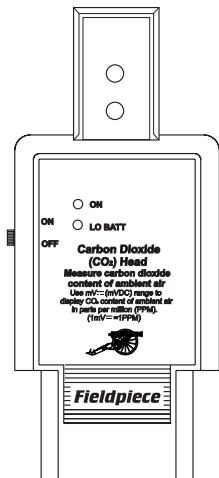


CARBON DIOXIDE

HEAD

Model ACD1



OPERATOR'S MANUAL



Description

The model ACD1 carbon dioxide (CO₂) accessory head enables most digital multimeters to measure low levels of carbon dioxide in parts per million (PPM).

It uses a non-dispersive infrared sensor that consumes no chemicals. Ambient air enters the measurement chamber by diffusion. It takes only seconds to respond to changing ambient CO₂ concentrations.

Application

Ventilation systems should be designed to bring in enough outside air to keep the ambient air below 1,000 PPM CO₂. CO₂ comes from people exhaling CO₂ in the concentration of approximately 40,000 PPM. The more people in a room or building, the more CO₂ is present.

Unlike CO (carbon monoxide), people can sense CO₂. As CO₂ levels go up, people can become unproductive, irritable, uncomfortable, and tired.

The way to bring CO₂ levels down is to bring in more outside air. ASHRAE Standard 62-1989 contains guidelines to determine ventilation rate by measuring CO₂ content of air. If CO₂ is higher than 1,000PPM, ventilation system modifications may be necessary to insure IAQ conditions are met as established by ASHRAE.

Don't exhale into sample air

When measuring ambient air, do not exhale into air surrounding the accessory head! Your breath contains 40,000 PPM CO₂. While it won't hurt the accessory head, it doesn't take much to throw your reading off.

When taking measurements, place the accessory head in a location that measures mixed air. This way you won't contaminate the gas measured by the instrument with your breath. Up high, near the return vent might be a good spot. On a table surrounded by people looking at the accessory head (and breathing on it) would be a very bad spot.

Use the MAX function on the DMM to hold the reading after the accessory head "times out" (5 minutes).

Specifications Electrical

Sensing range: 0-2000 PPM

Accuracy: @ 30" Hg and @ 77 °F

±75 PPM: 0-1500 PPM

±5% reading: >1500 PPM

Sensing method: Non-Dispersive Infrared (NDIR)

Operating temperature range: 32°F to +120°F

Pressure effect: 0.5% of reading per 0.1" Hg

Gas sampling mode: diffusion

Repeatability: ±9 PPM

Warm up time: < 90 seconds, output 0VDC during this time

Response time: < 20 seconds to 63% of step change

Drift measured at 800 PPM: 50 PPM/year

Output voltage: 1mV/1PPM

Recommended calibration interval: 1 year

Environmental

Ambient operating range: 32°F to +120°F

Storage temperature: 0°F to +140°F

Operating humidity range: 5-95%, non-condensing

Maximum temperature variation: 3 PPM/°F over operating temperature

General specifications

Battery: 9V alkaline battery

Battery life: approximately 50 readings, 5 minutes each

Low battery indicator: Red LED (approximately 20 samples left with first low battery indication)

On indicator: Green LED

Auto shutdown: After approx. 5 minutes

Lifetime (shutdown mode): 50 hours

Operating Instructions

1. Connect to COM and Volts jacks. For Fieldpiece "stick" meter, slide the head over the meter. For other meters, use the Fieldpiece ADL2 deluxe test leads or AHDL1 accessory head handle.
2. Turn the accessory head on and select the 2000mVDC range.
3. Place the accessory head in a location that contains the air you want to sample, away from your exhaled breath.
3. For 90 seconds, the reading will be zero. You will see lights blinking in the sample input holes. After 90 seconds you will see the CO₂ levels of the ambient air in PPM.
4. After 5 minutes the accessory head will automatically turn off.
5. To display the reading after the accessory head automatically turns off, press MAX. The highest reading will be held on your Fieldpiece meter for about 45 minutes.

Field Calibration

It is recommended that the carbon dioxide head be calibrated at 1 year intervals. Field calibration can be done with a nitrogen gas (0 PPM CO₂).

1. Remove the back case.
2. Remove the screw on the side of the sensor guard and replace it with the nylon hose barb supplied with the accessory head.
3. Turn on the accessory head.
4. Connect nitrogen and supply at a rate of 0.5 liters/minute.
5. When the reading stabilizes, press the button on the back side of the PCB.
6. Reassemble accessory head.

Condensation

If the accessory head sees wide fluctuations in temperature, particularly going from hot and humid to cold, condensation can occur inside the light chamber affecting your readings. The condensation can be evaporated by exposing the accessory head to warm dry air. The cab or dashboard of your truck may work as long as the temperature stays below 140 °F.

Warranty

The product is warranted to the original purchaser against defects in material or workmanship for a period of one (1) year from the date of purchase. During the warranty period, Fieldpiece Instruments will, at its option, replace or repair the defective unit.

This warranty does not apply to defects resulting from abuse, neglect, accident, unauthorized repair, alteration, or unreasonable use of the instrument. Any implied warranty arising out of the sale of Fieldpiece's products including but not limited to implied warranties of merchantability, and fitness for purpose, are limited to the above. Fieldpiece shall not be liable for incidental or consequential damages.

State laws vary, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Service

Call Fieldpiece for a return material authorization number (RMA#). If under warranty, the accessory head will be replaced or repaired, at Fieldpiece's discretion, and returned, freight prepaid. If not under warranty, include \$200 (check, money order, or VISA) for complete repair or replacement. For calibration only, include \$40 (check, money order, or VISA).



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