

iSense Remote CO₂/Temp/%RH Storage Safety Alarm-NEMA4



CM-0028

CM-0029

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IMPORTANT SAFEGUARDS

To reduce the risk of fire, electrical shock and/or injury to persons, basic safety precautions should always be followed when using electrical appliances, including the following:

1. **READ ALL INSTRUCTIONS BEFORE USING THE DEVICE**
2. Do not operate the device if it is malfunctioning.
3. Do not install the device outside in exposed conditions. Due to the nature of the design the enclosure cannot be made water-tight and the unit must not be exposed to water.
4. Do not operate the device with the cover detached.

SAVE THESE INSTRUCTIONS

SPECIFICATIONS

Input Voltage

CO2	1% (CM-0028) or 3% (CM-0029)
Temperature	-40 to 60 C
Relative Humidity	0-95% non-condensing

Input Voltage

Voltage Maximum	24VDC
Voltage Minimum	9VDC
Power Consumption	~.5Watt Average
	DC voltage accepted

CO2 Sensor Ratings

Life Expectancy	>10 years
Maintenance Interval	No maintenance required
Warm-up Time	< 1 min (measurements immediately)

Range	10,000ppm or 30,000ppm
Repeatability	±20ppm, ±1% measured value
Accuracy	±30ppm, ±5% measured value

Default Alarm Thresholds

Green	0-1,000ppm
Yellow	1,000ppm-1,500ppm
Red + Alarm	1,500ppm+
Mute Period	30s

Relay Ratings

Contact Rating (NO)	10A @ 277 VAC
Contact Rating (NC)	6A @ 277VAC

PACKAGE CONTENTS

Please verify the contents of your package before using the product.

- 1- Head Unit
- 1- 50ft, 4-conductor wire
- 1- Remote CO₂ Transmitter
- 1- USB Cable
- 1- Power supply 18VDC universal
- 1- Car Power plug DC



MINIMUM SYSTEM REQUIREMENTS

To utilize our software your Windows-PC must meet the following requirements:

- Windows XP SP3 or higher
- Microsoft .Net Framework 3.5 SP1
- Pentium 4 2.4Ghz or higher processor
- 1GB of RAM
- Sufficient disk space for logs and application files (20MB minimum, 200MB+ recommended)

Software is compatible with 64-bit operating systems and is fully tested under Windows 7.

Please visit co2meter.com and navigate to our Downloads section to obtain the latest version of our GASLAB® data collection software.

INSTALLATION

The unit is designed to have the remote CO2 transmitter permanently installed in a remote location. You can add more than one CO2 transmitter through RS-485 (limit 8 units) with one Remote Control. The entire system is powered by 12VDC, supplied by the host.

The figure on the next page displays the connections for this unit.

Remote Control connections



CO2 Transmitter connections



Powering the Unit

The unit is powered directly with 12VDC from the host system. Power is distributed to the remote CO2 transmitter through the 4-wire communication cable.

USAGE

The unit is designed to automatically start operating upon power-up. During normal usage no maintenance will be required.

Data Logging

The unit, when attached to 12VDC with a sensor connected, will automatically start collecting data logs. A fresh log record is created every time the unit is powered up.

During operation if the CO2 exceeds the set thresholds the unit will go into alarm mode, with a loud buzzer. The buzzer can be muted for 30 seconds by pressing the mute button. The buzzer is automatically disabled once the CO2 falls below the threshold.

Downloading Logs

To download logs the unit must be disconnected from the remote transmitter and connected to a computer via USB. **12VDC external power is not needed to download data logs.** Simply connect the unit, launch our GASLAB® software, and click on the Download and Manage Logs button.

THEORY OF OPERATION

The CO2 sensor inside this device uses non-dispersive infrared technology to sense, as a function of transmitted light, the concentration of CO2 in the air. It has been factory calibrated to operate within the specified accuracy and precision.

The sensor makes use of an algorithm called automatic background calibration to continuously adjust the zero-point to ensure accuracy is maintained.

The ABC algorithm allows the CO2 sensor to dynamically shift its CO2 reading by a constant. It works via storing the lowest CO2 sample taken over the ABC Period and assuming that this low value is equal to a known value (the target value). It then adjusts the output of the CO2 reading by the delta between these values. This algorithm does not affect the linearization of the output signal.

For example, by default ABC is enabled with an ABC Period of 180 hours, a target value of 400ppm, and a maximum delta of 30ppm. This operates under the principle that ambient, outdoor air is at 400ppm.

The sensor will keep track of the lowest CO2 reading recorded over a period of 180 hours and then adjust the zero point, up to 30ppm at a time, towards that value.

To ensure maximum accuracy it is recommended to install the device in an environment that will routinely see this low value. Alternatively the unit can be exposed to fresh air for a few minutes, or a calibration can be performed, as documented in the next section.

CALIBRATION

All units are factory calibrated with multiple reference points of gas, and have been verified to be accurate within their specified performance before shipment, however, if severely jolted or otherwise mechanically disturbed calibration can occasionally drift.

To compensate for this drift all calibration procedures are based around a procedure that consists of a single calibration point, effectively shifting the zero-point of the CO₂ sensor.

Calibration can be performed using either 0% CO₂ calibration gas (typically nitrogen, available directly from CO₂Meter), or using a fresh-air source, assumed to be approximately 400ppm.

Attach calibration gas and connect the unit to a PC. Open the calibration screen in GASLAB®. Click the calibrate button after selecting the applied calibration gas. As long as the gas concentration was stable the unit should instantly reflect the calibrated value. This can be confirmed by watching the display.

To see the calibration in real time we recommend starting a real time capture before opening the configuration screen.

Zero or Fresh Air Calibration

Apply gas and select the appropriate concentration in the screen shown in Figure 10. Click the calibrate button. The sensor reading should instantly reflect the calibration.

WARRANTY

This unit comes with a 90 day warranty.

CO2Meter.com 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 option) 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.

SUPPORT

The quickest way to obtain technical support is via email. Please send all support enquires to support@co2meter.com. In your email please include a clear, concise definition of the problem and any relevant troubleshooting information / steps for so we can duplicate the problem and quickly answer any questions.

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