



CO2METER COM CM-7000 Multi CO2 Sensor System User Manual

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USER MANUAL Multi CO2 Sensor System CM-7000



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Product Overview

Thank you for selecting the **CM-7000 CO2 Multi-Sensor System**.

This CM-7000 series features multiple gas sensors connected back to the main control panel. The device is designed to detect Carbon Dioxide (CO2) levels in the ambient air to protect employees, workers, and establishments. CO2 Monitors are required in most jurisdictions by code and regulation. High concentrations of carbon dioxide in confined spaces are dangerous and may lead to negative health problems ranging from headaches and fatigue to asphyxiation or fatality.

The CM-7000 has 12 unique sensor configurations, with relays that are triggered at 5,000ppm TWA, 5,000ppm, 1.5%, and 3% to meet OSHA/NIOSH standards, and all local fire codes in regards to CO2 safety monitoring.

With the CM-7000, ensure that you and your employees are safe, and protected.

The device includes the following key features:

- Measures 0-5% CO2
- Full color, 8" Touchscreen Display
- Audible/Visual Alarms
- User-configurable setting
- Individually addressable sensors
- Selectable alarms ranging from 5000ppm TWA, 5000ppm, 1%, 1.5%, 2%, 2.5%, 3%, 3.5%, 4% (configurable)
- Lock/unlock code for complete system security
- Expandable Sensor Array with up to 12 sensors + horn strobes

Package Content & Unit Layout:

The CM-7000 package comprises the following parts:

- 8" Touch Screen Tablet – (Qty. 1)
- Tablet Mounting Bracket (Qty. 1)
- Sensor Units (Qty. 2)
- Sensor Unit Mounting Brackets (Qty. 2)
- Alarm Horn Strobes (Qty. 2)
- Alarm Horn Strobe Mounting Brackets (Qty. 2)
- 25ft Ethernet Cables (Qty. 2)

- 6ft Ethernet Cables (Qty. 2)
- 54V Wall Mounted Power Supply (Qty. 1)
- USB Type-A Connector (Qty. 1)
- Non-Powered Uplink Connector (Qty.4)
- CAT5 Powered Remote Unit Connectors (Qty.1)
- DC Power Input Relay Connectors (Qty.3)
- (Not included – Standard Phillip Screwdriver)



Installation Procedure – Tablet

DO NOT CONNECT THE POWER SUPPLY, UNTIL AFTER YOU HAVE READ THIS SECTION.

Step 1. Attach the main bracket to the wall using included screws and drywall anchors, provided in the bottom of the CM-7000 packaging.

Please note, that the Tablet Mounting Bracket should be installed at eye level, outside of the location or source of CO2.

Step 2. Slide the CM-7000 8" tablet onto the mounting bracket, and move to the sensor unit mounting and installation procedure.



Installation Procedure – Sensor Unit

Step 1. Attach Sensor Unit Bracket to the wall using included screws and drywall anchors, located in the bottom sleeve of CM-7000 packaging.

* Please note, the sensor unit should be mounted 12" in. off the floor, and by the location or source of the CO₂. (i.e. CO₂ tanks, BIB racks, Keg Cooler, Fermentation tanks, or Cultivation Facilities)

Step 2. Please use the mounting bracket as a template to mark appropriate holes for wall anchors.

Step 3. Place in clear wall anchors, and ensure they are flush with the wall.

Step 4. Install Sensor Unit Bracket with provided screws.

Step 5. Locate the provided 25 ft. cable from the packaging, and connect the 25 ft. cable from the main tablet to the sensing unit. (Be sure to insert CAT5 25 ft. cable in sensor unit port 1-4, located on back of CM-7000 8" Tablet.

Step 6. Next, place the opposite end of the CAT5 cable behind the sensor unit in the "input" port.

Step 7. Finally, Mount Sensor Unit to Sensor Unit Bracket

Step 8. Please note: You must connect sensors to tablets one at a time. Do NOT connect all sensors then power the tablet.

PLEASE NOTE: The maximum distance any module can be placed from the tablet is 250 feet either direct or daisy chained.



Installation Procedure – Horn Strobe

Step 1. Remove Circuit Board or Mounting Bracket, from the back of horn strobe assembly.

Step 2. Next, Mount the Horn Strobe Mounting Bracket to the wall.

