



Macurco™ Combustible Gas Detector, Field Calibration Kit GD6-FCK

General

The GD-6 can be bump-tested or calibrated with the GD6-FCK with Methane, Propane or Hydrogen gas, regulator and test hood, available through your local representative or from Macurco.

Contents of the FCK

- GDM-FCK: Two Gas Cylinders, 10% LEL Methane gas in air, 20% LEL Methane in air, Gas regulator with two feet of plastic tubing, Humidifier and Gas test hood
- GDP-FCK: Two Gas Cylinders, 10% LEL Propane gas in air, 20% LEL Propane in air, Gas regulator with two feet of plastic tubing, Humidifier and Gas test hood
- GDH-FCK: Two Gas Cylinders, 10% LEL Hydrogen gas in air, 20% LEL Hydrogen in air, Gas regulator with two feet of plastic tubing, Humidifier and Gas test hood

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 with 0.2 LPM (Liters Per Minute) regulator 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

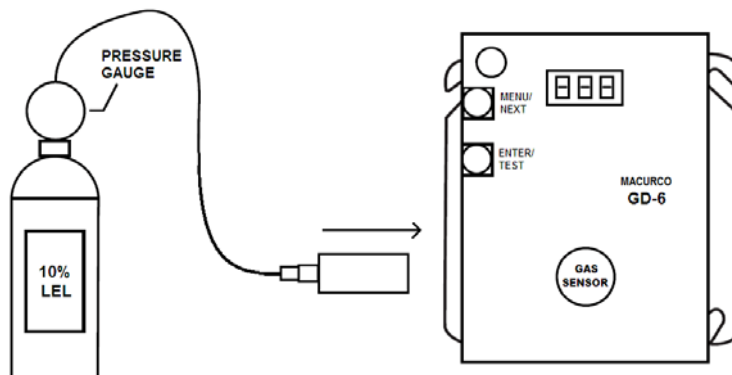
Gas Testing

Testing the Fan Relay

Note: The gas concentration to activate the fan relay depends on the setting.

1. Remove the Philips screw on the front of the GD-6. Remove the front cover.
2. Connect the 10% LEL cylinder of Combustible Gas to the regulator. Ensure that the gas used for calibration matches the gas selected in the GD-6 configuration.
3. Assemble regulator, hose and test hood and place the test hood over the gas sensor.
4. Check the pressure gauge on the regulator. If you have 25-psi or less you will need to replace the gas canister.

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 GD-6 will show the current concentration of gas or "0" (zero) in clean air. When the gas concentration reaches the fan relay setting (5% LEL, for example) the display will flash back and forth between "FAn" and "5". With the display function turned "Off", the display does not show the gas concentration, but will show "FAn" as long as the fan relay is activated.

Note: If the Fan relay does not close within 2 minutes, consider these 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 fan relay set to disable (OFF) or 20% LEL. Set fan relay to 5% LEL 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 gas concentration to activate the Alarm relay depends on the setting.

Connect the 20% LEL cylinder of Combustible Gas to the regulator. Ensure that the gas used for calibration matches the gas selected in the GD-6 configuration.

1. Check the pressure gauge. If there is 25-psi or less the cylinder should be replaced.
2. Place the test hood over the gas sensor. Turn on the regulator to start the gas flow.
3. The Fan relay should activate according to the settings.
4. With the display function turned "On" and the gas concentration reaching the Alarm Relay setting, (20% LEL, for example) the display will flash back and forth between "ALr" and "20". The buzzer will sound indicating "Alarm" if the buzzer is turned "On". With the display function turned off the display does not show the gas concentration, but will show "ALr" when the Alarm relay is activated.

5. Note: If the Alarm relay fails to operate within 2 minutes, consider these 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 20% LEL and repeat the test.
6. Remove the gas from the sensor after test. Proceed to test the 4-20 mA output or replace the top cover.

Testing the 4-20 mA current loop

Connect the 20% LEL cylinder of Combustible Gas to the regulator. Ensure that the gas used for calibration matches the gas selected in the GD-6 configuration.

1. Check the pressure gauge. If there is 25-psi or less the cylinder should be replaced.
2. Place the test hood from the regulator over the gas sensor. Turn on the regulator to start the gas flow.
3. The fan relay should activate according to the settings.
4. The alarm relay should activate according to the settings.
5. The 4-20 mA output should ramp up from 4mA in clean air to 20 mA at 50% LEL. See 4-20 mA diagram in these *User Instructions*.

