



INSTRUCTION MANUAL

CD200

Combustible Gas Leak Detector



1-800-547-5740 • Fax: (503) 643-6322
www.ueiautomotive.com • email: info@ueitest.com

Introduction

The CD200 has a long, slim gooseneck probe and a bright LED tip light to find leaks in tight areas. It's adjustable alarm, easy one-hand operation and impact resistance storage case add up to value and convenience

Features include

- Adjustable tick rate to locate leaks quickly and easily
- Visual leak detection by LED indicators
- Separate user adjustable alarm for pre-determined level detection
- Precision sensor detects even the smallest leaks
- Tip light illuminates search area
- Fast response of less than two seconds to 40% LEL
- Includes earphone

Safety Tips

Before using this Instrument, read all safety information carefully. In this manual the word "**WARNING**" is used to indicate conditions or actions that may pose physical hazards to the user. The word "**CAUTION**" is used to indicate conditions or actions that may damage this instrument.

If you are using your CD200 as a result of a service call, chances are someone has either smelled a combustible gas leak or someone has reason to believe gas may be leaking. While your CD200 is designed to function without producing sparks or otherwise igniting the gasses it detects, the environment you are responding to probably has no such safeguards. Most combustible gas leaks are noticed long before concentration levels build up to the point that explosion hazards exist.



WARNING!

If you feel an explosion hazard exists:

- Arrange for evacuation of people in the area
- Call proper authorities from a safe location
- Shut off gas source if possible
- Ventilate enclosed areas if possible to do so without risk of ignition
- **DO NOT** switch power switches on in area of question

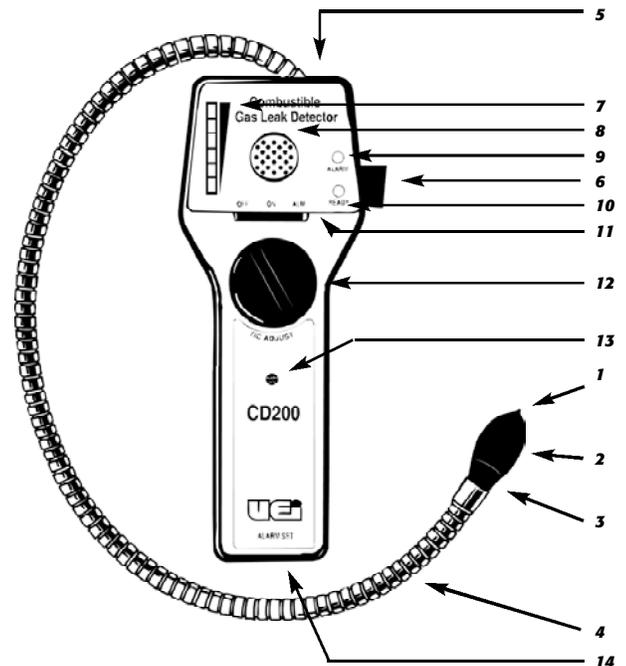
As a matter of routine, ventilate the area you plan to work in. Ventilation will help ensure the gas does not accumulate in large volume where it can attain its Lower Explosive Limit (LEL)*.

LEL: Lower Explosive Limit - The point at which a combustible gas, when mixed with air, has developed the minimum concentration to combust when exposed to a source of ignition. The LEL is usually stated as a percentage of gas in air, as a fuel-air-ratio, or as parts-per-million (PPM) in air.

International Symbols

	Dangerous Voltage		Ground
	AC Alternating Current		Warning or Caution
	DC Direct Current		Double Insulation (Protection Class II)
	Either AC or DC		Fuse
	Not Applicable to Identified Model		Battery

Controls and Indicators



1. LED Tip Light
2. Sensor Tip Guard
3. Sensor (internal)
4. Gooseneck Probe
5. Earphone Jack
6. Probe Clip
7. LED Gas Concentration Indicators
8. Amplified Tic and Alarm Speaker
9. Alarm Light
10. Ready Light (Power-On)
11. Power/Alarm Slide Switch
12. Tic Rate (Sensitivity) Adjustment
13. Alarm Mute Push button
14. Alarm Calibration/Variable Position Selector

Instructions

The CD200 runs through a one-minute warm-up and self-zeroing sequence when it is first turned on in fresh air. During this warm-up period the instrument typically responds by:

- Turn on the READY light - glows steadily
- Quickly increasing its tic rate, as though it were sensing a combustible gas, then gradually returning to a slower tic rate
- Lighting the LED gas concentration indicators, which rise and fall in concentration indicators, which rise and fall in concert with the tic rate

Each time the instrument is put into service, you should conduct a quick functional test. Simply expose the sensor to a known leak, like a cigarette lighter, or pass the probe over a drop of combustible fluid.

