

# Gas Detectors for the Fire Service

**MSA**  
The Safety Company



**WHEN YOU GO IN, WE GO IN WITH YOU.**

## MSA Gas Detectors for YOUR Fire Service Applications

Emergency response crews face two basic challenges when entering dangerous environments:

- Is the air acceptable for normal, unprotected breathing?
- Is the air safe from potential explosions?

Portable gas detection equipment can help emergency response crews to meet these challenges. Gas detection needs are expanding. Increasingly, fire departments respond to situations where hazardous substances may be present and proper detection equipment is necessary. MSA provides equipment to meet almost any gas detection need.

### Confined Space Entry

Emergency response teams may be called upon to perform services or rescues in confined spaces. While often industrial in nature, a confined space is typically defined as any enclosed area not meant for human habitation, such as a sewer or storm drain. MSA's multigas detectors can help to ensure that confined space atmospheres are safe for worker entry.

### Overhaul

During overhaul operations, you can never be certain of conditions within damaged structures. MSA Single and Multigas Detectors can indicate the need to use respiratory protection.

### Hydrogen Cyanide (HCN) Risks

Hydrogen Cyanide (HCN) detection has increasingly become a key part of firefighting respiratory programs and SOPs as the awareness of HCN exposures becomes known and studied. Materials such as insulation, furniture carpets, appliances and plastics can generate HCN when burning as can many items made of natural materials.

In addition to the smoke generated during active fires, the continued presence of heat and smoldering materials during overhaul can generate dangerous levels of HCN. This has prompted many departments to adjust their respiratory SOPs to minimize firefighter exposure to HCN. The use of HCN monitors during overhaul can provide the critical information needed to support those decisions and further protect firefighters.

HCN is a colorless gas with a bitter, almond like odor. HCN is considered to be IDLH at 50 ppm per NIOSH. HCN can enter the body through the absorption, inhalation and ingestion. Symptoms of HCN exposure can include nausea, dizziness, vomiting and breathing difficulty. These symptoms can appear immediately. The long term effects of repeat exposure continue to be studied. MSA ALTAIR Pro and ALTAIR 5X instruments can help firefighters detect threats from HCN.

### Carbon Monoxide (CO) Risks

CO is a colorless, odorless gas that is considered toxic at 35PPM with a NIOSH IDLH at 1200 ppm. Symptoms of exposure can include headache, nausea, dizziness, confusion and shortness of breath. Since CO is often the byproduct of incomplete combustion, it can be a threat during overhaul or in many home calls.

### Home Calls

Fire departments often respond to calls concerning CO (carbon monoxide) home alarms. MSA ALTAIR® 2X, ALTAIR 4X and ALTAIR 5X Gas Detectors can detect the presence of CO upon arrival at call sites and determine if the premises are safe for habitation. These units can even be used to locate the gas source (often garages or leaky furnace vents). Fire departments may also respond to natural gas leaks or suspicious odors and must be able to measure concentrations of several gases simultaneously.

### HazMat

Fire departments and HazMat teams at times must detect and identify hazardous compounds and other VOCs at spills and other emergency situations. With the ability to detect hundreds of volatile organic compounds, the Sirius® PID Multigas Detector is the ideal instrument for HazMat applications.



## The ALTAIR 2X Gas Detector

Introducing the ALTAIR 2X Gas Detector from MSA; the first one or two gas detector that incorporates industry-leading XCell Sensor Technology to deliver unparalleled performance while drastically minimizing total cost of ownership, increasing durability and delivering enhanced worker safety, compliance and traceability.

The ALTAIR 2X is also the first portable gas detector to introduce revolutionary XCell Pulse Technology. Based on proven science and advanced patented sensor capabilities.

### Built Tough

Like all MSA detectors, ALTAIR 2X is built for durability and designed for the work that is being completed.

- Withstands extreme impacts with rugged polycarbonate housing and passes 25-foot drop test
- IP 67-rated ALTAIR 2X is both dust tight and water tight
- Minimal rF interference
- Full three-year warranty supports the entire instrument, including the sensors.



DETECTOR TYPE (LOW, HIGH ALARM IN PPM)	CHARCOAL	GLOW-IN-THE-DARK
<b>ALTAIR 2X SINGLE GAS DETECTOR</b>		
CO (25, 100)	10153986	10154185
CO-H2 (25, 100)	10154074	10154186
<b>ALTAIR 2XT TWO-TOX GAS DETECTOR</b>		
CO/H2S (CO: 25, 100; H2S: 10, 15)	10154040	10154181
CO-H2/H2S (CO: 25, 100; H2S: 10, 15)	10154071	10154182
CO/H2S-LC (CO: 25, 100; H2S: 5, 10)	10154072	10154183
CO/NO2 (CO: 25, 100; NO2: 2.5, 5)	10154073	10154184
<b>ALTAIR 2XP – WITH XCELL PULSE TECHNOLOGY —COMING SOON!</b>		
H2S-Pulse (10, 15)	10153984	10154188
CO-Pulse (25, 100)	10160014	10160015
CO-HC (25, 100)	10154075	10154187

## ALTAIR Pro HCN Single-Gas Detectors

### Ease of Use

ALTAIR Pro HCN Gas Detectors combine user flexibility and functional simplicity. Units use an easily replaceable, commercially available battery and one button operation.