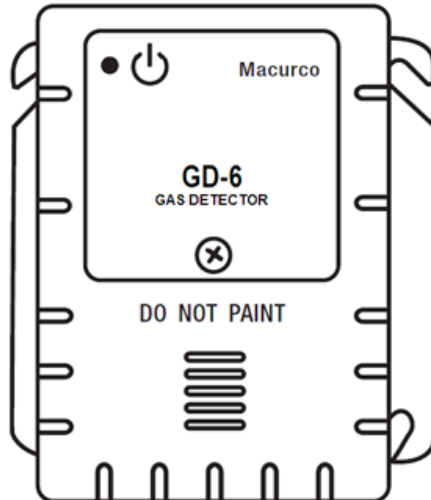
Note: If the 4-20mA output does not ramp up within 2 minutes, consider these possibilities:

- 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 4-20 mA option to "On" and repeat the test.
6. Remove the gas from the sensor. Re-assemble the GD-6 (make sure the LED is aligned with the hole on the front of the case).

Quick Gas Test

A cigarette lighter can be used to perform a functionality test of the GD-6. This test allows installers to do a quick functionality test of the gas sensor.

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 GD-6 status indicator light is illuminated, green continuously. If not, do not proceed with tests. See GD-6 *Trouble Indicator* section in these *User Instructions*.
4. The display option should be set to "On" and reading 0% LEL in clean air.
5. Aim the lighter into the sensor grate area (under "DO NOT PAINT") on the front cover and release the gas without igniting the flame for 2 to 3 seconds.



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

Note: If the Display does not change within 10 seconds, consider these possibilities:

- a. Lighter is empty.
 - b. Unit needs to be re-calibrated (go through the *Field Calibration Procedure* in these *User Instructions* 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% LEL 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.

Zero the Sensor

1. Remove the Philips screw on the front of the GD-6. Pull the front cover of the unit off.
2. To select Calibration Zero Mode (000), from normal mode, press the *Next* button four times to get to **CAL** or **Calibration Mode**.
3. Then press the *Enter* button to get to "000" - Calibration Zero Mode.
4. Press the *Enter* button and the display will read 0 alternating with 000 (blinking) indicating zero calibration in progress (max 165 sec).
5. If the process is successful, the display will read __0 alternating with PAS (blinking) Zero Calibration complete.
6. If the process was not successful the display will read __1 alternating with Fail (blinking) Zero Failed. If this occurs, repeat steps 2 through 4. If the sensor fails to zero twice contact Technical Assistance: 1-877-367-7891.
7. To return to Normal Mode press *Enter* and then press *Next* until "End" is displayed. Press *Enter* to return to Normal Mode.

Calibration

1. Remove the Philips screw on the front of the GD-6. Pull the front cover of the unit off.
2. Assemble the 10% LEL gas cylinder and regulator together. Ensure that the gas used for calibration matches the gas that the GD-6 is configured to (**mE, Pro or Hy**).
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 gas sensor.
5. To select Calibration Span Mode (**SPn**), from normal mode, press the **Next** button four times to get to **CAL** or Calibration Mode.
6. Then press the **Enter** button to get to "000" Calibration Zero Mode, then press the **Next** button to get to "**SPn**" – Calibration Span Mode.
7. Press the **Enter** button and the display will read **10** alternating with the gas, **mE, Pro or Hy** (blinking), indicating the sensor is looking for gas.
8. Start applying gas to the gas 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.
9. When the sensor detects the gas, the display will flash back and forth between the **gas concentration** and **SPn** and the calibration will progress. The display will show this for a maximum of 165 seconds.
10. When the calibration is successful, the display will flash back and forth between **10** and **PAS**.
11. Remove the gas. The display will return to "**SPn**", then normal mode. The calibration is done.
12. If the calibration fails, the display will flash back and forth between the gas 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 11. If the unit fails to calibrate twice contact Macurco Technical Assistance at 1-877-367-7891.
13. Disassemble the cylinder and regulator.
14. Re-assemble the GD-6 (make sure the LED is aligned with the hole in the front case).

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.

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