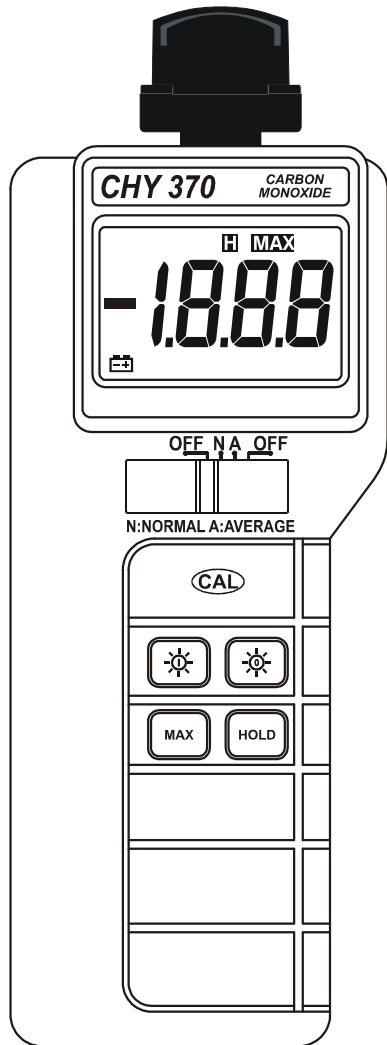


OPERATING INSTRUCTIONS

MODEL: 370 C€

CARBON MONOXIDE METER



OPERATING INSTRUCTIONS

CARBON MONOXIDE

INTRODUCTION

The carbon monoxide meter enables to measure low levels of carbon monoxide in parts per million (PPM).

It is intended to measure levels of CM in still ambient air.

It uses a catalytic chemical sensor that consumes no chemicals.

Life is primarily determined by the type of exposure.

The most practical application is to determine if the indoor CM levels are higher than outdoor levels and to determine the source.

This instrument detects changes in CM levels very quickly.

The faster the beeper sounds, the higher the concentration of CM.

Above 200PPM, the beeper sounds continuously, and the frequency of the tone increases with the concentration of CM.

This instrument is a portable easy use 3½ digit, compact-sized digital carbon monoxide meter designed for simple one hand operation. Meter with Backlight LCD display.

WARNING

Do not take measurements directly at a tailpipe, in a furnace flue, or at a register. See precautions.
Do not rely solely on a carbon monoxide measurement to determine if a heat exchanger is bad.
See heat exchangers

PRECAUTIONS

- Do not measure gas engine exhaust or other high CM or highly contaminated gases.
High levels of CM and other contaminants can ruin the sensor.
- Do not take readings directly in stream of air at register or in a flue.
- Allow enough time for accessory head to reach ambient temperature and RH%.
Air being measured must be stable and between 0°C and 40°C (32°F and 105°F) and 15%RH and 90%RH.
Temperature and humidity changes can cause transient readings.
For best results, use a Hand pump to sample the air, cool it to near room temperature, and raise the relative humidity.

How to use

- Slide the switch at "Average" or "Normal" to measure the concentration of CM.
- Let stabilize for at least 45 seconds.
- Take the instrument outside and adjust it to zero.
Then bring inside to take measurements.
- Expose sensor to a still, stable air sample.
(see precautions)
The display reacts to the presence of CM in seconds.

- Take final reading when reading stabilizes.
- For initial test, walk around the building, watching for the readings to go up to determine where maximum concentrations of CM are.
To measure air from register, use a pump or measure out of the air stream.
Hot blowing air can adversely affect the reading.
The temperature of the sample must be near ambient.
- Push "MAX" to read the maximal reading.
Push "HOLD" to hold the maximal reading.
Push "☀" to turn on the backlight .
Push "☾" to turn off the backlight.
- Average mode can read a stable reading.

Zeroing the Sensor

Turn on the power and allow the displayed reading to stabilize before proceeding approximately 30 seconds.

Then with the instrument sampling fresh air (air that is free of CM), remove cap of cover "CAL" use attached screw driver to adjust VR which is in the hole for a reading of 000±2ppm.

If you're not sure about the quality of the surrounding air, you can apply a blend of Oxygen/Nitrogen gas to the sensor as described under calibration.

If rapid temperature changes are encountered (such as from freezing to room temperatures) during the operation of the analyzer, the operator must allow the analyzer to stabilize at the ambient temperature for at least 2 minutes before taking a measurement.

SPECIFICATIONS

GENERAL

- Display:** 3½ digit liquid crystal display (LCD) with maximum reading of 1999.
- Low battery indication:** The "☹" is displayed when the battery voltage drops below the operating level.
- Operating Environment:** 32°F to 105°F (0°C to 40°C) at 15% to 90% R.H.
- Storage Temperature:** -4°F to 140°F (-20°C to 60°C) , 0 to 80% R.H. with battery removed from meter.
- Battery:** Standard 9V battery (NEDA 1604, IEC 6F22 006P).
- Battery Life:** 200 hours typical.
No measurable current draw when in "off" position.
- Dimensions:** 189mm(H) x 67mm(W) x 35mm(D).
- Weight:** approx.193g including battery.

