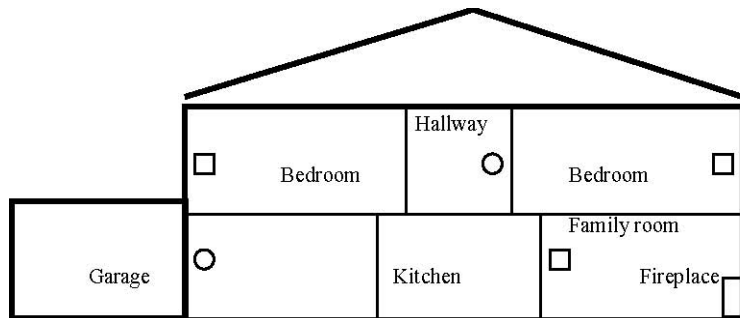


MACURCO GAS DETECTORS

CM-15 INSTALLATION AND OPERATION INSTRUCTIONS

GENERAL INFORMATION

The CM-15 and CM-15A ("CM-15/15A" when both units are referred to) are low voltage (13-24 VAC, 50-60Hz, or 12-24 VDC) all electronic detectors of Carbon Monoxide (CO). The CM-15/A's are designed for connection to UL Listed alarm control panels (Fire or Fire/Burglar or Critical Process Management Equipment). NOTE: Any time the words "Control Panel" or "Alarm Panel" or "Alarm Control Panel" are used in these instructions, what is meant is a UL Listed Fire or Fire/Burglar or Critical Process Management Equipment. Alarm control panels that work on 12 or 24 VDC can provide battery backup to the CM-15/A detectors. This carbon monoxide detector is designed to detect CO gas from ANY source of combustion. It is NOT designed to detect smoke, fire or any other gas.



LOCATION NOTES

1. ○ Normal CM-15/15A location.
2. □ Alternate CM-15/15A location.
3. Do NOT mount the CM-15/15A within 5 feet (1.5m) of any cooking appliance.

LOCATION

There are two usual sources of CO in homes -- defective heat sources (furnaces or wood burning stoves) and automobiles running in adjoining garages. The CM-15/15A can provide protection from these sources, as well as any other sources of CO.

For best protection, mount a CM-15/15A in the hallway near each bedroom area. In addition, another CM-15/15A may be mounted just inside the door from the adjoining garage. Consider placing another detector in a bedroom that is adjacent to a furnace room. The detector may be installed on either a ceiling or a wall. If installed on a peaked, gabled, or sloped ceiling, it should be located about 3 feet from the highest point.

Do NOT mount the unit in the garage. Do NOT mount the CM-15/15A where the normal ambient temperature is below 40° F (4.4° C) or exceeds 100° F (37.8° C), or within 5 feet (1.5 meters) of a cooking appliance.

CONFIGURATIONS

CM-15
SPDT Alarm Relay
SPST Trouble Relay
Visual Status Indicator

CM-15A
SPDT Alarm Relay
SPST Trouble Relay
Loud Buzzer
Visual Status Indicator

SPECIFICATIONS

Voltage: 12-24 VDC or 13-24 VAC (50-60 Hz)
Current consumption (worst case under AC power, DC may vary)
Current (standby, CM-15): 45 ma @ 12V, 31 ma @ 24V
Current (alarm, CM-15): 62 ma @ 12V, 45 ma @ 24V
Current (standby, CM-15A): 47 ma @ 12V, 32 ma @ 24V
Current (alarm, CM-15A): 66 ma @ 12V, 46 ma @ 24V
Size: 4 ½ X 5 X 1 5/8 inch
Alarm Relay: 1 Amp, 125V, 30VA
Trouble Relay: 0.5 Amp, 200V, 10VA
Buzzer Rating: 85 dBA at 10 Feet
Shipping Weight: One pound
Oper. Temp. Range: 32° to 120° F
Alarm Setting: Per UL 2034 (Oct.98)
Color: White

INSTALLATION

See wiring diagram on page 4 for information on connections of the CM-15 and CM-15A. Macurco recommends a minimum of 22 AWG wire for runs up to 200 ft., and 18 AWG wire for longer runs.

The unit can be placed vertically or horizontally on a wall, so the information on the front of the CM-15/A can be read in a normal manner. The word TOP on the internal cover indicates the correct mounting orientation of the detector.