***Please note, that the Mounting Bracket should be mounted at least 6ft. from the sensor unit(s). This Mounting Bracket also is designed to be mounted on junction boxes if needed.**

Step 3. Please use the mounting bracket as a template to mark placement for holes.

Step 4. Once the placement is marked, drill holes accordingly.

Step 5. Insert clear wall anchors into holes, and ensure they are flush with the wall.

Step 6. Install the Mounting Bracket to the wall.

Step 7. Next, place the CAT5 cable in only the porthole of the mounting bracket.

Step 8. Slide the front horn strobe cover which displays (CO₂), to the mounting bracket on the wall.

Step 9. Seal both bracket and the horn strobe cover together with a tamper-proof screw.

Step 10. Install CAT5 Cable to the Sensor Unit back “Strobe” port.

Step 11. Locate the AC Power Adapter, included in the bottom sleeve of the CM-7000 packaging.

Step 12. Insert power adapter to back of CM-7000 8” tablet, in the green port assembly.

Step 13. Screw and assemble power adapter green assembly to the back of the tablet.

Step 14. Plugin the AC power adapter into a standard wall outlet, and observe the CO2Meter gear start-up screen.

Congratulations! You have successfully installed your CM-7000, Sensor Unit, and Horn Strobe.
You are now ready to start CO2 safety monitoring.

Alarm Horn / Strobe

- Halogen Amber Lens Strobe
- Piezo Electric Horn
- Amber Lens Included
- Blue Lens Available for Purchase

Ethernet Cables

- Standard CAT5e
- 24AWG Solid Wire
- 8-wire twisted pairs

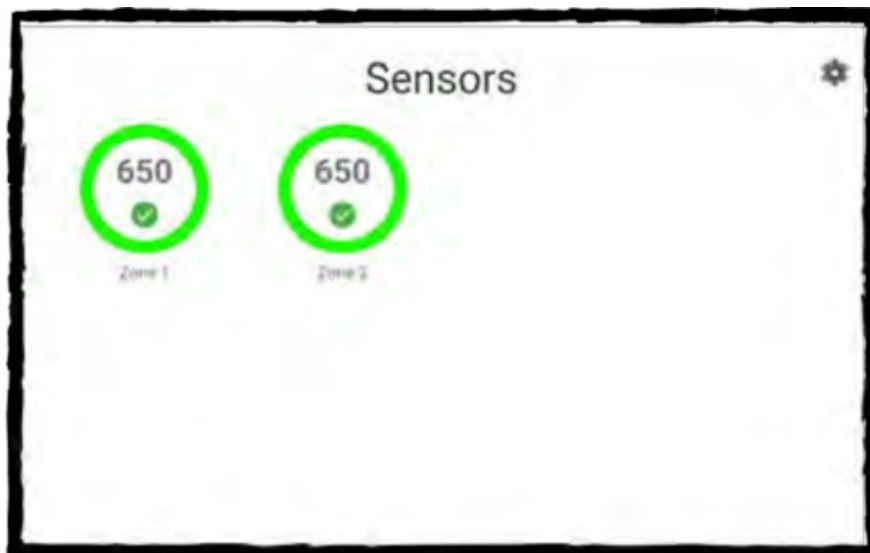
54V Power Supply

- 54V 1.11A Power Supply
- Plastic belt to secure power supply to wall

Basic Operations



Carefully remove all items from the package and follow the step-by-step operation instructions below. The main screen will display all sensors connected to the tablet with a color-coordinating ring and CO2 reading. The sensors are initially ordered by which sensors were connected first. The sensors are updated every two seconds with the most recent CO2 concentration, Relative Humidity, and Barometric Pressure. The CO2 Reading is compensated by the ambient Barometric Pressure. The order of the displayed sensors can be user-configurable under the “Sensor Properties Screen”.



The image above is your main display screen. This screen will show all the sensors configured – up to 12 currently with strobes – and their accompanying CO2 levels. We have two displayed here, which is what is included in the purchases of 1 CM-7000 CO2 Multi-Sensor System. You notice a gear icon in the upper right-hand corner of the screen. This will open your settings screen. From the settings screen, you will also have the ability to lock/ unlock the device with the CO2Meter password and change the audio, strobes, sensors, and relay configurations.

The main display screen will also display the sensor color-coordinating ring dependent upon the given CO2 Reading, as well as the other sensor readings including Relative Humidity and Barometric Pressure.