SAFETY INFORMATION

It is recommended that you read the safety and operation instructions before using CM level Health effect.

0-1 ppm	Normal background level.
9 ppm	Maximum indoor air quality level.
50 ppm	Maximum concentration for continuous exposure in any 8 hour average level.
200 ppm	Mild headache, fatigue, nausea and dizziness.
400 ppm	Frontal headache, life threatening after 3 hours.
800 ppm	Death within 2 hours.
1600 ppm	Nausea within 20 minutes, death within 1 hour.
12800 ppm	Death within 1 to 3 minutes.

OPERATING INSTRUCTIONS

Push Button

Back-Light Button

- Press "☀" button to turn the Back-Light on.
- Press "☾" button to turn the Back-Light off.

DATA HOLD Button

Pressing the "HOLD" key to enter the Data Hold mode, the "H" annunciator appears on the display.

When DATA HOLD mode is selected, the meter held the present readings and stops all further measurements.

Pressing the "HOLD" key again cancels DATA HOLD mode, causing meter to resume taking measurements.

MAX HOLD Button

Pressing the "MAX" key to enter the MAX HOLD mode.

The meter then records and updates the maximum absolute values and the "MAX" annunciator appears on the display. Pressing the "MAX" key again to exit the MAX HOLD recording mode.

In the MAX HOLD mode, press "HOLD" key to stop the recording, press "HOLD" key again to resume recording.

CM DETECTORS and CRACKED HEAT EXCHANGER

A CM detector cannot tell you if a heat exchanger is good.

A CM detector can indicate a heat exchanger is cracked only if all of the following conditions occur simultaneously:

- The flame generates enough CM (lack of oxygen, excess fuel, high temp).
- Enough exhaust gases are emitted from the heat exchanger crack.
- The exhaust gases from the crack are not diluted too much before coming in contact with the sensor.
A cracked heat exchanger may leak CM in a small stream.
You may measure high concentrations at one point but low concentrations only an inch away.

4. The heat exchanger is the only possible source from the CM detected.

SAFETY INFORMATION

CM(PPM)Effects

9PPM Minimal. Max allowable concentration for eight hours (EPA and ASHRAE).

35PPM Max for continuous exposure for one hour (EPA and ASHRAE).

50PPM Max for eight hours (OSHA).

100PPM Trips installed CM detectors. UL2034 specifies a max exposure of 100 min.

200PPM In two to three hours: slight headache, tiredness, dizziness, nausea. UL2034 specifies a max exposure of 35 min.

400PPM In one or two hours: frontal headaches. In three hours: life threatening. UL2034 specifies a max exposure of 15 minutes.

800PPM In forty five minutes: dizziness, nausea, and convulsions.

800PPM In two to three hours: death.

1600PPM In one hour: death.

6400PPM In fifteen minutes: death.

12800 PPM In three minutes: death.

Effects can vary significantly depending on age, sex, weight, and overall health.

Cross-sensitivity

The sensor has a permanent irreplaceable filter built inside the sensor to filter out trace concentrations of SO₂, NO₂ and most hydrocarbons.

If exposed to high concentrations of harmful chemicals or dirt, the filter can deteriorate and/or impede diffusion of air to the sensor.

Gas	PPM	Cross-sensitivity%
Hydrogen sulfide	207	1.3
Sulphur dioxide	208	-0.7
Nitric oxide	1000	46
Nitrogen dioxide	20	-4.4
Chlorine	15	-3.8
Hydrogen	200	78
Hydrogen cyanide	15	-0.5
Hydrogen chloride	135	-0.7

Storage

Do not store in areas which contain solvent vapors.

This includes aerosols such as air-freshener, wax polish, window cleaner, and all organic solvents.

Optional pump

Use the model CHY hand pump set to extract ambient air samples from hard to reach places or from locations where the air temperature is high.

For potentially high concentrations of CM, pump slowly and stop if the measurement approaches 2000PPM.

Carbon monoxide concentrations will begin to be shown in two or three squeezes.

For final reading, pump until the reading stabilizes

approximately 30 squeezes.

ELECTRICAL

Range: 0 to 1000PPM.

(2000PPM with 5 minute max exposure time.)

Sensor Calibration: Factory calibrated on 205ppm.

Sensor Type: Electrochemical (specific to CM).

Initial Accuracy: ±5% of reading ±5PPM.

Response time: <70sec to 90% of reading.

Operating Temperature: 0 to 40 °C (32 to 105 °F).


Operating relative humidity: 15 to 90%RH, noncondensing.

Long term drift: <5%/year (depending on use).

OPERATOR MAINTENANCE

Battery Replacement

Power is supplied by a 9 volt “transistor” battery (NEDA 1604, IEC 6F22).

The “” appears on the LCD display when replacement is needed.

To replace the battery, remove the two screws from the back of the meter and lift off the battery cover. Remove the battery from battery contacts.

Cleaning

Periodically wipe the case with a damp cloth and detergent, do not use abrasives or solvents.