### Distinctive Alarm System

Triple alarm system's piercing audible alarm averages 95 dB @ 1 foot and is designed not to be confused with other sounds. Visual alarm features dual bright top LED to be seen from all angles. Internal vibrating alarm is standard with all units.

### Built-In IR Communication (Event and Data-Logging)

ALTAIR Pro HCN Gas Detectors provide standard data logging, automatically recording the 50 latest events while simultaneously recording peak readings every three minutes.

### Durability

Thick rubberized housing withstands accidental drops and other impacts. 10' drop test and IP67-rated for water-and-dust resistance.

ALTAIR PRO HCN SINGLE-GAS DETECTOR					
Instrument Type	P/N	Low Alarm	High Alarm	STEL	TWA
HYDROGEN CYANIDE (HCN)	10076729	4.7 ppm	10 ppm	10 ppm	4.7 ppm

ACCESSORIES	
P/N	Description
711072	Cal Gas - 10 ppm HCN - 34 Liter
655051	Replacement HCN sensor
467895	Flow Control Regulator
602294	Tubing
10150609	Cal Gas - 60PPM CO - 116 Liter



ALTAIR PRO HCN Fire Single-Gas Detector

## ALTAIR 5X Multigas Detectors

### Powered by Performance

ALTAIR 5X Multigas Detectors provide industry-leading sensor technology with MSA XCell® Sensors, offering typical life of more than double the industry average. MSA's proprietary Application-Specific Integrated Circuit (ASIC) design miniaturizes sensor controlling electronics, offering superior stability, accuracy and repeatability.

Saving seconds on response time can mean saving lives. MSA XCell Sensors enable faster response and span calibration times to save on calibration gas and maintenance costs. ALTAIR 5X Multigas Detectors can also be equipped with MSA IR sensors for many gases and ranges, including CO2.

### Flexibility to Meet Your Needs

MSA's ALTAIR 5X Multigas Detectors are available with high-resolution color or monochrome LCD display with multilingual capabilities; MSA's Logo Express® Service can customize your color display. Easily configurable detectors with interchangeable plug-and-play MSA XCell Sensor slots can monitor up to six gases simultaneously. Optional glow-in-the-dark instrument housing is available for IR sensor-equipped units. Lithium-ion battery lasts for 20 hours for multiple shift use; alkaline battery pack is also available. ALTAIR 5X Multigas Detector is fully compatible with the MSA GALAXY® GX2 Automated Test System and MSA Link Software.



ALTAIR 5X Multigas Detector

**ALTAIR 5X Detector Kits** – monochrome display, integral pump, 10-ft sampling line, and 1-ft probe

Approvals		Configuration
U.S.	CANADA	
10116926	10115120	LEL, O2, CO, H2S
10160201		LEL, O2, CO, H2S, HCN

**ALTAIR 5X Detector Deluxe Kits** – color display, integral pump, 10-ft sampling line, and 1-ft probe

Approvals		Configuration
U.S.	CANADA	
10116928	10115142	LEL, O2, CO, H2S
10160193		LEL, O2, CO, H2S, HCN

### ACCESSORIES

P/N	Description
10042621	Sample Probe
10040665	10' Sample Line
801582	Water Stop Filter, 10-pack
10045035	58 Liter Quad Gas - LEL-O2-CO-H2S
10095774	Vehicle Charger
10034391	Demand Regulator Kit

### SENSOR OPTIONS AND SPECIFICATIONS

Gas Type	Range	Resolution
COMBUSTIBLE	0-100%	LEL 1% LEL
OXYGEN	0-30% VOL	0.1% VOL
CARBON MONOXIDE	0-1999 PPM	1 PPM
HYDROGEN SULFIDE	0-200 PPM	1 PPM
SULFUR DIOXIDE	0-20 PPM	0.1 PPM
CHLORINE	0-10 PPM	0.1 PPM
AMMONIA	0-100 PPM	1 PPM
NITROGEN DIOXIDE	0-20 PPM	0.5 PPM
CHLORINE DIOXIDE	0-1 PPM	0.01 PPM
PHOSPHINE	0-5 PPM	0.1 PPM
HYDROGEN CYANIDE	0-30 PPM	0.1 PPM
CARBON DIOXIDE	0-10% VOL	0.01% VOL
BUTANE	0-25% VOL	0.1% VOL
METHANE	0-100% VOL	1% VOL
PROPANE	0-100% VOL	1% VOL

