TEMPLATE
Standard Operational Guideline
MSA Sirius

PURPOSE:

The Purpose of this guideline is to provide the user with adequate information to operate and calibrate the meter.

Purpose of Equipment

The Sirius Multigas Detector is for use by trained and qualified personnel. It is used when performing a hazard assessment to:

- Assess potential worker exposure to combustible and toxic gases and vapors
- Determine the gases and vapors present in a workplace & identified with a trained operator.
- The MSA Sirius multi gas monitor will alert the user to the presence of combustible gases and vapors and to atmospheres that are rich or deficient in oxygen. The monitor will also alert the user to the presence of Carbon Monoxide and Hydrogen Sulfide. The Sirius detects gases and vapors in air only.
- The Sirius cannot measure combustible or toxic gases in reducing atmospheres, furnace stacks or environments with inert gas backgrounds.
- The Sirius should never be used to measure combustible or toxic gases when the amount of oxygen is either deficient or enriched.
- The Sirius cannot measure the presence of combustible airborne mists, such as lubricating oils, or airborne dusts, such as grain or coal dust.

EQUIPMENT LOCATION: (TO REMAIN BLANK FOR EACH HOSPITAL TO FILL IN)

OPERATIONAL INSTRUCTION GUIDELINES: always follow manufactures instructions, these are streamlined guides.

A.) Operation

To Turn the unit on, press the "Power ON" button; the instrument displays:

The unit will go through a self-test of all systems installed. (If you do nothing, unit will eventually go into the measure mode.)

The self test will include:

1. A self-test
    - All segments display
    - Audible alarm sounds
    - Alarm LEDs illuminate
    - Display backlight illuminates
    - Pump activates
    - Software version displays
    - Internal diagnostics

2. Alarm setpoints:
    - Low
    - High
    - STEL (if activated)
    - TWA (if activated)
3. Calibration gas (expected calibration gas values)
4. Time and date (if data logging option installed)
5. Last CAL date (if data logging option installed)
6. Instrument warm-up period
7. Fresh Air Setup option

To turn the unit **OFF** Press the "Power On" button and hold for 3 seconds, anytime after the self test.

B.) Calibration Procedures and frequency.

- The Sirius will be calibrated, at a minimum, on a monthly basis as described on pages 2-20 through 2-22 of the Sirius Instruction Manual. Calibration may also be required if the instrument fails a performance check or delivers suspect results.

Persons responsible for the use of the Sirius Multigas Detector must determine whether or not the Fresh Air Setup option should be used. The user's abilities, training and normal work practices must be considered when making this decision.

- Turn ON the Sirius Multigas Detector.
- Once the instrument self check is complete, "**ZERO?"** flashes for 10 seconds.
- To perform a Fresh Air Setup, push the ON/OFF button while "**ZERO?"** is flashing.
- To immediately skip the FAS, push the RESET/ button.

If no buttons are pushed, the "ZERO?" automatically stops flashing after the 10 seconds have expired and the FAS is not performed.

Autocalibration
Each Sirius Multigas Detector is equipped with an Autocalibration feature to make unit calibration as easy as possible.
The Autocalibration sequence resets instrument zeroes and adjusts sensor calibration for known concentrations of calibration gases.

1. Turn ON the instrument and verify that battery has sufficient life.

2. Wait until the Measure Gases page appears.

3. Push and hold the RESET/ button until "**CAL ZERO?"** flashes on the display

4. Push the ON-OFF/ACCEPT button to zero the instrument.
• Instrument must be in fresh air to perform the zero.
• "**CAL ZERO"** flashes.

NOTE: To skip the Zero procedure and move directly to the calibration span procedure, push the RESET/□ button.

If no button is pushed for 30 seconds, the instrument returns to the Measure mode.
• Once the zeros are set, "**CAL SPAN?"** flashes (FIGURE 5-3).

5. Connect the appropriate calibration gas to the instrument by connecting one end of the tubing to the pump inlet on the instrument and the other end of tubing to the cylinder regulator (supplied in the calibration kit).

6. Open the valve on the regulator, if so equipped.

7. Push the ON-OFF/ACCEPT button to calibrate (span) the instrument.
• "**CAL SPAN"** flashes for approximately 90 seconds.
• If autocalibration sequence passes, the instrument beeps three times and returns to the Measure mode.

NOTE: To skip calibration and return to the Measure mode, push the RESET/□ button. If no button is pushed for 30 seconds, it will return to the Measure page.

8. Remove the tubing from the instrument.

9. Close the valve on the regulator, if so equipped.

10. Repeat steps 5 through 8 for the PID.

NOTE: The Autocalibration procedure adjusts the span value for any sensor that passes the test; sensors that fail autocalibration are left unchanged. Since residual gas may be present, the instrument may briefly go into an exposure alarm after the calibration sequence is completed

C.) Performance Checks or Calibration Check

The Sirius should be "bump tested" with known concentrations of calibration gases prior to each use and calibrated as needed.

