OPERATION MANUAL

PORTABLE IAQ METER

$C\epsilon$

INTRODUCTION

Thank you for purchasing this portable Indoor Air Quality (IAQ) meter. The meter measures the carbon dioxide (CO_2) level, carbon monoxide (CO) level, air temperature, dew point, wet bulb temperature and humidity, and is an ideal portable instrument for IAQ diagnosis.

Poor indoor air quality is considered unhealthy because it causes tiredness, loss of ability to concentrate, and even illness (for example: Sick Building Syndrome). IAQ monitoring has become widely applied in public areas such as offices, classrooms, factories, hospitals and hotels. It is also suggested in regulations of industrial hygiene in some countries (see Appendix).

The portable CO_2 meter uses NDIR (non-dispersive infrared) technology to ensure reliability and long term stability. It is useful in verifying HVAC system performance and air ventilation control.

The IAQ meter also measures carbon monoxide. CO is a colorless, odorless, and tasteless gas which is lighter than air. It is highly toxic to humans and animals.

The maximum CO indoor air quality level per ASHRAE Residential standards 62-1989 for living area is under 9ppm. Besides, it is also necessary to remove employees from enclosed space if the CO concentration exceeds 100ppm per the OSHA exposure limit. Please refer to the Appendix for the details.

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Features:
- Big LCD display with blue backlight to use in dark area
- One touch to display CO_2 /Dew Point temperature/Wet bulb temperature/
- Air temperature/Humidity/CO in turns. Designed with NDIR (non-dispersive infrared) Waveguide technology CO_2 sensor
- Programmable warning CO level
- Long term NDIR CO_2 sensor drift compensation
- Audible alarm (~80db) threshold setting Max, Min, TWA, STEL functions included Mini USB to PC download function for analysis
- 99 memory points manually recorded
- 24,000 data points auto recording
- Review 99 points manual record
- Hold function freezes current readings Wide, slotted housing design improves air ventilation for quicker and more accurate response
- Easy to manually calibrate CO_2 in fresh air (~400ppm).

MATERIAL SUPPLIED

This package contains:
- ✓ Meter
- ✓ 4 AA batteries
- ✓ Mini USB cable and software CD
- ✓ Operation manual
- ✓ Hard carrying case
- ✓ Adaptor (9V/100~240Vac)
- ✓ 33% calibration salt
- ✓ 75% calibration salt

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POWER SUPPLY

The meter is powered by either 4 AA batteries or a DC adaptor (9V/1A output).

Install the batteries into the battery compartment on the rear and make sure they are in correct polarity and good contact. When an adaptor is used, it will cut off the power supply from batteries. The adaptor can't be used as a battery charger.

When battery voltage gets low $\boxed{\text{B}}$ will appear on the LCD (Fig.1).
The CO_2 sensor cannot work normally under low voltage. Please replace with fresh batteries or connect the adaptor.

Fig.1

LCD DISPLAY

HOLD MIN MAX AVG TWA STEL CAL CO₂ CO TADPWBT
°C °F %rh ppm
REC Recall AM PM 88:88:88 🔋

8888
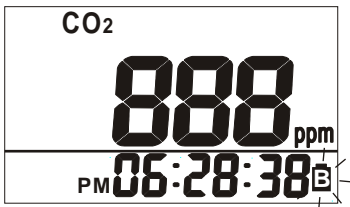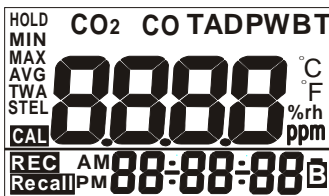
Symbols

UpperLCD	CO2/CO/Temp/RH display
LowerLCD	Clock/timer display
CO₂	Carbon dioxide reading
CO	Carbon monoxide reading
HOLD	Readings are frozen unchanged
MIN/MAX	Minimum/Maximum readings
STEL	Short-term exposure limit (15 minutes weighted average)
TWA	Time weighted average (8 hours)
🔋	Low battery indicator
DP	Dew point temperature
TA	Dry air temperature
WBT	Wet bulb temperature
%RH	Unit of relative humidity
°C/°F	Celsius/Fahrenheit temperature
CAL	In calibration mode
REC	In manual/automatic logging
RECALL	In manual records recall mode

KEYPAD

ON/OFF SET	Turns on and off the meter. Enters setup mode while meter is off. Sets as non-sleep mode with 🔼
START ESC	Exits setup/recall page. Start automatic logging.
MODE RECALL	Press to switch displayed mode. Long press to enter memory recall mode.

