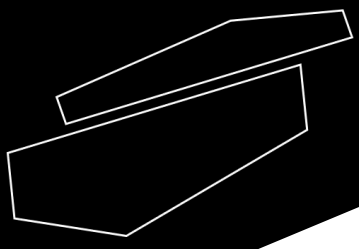
METRIA



Wallmount Air Quality Meter, 7722

Please read the User Manual carefully before use, and follow all operating and safety instructions!



user manual

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User Manual

EN

7722 Wallmount air quality meter

Preface

Users should read this Manual carefully, follow the instructions and procedures, and beware of all the cautions when using this instrument.

Service

If help is needed, you can always contact your dealer or Letslab via **www.letslab.com**

Please, provide the customer service representative with the following information:

- Serial number
- Description of the problem
- Your contact information

Warranty

This instrument is guaranteed to be free from defects in materials and workmanship under normal use and service, for a period of 24 months from the date of invoice. The warranty is extended only to the original purchaser. It shall not apply to any product or parts which have been damaged on account of improper installation, improper connections, misuse, accident or abnormal conditions of operation.
For claim under the warranty, please contact your supplier.

1. Introduction

This meter can measure the CO_2 level, air temp., dew point, wet bulb temp. and humidity. It is an ideal instrument for indoor air quality (IAQ) diagnosis. Poor indoor air quality is considered unhealthy because it causes tiredness, loss of ability to concentrate, and even illness(ex. Sick Building Syndrome). IAQ monitoring and survey, especially on CO_2 level and air ventilation 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.

With NDIR (non-dispersive infrared) sensor used, this CO_2 monitor is stable in long term monitoring. And the built-in alarm output is especially helpful in ventilation control and HVAC system performance verification.

Features

- Triple displays of CO_2 level, temp. and humidity
- Stable NDIR sensor for CO_2 detection
- Statistics of weighted averages
- TWA (8 hours weighted average)
- STEL(15 minutes weighted average)
- Visible and audible CO_2 warning alarm
- Alarm output for ventilation control
- ABC (Automatic Baseline Calibration) and manual CO_2 calibration
- PC connect via RS232 interface

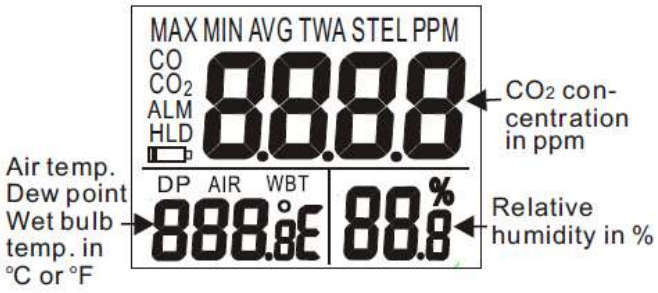
Material supplied (the package contains):

- Meter
- Adaptor
- Operation manual
- Plain white box

Power supply

The meter is powered by an AC adaptor (12V/1A output)

LCD Display



TWA	Time weighted average (8 hours)
STEL	Short-term exposure limit (15 minutes weighted average)
MIN/MAX	Minimum and maximum readings
DP	Dew point temperature
WBT	Wet bulb temperature
%	Unit of relative humidity
AIR	Air temperature
°E (C/F):	Celsius or Fahrenheit
/AVG/CO/ALM/HLD	Vain icons in this model

Keypad

SET	· Enters setup mode · Save and finish settings
CAL ESC	· Enters CO_2 calibration with DP/WB · Enters RH calibration with M^N_X/AVG · Exits setup page/mode
RESET	· Reset the meter and clear MAX/MIN · Terminate during calibration
DP/WB	· Select AIR, DP, WBT temp. display · Select mode or increase value in calibration and setup
MX/AVG	· Activates MIN, MAX, STEL, TWA function · Select mode or decrease value in calibration and setup

2. Operation

Power ON/OFF

Plug in the adaptor and the meter turns on automatically with a short beep. It performs a 30 second countdown (Fig.1) for meter warm up, then enters normal mode with current CO_2, temperature and humidity readings displayed (Fig.2).



Figure 1



Figure 2

Taking measurement

The meter starts taking measurement after power on and updates readings every second. In the condition of operating environment change (ex. from high to low temp.), it takes 30 sec to respond for CO_2 sensor and 30 minutes for RH.

NOTE: Do not hold the meter close to faces since exhalation affects CO_2 levels.

AIR, DP and WBT

Press DP/WB to switch temperature display. The lower left LCD will cycle through air temperature, dew point temperature (Fig 3.) and wet bulb temperature (Fig. 4).