In the configuration as normally shipped, the CM-15/15A has a three part case. This allows the unit to mount flush to a wall over a single gang electrical box (not included). If the back cover is removed, (remove the two screws inside), the CM-15/15A's mount on a two gang, old work box or a 4 X 4 electrical box, provided by the installer. The CM-15/15A's have terminal strips to connect to the cables from the control panel or other device. When connecting the unit, follow good wiring practices, and ensure the power is turned off. Access to the terminal strip will be easier if the back cover is off. Ensure that the CM-15/15A is connected to a **continuous** source of power (not controlled by a wall switch). The CM-15/15A power consumption figures represent worst-case conditions under AC power; DC performance may vary.

The alarm relay of the CM-15/15A is a dry contact and rated at 1 Amp, 125V at 30 VA. It is not suitable for fan control use. When connecting the units to remote buzzers or other devices (all buzzers or "other devices" must be UL approved), make sure that the load does not exceed the relay's rating. External buzzers must be capable of generating a sound output greater than 85 dBA at 10 ft.

OPERATING INSTRUCTIONS

When the detector is first powered, the status light will alternate between RED and GREEN as the unit performs a 2-1/2 minute warm-up cycle and self-test procedure. The buzzer on the CM-15A units the buzzer will cycle twice, emitting its characteristic 4-chirp tone. At the end of this 2-1/2 minute cycle, the status light will turn GREEN to indicate normal operation and safe air. The alarm relay is not energized during the 2-1/2 minute warm-up cycle.

The CM-15/15A continuously monitors the air. If the CM-15/15A measures levels of CO greater than the danger level, the RED light will turn on, the Alarm Relay will switch to actuate the alarm circuits in the control panel, and the buzzer on CM-15A units will sound. The computer in the CM-15/15A is programmed to alarm if the danger levels of carbon monoxide are exceeded, which are time and concentration-related. The alarm points are: 70 ppm of CO after 60 to 240 minutes, 150 ppm of CO after 10 to 50 minutes, and 400 ppm of CO after 4 to 15 minutes, in accordance with the provisions of UL Standard 2034.

WHEN AN ALARM OCCURS (INSTALLER NOTE: It is recommended the information below be posted near the control/alarm panel or a copy provided to the customer.)



WARNING: Actuation of your CO alarm indicates the presence of carbon monoxide (CO) which can KILL YOU. If alarm signal sounds:

- 1 Operate the reset/silence button;**
- 2 Call your emergency services (_____) [fire department or 911];**
- 3 Immediately move to fresh air - outdoors or by an open door/window. DO A HEAD COUNT TO CHECK THAT ALL PERSONS ARE ACCOUNTED FOR. DO NOT RE-ENTER PREMISES NOR MOVE AWAY FROM THE OPEN DOOR/WINDOW UNTIL THE EMERGENCY SERVICES RESPONDERS HAVE ARRIVED, THE PREMISES HAS BEEN AIRED OUT, AND THE ALARM REMAINS IN ITS NORMAL CONDITION.**
- 4 After following steps 1 - 3, if your alarm reactivates within a 24-hour period, repeat steps 1 - 3 and call a qualified technician (_____) to investigate for sources of CO from fuel burning equipment and appliances, and inspect for proper operation of this equipment. If problems are identified during this inspection, have the equipment serviced immediately. Note any combustion equipment not inspected by the technician and consult the manufacturers' instructions, or contact the manufacturer directly, for more information about CO safety and the equipment. Make sure that motor vehicles are not, and have not been operating in an attached garage or adjacent to the residence.**

CAUTION: This detector will only indicate the presence of carbon monoxide gas at the sensor. Carbon monoxide gas may be present in other areas. Accommodation spaces should be well ventilated when household cleaning supplies or similar contaminants are used.

WARNING: This product is intended for use in ordinary indoor locations of family living units and office workspaces. The CM-15/15A is not designed to measure compliance with Occupational Safety and Health Administration (OSHA) commercial or industrial standards.

WARNING: Individuals with medical problems may consider using warning devices that provide audible and visual signals for carbon monoxide concentrations below 30 ppm.

The following symptoms are related to **CARBON MONOXIDE POISONING** and should be discussed with ALL members of the household:

- Mild exposure: Slight headache, nausea, vomiting, fatigue (often described as "Flu-like" symptoms).
- Medium Exposure: Severe throbbing headache, drowsiness, confusion, fast heart rate.
- Extreme Exposure: Unconsciousness, convulsions, cardio respiratory failure, and death.

Many cases of reported **CARBON MONOXIDE POISONING** indicate that while victims are aware they are not well, they become so disoriented they are unable to save themselves by either exiting the building or calling for assistance. Young children and household pets may be the first affected.