The sensor readings will continue to be updated as the sensor properties screen is open. It also contains editable properties of the sensor including the Location Name, Zone, and Position on the main display. The user is also able to mute the sensor if it is in alarm, and can reset the sensor if it is in an alarm state that is latched.

Settings Menu



The settings menu allows the user to adjust the alarm settings.

There are four alarms that can be set with the following properties:

- Alarm Levels

The CM-7000 CO2 Multi-Sensor System features four alarms, Alarms 1-4 with the default set at AL1 5,000ppm TWA, AL2 5,000ppm, AL3 1.5%, and AL4 3%. All of these are user-configurable from the settings menu.

This means that you have four levels of alarm that can all trigger different functionalities. The first setting under Alarms one through 4 is AL1 – Alarm 1 defaults to 5,000 ppm TWA. This is the OSHA standard for first-level alarms. As you read left-to-right, you can alter these to different levels.

When the device senses too much CO2 it begins to alert the user in three ways (if so configured):

1. Audible horns will sound and the tablet will verbally detail the alarm notification.
2. The visual indication will come from strobes and a visual indication on the tablet of the sensor and its status.
3. Statuses may be GREEN, YELLOW, AMBER, or RED depending on the severity of the gas leak Audio

The audio switch will determine if the Horn connected to the sensor should be triggered

The screenshot shows the 'System Settings' interface with a 'DONE' button at the top left and a lock icon at the top right. The settings are organized into columns for Alarm 1, Alarm 2, Alarm 3, and Alarm 4. The rows include Alarm Level, Audio, Strobe, Relay 1, Relay 2, Relay 3, and Latch. Each setting is represented by a slider or a dropdown menu. The 'Sensors' row at the bottom is highlighted with a yellow box, showing 'Individual' for Alarm 1, 'Individual' for Alarm 2, 'All' for Alarm 3, and 'Individual' for Alarm 4.

	Alarm 1	Alarm 2	Alarm 3	Alarm 4
Alarm Level	5000 TWA	5000	10000	30000
Audio	OFF	OFF	ON	ON
Strobe	OFF	ON	ON	ON
Relay 1	OFF	ON	ON	ON
Relay 2	OFF	OFF	ON	ON
Relay 3	OFF	OFF	OFF	ON
Latch	OFF	OFF	OFF	ON
Sensors	Individual	Individual	All	Individual

- **Strobe**

The strobe switch will determine if the Strobe connected to the sensor should be triggered. You can turn the strobes on or off for each alarm setting depending on your application or environment needs/requirements.

- In addition, you will find that in the system settings screen, the horn strobes can be individually tested per associated individual sensor by selecting from the sensor drop-down setting underneath the latch and choosing "All" instead of "Individual" functionality dependent upon the specific sensor and AL1-AL4 alarms.

The screenshot shows the 'Tablet Relay Non-Alarm State' screen. It features a 'Latch' row with four sliders, all set to 'OFF'. Below this is a 'Sensors' row with four dropdown menus, each set to 'Individual'. The 'Mute' row has four dropdown menus, each set to 'Audio'. The 'Mute Time' row has four dropdown menus, each set to '30s'. A yellow box highlights the 'Tablet Relay Non-Alarm State' section, which contains three columns for Relay 1, Relay 2, and Relay 3. Below each relay name is a status indicator: 'Inactive' for Relay 1, 'Active' for Relay 2, and 'Inactive' for Relay 3. At the bottom, there are two blue buttons: 'RESET DEFAULT' and 'DEVICE MANUAL'.

Latch	Individual	Individual	All	Individual
Sensors	Individual	Individual	All	Individual
Mute	Audio	Audio	Audio	Audio
Mute Time	30s	30s	30s	30s

Tablet Relay Non-Alarm State

Relay 1	Relay 2	Relay 3
Inactive	Active	Inactive

Version: v1.1.2

RESET DEFAULT DEVICE MANUAL

Relay 1

The relay 1 switch will determine if the Relay on the Tablet or on the Remote Relay Unit will be switched to the ON position. This means for whichever alarm setting it is turned on for, whether it's Alarm 1,2,3, or 4, Relay 1 will activate. The same thing goes for Relays 2 and 3.

Please note Relays are not tested with the test button, individuals will need to scroll down to the bottom of the

settings screen under “Tablet Relay Non-Alarm State” to individually select “Active” or “Inactive” to set no NC pathway.