$\overset{\text{HOLD}}{\blacktriangle}$ Freezes the current readings.
Selects unit or increases value in setup.
Cancels data hold function.

$\overset{\text{MEM}}{\blacktriangledown}$ Press to manually record the reading.
Selects unit or decreases value in setup.

$\overset{\text{M/AVG}}{\blacktriangleleft}$ Activates MIN, MAX, TWA, TEL
function. Saves and finishes settings.

OPERATION

POWER ON/OFF

Press $\overset{\text{ON/OFF}}{\text{SET}}$ to turn the meter on and off.
At power up, it emits a short beep and
performs a 30 second countdown
(Fig.2). It then displays the normal mode
and clock (Fig.3). The real time display
will cycle between date and time in turns.

Fig.2

Fig.3

While waiting for 30 seconds to warm up
is best, for a quick start you can press
$\overset{\text{M/AVG}}{\blacktriangleleft}$ for 2 seconds to end the warm up
and show the normal display.

TAKING MEASUREMENT

The meter starts when the power is
turned on and updates readings every
second. When the operating
environment changes quickly (ex.
going outdoors on a cold day), it can
takes 30 seconds for the CO_2 level to
change and up to 30 minutes for RH.
NOTE: Do not hold the meter close to
your face. Exhalation affects the CO_2
levels.

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CO2 (Carbon Dioxide)

Press (MODE/RECALL) to switch the mode to CO2. You can view the CO2 reading in ppm or the main display (Fig.4). The lower display shows the real time clock.

CO2 688 ppm AM 06:38:38 Fig.4	**CO** 8 ppm AM 06:38:38 Fig.5

CO (Carbon Monoxide)

Press (MODE/RECALL) to switch the mode to CO. You can view the CO reading in ppm on the main display (Fig.5). The lower display shows the real time clock.

AIR, DP, WB Temperature

Press (MODE/RECALL) to switch to temperature display (Fig.6). You can view the dew point temperature, and next the wet bulb temperature (Fig.7). The lower display shows the real time clock.

TA 288 °C PM 08:08:08 Fig.6	**WBT** 208 °C 11-08-06 Fig.7

Humidity

Press (MODE/RECALL) to switch to humidity display (Fig.8). The lower display shows the real time clock.

688 %rh
11-08-08

Fig.8

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DATA HOLD

In normal display mode, press 🔲ᴴᴼᴸᴰ to freeze the readings, "HOLD" icon is flashed on the left top of LCD(Fig.9). All current readings are kept unchanged. Press 🔲ᴴᴼᴸᴰ again to cancel the hold function.
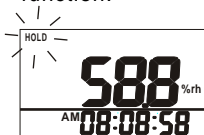

Fig.9

BACKLIGHT

The backlight will be activated for 10 seconds by pressing any key.

CURRENT MIN,MAX,STEL,TWA REVIEW

This meter allows you to check the minimum, maximum, STEL, TWA and current value from the moment you press the 🔲ᴹ/ᴬⱽᴳ key. Under normal mode, press 🔲ᴹ/ᴬⱽᴳ to see the minimum, maximum, STEL, TWA and current value in turns. Each press of 🔲ᴹ/ᴬⱽᴳ displays MIN, MAX, STEL, TWA, current value in sequence. (Fig.10~12). To return to normal mode, press the 🔲ˢᵀᴬᴿᵀ/ᴱˢᶜ key to escape (Fig.13).

