



Incorporated

# Carbon Monoxide Analyzer

## Instruction Manual

### Introduction

The C-Squared CO Analyzer is designed to measure CO levels in the 1ppm to 100ppm range. It can be used to measure the CO content to assure safety in gas mixes that may be contaminated due to the introduction of CO from internal combustion engines or other pumping devices where CO is a bi-product. The Analyzer is designed to be able to verify CO concentration in cylinders as well as analyze closed spaces.

The C-Squared Analyzer has a digital display, an internally or externally mounted temperature compensated sensor with a 1 year life expectancy. The power is supplied by three AAA 1.5 volt batteries providing an expected operation life of one year before replacement is required.

The case has an environmentally sealed, potentiometer, on/off switch, long life sensor and digital panel meter. The Analyzer is water resistant and sealed to prevent moisture from affecting the internal components.

The Analyzer is shipped in a high impact case that can be used for storage or other purposes. The Analyzer is ready to use out of the box with no additional work other than checking on the calibration with an appropriate calibration gas at 50 or 100ppm.

### Controls

The C-Squared Carbon Monoxide Analyzer has a splash proof on/off switch. When the switch is centered it is in the off position. When not in use, the switch should be in the off position to conserve battery life. When the switch is in the up position it is on. When the switch is flipped down the unit will remain in the off position.

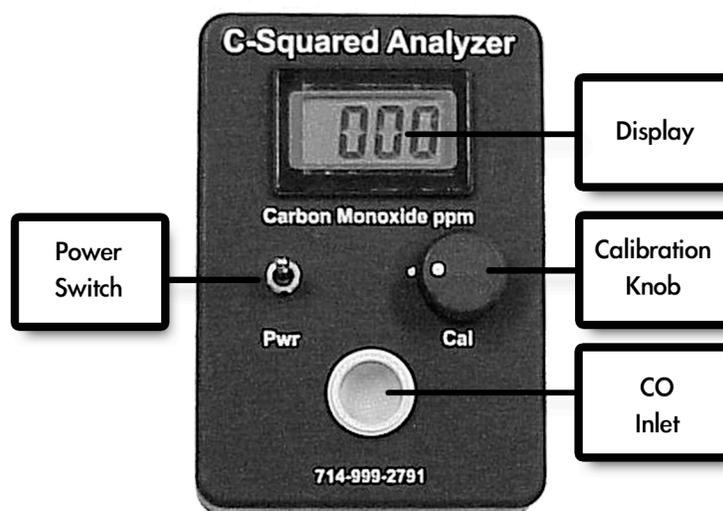
When switched on, the analyzer's display will indicate a CO reading. Please note that the analyzer has been calibrated prior to shipping but it should be checked routinely (see calibration section).

The low battery warning is a battery symbol in the left corner of the display. When present change the batteries prior to using the analyzer.

The display has a 1 ppm resolution and is sealed.

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### Gas Calibration:

Calibration is desirable prior to every use. For gas mixtures or room monitoring you should use a CO calibration of 50ppm or 100ppm concentration before use. This assures minimum deviation and greatest accuracy. The CO Analyzer is factory calibrated and marked for 93 ppm CO with calibration gas. As the sensor ages it would be correct to either send the unit back for recalibration or reset the calibration using the above concentrations of certified gas. For regular use expose the analyzer to the calibration gas and adjust the calibration knob until the display reads the listed concentration of the Calibration gas.

The analyzer is now ready for CO measurement.

### **WARNING:**

**The analyzer is sensitive to partial pressure. Calibration must always be carried out at the same pressure as the CO measurement.**

### Carbon Monoxide Calibration:

Obtain the 50ppm or 100ppm Carbon Monoxide from a certified Distributor and measure the gas using a 100 to 300 cc per minute flow rate. Be sure to allow the reading to stabilize.

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**Operation:**

The CO Analyzer comes complete with a sensor flow cap/restrictor that allows you to read directly from a cylinder valve.

You should check the calibration with 50ppm or 100ppm and adjust as necessary. If for any reason the Analyzer does not calibrate within specifications the CO sensor should be replaced. If the batteries are low an icon will appear on the face of the display and the batteries should be replaced with three AAA alkaline batteries for best performance.

Once you have verified the operation of the Analyzer it is ready to use and should operate correctly.

**Troubleshooting:**

<b>PROBLEM</b>	<b>POSSIBLE SOLUTIONS</b>
<b>Cannot calibrate analyzer</b>	<b>Replace Sensor</b>
<b>No display once analyzer is turned on.</b>	<b>Replace Batteries</b>
<b>Low battery indicator is displayed</b>	<b>Replace batteries</b>

**Maintenance:****Battery Replacement:**

- a) Remove the 4 screws located on the back of the analyzer and carefully remove the back cover.
- b) Slide the batteries out of their holder and replace them with new AAA batteries.
- c) Make sure no wire leads are outside of the enclosure, and the o-ring is in place. Carefully secure the lid and replace the screws.

**Sensor Replacement:**

- a) Remove the sensor from the case by removing the back cover of the analyzer as noted for battery replacement and disconnecting the Molex connector
- b) Dispose of the sensor in accordance with local regulations.
- c) Remove the new sensor from its package; check it for leaks or any damage.
- d) Be sure to remove the shorting plug from the connector prior to installing it into the Analyzer.

**Care of the Analyzer:**

The Analyzer is an electronic instrument and should be treated as such. It is a completely sealed unit and the enclosure was designed to withstand use in harsh environments. However it should not be intentionally dropped in water or physically abused. With proper care it will provide you with a long life. The Analyzer and sensor may be wiped clean with standard disinfectants or water. The Analyzer is designed to be splash proof so there is little chance of liquids coming in contact with delicate electronics.

**Safety:**

When the batteries or sensor require replacement, dispose of them in accordance with local regulations.

The sensor contains a KOH (Potassium Hydroxide) solution that is hazardous and can result in the following:

- |            |   |
|------------|---|
| Eye:       | Can cause eye damage. Flush the eye with water for 15 minutes and seek aid.   |
| Ingestion: | Can be serious if swallowed. Drink a lot of fresh water and seek aid.   |
| Skin:      | Chemical burn is possible. Wash the area of skin exposed and remove any clothing that was in contact with the KOH. Seek aid if necessary. |

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