



Macurco™ Carbon Monoxide Detector Field Calibration Kit CM6-FCK

General

A Field Calibration Kit (CME-FCK) is needed to complete a CO gas test. These are available through your local representative or from Macurco.

Contents of the FCK

- CME-FCK: (2) Gas Cylinders, (1) 50ppm carbon monoxide (CO) in air and (1) 200 ppm
- Gas regulator with about two feet of plastic tubing
- Humidifier
- Gas applicator caps

FCK Information

Several detectors can be calibrated with one FCK. The only limitation is the amount of gas in the cylinder. The 17 liter cylinder has approximately 85 minutes of continuous calibration run time. Replacement cylinders are available. The gas cylinder should be replaced when the pressure gauge on the regulator shows 25-psi or less.

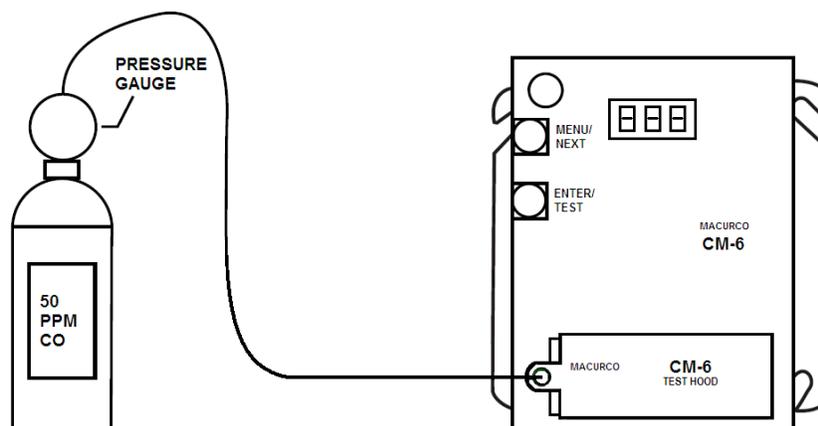
Note: For optimum test results it is suggested that the unit be in clean air (green light on) and be in a low ambient air flow

Gas Testing

Testing the Fan Relay –

1. Remove the Philips screw on the front of the CM-6. Remove the front cover.
2. Open the FCK. Connect the 50 ppm gas cylinder to the regulator.
3. Check the pressure gauge on the regulator. If you have 25-psi or less you will need to replace the gas canister.
4. Assemble regulator, hose and Test Hood and place the Test Hood over the CO sensor.

Note: The time to activate the Fan relay depends on the delay setting.



5. Turn on the regulator to start the gas flow and wait with the gas applied continuously.
6. With the display function turned "On", the CM-6 will show the current concentration of CO or "0" (zero) in clean air. When the CO concentration reaches the Fan Relay setting (35 ppm, for example) the display will flash back and forth between "FAn" and "35". With the display function turned "Off", the display does not show the CO concentration, but will show "FAn" as long as the fan relay is activated.

Note: If the Fan relay does not close within 2 minutes, there are four possibilities:

- a. Gas cylinder is empty, check the pressure gauge. Replace the gas cylinder if 25psi or less.
 - b. Unit needs to be re-calibrated (go through recalibration and re-test).
 - c. Detector is in need of servicing (return unit to factory for servicing).
 - d. Detector has fan relay set to disable (OFF) or 100ppm. Set fan relay to 25ppm and repeat the test.
7. Remove the gas from the sensor. Proceed to Test the Alarm relay or replace the top cover.

Testing the Alarm Relay

Note: The CO concentration to activate the Alarm relay depends on the setting.

1. Connect the 200ppm cylinder of carbon monoxide to the regulator.
2. Check the pressure gauge. If there is 25psi or less the cylinder should be replaced.
3. Place the Test Hood over the CO sensor. Turn on the regulator to start the gas flow.
4. The Fan relay should activate according to the settings.
5. With the display function turned "On" and the CO concentration reaching the Alarm Relay setting, (200 ppm, for example) the display will flash back and forth between "ALr" and "200". The buzzer will sound indicating "Alarm" if the buzzer is turned "On". With the display function turned off the display does not show the CO concentration, but will show "ALr" when the Alarm relay is activated.
6. **Note: If the Alarm relay fails to operate within 2 minutes, there are four possibilities:**
 - a. Gas cylinder is empty, check the pressure gauge. Replace the gas cylinder if 25-psi or less.
 - b. Unit needs to be re-calibrated (go through recalibration and re-test).
 - c. Detector is in need of servicing (return unit to factory for servicing).
 - d. Detector has Alarm relay set to disable (OFF). Set Alarm relay to 100 ppm and repeat the test.
7. Remove the gas from the sensor after Test. Proceed to Test the 4-20mA output or replace the top cover.