If the meter is turned on for shorter than 15 mins, the STEL and TWA values will be the weighted average of readings taken since power on. The actual TWA values will appear after 8 hours.

It takes at least 5 mins to calculate STEL and TWA. The display will show "----" during the first 5 minutes after power on.

While in "HOLD" mode, STEL and TWA will update every 5 mins.

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The meter also allows you to check the min/max/STEL/TWA values calculated since power on. Under normal mode press (M.AVG) to see min/max/STEL/TWA and real time sequence. Each press of the (M.AVG) displays the sequence in turn, then returns to the current mode (Fig.10~13).

STEL and TWA are calculated for CO2 only.

In this mode, press (RECALL) to switch the displayed parameters (Fig 14).

Press the (RECALL) key to leave this mode and return to normal mode.

You can tell between the normal display and current review by checking the time display format. In normal display, the date & time display in turns. In current review, the time display is the **accumulated time** of how long you are in max/min mode.
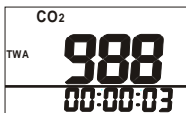
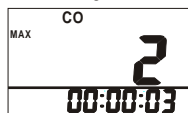|	
MIN CO2 **688** 00:00:01 Fig.10	CO2 TWA **988** 00:00:03 Fig.11
CO2 **788** 00:00:08 Fig.12	CO2 **789** AM 08:08:38 Fig.13
CO MAX **2** 00:00:03 Fig.14	**NOTE:** "MANUALY RECORD & "RECALL" FUNCTIONS ARE DISABLED IN MIN/MAX/AVG MODE. **NOTE:** TWA & STEL ARE FOR CO2 ONLY. MIN/MAX ARE FOR ALL PARAMETERS.

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The meter features a 99 point memory.

In normal or hold mode, Press $\boxed{\text{MEM}}$ key to record. **REC** icon and main display flash for about 3 seconds. The main display shows the memory serial number up to 99 points (Fig. 15).

Each memory contains all parameters (CO_2, CO, TA.....%RH), not only the parameter you choose to see on the main display.
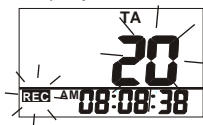

If the reading changes quickly, you can press $\boxed{\text{HOLD}}$ to freeze the reading before manually recording the data.

Fig.15

The manually recording function is disabled in min/max mode.

99 MEMORY RECALL

The meter has 99 memory locations that can be saved and reviewed.

In normal or hold mode, press $\boxed{\text{MODE RECALL}}$ key for more than 2 seconds until the **Recall** icon flashes.

Press $\boxed{\text{HOLD}}$ or $\boxed{\text{MEM}}$ to scroll through the memories. The memory serial number displays on the main LCD first and readings come after (Fig.16 & 17).
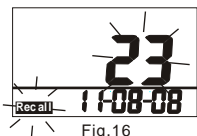

Fig.16
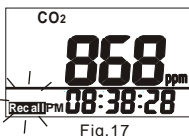

Fig.17

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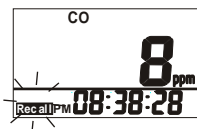Press 🔘(MODE/RECALL) key to switch the display parameter (Fig.18).

Fig.18

The time displayed in memory recall mode is the recording time of this memory.

To leave the memory recall mode, press 🔘(START/ESC) key to exit and return to the normal display.

(ALARM)

The meter features an audible alarm to give warnings when CO concentration exceeds the limit. (See P.20 in setup for setting alarm threshold). It emits beeps (approx. 80db) if the CO level goes over the set value and stops only when the readings fall below the set value. It beeps again if the value goes over the limit.

(DATA LOGGING)

The meter can automatically record readings of CO2/CO/TEMP/RH for long time environment monitoring. The memory capacity is 8,000 points. Users can set that sampling rate from 1 second to 4 hours 59 minutes and 59 seconds (See SETUP Section).