- **Relay 2**

The relay 2 switch will determine if the Relay on the Tablet or on the Remote Relay Unit will be switched to the ON position

- **Relay 3**

The relay 3 switch will determine if the Relay on the Tablet or on the Remote Relay Unit will be switched to the ON position

- **Latch**

The latch switch will force the alarm to stay on, even if the sensor reads below the alarm trigger level.

This functionality was designed specifically for Denver, CO, and is a key-driven shut-off box to mute the alarm until the fire marshal can evaluate the situation.

- **Sensors**

The sensors drop-down allows the user to choose if only the sensor that is triggered will alarm, or if all sensors connected to the tablet will alarm.

- **Mute**

The mute drop-down allows the user to choose what is muted. Choices are Horn Only, Strobe Only, Both Horn and Strobe, Relays Only, or all. This function will silence the alarm for the user’s configured amount of time.

Default mute time is set to 30 seconds.

- **Mute Time**

The mute time dropdown allows the user to choose how long the mute will last. Choices are 15 seconds, 30 seconds, or 60 seconds.

- **Password Protected**

Please note that the device does come password protected. This is a great feature if you are a manager or industry professional. This allows only those with the password to make adjustments to the device. The password is fixed, and cannot be changed.

To make edits to the name of the sensor, first tap the lock icon in the upper right-hand corner, type the password “co2meter”, and hit unlock. The lock icon in the right-hand corner will then indicate an open lock.

Now that the device is unlocked, you can name the sensor from this screen. Tap “Give Location Name” and rename the sensor to something that allows you to understand where the sensor is located. Once you have finished renaming the sensor, tap the small “down” arrow below the keyboard.

Once you are done on the sensor dashboard hit “done” in the upper left-hand corner.

Calibration

It is good practice to regularly calibrate the CO2 Sensor. We do so by Zero Calibrating using pure 100% Dry Nitrogen.

The procedure is as follows:

1. On the tablet, tap on the sensor you are calibrating. Tap on the Unlock Button on the top right and enter the password. Scroll to the bottom of the sensor properties screen and tap the “Calibrate” button.
2. Place a flex tube connected to a tank of 99.9% Dry Nitrogen to the sensor orifice on the Remote Sensor Unit
3. When the sensor reads below 300ppm, the calibration will begin and takes 1 minute
4. Leave the flex tube of Nitrogen on the sensor orifice for the entire minute

5. When calibration is complete, the Red Alarm LED on the Remote Sensor Unit will flash 5 times, the Strobe may flash as well.
6. Check the tablet for a message validating that the calibration was successful.
7. If the unit fails calibration, it will state fail and you will need to keep the sensor main screen open and troubleshoot, via contacting our support team at either support@CO2Meter.com or speak to an expert, 877-678-4259.

Please note: The end user has a choice of either calibrating themselves with a tank of nitrogen, or sending it back to CO2Meter to calibrate for a small calibration fee.

Accessories:

- **CM-7002 – Reset Unit (Add-On)** – The Reset Unit Add-On provides a unique Push Button and Key Switch to mute and reset latch for all sensors connected to the tablet. The unit also comes with 3 Relays allowing the user to place their alarm relays anywhere. This was designed specifically for Denver, CO code requirements.
- **CM-7003 CO2 Sensor Module** – Additional CO2 Sensor Modules can be purchased per industry or application dependent upon customer needs or requirements.
- **CM-7004 Horn/Strobe Module** – Additional Horn/Strobes can be purchased per industry or application dependent upon customer needs and requirements. Amber Lens come included, Blue Lens are available for purchase.
- **CM-7005 LCD Tablet** – Additional 8" touch screen control panel tablet is available for individual purchase.
- **CM-7006 Secondary Tablet** – An additional secondary tablet can be purchased for display use only.

Specifications

Sensor Specifications

- CO2 Measurement Range: 0-5% (400-50,000ppm)
- CO2 Measurement: Non Dispersive Infrared (NDIR)
- Sensor Reading Frequency: 0.5Hz
- Response time: 90% at 2 minutes
- Measurement Interval: 2 seconds
- Communication: UART Modbus
- Sensor Life Expectancy: > 15 years
- Maintenance Interval: no maintenance required
- Self-Diagnostics: complete function check on startup

Electrical/Mechanical

- Power Input: 4.5-5.25 VDC
- Power Consumption: 300mA peak, 30mA average
- Connections: Input / Output / Strobe – CAT5 8 pin Connector