Testing the 4-20mA current loop

1. Connect the 200 ppm cylinder of carbon monoxide to the regulator.
2. Check the pressure gauge. If there is 25-psi or less the cylinder should be replaced.
3. Place the cap from the regulator over the CO sensor. Turn on the regulator to start the gas flow.
4. The Fan relay should activate according to the settings.
5. The Alarm relay should activate according to the settings.
6. The 4-20 mA output should ramp up from 4mA in clean air to 20mA at 200 ppm. See 4-20 mA diagram on page 6.

Note: If the 4-20mA output does not ramp up within 2 minutes, there are four possibilities:

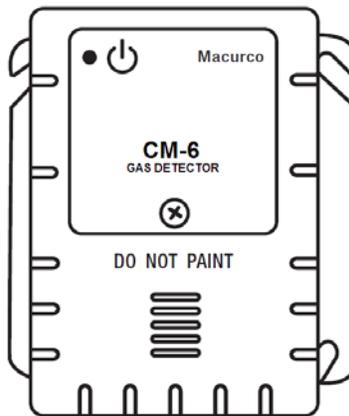
- a. Gas cylinder is empty, check the pressure gauge. Replace the gas cylinder if 25-psi or less.
 - b. Unit needs to be re-calibrated (go through recalibration and re-test).
 - c. Detector is in need of servicing (return unit to factory for servicing).
 - d. Detector has 4-20 mA option set to "OFF". Set 4-20mA option to "On" and repeat the test.
7. Remove the gas from the sensor. Re-assemble the CM-6 (make sure the LED is aligned with the front case hole). You are done.

Aerosol Carbon Monoxide Test

The CME1-FTG is an 11L 500 ppm Aerosol Carbon Monoxide Field Test Gas that can be used with the CM-6. This field test gas allows installers to do a quick functionality test of the CO sensor. The flow rate of the CME1-FTG is 10 Lpm so you will have about a minute of gas or enough to test 20-30 sensors.

1. Units to be tested must be powered continuously for a minimum of 3 minutes before proceeding.

2. For optimum test results the unit should be in clean air and be in a low ambient air flow.
3. Check that the CM-6 status indicator light is illuminated, Green continuously. If not, do not proceed with tests. See CM-6 Trouble Indicator section on page 11.
4. The display option should be set to "On" and reading 0 ppm in clean air.
5. Aim the nozzle of the aerosol can into the sensor grate area (under DO NOT PAINT) and press for 2 to 3 seconds.



6. Wait for a few seconds. The digital display should climb indicating the increased CO concentration at the sensor confirming a pass of the quick test.

Note: If the Display does not change within 10 seconds, there are three possibilities:

- a. Gas cylinder is empty, replace the gas cylinder.
 - b. Unit needs to be re-calibrated (go through the Field Calibration Procedure and re-test).
 - c. Detector is in need of servicing (return unit to factory for servicing).
7. Wait for the display to return to 0 ppm and configure options to desired settings.

FIELD CALIBRATION PROCEDURE

Note: For optimum calibration results the unit should be in clean air and be in a low ambient air flow.

1. Remove the Philips screw on the front of the CM-6. Pull the front cover of the unit off.
2. Assemble the 200 ppm gas cylinder and regulator together.
3. Check the pressure gauge on the regulator. If you have 25-psi or less you will need to replace the gas canister.
4. Place the test Hood from the regulator over the CO sensor.
5. Push **Next** 3 times to get to the CAL menu then push **Enter**. The display will flash back and forth between GAS and 200.
6. Start applying gas to the CO sensor.

Note: The sensor will look for the gas for 45 seconds. If no gas is applied or detected in that time, the display will return to CAL.
7. When the sensor detects the gas, the display will flash back and forth between the CO concentration and **SPn**, then the calibration will progress and the display will show the gas level for a maximum of 165 seconds.
8. When the calibration is successful, the display will flash back and forth between CO concentration and **PAS**, then the display will show the calibration gas level and the calibration is done.
9. If the calibration fails, the display will flash back and forth between the CO concentration and **FAL** (fail). If this occurs, check the pressure gauge on the regulator. If the pressure is less than 25 psi the flow of gas may not be adequate to properly calibrate the unit. If there is proper pressure in the cylinder repeat steps 4 through 6. If the unit fails to calibrate twice contact Technical Assistance: 1-877-367-7891.
10. Once the calibration has passed, remove gas and disassemble the cylinder and regulator.

11. Re-assemble the CM-6 (make sure the LED is aligned with the front case hole). You are done.
12. See Calibration Flowchart.

MACURCO FIXED GAS DETECTION PRODUCTS LIMITED WARRANTY

Macurco, warrants the field test kits will be free from defective materials and workmanship for a period of one (1) years from date of manufacture (indicated on the gas bottle label), provided it is maintained and used in accordance with Macurco instructions and/or recommendations. 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 ONE (1) 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 gas 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 non-conforming goods or parts.

Manufactured by Aerionics, Inc.
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Rev 4.10.2012
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