After sampling rate is selected, press 🔘(START/ESC) for 2 seconds under normal mode to start logging. The REC icon flashes to indicate the logging status and LCD main display shows the real time CO2 value. Lower displays are the real time clock (Fig.19).
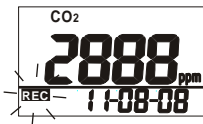
10

Fig.19

To terminate data logging, press $\boxed{\text{START}_{\text{ESC}}}$ for 2 seconds, **REC** icon stops flashing.

The meter will only record one session at a time. Once $\boxed{\text{START}_{\text{ESC}}}$ record mode is activated all previous data is erased.

Download logged data on a PC prior to recording another data log.

AUTO POWER OFF

The meter turns off automatically after 20 minutes of inactivity. To override the function, hold down $\boxed{\text{ON/OFF}_{\text{SET}}}$ and $\boxed{\text{HOLD}_{\blacktriangle}}$ at the same time for 2 seconds until "**n**" appears (Fig.20).
NOTE: AUTO POWER OFF IS DISABLED DURING CALIBRATION.
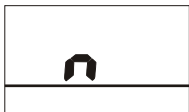
Fig.20

Fig.21

SETUP

When the meter is off, hold down $\boxed{\text{ON/OFF}_{\text{SET}}}$ for more than 1 second to enter setup mode.

Press $\boxed{\text{HOLD}_{\blacktriangle}}$ or $\boxed{\text{MEM}_{\blacktriangledown}}$ to scroll through the setup options.

Press $\boxed{\text{START}_{\text{ESC}}}$ to exit setup mode.

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P10   CLEAR MEMORY

When entering setup mode, P10 and "CLr" (Fig.21) are displayed on the LCD. Press (M/AVG) to go into P11 and decide to clear or keep all the manual records. The current set will be blinking on LCD (Fig.22).

Press (HOLD) or (MEM) to choose NO or YES and press (M/AVG) to confirm.

```
YES
P11
```
Fig.22

Press (START/ESC) to return to P10.

P20   CO ALARM

When entering setup mode, P20 and "ALAr" (Fig.23) are displayed on LCD. Press (M/AVG) to go into P21 and set the CO alarm threshold. The current set value will blink on the LCD (Fig.24). Press (HOLD) to increase the value or (MEM) to decrease. The selectable alarm limits are 15~200ppm. Each press is 5ppm. When the preferred alarm value is set, press (M/AVG) to save the setting or (START/ESC) without saving and return to P20

```
CO
ALAr
P20
```
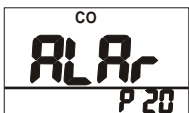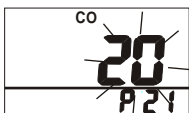Fig.23

```
CO
20
P21
```
Fig.24

P30   TEMPERATURE UNITS

When entering setup mode, P30 and
"unit" (Fig.25) are displayed on the LCD.
Press MJAVG to go into P31 and select the
temperature units in ^{0}C or ^{0}F.

The current set will display on LCD
(Fig.26).

Press HOLD or MEM to pick ^{0}C or ^{0}F
and press MJAVG

TA	TA
un it	un it ℃
P 30	P 31
Fig.25	Fig.26

Press START/ESC to return to P30.

P40 LOGGING SAMPLING RATE

Go into P40 for setting sampling rate
of data logging (Fig.27). The range
is from 1 second to 4 hours 59
minutes and 59 seconds.

Press MJAVG and it goes into setting
with blinking Hour digits on the lower
display. To change the digit, press HOLD
to increase and MEM to decrease. Press
MJAVG to confirm and enter Minute setting.
Press MJAVG again to confirm and ente
Second setting (Fig.28). Press MJAVG
to confirm the rate setting or START/ESC
without saving and return to P40.

rAtE	rAtE
P 40	00:00:08
Fig.27	Fig.28

P50 PRESSURE COMPENSATION

When entering setup mode, P50 and "PrES" (Fig.29) are displayed on the LCD. Press $\overset{\text{M/AVG}}{\blacktriangleleft}$ to set pressure compensation value for CO_2 measurement.

The current set will flash on LCD (Fig.30).The barometric pressure unit is kpa.