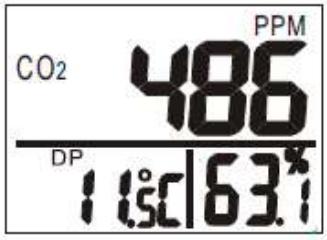


Figure 3

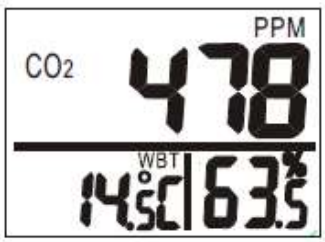


Figure 4

MIN, MAX, STEL and TWA

Under normal mode, press M^{N}_{X}/AVG to see the minimum, maximum and weighted average readings. Each press of M^{N}_{X}/AV displays MIN, MAX, STEL, TWA in sequence and returns to normal mode.

In MIN and MAX modes, it shows the minimum and maximum readings of CO_2 on the upper LCD and of AIR or DP or WB temp. and humidity on the lower LCD (Fig. 5).



Figure 5

In STEL and TWA modes, the upper LCD shows the weighted average of CO2 readings for the past 15 minutes (STEL) and 8 hours (TWA). The lower LCD shows the current AIR, DP/WB temp. and humidity (Fig. 6).



Figure 6

NOTE:

1. If the meter is turned on for shorter than 15 minutes, the STEL value will be weighted average of readings taken since power on. Same for TWA values that appear before 8 hours.
2. It takes at least 5 minutes to calculate STEL and TWA. The LCD shows "----" (Fig. 7) during the first 5 minutes from power on.

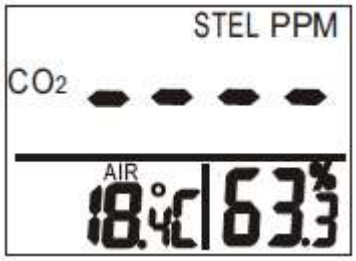


Figure 7

Alarm

The meter features visible and audible alarm to give warnings when CO_2 concentration exceeds the limit.
Users can set up 2 limits:

1. Upper limit: the alarm threshold requires air conditioning
2. Lower limit: to stop the alarm.

(See section **P1.0** to set the alarm limits).

It emits beeps (Abt.80dB) with blinking LED when CO_2 level goes over the upper limit. Beeps can be stopped by pressing any key or automatically stop when CO_2 reading falls below the lower limit.

If the beeper is temporarily shut, it will sound again when readings fall below the lower limit and then go over the upper limit again, or users press RESET key for more than 1 second to activate it.

LED alarm keeps blinking when beeps are manually shut. It stops only when readings fall below the lower limit.

Setup
Hold down SET key under normal mode for more than 1 second to enter the setup mode. To exit setup, press CAL/ESC in **P1.0, P3.0** or **P4.0** and it returns to normal mode.
NOTE: P2.0 is not applicable in this model

P1.0 CO_2 alarm: Upper and lower limits
When entering setup mode, P1.0 and "AL" (Fig. 8) are displayed on the LCD. Press SET key again to enter P1.1 to set the CO2 upper limit. The current setting value will be blinking on the LCD (Fig. 9).

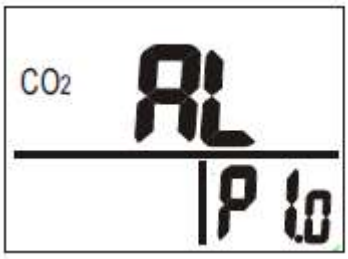


Figure 8

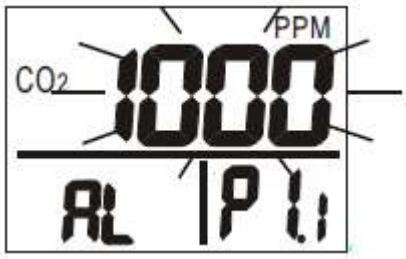


Figure 9

Press UP key to increase the value or DOWN key to decrease. Each press tunes 100 ppm, and the alarm range is from 100 to 9900 ppm.

CAUTION: It's suggested to set up the alarm value within specification range that accuracy is ensured. The out of spec readings are only reference and not suitable to use as alarm limits.

When the preferred value is set, press SET key to enter **P1.2** (Fig. 10) to set the lower limit. After both settings are done, press SET key to save or CAL/ESC key without saving and return to P1.0.



Figure 10

P3.0 Temperature scale
Press UP key in P1.0 to access P3.0 to set up the temperature scale (Fig. 11). Press SET key to enter P3.1, current setting of °C or °F will blink on the lower LCD (Fig. 12). Press UP or DOWN key to switch °C to °F. Then press SET key to save the setting or CAL/ESC without saving and return to P3.0.