After the initial warm-up, the instrument can be used to detect combustible gasses. When the sensor in the probe tip detects a combustible gas, the tic rate will increase and the LED gas concentration indicators will begin to light. As the concentration of gas increases so does the tic rate.

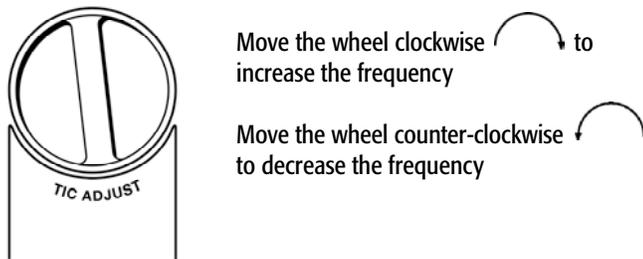
If the **READY** light is flashing, the batteries are low. They should be replaced immediately. Low batteries will adversely affect the instrument's reliability. See the Maintenance section for replacement procedures.

Use the alarm by sliding the **Power/Alarm** slide switch into the **ALM** position. If the gas concentration reaches a preset level, the instrument sounds a warbling tone while the ALARM light flashes.

If the situation calls for quiet operation, or if background noise makes it difficult to hear the built-in speaker, you can use an earphone. The jack is at the top of the instrument. Note that listening to the alarm or tic through the earphone is very loud.

Adjusting the Tic Rate

The tic rate tells you when the sensor (in the tip of the instrument) is getting close to a leaking gas. You can control the tic rate using the rotary wheel in the center of the instrument.



A tic rate of 4 to 8 tics per second, in fresh air, is typical. As the sensor comes near a combustible gas source, the tic rate increases. In order to isolate the source of a leak, you may need to move the wheel counter clockwise, decreasing the sensitivity, as the sensor moves closer.

The LED Indicators

There are a total of six LED indicators along the left side of the instrument. Two green, two orange, and two red, which indicate the relative concentration of gas detected. These respond in direct proportion to the tic rate.

When the tic rate is initially set, (with no combustible gas being detected), the bottom most (green) LED should be flashing on and off rapidly. As the sensor moves closer to the source of a gas leak, the LED indicators will light in sequence from bottom to top.

Setting the Alarm

The alarm functions independently of the tic rate. Use it to separate significant leaks from background contamination. Slide the Power/Alarm switch to the ALM position, and a warbling tone will sound when a preset level of combustible gas is detected. The thumb-wheel on the bottom of the instrument allows you to use either the factory calibrated setting of .5% methane in air, or increase the sensitivity to your own set-point.

To select the factory calibrated setting: turn the thumb-wheel fully clockwise. You will feel a click when it reaches the end of its motion and stop at this factory setting.

To increase the alarm's sensitivity: turn the thumb-wheel counter-clockwise. As the thumb-wheel moves out of the factory set calibrated position you will feel a click.

To set your own alarm point:

1. In a controlled environment, create the circumstance you want the alarm to report (a pinhole leak for example).
2. Allow your instrument to warm up for one minute in the **ALARM** mode.
3. Move the sensor tip over the controlled leak.
4. Move the thumb-wheel slowly until the alarm sounds.
5. Move the sensor away from the leak to ensure the alarm stops.
6. Verify repeatability - Ensure the alarm sounds when the sensor is returned to the leak source.
7. The instrument is ready for its application - Repeat these steps if the thumb-wheel is moved.

The alarm mute button: located below the tic rate adjustment knob, will silence the alarm as long as it is depressed. The alarm lamp will continue to function with the alarm mute depressed.

The alarm will continue to sound for a short period after the probe is removed from the leak source due to residual gas in the sensor cavity. The duration of the alarm will be directly related to the concentration of combustible gas the sensor was exposed to.

Maintenance

Cleaning

Use a damp cloth and mild soap to clean the case of your CD200. DO NOT use harsh detergents or abrasives as these may harm the finish or weaken the structure with an adverse chemical reaction.

Certain soaps are detected by the CD200. Check your sensitivity before using any soap, and remove as much of the residual as possible with a damp cloth.

DO NOT allow moisture to directly contact the sensor. Remove the sensor tip guard prior to cleaning it. Rinse and dry thoroughly before replacing.

Replacing the Batteries

Replace your 1.5 volt AA alkaline batteries when:

- The green **READY** light begins to strobe (flash on and off)
- No light or other activity occurs upon turning the instrument on

To replace the batteries:

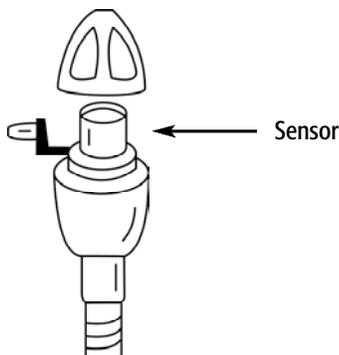
1. Lay the instrument face-down on a clean, flat surface.
2. Remove the battery cover. Apply upward pressure to the tab at the bottom of the battery cover while lifting it out.
3. Remove the batteries using a coin or screwdriver, if necessary, to pry them out.
4. Replace all four batteries with new ones.