Press $\overset{\text{HOLD}}{\blacktriangle}$ or $\overset{\text{MEM}}{\blacktriangledown}$ to adjust the pressure value and press $\overset{\text{M/AVG}}{\blacktriangleleft}$ to confirm.

CO2 PrES P 50	CO2 101 h PA
Fig.29	Fig.30
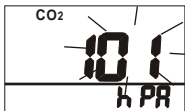
Press $\overset{\text{START}}{\text{ESC}}$ to return to P50.

P60   REAL TIME CLOCK

Go into P60 to set the real time clock.

Press $\overset{\text{M/AVG}}{\blacktriangleleft}$ to enter into P61 to set the time format as 12 or 24 hour. The current setting will flash on the LCD. Press $\overset{\text{HOLD}}{\blacktriangle}$ or $\overset{\text{MEM}}{\blacktriangledown}$ to change the format and press the $\overset{\text{M/AVG}}{\blacktriangleleft}$ key to confirm.

NOTE: Date format is YY/MM/DD

The date will show on the lower display with the year digit blinking. Press $\overset{\text{HOLD}}{\blacktriangle}$ to increment or $\overset{\text{MEM}}{\blacktriangledown}$ to decrement the digits.

Use the same process to set the month and day. Press $\overset{\text{START}}{\text{ESC}}$ to return.

12H P 61	rtc PM 08:08:08
Fig.31	Fig.32

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CO₂ CALIBRATION

The meter is calibrated at standard 400ppm CO_2 concentration at the factory. You should manually calibrate regularly to maintain good accuracy.
NOTE:
When accuracy becomes a concern after long use, you can return the meter to CO2Meter, Inc. for standard calibration.

IMPORTANT:
Do not calibrate the meter in air with an unknown CO_2 concentration. Otherwise, it will be calibrated as 400ppm by default which will lead to inaccurate measurements.

For successful manual calibration, it should only be completed with the meter located in fresh, outdoor air. Start with the unit powered off.

First press 🔘START/ESC + 🔘MEM then also 🔘ON/OFF simultaneously for 3 seconds to turn on the meter and enter calibration mode (Fig.33). Press 🔘MEM or 🔘HOLD to choose from humidity, CO or CO2 calibration menus.
Press 🔘MAX/AVG key to select the calibration. 400ppm and **CAL** icon will blink on the screen.
(Fig.34).

Wait about 10 minutes until the blinking stops and the calibration is completed automatically. To abort the calibration, press 🔘ON/OFF/SET at any time.

NOTE:
Ensure the batteries are fully charged or meter is plugged in during calibration to prevent interrupted or failed calibration.

Fig.33

Fig.34

RH CALIBRATION

The meter defaults to be calibrated the humidity with 33% and 75% salt solution. The ambient condition is recommended to be at 25°C and stable humidity(better to be close to the calibrating value). To abort calibration, just turn off the meter.

CAUTION:
Do not calibrate the humidity without the default calibration salt. Otherwise, it will cause permanent damage. Contact CO2Meter, Inc. for calibration salt or services.

33% calibration
Plug the sensor probe into 33% salt bottle. First press (START/ESC) + (▼), also (ON/OFF SET) simultaneously for 3 seconds to turn on the meter and enter calibration mode (Fig.33). Press (MEM/▼) or (HOLD/▲) to choose the 33% humidity calibration menu. Press (M/AVG) to select 33% calibration (32.8% if at 25°C) and to start.

Meter is now calibrating, and will finish in about 60 minutes when "CAL" and humidity stop blinking. To abort calibration, press (ON/OFF SET) at any time.

75% calibration
Plug the sensor probe into 75% salt bottle and enter calibration mode. In calibration mode, press (HOLD/▲) to select 75% calibration (Fig.35), press (M/AVG) to begin.

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"CAL" and calibrating value (75.3% if at 25°C) are blinking on the LCD.

Meter is now calibrating, and will finish in about 60 minutes when "CAL" and humidity stop blinking. To abort calibration press (ON/OFF SET) at any time.

