

Confined Space Entry & Tunnel Safety – Appendix D: Multi-Gas Detector Use & Calibration

The MSA Altair 4X(R) Multi-gas monitor must undergo a “bump test” prior to entering a permit-required confined space. Employees using this equipment will record the date and time of the “bump test” on *Form 2: Confined Space Entry Permit*.

“Bump-Test” – perform daily before each entry or use.

1. Turn the MSA Altair 4X(R) on in normal reading mode. Do this by pressing and holding the center button. There will be a loud 95+ dB audible ‘BEEP-BEEP!’
2. Press the [V] button to display ‘BUMP TEST’
3. Place the multi-gas detector UPSIDE-DOWN and BACKWARDS into the cradle of the Galaxy docking station. Close the lid until the cover ‘SNAPS’ closed.
4. After the BUMP TEST completes, the instrument momentarily displays “BUMP PASS” or “BUMP ERROR” along with the label of any sensor that failed before returning to Measure mode. Two tries are allowed to “BUMP PASS”. If the detector fails the bump test, remove it from use and contact EH&S.

The check √ symbol will be displayed for 24-hours after a successful BUMP TEST. Confined space multi-gas detectors are to be obtained from EH&S in SY CSB 207.

Equipment and instruments must be reserved 2-days before the planned entry. The equipment check-out must be logged in the *Confined Space Equipment Log Book*.

This table contains the default alarm set points for the MSA Altair 4X(R) Multi-Gas Detector. The calibration is to verify that these set points are valid and the detector is safe to use.

MSA Altair 4X Default Alarm Set Points

Sensor Type	Low	High	STEL	TWA
Hydrogen sulfide	10 ppm	15 ppm	15 ppm	10 ppm
Carbon monoxide	25 ppm	100 ppm	100 ppm	25 ppm
Oxygen	19.5%	23.0%	-	-
LEL	10%	20%	-	-

The calibration gases* that are currently in-use are;

Gases	H2S	CO	O2	CH4	LEL
Calibration	20 ppm	60 ppm	15 %	1.45%	29%

* *Certificate of Analysis available upon request.*

Calibration of the MSA Altair 4X(R) Multi-gas Detector

1. Turn the MSA Altair 4X(R) on in normal reading mode. Do this by pressing and holding the center button. There will be a loud 95+ dB audible 'BEEP-BEEP!'
2. Once the MSA Altair 4X(R) is in normal reading mode, you need to send it into calibration mode. Do this by pressing and holding the right "UP" button until it beeps at you and the screen asks you to zero the monitor (refresh on the MSA Altair 4X(R)).
3. Now that the screen is asking for confirmation, press the center button once to confirm. This will send the monitor into zeroing mode. Now is a good time to set the monitor down, and check your calibration gas, regulator, and calibration adapter.
4. **Initial set-up.** Open the valve on your regulator before attaching it to the gas cylinder. Now screw it into your calibration gas cylinder. Close the regulator once you hear gas coming out of it. This is the signal to know your regulator is good to close. Continue screwing in the regulator until it stops. Do not overturn it.
5. Attach the tubing to the hose barb on your regulator. Make sure the tubing is also connected to the Galaxy™ docking station.
6. Wait for the screen to come up asking for you to apply calibration gas. Once this screen comes up, press the center button again to confirm. Place the gas detector in the Galaxy cradle, and close the door. Once it is clipped on, turn on your gas.
7. Make sure your calibration gas values on the screen match what is on your calibration gas cylinder! Verify the gas display is the same as on the table.
8. Once the calibration procedure is completed, turn your gas off and remove the MSA Altair 4X(R). The screen will go back to normal reading mode within a few seconds.
9. The MSA Altair 4X(R) Multi-Gas Detector is officially calibrated. Make sure to record these readings on the unit-specific calibration log.

Calibration Log for #1 MSA Altair 4X(R) Multi-Gas Detector: I13EO, SN: _____

LIFE Calibration Gas – KA0057361,* Lot: _____, Exp.: _____

Gases	H2S	CO	O2	CH4	LEL
Calibration	20 ppm	60 ppm	15 %	1.45%	29%

RECORD the 'Calibration' or 'Bump-Test' reading in the table below.

Altair 4X(R) Multi-Gas Calibration Log Book – Sylvania Campus – SY CSB 207

#1 MSA Altair 4X(R) Multi-Gas Detector: I13EO, SN: _____

Date (mm/dd/yy)	H2S 20 ppm	CO 60 ppm	O2 15 %	CH4 1.45%	LEL 29%

* *Certificate of Analysis available upon request.*

This form is to be retained in the Equipment Inspection Log Book.