Figure 11



Figure 12

P4.0 ABC Selection

ABC (Automatic Baseline Calibration) is to implement baseline calibration to eliminate the zero drift of the infrared sensor. The ABC function default is on when turning on the meter. Users can disable it by following the procedure. Press UP in P3.0 or DOWN in P1.0 to access P4.0 to select the ABC function (Fig. 13).



Figure 13

Press SET key to enter P4.1 with blinking "en" icon (Fig. 14) on the lower LCD. To disable the ABC function, press UP or DOWN and "dis" blinks for choice (Fig. 15).

After the preferred selection is done, press SET key to save the setting or CAL/ESC without saving and return to P4.0.

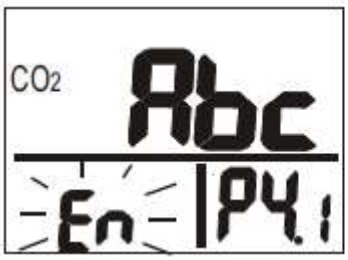


Figure 14

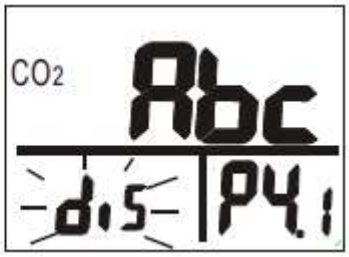


Figure 15

CO_2 calibration

The meter is calibrated at standard 400 ppm CO_2 concentration in factory. It's suggested to do either ABC or manual calibration regularly to maintain a good accuracy.

CAUTION:

1. Do not calibrate the meter in air with unknown CO_2 level. Otherwise, it will be taken as 400 ppm and leads to inaccurate measurements.
2. When operating the meter in closed indoor areas that are not ventilated, such as hospitals or offices with windows shut, be sure to disable the ABC function to prevent incorrect calibration.

ABC (Automatic Baseline Calibration)

ABC is to calibrate the meter at the minimum CO_2 reading detected during 7 days of continuous monitoring (power on). It is supposed that the ventilating area can have fresh air with CO_2 level around 400 ppm during a period of time. It's not suitable to implement ABC in a closed area with a higher CO_2 level.

The ABC default is on. To disable the function, please refer to P4.0.

Manual calibration
The manual calibration is suggested to be done in outdoor area with ventilating fresh air where CO_2 level is around 400 ppm. Do not calibrate in places crowded with people or closed areas with high CO_2 concentration such as ventilating outlets or fireplaces.

Place the meter in the calibration site. Turn on the meter and hold CAL/ESC and UP keys simultaneously to enter CO_2 calibration mode (Fig. 16). 400 ppm and "CAL" are blinking on the LCD while performing calibration.

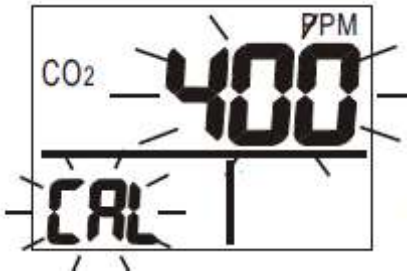


Figure 16

Wait about 5 minutes until the blinking stops and the calibration is completed automatically and return to normal mode. To abort the calibration, press RESET key for more than 1 second.

RH calibration
The meter defaults to be calibrated the humidity with 33% and 75% salt solution. The ambient conditions is recommended to be at 25 °C and stable humidity (better to be close to the calibrating value). To stop the calibration, hold RESET key for more than 1 second at any time.

CAUTION: Do not calibrate humidity without default calibration salt, otherwise, it will cause permanent damage.

33% calibration
Plug the sensor probe into 33% salt bottle. Hold CAL/ESC and DOWN keys under normal mode to enter 33% calibration (Fig. 17). "CAL" icon and calibrationg value (32.7% if at 25°C) are blinking on the LCD with current temperature at the left.

Meter is now calibrating and will finish in about 60 minutes when "CAL" icon and humidity value stop blinking (Fig. 18).



Figure 17



Figure 18

75% calibration
After 33% calibration, plug the sensor probe into 75% salt bottle, then press SET key to enter 75% calibration (Fig. 19).



Figure 19

"CAL" icon and calibrating value (75,2% if at 25°C) are blinking on the LCD with current temperature at the left. Meter is now calibrating. Wait about 60 minutes until blinking stops, then calibration is completed and it returns to normal mode.

NOTE: Users can also calibrate either point. To calibrate 33% only, pres CAL/ESC key to exit when 33% calibration is completed. To calibrate 75% only, press UP or DOWN key within 5 minutes while initializing 33% calibration. It will skip 33% calibration and enter 75% calibration mode.