Fig.35

CO CALIBRATION

When the accuracy becomes a concern after a long time usage, return to dealers for standard calibration. It is necessary to have standard CO gas for calibration.

> **_CAUTION:_**
> Do not calibrate the meter in the air with unknown CO concentration. Otherwise, it will be calibrated as 0 or 400ppm by default and leads to inaccurate measurements.

Place the meter in the calibration site. First press (START/ESC) + (MEM) then also (ON/OFF) simultaneously for 3 seconds to turn on the meter and enter calibration mode (Fig.33).

Press (HOLD) or (MEM) to select the CO 0ppm or 400ppm calibration. ppm and " **CAL** " icon will blink on the LCD. Press (MAX/AVG) to start the calibration (Fig.36 & 37).

Wait about 10 minutes until the blinking stops and the calibration is completed automatically. To abort the calibration, press (ON/OFF SET) at any time.

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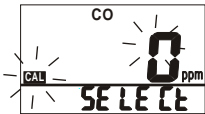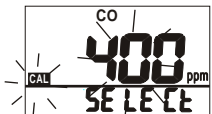
Fig.36   Fig.37

NOTE: 400ppm calibration gas can vary from 385~415ppm (400+15ppm)

TROUBLESHOOTING

? *Cannot power on*
-Press (ON/OFF SET) for more than 3 seconds and try again.
-Check whether batteries are in good contact and correct polarity, or the adaptor is plugged in correctly.
-You may also take out the batteries for 10 mins and then put them back in again.

? *Fixed readings*
Check whether data hold is activated. (HOLD icon displayed)

? *Slow response*
Check whether the air flow channels on the rear are blocked.

? *Error messages*
E01/E33: CO_2 sensor is out of order. Try new battery first.
E02: The value is under range.
E03: The value is over range.
E04: The original data error results in this error (DP, WB)
E11: Retry humidity calibration.
E16: Retry CO calibration.
E31: Temperature sensor or AD damaged.
E32: Memory IC damaged.
E33: Humidity sensor or circuit damaged.

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PC CONNECTION

Connect the logger to PC, users can do logging setting and data transmission with the included software.

Plug the USB cable into the socket at the right side of the meter and the other port to PC. Then install the software in your PC with the following procedure.

1. Insert the CD Rom and run installation. Select a preferred directory and click "Next" step by step and finish it.
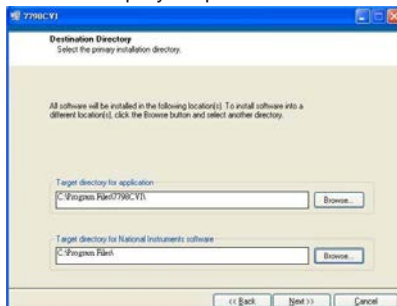
2. After the software installation is completed, it will run USB driver installation next.
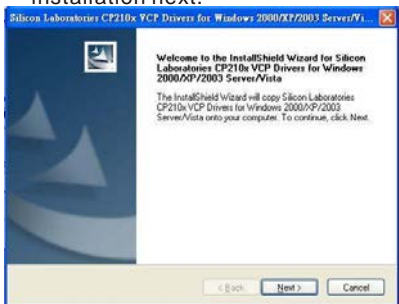
Auto-Connect

Start the software and it will detect logger connection automatically and indicate the COM Port information at the bottom of the main screen as well as the COMPort setting column.
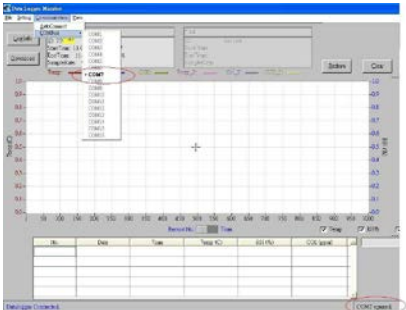
Logger Settings

To set up logging plan, click "Setting" icon and select "Logger". The setting page is opened.

| Identifier | 77597_2 |

Qk

Exit

Users can set up the logger identifier number. Click OK for setting and Exit the screen to confirm the settings.