The bump test or calibration check is simple and should only take about one minute. Perform this calibration check before each day's use for each installed sensor.
1. Turn ON the Sirius Multigas Detector in clean, fresh air.
2. Verify that readings indicate no gas is present.
3. Attach regulator (supplied with calibration kit) to the cylinder.
4. Connect tubing (supplied with calibration kit) to the regulator.
5. Attach other end of tubing to the instrument.
6. Open the valve on the regulator, if so equipped.

The reading on the Sirius Multigas Detector display should be within the limits stated on the calibration cylinder or limits determined by your company.

If necessary, change cylinder to introduce other calibration gases.

If readings are not within these limits, the Sirius Multigas Detector requires recalibration. See Chapter 5, **Calibration**.
NOTE: The presence of other calibration gases may cause the PID to underrange, indicated by dashes for the displayed VOC reading.

D.) Cleaning

- Clean equipment of normal daily dirt directly after use by wiping down with a damp cloth
- Every effort should be made to keep the instrument from becoming contaminated both internally and externally other than what is needed to sample.
- Protective measures such as enclosing the instrument in a plastic bag, or using approved water/particulate traps should be implemented should the instrument be at risk of becoming contaminated.

*If contaminated with hazardous materials contact a Hazardous Materials Technician for proper Decon Procedures.

- In the event that external contamination does occur, the case may be gently wiped clean with a mild soap and water solution. Internal contamination will require replacement of all filters and may require return of the instrument for service

User Qualifications

A.) Required Skills

- Users shall be able to understand appropriate usage of the instrument, perform calibration and performance checks, replace sensors and filters, charge and/or change batteries, and perform basic decontamination of the instrument.

B.) Testing of Skills and Authorization

- Successful demonstration of the above skills shall constitute the testing performance and authorization requirements for this instrument. The user will accomplish much of this during monthly calibrations checks performed on this instrument.

MAINTENANCE

Storage of equipment

- The instruments shall be kept in the cases provided when not in use.
- These cases shall be stored in a safe, dry place.
    - Optimum storage temperatures are between 23 and 104 degrees Fahrenheit.
    - This may require the user to keep the instrument in a warm location during winter months.

Instructions for replacing the following Sirius Multigas Detector Sensors:

- Combustible Sensor
- Oxygen (O2) Sensor
- Carbon Monoxide (CO) Sensor
- Hydrogen Sulfide (H2S) Sensor

For Certificates, Approvals, Response Factors, Sensor Performance Specifications, and other information, refer to the Sirius Detector Instruction Manual (P/N 10048887).

Sensor Replacement

1. Verify the instrument is turned OFF.
2. Remove the battery pack.
3. Remove the four case mounting screws from the back of the case.
4. Remove the back case.
5. Gently lift out and properly discard the sensor to be replaced. Use a flat-blade screwdriver to pry the CO and/or H2S sensors from their holders.

NOTE: If a Long Term O2 sensor is being installed, remove and discard the shorting clip that is connected to its pins.

6. For the combustible and/or O2 sensor, carefully align the new sensor pins with the appropriate sockets on the (lower) printed circuit board. Press gently into position.

• If a combustible and/or an O2 sensor is not to be installed, ensure that the appropriate opening in the sensor gasket is sealed with a sensor cover label (tape disc) (P/N 710487).

7. For the CO and/or H2S sensors carefully press them into their appropriate socket.

• The CO sensor has a filter disc attached to it. Be careful not to damage the filter disk during handling and installation. Be sure the filter disk is facing upward when installed.

The Battery

- The battery condition icon continuously displays in the upper portion of the screen
- To charge the Lithium Ion Battery Pack
    1. Turn the unit Off or remove battery (see AA battery Removal below)
    2. Plug unit into MSA supplied Sirius charger only. Wait for green light that charge is complete.
- To Change the 4 AA Batteries

To remove the battery pack from the Sirius Multigas Detector:

1. Unscrew the captive screw from the bottom of the battery door.
2. Pull the battery pack out of the instrument by gripping the sides of the battery pack door and lifting it up and away from the unit.

3. **For Alkaline battery packs:**
a. Pull the battery pack from the clip.
b. Unscrew the captive thumbscrew and lift the lid. The lid will remain on the thumbscrew.
c. Replace the batteries, using only batteries listed on the approval label, and replace the lid; tighten the thumbscrew.
d. Slide the battery pack into the clip and reinstall the door.

Record Keeping

- Documentation of completed monthly calibrations checks shall be written on the Monthly Calibration Checks form provided to all users.
- Documentation of use and decontamination shall be recorded on the tag provided for each instrument.
- Documentation of any service work done on each instrument will also be stored in the Instrument Log.
- Documentation of completed maintenance during the month shall be written on the Monthly Calibration Checks form.

Standard Operational Guideline
MSA Sirius: Chemical Detection Unit Maintenance Log

Date	Alarms	Charging	%LEL	Isobutyl	Calibration % O_2	ppm H_2S	ppm CO	Comments	Signature