

## 3M™ Multi-Gas Detector 950 Series – Metal Oxide Semiconductor (MOS) Smart Sensor

The MOS Sensor is a type of gas sensor that responds to vapors and gases that react at the surface of the metal oxide sensing material. Organic compounds are the most common but it is a broad band sensor and can respond to a variety of organic and inorganic chemicals.

The user is alerted to a number of gases that are in the air, but other sensors, monitoring or sampling equipment will be needed to actually determine which chemical is in the air and to quantify its level.

### Installing the MOS Smart Sensor

The warranty period for the MOS sensor is one year. A warranty expiration sticker on the MOS sensor housing shows the end of the warranty period.

The sensor can be installed in any of the 5 sensor slots but best overall detector performance is achieved if it is installed in slot 4 or 5. The detector will provide the proper order if the one selected is not optimal.

### Display

On start up, the unit will detect the presence of the MOS sensor and one location of the display will show the sensing mode selected. The sensor has two sensing modes that can be selected on the detector.

**General Mode:** Designed to display readings in a linear curve. Mode readings will go from 0 to 500. Any reading over 500 is displayed as over-range. The number indicates the relative presence of the vapor or gas present.

**Leak Mode:** Designed to display raw resistance data from the sensor. Mode readings will go from 0 to 999. This mode is very sensitive to minor variations in gas levels as well as changes in humidity.

### Alarms and Warnings

The default condition for the MOS sensor is that no warning or alarms are active.

### Selecting the Sensing Mode

To select the sensing mode:

- a) Press CAL/NO button briefly.
- b) A message “CHANGE MO SENSOR RESPONSE CURVE?” should appear on the LCD.
- c) Press the CAL/NO button to return to normal sensing mode.
- d) Press the POWER/SELECT/YES button to change the MO sensing mode.

- e) If the Yes button is pressed a message “SELECT GAS TYPE” followed by two gas names will appear. Select either General or Leak and press the POWER/SELECT/YES button.

## **Bump Testing and Calibrating**

Calibration of the unit should be performed every 30 days or immediately if it does not pass the bump test. Sensors used beyond the warranty period and those exposed to very high concentrations of gas may require calibration more frequently. A bump test should be performed before every use.

Bump testing and calibrating the MOS sensor is done in two menu areas, “Bump Test MO” and “MO SPAN.” They are located in the calibration menu right after “ZERO SENSORS.”

To bump test or calibrate the MOS sensor, use the 3M calibration kit Part No. 933-020-100 - 34L bottle of propane, 0.2 liter per minute regulator, 1/8” ID tubing and the in-line humidifier.

First, prepare the humidifier.

- a) Open the two plastic halves by holding one half steady, turning the other one counterclockwise and then pulling them apart.
- b) Pull out the orange sponge and wet it.
- c) Squeeze the sponge such that there are not any visible drops of water on the sponge (it should only be damp).
- d) Put the sponge back into the humidifier housing and close it.

The process of performing a bump test or calibration of the MOS sensor is the same as for any other sensor.

- a) Connect the humidifier end with the orange sponge to the end of the tubing from the regulator.
- b) Connect the 6” piece of tubing from the other end of the humidifier to the pump inlet of the detector.
- c) Zero the sensors.
- d) Bump test or calibrate the MOS sensor as previously shown.
- e) Disconnect the tubing and propane calibration gas from the unit.
- f) Connect the calibration gas for the other sensors installed in the detector.
- g) Bump test or calibrate the other sensors as previously shown.
- h) Disconnect the calibration gas.
- i) Return to normal function.