NOTICE: Transient CO situations can occur:

- 1.) Excessive spillage or reverse venting of fuel burning appliances caused by outdoor ambient conditions, such as:
 - a. Wind direction and/or velocity, including high gusts of wind. Heavy air in the vent pipes (cold/humid air with extended periods between cycles).
 - b. Negative pressure differential resulting from the use of exhaust fans.
 - c. Simultaneous operation of several fuel-burning appliances competing for limited internal air.
 - d. Vent pipe connections vibrating loose from clothes dryers, furnaces, or water heaters.
 - e. Obstruction in or unconventional vent pipe designs, which can amplify the above situations.
- 2.) Extended operation of unvented fuel burning devices (range, oven, fireplace, etc.).
- 3.) Temperature inversions, which can trap, exhaust gasses near the ground.
- 4.) Car idling in an open or closed attached garage, or near a home.

The CM-15/15A will automatically reset once the air clears.

TEST/RESET SWITCH

The switch on the front of the CM-15/15A labeled "PUSH HERE TO TEST OR RESET" performs three functions.

- 1.) During normal operation a short press of the switch, less than 5 seconds long, will place the unit into self test mode with no alarm relay activation. The status light will turn red for 5 seconds and then it will alternate slowly between green and amber while the self-test executes. The controlling software simulates a 3000 ppm CO environment and causes the unit to alarm after approximately one minute has elapsed. When this happens, the status light turns red and the CM-15A buzzer will sound two complete alarm cycles. The unit will then return to normal operation.
- 2.) During normal operation a long press of the switch, about 6 seconds long, will place the unit into self-test mode with alarm relay activation. Pressing and holding the switch will cause the status light to turn red for 5 seconds and then switch to solid amber. The alarm relay will then be activated and the switch can be released. After about 5 seconds, the alarm relay will turn off and the status light will alternate slowly between green and amber while the self test executes. The controlling software simulates a 3000 ppm CO environment and causes the unit to alarm after approximately one minute has elapsed. When this happens, the status light turns red and the CM-15A buzzer will sound two complete alarm cycles. The unit will then return to normal operation.
- 3.) If the CM-15/15A is in an alarm condition due to the detection of carbon monoxide, one push of the switch will cause the alarm buzzer to mute and the alarm relay to open for five minutes. After the five-minute period, if CO is still present, the status light will again switch to RED, the alarm relay will close and the CM-15A buzzer will sound.

TROUBLE SIGNAL

The Trouble signal is determined by the configuration of the alarm panel. The CM-15/15A Trouble Relay provides an open circuit for actuation of the control panel circuits, the status LED will flash AMBER and the CM-15A buzzer will emit a short "chirp" every 30 to 60 seconds. See ERRORS below. Various parameters are continuously monitored by the CM-15/15A computer, and will open the Trouble Relay when such a condition occurs. Failure of the CM-15/15A internal power supply, or a lack of power to the detector will result in the Trouble Relay opening, and the status light will be OFF (not illuminated). The most common expected trouble would be a break in the wiring between the control panel and the CM-15/15A.

ERRORS

The computer in the CM-15/15A continuously monitors various operating parameters. If a problem is found, the unit will switch to Trouble mode. See TROUBLE SIGNAL above. To reset the unit for normal operation, turn off the power to the unit, wait a few seconds, and then turn the power back on. If this problem persists, your detector requires repair; contact the alarm panel installer or Macurco Tech Support for advice. If repair is required, return the unit to manufacturer to comply with warranty.

MAINTENANCE

The CM-15/15A should be tested monthly by pushing the TEST/RESET switch; see TEST/RESET switch, above. At the same time, the CM-15/15A should be cleaned using the soft brush attachment of your vacuum cleaner. The CM-15/15A should be tested after cleaning to ensure the unit is operating normally. There are no field calibration procedures for this unit.

SENSOR POISONS

The gas sensor in the detector is designed with extreme sensitivity to the environment. As a result, the CO sensor may be damaged if it is exposed to a direct spray from aerosols such as paints, silicone vapors, etc., or to a high density of corrosive gases such as hydrogen sulfide or sulfur dioxide for an extended period of time. The sensor may react to chemicals such as ammoniated cleaning agents, volatile solvents and hydrogen gas. In sufficient concentration, these chemicals may cause a false alarm.

