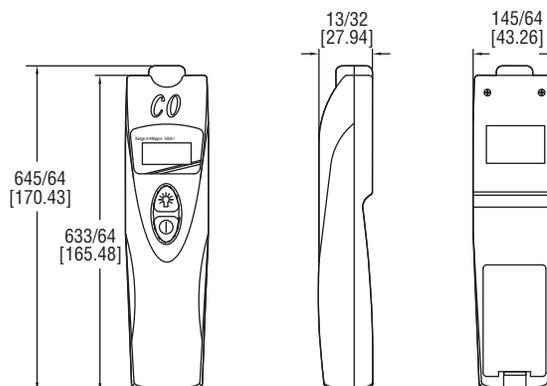




Model 450A-1 Digital Pocket Size Carbon Monoxide Meter

Specifications - Installation and Operating Instructions



The **Model 450A-1 Digital Pocket Size Carbon Monoxide Meter** measures the ambient concentration of carbon monoxide (CO) in the environment and displays the measurement on the two line digital LCD screen. Besides the measurement, the maximum recorded CO value since the last reset is shown. An audible carbon monoxide alarm gives warning of CO levels above 25 ppm. For viewing in poorly lit environments, the built-in back light brightens the display. Model 450A-1 includes soft carrying case with belt loop, wrist strap, and three AAA batteries.

- WARNING**
- Recovery time is needed when the meter has been exposed to high levels of CO and the alarm has gone off. The longer the exposure, the longer recovery time needed.
 - Meter must be kept from electromagnetic interference. Exposure may cause unreliable readings.
 - Self-test after power on is required to test the sensor and circuit condition.

OPERATING INSTRUCTIONS

Power On / Off

Press the button to turn the meter on or off.

Upon turning on the unit, the Model 450A-1 will go through a self test procedure. The alarm value and the current ambient temperature will blink on the screen. The self-test will be completed in approximately 15 seconds with a short beep.

NOTICE

It is recommended that the Model 450A-1 be turned on in a area free of CO to avoid self test failures due to high CO concentrations.

Setting Temperature Units

To switch temperature units, press the button for more than 1 second during self-test.

Backlight

The backlight can be turned on at anytime during the operation of the meter. Press the button momentarily, to activate backlight. Press again to turn off backlight.

Alarm Setting

The audible alarm set point is pre-set to 25 ppm CO. The alarm value can be adjusted by:

- Powering the Model 450A-1 off. Press and hold the button as the possible set point values are displayed.
- Once the desired set point value appears, let go of the button. Possible alarm values are 0, 25, 30, 35, 45, 50, 70, 100, and 200 ppm.
- The meter will return to self-test after the value is selected.

SPECIFICATIONS

Range: 0 to 999 ppm.

Accuracy (at 20 ±5°C, 50 ±20% RH): ±20% @ 0 to 100 ppm; ±15% @ 100 to 500 ppm.

Resolution: 1 ppm.

Display: Dual digital LCD display.

Response Time: Less than 60 seconds.

Sensor: Electrochemical carbon monoxide sensor.

Ambient Operating Temperature: -10 to 60°C (14 to 140°F).

Operating Humidity (Non-Condensing): 5 to 99% RH.

Power Requirements: (3) AAA alkaline batteries, included, user replaceable.

Battery Life: 250 hours with backlight off; 35 hours with backlight on.

Alarms: Audible, preset at 25 ppm.

Weight: 4.23 oz (120 g).

Agency Approval: CE.

Resetting Max CO Level

The maximum CO level detected will be displayed on the lower line of the display. It can be reset by pushing and holding the button for two seconds while in normal operation.

Automatic Power Off (Sleep Mode)

The instrument will shut off automatically after 15 minutes if no buttons are pressed. The meter will NOT turn off during calibration mode.

BATTERY REPLACEMENT

The Digital Pocket Size Carbon Monoxide Meter incorporates a visual low battery indication. When the "Low battery symbol" appears, the 3 AAA alkaline batteries need to be replaced. Another sign that the batteries need to be replaced is when the thermometer fails to power on.

To Replace the Battery:

1. Make sure the unit is powered off.
2. Remove the battery cover.
3. Lay face down on a clean, flat surface.
4. Replace batteries, taking note of the indicated polarity.
5. Replace the battery cover.

NOTICE

Failing to turn the meter off may result in malfunction of the unit. Dispose of used batteries promptly and keep away from children.

CALIBRATION

A periodic check of the system calibration is recommended.

To enter calibration mode, turn off meter and press the  and the  button simultaneously for 2 seconds. For calibration, there are two options.

0 ppm Calibration:

Place meter in an area free of CO and enter calibration mode. The unit will calibrate automatically. The display will blink until calibration is complete. This takes about 10 minutes.

100 ppm/500 ppm Calibration:

After entering calibration mode, hold the  button. 0,100, and 500 ppm will cycle through on the bottom of the display. Release the button when preferred calibration value is reached. Place meter in sealed box filled with the selected calibration gas standard for 15 minutes. Check if the reading meets calibration standard. If it does not, repeat the procedure.

MAINTENANCE

Model 450A-1 is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

TROUBLESHOOTING

Problem	Solution
Power on but no display	<ul style="list-style-type: none">• Verify that the time since power on has been over 300 mS.• Verify that the batteries are in good contact with the correct polarity.• Replace batteries with new batteries and try again.
Display disappears	<ul style="list-style-type: none">• Determine if the low battery indicator is on the screen before display disappears. If so, replace with new batteries.
Calibration failure	<ul style="list-style-type: none">• Determine if the low battery indicator shows before calibration. If so, replace with new batteries and retry calibration.• Verify that the standard gas is correct.
E 2	<ul style="list-style-type: none">• The value is underflow.
E 3	<ul style="list-style-type: none">• The value is overflow.
E 4	<ul style="list-style-type: none">• The value is in error because of the original data.
E 31	<ul style="list-style-type: none">• A/D failure. Return meter for repair.
E 33	<ul style="list-style-type: none">• Measurement circuits failure. Return meter for repair.
E 35	<ul style="list-style-type: none">• Self-test failure<ul style="list-style-type: none">• Turn the meter on again in area free of CO.• If error displays again, sensor failure. Return meter for repair.

LEVELS AND EFFECT OF CO

ppm	Symptoms and Applicable Standard
0-1	Normal background levels.
9	Maximum indoor air quality level; Maximum allowable concentration per ASHRAE residential standards 62-1989 for living area.
25	Maximum limit of 8 hours of continuous exposure per California OSHA workplace standards.
35	Maximum 8 hours of average exposure level per US OSHA workplace standards.
50	Maximum concentration for continuous exposure in any 8 hours average level per OSHA standards.
100	Remove employees from enclosed space if the CO concentration exceeds 100 ppm per OSHA exposure limit.
200	Mild headache, fatigue, nausea, and dizziness within 2-3 hours.
400	Frontal headache, life threatening after 3 hours; Maximum concentration in flue gases per the US EPA and AGA standards.
800	Dizziness, nausea, convulsions, death within 2-3 hours.
1600	Nausea within 20 minutes, death within 2-3 hours.