## ALTAIR 4X Multigas Detectors

ALTAIR 4X Multigas Detectors are driven by advanced portable gas detector technology. Design breakthroughs improve performance and ensure that ALTAIR 4X Detectors outlast the competition

- Full three-year warranty
- Four-year sensor life
- Lower cost of ownership
- IP67-rated
- End-of-sensor-life warning
- 24-hour run time
- Withstands 20-ft drop
- Fast, high-performing MSA XCell Sensors



ALTAIR 4X Multigas Detector – charcoal (left) and phosphorescent (right)

**ALTAIR 4X Detector** with North American approval, quick-start card, data logging, charger, calibration cap and tubing, CD manual. MotionAlert™ feature is now standard on all detectors.

P/N	Description
10107602	ALTAIR 4X Multigas Detector (LEL, O2, CO, H2S), charcoal
10110443	ALTAIR 4X Multigas Detector (LEL, O2, CO), charcoal
10110444	ALTAIR 4X Multigas Detector (LEL, O2), charcoal
10107603	ALTAIR 4X Multigas Detector (LEL, O2, CO, H2S), phosphorescent
10110445	ALTAIR 4X Multigas Detector (LEL, O2, CO), phosphorescent
10110446	ALTAIR 4X Multigas Detector (LEL, O, phosphorescent)

### ACCESSORIES

P/N	Description
10152669	ALTAIR Pump Probe with charger
10153104	25' Sample Line for Pump Probe
10082834	JetEye IR Adapter with USB connector
10045035	58 Liter Quad Gas - LEL-O2-CO-H2S
467895	Flow Control Regulator
10095774	Vehicle Charger

### SENSOR SPECIFICATIONS

Gas Type	Range	Resolution
LEL	0-100%	1%
O2	0-30% vol	0.1% vol
CO	0-1999 ppm	1 ppm
H2S	0-200 ppm	1 ppm

## MSA XCell Technology

MSA revolutionizes sensor technology with design breakthroughs for superior performance that saves you money.

- Sensor response and clear times in less than 15 seconds
- Bump test in less than 15 seconds
- Span calibration time of 60 seconds
- Greater signal stability and repeatability within changing or extreme environmental conditions
- Two-tox CO/H2S sensor with virtually no cross-channel interference
- Sensor digital output reduces susceptibility to RF interference
- Reliable, extended-life XCell Sensors offer typical life greater than four years
- Laser-welded sensor housings eliminate opportunities for leaks
- Combustible sensor proprietary operating mode improves poison resistance
- End-of-sensor-life warning gives advanced notice to user, reducing service outages





## The Importance of Calibration and Bump Testing

It is vital to firefighter safety that portable gas detectors are maintained and calibrated properly. All sensors can eventually expire due to loss of sensitivity, slowed response time or both. Because of this, performance of a daily bump test is best practice because it is the only method by which the entire system: instrument, sensors, flow path, power source, alarms, and all electronics can be checked to ensure that it is functioning properly. That's why most manufacturer instructions recommend a daily bump test each day, prior to operation of gas detectors.

### Sensor drift

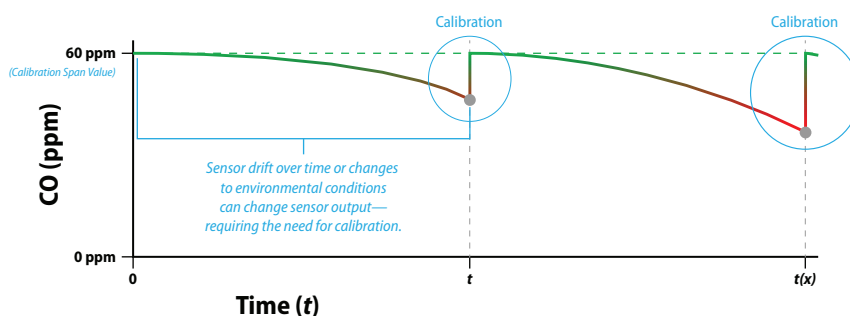
All electrochemical sensors will eventually lose sensitivity over time with exposure to work conditions. Calibration is used to compensate for the loss of sensitivity and adjust the readings to the new sensitivity output level.

Drift is the amount that sensor output

changes over time. All sensors experience drift. Once the sensitivity becomes too low, it becomes more difficult to assess exact differences in gas concentrations. Sensors typically have a fixed sensitivity limit assigned by the detector; once that limit is reached, they will not pass calibration.