Data Transmission

To transmit auto recorded data from the meter, click "Download" icon on the left top side of the main screen. All auto-recorded data in the logger will be transmitted. The raw data with time stamp will display at the lower part of the screen and the graph in the middle.

In the Graph display, the Y-axis indicates Temp, RH, DP, WBT, CO_2 & CO level in different line colors. And the X-axis can be switched to show Time or Record number stamp.
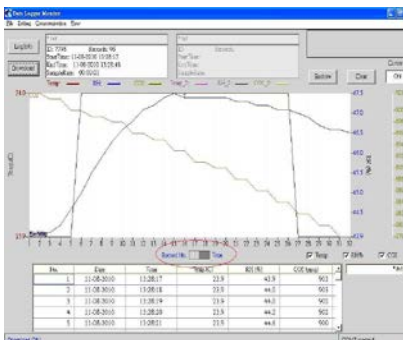
Data Review Function

The following functions help to view the GRAPH data in more detailed way.

Under **View** function, there are 4 tools to enlarge the Graph data for detailed data review.

Zoom in: Hold down "Ctrl" key on the PC keyboard and click any target point on the graph. It enlarges the point in each click.

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Zoom window: Hold down "Ctrl" key and drag click the left button of the mouse to select an area on the Graph and the selected area will be enlarged.

Zoom X-axis: Hold down "Ctrl" key and drag click the left button of the mouse to select an area on the Graph and the X-axis of the selected area will be enlarged.

Zoom Y-axis: Hold down "Ctrl" key and drag click the left button of the mouse to select an area on the Graph and the Y-axis of the selected area will be enlarged.

Three icons on the right top side of the main screen:

Redraw: After any review and zooming on the Graph, click "Redraw" to reset it to original format.

Clear: Click "Clear" to delete all data and Graph on the window. A warning box shows up for confirmation. Press "Yes" and all data will be cleared.

Cursor: Switch Cursor **ON** and it shows the raw data with the cursor. In any click on the graph, the digital data displayed. Switch **OFF** to disable the function.
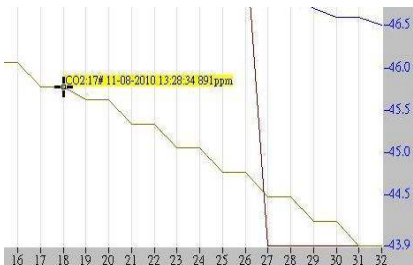
Data Processing

The downloaded data can be **Saved** or **Printed** via "**F**ile" processing functions.

Load: To retrieve saved files, just click "Load" and select a desired file and it will be loaded in the main screen with the file details at the left top side.

LogInfo	77597V1.0
Download	StartTime: 08-11-2011 18:08:11 EndTime: 08-11-2011 18:10:23 SampleRate: 00:00:06

SPECIFICATIONS

77597

Measuring range	
CO2	0~9999 ppm, (5001~9999 ppm out of scale range)
CO	0~1000 ppm,
Temperature	-20~60°C (-5~140°F)
Relative Humidity	0.1%~99.9%RH
DP(Dew point temp.)	-20.0~59.9°C
WB(Wet bulb temp.)	-5.0~59.9°C
Resolution	1ppm , 0.1°C/°F, 0.1%RH
Accuracy	
CO2	±30ppm±5% of reading(0~5000ppm) Other ranges are not specified
CO	+/-10 ppm for less than 100 ppm +/-10% or reading for 101~500 ppm +/-20% of reading for 501ppm and above
Temperature	±0.6°C/±0.9°F
Relative Humidity	±3%RH (at 25°C, 10~90%RH) , ±5%RH (at 25°C, other range)
CO2 Warm-up time	30 seconds
Response time	
CO2	<30 seconds(90% step change)
CO	<60 seconds(90% step change)
Tair	<2 mins (90% step change)
RH	<10 minutes (90% step change)
LCD / Meter size (mm)	26(H)x44(L), 205(L)x70(W)x56(H)
Operating condition (avoid condensation)	-20 to 50 °C (CO2 sensor),0 to 50 °C (CO sensor) -20 to 60 °C (for the rest parameters)
Storage condition	-20~ 60°C,10~90%RH(avoid condensation)
Power supply	AA x 4pcs or 9V adaptor
Battery life	> 24 hours (Alkaline battery)
Weight	200g
Standard package	Meter, manual ,AA bat.USB cable &CD, carry case