Replacing the Sensor

Although the sensor is designed to offer many years of reliable service, it may become inoperable if it is submerged in liquid or otherwise physically damaged.

To replace sensor:

1. Turn the instrument off
2. Remove the upper tip guard by pressing and lifting straight up from the alignment notch that separates the two halves of the tip guard.
3. Move the tip-light out of the way. This is a sturdy component, but use caution bending its leads.
4. Pull the sensor straight up from its tip housing.
5. Relace the sensor, pressing it straight in.
6. Reassemble in reverse order.



Calibration

The pre-set alarm threshold can be calibrated to any setting from 0 to 40% of LEL (methane in air) by the UEi service center, or by other facilities having calibration gas standards.

To ensure your instrument is performing at its peak, send it to the UEi service center or a qualified instrument calibration facility for annual calibrations.

If I See This Malfunction	I Should Check	Corrective Action
Instrument does not turn on	Battery voltage	Replace low batteries
	Mode switch position	Place firmly in ON or ALM position
Instrument does not tic after it is switched on, but lights work	Tic rate adjustment	Increase tic rate by turning knob clockwise
	Earphone jack	Remove earphone plug or debris inserted in receptacle
Appropriate indicators do not light	Battery voltage	Replace low batteries
	Tic rate adjustment	Increase tic rate by turning knob clockwise
The tic rate does not increase when the sensor is exposed to combustible gas	Airflow to sensor	Clear restriction
	Sensor connection	Lit sensor out and replaced firmly
	Sensor contamination	Replace sensor
Tic rate remains fast after warm up	Sensor contamination	Replace sensor
Alarm does not stop sounding when instrument is used in fresh air	Constant fast tic and visual indicators	Replace sensor
	Proper alarm sensitivity setting	Adjust sensitivity clockwise
The green READY light strobes or flashes	Battery voltage	Replace low batteries
Tip light does not shine	Physical damage	*Return for repair

*The tip light is not required for operation, but should be removed by clipping the leads near their base if the instrument is going to be used without it.

This unit contains no user serviceable parts beyond those listed in this table. In the event your instrument is physically damaged or does not function properly after taking the listed action, please return the instrument to UEi following the warranty and service instructions.

Specifications

Size	8 3/4" x 3 1/4" x 2 1/2" (Add 1" to height and width to account for coiled probe)
Probe length	18" (46 cm)
Weight: Batteries installed	16.0 oz. (450g)
Power requirements	Four AA alkaline batteries
Average battery life	Approximately 12 hours (continuous use)
Sensitivity	<50 PPM methane in air
Sensor	Solid state conductivity (semiconductor)
Dutycycle	Continuous
Typical response time	Less than 2 seconds for maximum response with 40% LEL methane in air stimulus
Typical recovery time	Less than 4 seconds recovering from 40% LEL methane in air
Warm up period	One minute average
Alarm	Adjustable from 10 to 40% LEL - methane in air (Can be calibrated for other gasses)
Visual level indicators	Six tic rate scaled LED indicators, changing with gas concentration levels from green to red (including relative, not specific quantities)

Operating Conditions

To ensure accurate readings from your CD200, use it only when ambient air is within this range:

Temperature: 32 to 120°F
Humidity: 10 to 90% RH (non condensing)

Gasses Detected

The CD200 detects a wide variety of gasses, including some toxic gasses, and nuisance vapors. The following lists represents only a portion of the more common gasses it will detect.

Combustible:

Alcohol	Butane	Gasoline	Solvents
Thinners	Propane	Combustible Refrigerants	Natural Gas
Volatile jet fuel	Methane	Naphtha	Acetylene

Other:

Acetone ammonia	Smoke	Hydrogen Sulfide	Steam
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CD200

Combustible Gas Leak Detector

Limited Warranty

The CD200 is warranted to be free from defects in materials and workmanship for a period of three years from the date of purchase. If within the warranty period your instrument should become inoperative from such defects, the unit will be repaired or replaced at UEi's option. This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, tampering, accident, misuse, abuse, neglect or improper maintenance. Batteries and consequential damage resulting from failed batteries are not covered by warranty.

Any implied warranties, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the express warranty. UEi shall not be liable for loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim or claims for such damage, expenses or economic loss. A purchase receipt or other proof of original purchase date will be required before warranty repairs will be rendered. Instruments out of warranty will be repaired (when repairable) for a service charge. Return the unit postage paid and insured to:

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This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