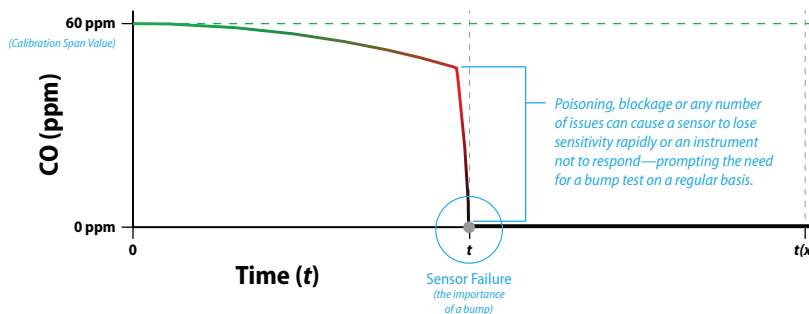
### What is a Calibration?

Calibration is an adjustment of the sensor(s) output to match the known traceable calibration gas concentration. Full calibration ensures maximum accuracy of the instrument. Environmental conditions such as over-exposures, introduction of poisons, heavy impacts, or other extreme environmental changes can cause sensors to become less accurate. Calibration allows the instrument to manage these changes in sensitivity.



### What is a Bump Test?

Bump tests are meant to verify that the sensors and the alarms function properly and that the sensors respond within acceptable margins. Gases or vapors must be able to reach the sensor. Bump tests confirm that gas flow paths to the sensor on the detector are clear and the sensor(s) are functioning from a qualitative standpoint. Bump testing will alert users if a gas inlet has become blocked, even if the blockage is not visible. The bump test, however, is not meant to adjust the device's accuracy.



## GALAXY GX2 Automated Test System

Simplicity counts with the MSA GALAXY GX2 Automated Test System for advanced safety management and effortless operation. GALAXY GX2 Test System provides simple, intelligent testing and calibration of MSA ALTAIR and ALTAIR PRO Single-Gas Detectors and ALTAIR 4X and ALTAIR 5X Multigas Detectors. Easy-to-use automated test stand offers high performance as either stand-alone unit or integrated portable detector management system, enabling total data access and control of the MSA ALTAIR family Gas Detector fleet. New MSA Link Pro Software for proactive safety management; gas exposure email alerts, direct data input, live filtering, test and exposure queries, collecting and printing reports.



- Color touch screen for ease of setup and viewing
- Extremely simple to use; testing starts automatically without touching a single button
- Simultaneous testing of up to ten instruments
- GALAXY GX2 System is optimized for use with MSA's XCell Sensors; provides up to 50% cost of ownership reduction
- At-a-glance indicators include low calibration gas volume, expiration warnings and test stand status
- MSA Link Pro Software provides proactive safety management, dashboard overview and total record-keeping
- 18 languages available for test stand and MSA Link Pro Software that simplifies usage and reduces training

CALIBRATION CYLINDERS AND ACCESSORIES	PART NO.
C12/NH3/CIO2 DEMAND REGULATOR KIT	10034391
KIT, CASE WITH GAS MISER® REGULATOR, DEMAND FLOW RP (INCLUDES TUBING AND FITTING, LESS GAS)	10050985
CALIBRATION TUBING WITH QUICK-DISCONNECT FITTING	10041225
58L QUAD GAS 60 PPM CO, 20 PPM H2S, 15% O2, 1.45% CH4	10045035
34L QUAD GAS CYLINDER, 60 PPM CO, 20 PPM H2S, 15% O2, 1.45% CH4	10048280
34L CYLINDER, 60 PPM CO, 15% O2, 1.45% CH4	10048789
34L ECONO-CAL® CYLINDER, 10 PPM NO2, AIR BALANCE	711068

GALAXY GX2 SYSTEM TEST STAND	1 valve (for use with 1 calibration gas cylinder)		4 valve (for use with 1-4 calibration gas cylinders)	
	Charging*	No-charging	Charging*	No-charging
ALTAIR / ALTAIR PRO Single-Gas Detector	–	10128644	–	10128643
ALTAIR 4/4X Multigas Detector	10128630	10128642	10128629	10128641
ALTAIR 5/5X Multigas Detector	10128626	10128628	10128625	10128627

ACCESSORIES	
10127422	ALTAIR 4/4X Detector Multi-unit Charger
10127427	ALTAIR 5/5X Detector Multi-unit Charger
10105756	Electronic Cylinder Holder
10125135	Standard Cylinder Holder
10034391	Demand Regulator Kit
10127111	Memory Card

Note: This bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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