CO2 LEVELS AND GUIDELINES

Non-Enforced Reference levels

NIOSH recommendations
400 ppm: normal outdoor ambient air CO_2 concentrations
600 ppm: normal indoor air quality
1,000+ ppm: indicates inadequate ventilation; complaints such as headaches, fatigue, and eye/throat irritation will be more widespread. 1000 ppm should be used as an upper limit for indoor levels.

EPA Taiwan: 600ppm and 1,000ppm
Type 1 In indoor areas such as department stores, theaters, restaurants, libraries the acceptable CO_2 concentration of 8 hours average (TWA) is 1,000ppm.
Type 2 indoor areas with special requirements of good air quality such as schools, hospitals, day care centers, the suggested CO_2 level is 600ppm.

Regulatory Exposure Limit

ASHRAE Standard 62-1989: 1,000ppm
CO_2 concentrations in occupied buildings should not exceed 1,000ppm.

Building bulletin 101 (BB101): 1,500ppm
UK standards for schools say that CO_2 levels averaged over the whole day (TWA, i.e. 9am to 5pm) should not exceed 1500ppm.

OSHA: 5000ppm
Time weighted average over five 8-hour work days should not exceed 5,000ppm.

Germany, Japan, Australia, UK: 5,000ppm
8 hours weighted average in occupational exposure limit is 5,000ppm.

CO LEVELS AND 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 w/i 2-3 hrs.
400	Frontal headache, life threatening after 3hrs. Maximum concentration in flue gas per the US EPA and AGA standards.
800	Dizziness, nausea, convulsions, death w/i 2-3 hrs.
1600	Nausea w/i 20 min.,death w/i 2-3 hrs

WARRANTY

The meter comes with a one (1) year warranty starting from the date the meter was shipped to the buyer.

During this period of time, CO2Meter warrants our products to be free from defects in materials and workmanship when used for their intended purpose, and agrees to fix or replace (at our discretion) any part or product that fails under normal use. To take advantage of this warranty, the product must be returned to CO2Meter.com at your expense. If, after examination, we determine the product is defective, we will repair or replace it at no additional cost to you.

This warranty does not cover any products that have been subjected to misuse, neglect, accident, modifications or repairs by you or by a third party. No employee or reseller of CO2Meter.com's products may alter this warranty verbally or in writing.

LIABILITY

All liabilities under this agreement shall be limited to the actual cost of the product paid to CO2Meter.com. In no event shall CO2Meter.com be liable for any incidental or consequential damages, lost profits, loss of time, lost sales or loss or damage to data, injury to person or personal property or any other indirect damages as the result of use of our products.

RETURN AUTHORIZATION

If the product fails under normal use during the warranty period an RMA (Return Material Authorization) number must be obtained from CO2Meter.com. After the item is received, CO2Meter.com will repair or replace the item at our discretion.

To obtain an RMA number, call us at (386) 256-4910 or email us at support@co2meter.com. When requesting an RMA number, please provide the reason for return and the original order number

If we determine that the product has failed because of improper use (water damage, dropping, tampering, electrical damage, etc.) or if it beyond the warranty date, we will inform you of the cost to fix or replace the product.

For more information visit our website: www.CO2Meter.com/pages/faq

Contact us: We're here to help!
If the troubleshooting guide above doesn't help you solve your problem or for more information, please contact us using the information below.

Support@CO2Meter.com
(386) 256-4910 Technical Support
(386) 872-7665 Sales