Dimensions

- Main Tablet: 8.0" w x 8.75" l x 1.5" h (Screen is 8" LCD touchscreen)
- Sensor Unit: 3.5" w x 5.5" l x 1.75" h
- Reset Unit : 3.5" w x 5.5" l x 1.75" h
- Horn Strobe Unit: 5.5" w x 4.5" l x 2.75" h

Tablet Specifications

- 8in Capacitive Touchscreen
- 2x 1 Watt Speakers
- 48-54V DC Power Input
- 4x CAT5 Powered Ethernet Connectors
- 1x CAT5 Un-Powered Uplink Ethernet Connector (Used for Troubleshooting Only)
- 3x 10A Relays
- 1x USB Type A Connector (Used for Troubleshooting and Updates Only)

Horn Strobe

- 110 Candela Amber Strobe
- 90-120dB 3KHz Temporal
- Horn CAT5 Connector

Relay Specifications

- 1x Mute Push Button
- 1x System Reset Lock Switch
- 3x 2A Relays

Troubleshooting

1. Sensor does not appear on Tablet
 - Make sure that the sensor is connected and receiving power
 - Green LED will be ON when Remote Sensor Unit has power
 - Make sure that the CAT5 Cable is connected to one of the Powered CAT5 Connectors on the Tablet or the OUTPUT Connector on the previous Remote Sensor Unit. Make sure that the CAT5 Cable is connected to the INPUT Connector of the Remote Sensor Unit that is not powered.
2. Sensor appears on Tablet as OFFLINE
 - Make sure that the sensor is connected and receiving power by following (1)
3. Calibration Failed
 - Make sure that the Nitrogen is turned on and always present during the calibration procedure
 - Make sure that the measured PPM of the Sensor does not go above 300ppm after calibration is started

Safety Notice

Warning: Your safety is very important to us. To ensure the proper and safe use of the device, please read all

warnings and the entire User Manual before using the device. Otherwise, the protection provided by the equipment may be impaired. These warnings provide important safety information and should be observed at all times.

1. Please handle the device carefully. Do not subject the product to impact or shock, as it could lead to sensor accuracy drift.
2. Do not place the unit near a heat source. Heat may distort the unit.
3. Do not touch the exposed electronic circuitry of the device under any circumstances, as there is danger of electric shocks. All relays are dry contact and are able to remain exposed without risk of electric shock.
4. Please take care of cable connection between Sensor Unit and Main Tablet. Make sure the cable from Sensor Unit Output (Main Tablet) port is connected to the Main Tablet INPUT (Sensor Unit/Main Tablet) port.
5. The dry contact relays do not provide power to external devices, like a ventilation fan. If there is no power supply to the fan, the relay will not work. This may result in potential danger with high CO₂ concentration in confined space.
6. 6 bilingual Warning Signs are included with each device

Product Care

To ensure maximum benefit from this product, please observe the follow guidelines.

1. Repair – Do Not attempt to repair or modify the device in any way. Please contact CO₂Meter directly if the product needs servicing, including replacement or calibration service. See Section 15 for technical support contact information.
2. Cleaning – Disconnect the power before cleaning. Use a damp cloth. Do not use liquid cleaning agents such as benzene, thinner or aerosols, as these will damage the device. Do Not splash the unit with water.
3. Maintenance – We recommend users to test the communication between the Sensor Unit and Main Tablet using the 'DIAG' function to verify the working conditions of the Sensor Unit and Main Tablet. If the five LEDs blink and the buzzer of Sensor Unit and Main Tablet sound simultaneously, the Sensor Unit and Main Tablet are working normally.

Support

Contact us: We're here to help!

If the troubleshooting guide above doesn't help you solving your problem or for more information, please contact us using the information below.

For for further information on the CM-7000, visit our FAQ page: [here](#).



Support@CO2Meter.com



(386) 256-4910 (M-F 9:00am–5:00pm EST)

www.CO2Meter.com



See CO₂Meter, Inc. Terms & Conditions at:

www.CO2Meter.com/pages/terms-conditions



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Documents / Resources

	<p>CO2METER COM CM-7000 Multi CO2 Sensor System [pdf] User Manual CM-7000, Multi CO2 Sensor System, CM-7000 Multi CO2 Sensor System</p>
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References

- [CO2 Meters, CO2 Sensors, CO2 Monitors | CO2Meter.com](#)
- [Terms & Conditions | CO2Meter.com](#)

[Manuals+](#).