarm threshold for CO & CO₂ detection, scroll through to the level required and confirm your selection. Available levels range from 15 to 200ppm in 5ppm increments for CO and 400 to 2000ppm in 50ppm increments for CO₂.

unit

Select whether to display the temperature on screen using degrees centigrade or fahrenheit.

rATE

Press button 6 to start setting the sampling rate. The hours will flash first, use buttons 2 and 4 to set. Pressing button 6 to move on to the minutes and repeat with the seconds. The final push of button 6 will confirm your selection and return to the main menu. The range is from 1 second to 4 hours, 59 minutes and 59 seconds.

PrES

If operating at high altitudes the barometric pressure value of this unit may need adjusting from the standard of 1013hPa. (Range is 700 - 1990hPa).

rtC

The first option that appears is whether to use the 24 hour clock or not. Select 24 or 12, confirm your selection then set the date (day, month, year) using buttons 2 and 4, followed by 6 to set it. The time can then be set (hours, minutes, seconds) by the same method.

Fresh Air Correction & Calibration

CO₂ Fresh Air Correction

It is strongly suggested that the unit be corrected in a sunny, outdoor environment that is well ventilated. Do not correct the unit in places crowded with people or close to areas with high CO₂ concentration such as ventilating outlets or fireplaces.

To correct the unit for CO₂ make sure that it is turned off and place it in the calibration site. Turn it on by pressing and holding buttons 1, 3 and 4 for 3 seconds. The unit will enter calibration mode. There are three different calibration options available to perform. Select the CO₂ option and press button 6 to start calibrating. After about 5 minutes the unit will stop flashing and calibration will be completed.

To abort correction at any time, simply turn the meter off.

CAUTION: The meter is corrected at ambient air of around 400ppm. Do not correct the meter in an environment with an unknown CO₂ concentration. Doing this could lead to inaccurate measurements.

CO₂ Levels & Guidelines

ASHRAE Standard 62-1989: 1000ppm

CO₂ concentration in occupied building should not exceed 1000ppm.

Building Bulletin 101 (BB101): 1500ppm

UK standards for schools say that CO₂ averaged over the whole day (i.e. 09:00 - 15:30) should not exceed 1500ppm.

OSHA: 5000ppm

Time weighted average over five 8-hour work days should not exceed 5000ppm.

NIOSH recommendations:

250 - 350ppm

Normal outdoor ambient concentrations.

600ppm

Minimal air quality complaints.

1000ppm

Indicates adequate ventilation; complaints such as headaches, fatigue and eye/throat irritation will be more widespread. 1000ppm should be used as an upper limit for indoor levels.

CO Levels & Guidelines

ppm	Symptoms and applicable standard
0 - 1	Normal background levels
9	Maximum indoor air quality level: Maximum allowable concentration per ASHRAE Residential standards 62-1989 for living area
25	Maximum limit 8 hrs of continuous exposure per California OSHA workplace standards
35	Maximum 8 hrs average exposure level per US OSHA workplace standards
50	Maximum concentration for continuous exposure in any 8 hrs average level per OSHA standards
100	Remove employees from enclosed space if the CO concentration exceeds 100ppm per OSHA exposure limit
200	Mild headache, fatigue, nausea and dizziness within 2 - 3 hrs
400	Frontal headache, life threatening after 3 hrs. Maximum concentration in flue gas per the US EPA and AGA standards
800	Dizziness, nausea, convulsions, death within 2 - 3 hrs
1600	Nausea within 20 min., death within 2 - 3 hrs

Specification

■ **CO₂**

Range of 0 - 9999ppm

Accuracy $\pm 30\text{ppm} \pm 5\%$ of reading

Response time <30 seconds

■ **CO**

Range of 0 - 1000ppm

Accuracy: $\pm 10\text{ppm}$ at <100ppm

$\pm 10\%$ of reading for 101 - 500ppm

$\pm 20\%$ of reading for 501ppm and above

Response time <60 seconds

■ **Temperature**

Range of -20 - 60 °C (-5 - 140 °F)

Accuracy $\pm 0.6^\circ\text{C}$ (0.9 °F)

Response time <2 minutes

■ **Warm Up**

30 seconds

■ **Operating Ranges**

From 0 ~ 50 °C , 0 ~ 95% RH (avoid condensation)

■ **Storage**

From -20 ~ 60 °C , 0 ~ 99% RH (avoid condensation)

■ **Power**

4 pcs AA batteries (rechargeable option), DC Adaptor

■ **Battery Life**

> 10 hours (Alkaline)

Troubleshooting

■ **Can't power on**

Press button 1 for more than 0.3 seconds and try again. Check whether batteries are in good contact and correct polarity is observed.

■ **Fixed readings**

Check whether data hold function was activated.

■ **Slow response**

Check whether the air flow channels on the rear are blocked.

■ **Error messages**

E01: CO₂ sensor damaged

E02: The value is under range

E03: The value is over range

E04: The original data error results in this error

E07: Voltage to measure CO₂. Replace batteries or use an adaptor

E17: Retry CO₂ calibration

E31: Temperature sensor damaged