LIMITED WARRANTY

The CM-15 and CM-15A gas detectors are warranted to be free from defective material and workmanship for a period of two (2) years from the date of manufacture (stamped on the unit). If any component becomes defective during the warranty period, it will be replaced or repaired free of charge, if the unit is returned in accordance with the instructions below. This warranty does not apply to units that have been altered or had repair attempted, or that have been subjected to abuse, accidental or otherwise. The above warranty is in lieu of all other express warranties, obligations or liabilities. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE ARE LIMITED TO A PERIOD OF TWO (2) YEARS FROM THE PURCHASE DATE. Macurco shall not be liable for any incidental or consequential damages for breach of this or any other warranty, express or implied, arising out of or related to the use of said detector. Manufacturer or its agent's liability shall be limited to replacement or repair as set forth above. Buyer's sole and exclusive remedies are return of the goods and repayment of the price, or repair and replacement of the non-conforming goods or parts (The Uniform Commercial Code applicable in the State of Colorado shall govern.)

RETURN INSTRUCTIONS

Call (303) 781-4062 for a Return Authorization number. After receiving a Return Authorization number, carefully pack the detector with a written description of the nature of the return. Send the unit to the following address:

Aerion Technologies Inc.,
Attn: Macurco Repair RA# _____,
6555 S. Kenton St., Ste. 304,
Centennial, CO 80111.

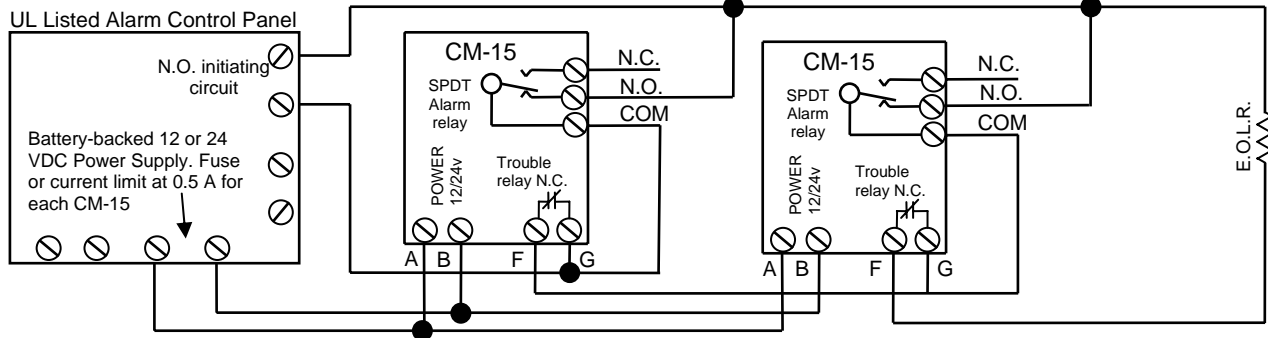
www.macurco.com

WIRING DIAGRAMS



ENSURE POWER IS OFF WHEN CONNECTING TERMINALS A AND B!

TYPICAL CONNECTION OF TWO CM-15/15A's TO AN ALARM CONTROL PANEL



1. The CM-15/15A is for use with UL Listed Alarm Control Panels (Fire or Fire/Burglar type or Critical Process Management Equipment) that have 12 TO 24 Vdc power and 12 to 24 VDC alarm initiating circuits.
2. The Alarm Control Panel (Fire or Fire/Burglar type or Critical Process Management Equipment) must be dedicated to CO detection or have alarm devices that provide a distinctive alarm for carbon monoxide detection. Do not connect the CM-15/15A to Fire Alarm Circuits. For CM-15 installations, a UL Listed audible device must be connected that provides at least 85 dBA sound output.
3. The CM-15/15A is intended for installation in buildings in non-hazardous locations such as residences, retail stores, office buildings and institutional buildings.
4. The CM-15/15A is NOT intended for use in industrial applications such as refineries, chemical plants, etc. The CM-15/15A is NOT intended for use in parking garages, as the controller for exhaust systems.
5. LOCATION: Place the unit at a level where people breathe: about 5 feet (1.5 meters) above the floor. Mount the CM-15/15A in a vertical position on a wall or column. Do NOT mount the CM-15/15A in a corner.
6. SPACING: Use the same spacing as for smoke detectors – 30 foot (9 meters) centers, 900 sq. feet (83 sq. meters) per detector.
7. INSTALLATION: See page 1.
8. The alarm control panel zone inputs must be terminated with end of line resistors (E.O.L.R.), which are provided with the panel.
9. When using the CM-15/15A with normally closed initiating circuits, use the "N.C." and "COM" alarm relay connections.

The CM-15/15A has not been evaluated as a stand-alone unit by U.L.

CM-15 CONTROLLING A REMOTE ALARM