Troubleshooting

Problem	**Solution**
Can't power on	Check if the adaptor is well plugged
Slow response	Check if the air flow channels on the rear are blocked

Error messages

Error text	**Meaning**
E01	CO_2 sensor damaged
E02	The value is under range
E03	The value is over range
E04	The original data error results in this error (RH, DP, WB)
E07	Too low voltage to measure CO_2 Check if the adaptor output is 12V
E11	Retry humidity calibration
E17	Retry CO_2 calibration
E31	Temperature sensor damaged
E34	Humidity sensor damaged

Specifications

Model	7722
CO_2 Range	0-2000 ppm (2001-9999 ppm out of scale)
CO_2 Resolution	1 ppm
CO_2 Accuracy	±50 ppm + 5% rdg (0-2000)
CO_2 Pressure dependance	+ 1.6% reading per kPa deviation from normal pressure, 100 kPa
Temperature Range	-10.0 – 60.0 °C
Temperature Resolution	0.1 °C/0.1 °F
Temperature Accuracy	± 0.6 °C/ ± 0.9 °F
Humidity Range	0.0-99.9%
Humidity Resolution	0.1%
Humidity Accuracy	±3% (10-90%) ±5% (other range)
Warm up	30 seconds
Operating	0 – 50 °C, 0 – 95% RH (avoid condensation)
Storage	-20 – 60 °C, 0 – 99% RH (avoid condensation)
Power	12V adaptor

CO_2 levels and guidelines

Non-Enforced reference levels:

NIOSH recommendations:
250-350 ppm: Normal outdoor ambient concentrations
600 ppm: minimal air quality complaints
600-1000 ppm: less clearly interpreted
1000 ppm: indicates inadequate ventilation; complaints such as headaches, fatigue, and eye/throat irritation will be more widespread. 1000 pm should be used as upper limit for indoor levels.

EPA Taiwan: 600 ppm and 1000 ppm
Type 1: indoor areas such as department stores, theatres, restaurants, libraries, the acceptable CO_2 concentration of 8-hour average is 1000 ppm.
Type 2: indoor areas with special requirements of good air such as schools, hospitals, day care centres, the suggested CO_2 level is 600 ppm.

Regulatory exposure limit

ASHRAE standard 62-1989: 1000 ppm
CO2 concentration in occupied building should not exceed 1000 ppm.

Building bulletin 101 (BB101): 1500 ppm
UK standards for schools say that CO2 at average over the whole day (i.e. 9 AM to 4 PM should not exceed 1500 ppm).

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

Gernamy, Japan, Australia, UK…: 5000 ppm
8 hours weighted average in occupational exposure limit is 5000 ppm.

Nota importante para los aparatos electrónicos vendidos en España

Instrucciones sobre la protección del medio ambiente y la eliminación de aparatos electrónicos:



Los aparatos eléctricos y electrónicos marcados con este símbolo no pueden ser eliminados en forma de residuos urbanos.

De conformidad con la Directiva 2012/19/UE, los usuarios de la Unión Europea de aparatos eléctricos y electrónicos, tienen la posibilidad de devolver sus RAEE para su eliminación al distribuidor o fabricante del equipo después de la compra de uno nuevo. La eliminación ilegal de aparatos eléctricos y electrónicos es castigada con multa administrativa.

Remarque importante pour les appareils électroniques vendus en France

Informations sur la protection du milieu environnemental et élimination des déchets électroniques :



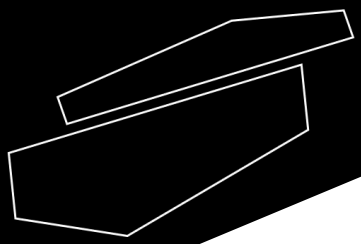
Les appareils électriques et électroniques portant ce symbole ne peuvent pas être jetés dans les décharges.
En réponse à la règlementation, Labbox remplit ses obligations relatives à la fin de vie des équipements électriques de laboratoire qu'il met sur le marché en finançant la filière de recyclage de ecosystem dédiée aux DEEE Pro qui les reprend gratuitement (plus d'informations sur www.ecosystem.eco).
L'élimination illégale d'appareils électriques et électroniques est punie d'amende administrative.

Nota importante per le apparecchiature elettroniche vendute in Italia

Istruzioni sulla protezione ambientale e sullo smaltimento dei dispositivi elettronici:



Le apparecchiature elettriche ed elettroniche contrassegnate con questo simbolo non possono essere smaltite come rifiuti urbani.
In conformità con la Direttiva 2012/19 / UE, gli utenti dell'Unione Europea di apparecchiature elettriche ed elettroniche hanno la possibilità di restituire i propri RAEE per lo smaltimento al distributore o al produttore di apparecchiature dopo averne acquistato uno nuovo. La rimozione illegale di apparecchiature elettriche ed elettroniche è punibile con una sanzione amministrativa.



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