MSA
The Safety Company

Gas Detectors for the Fire Service

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 35 ppm 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 ALTAIR 5X PID Multigas Detector is the ideal instrument for HazMat applications.

MSA The Safety Company

ALTAIR 5X/5X PID Multigas Detector

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.

VOC detection is critical in HAZMAT, Arson Investigations, and several applications emerging in the Fire Service. Advanced Photoionization (PID) Detectors are becoming required tools for the fire service for VOC applications. Count on MSA to bring this advanced technology in an extremely durable and easy-to-use package.

Tremendous Flexibility

Users can simultaneously monitor for VOC with low vapor pressures while measuring for combustible, toxic, and oxygen deficient atmospheres within one reliable, easy-to-use, durable unit.

Durable & Reliable PID Performance

Integrating MSA's patented PID sensor design in our proven reliable multigas detector make this combination a dependable winner. Get the job done reliably and quickly.

Loud, Attention-Grabbing Alarm System

ALTAIR 5X PID Multigas Detectors provide outstanding alarms to clearly warn users of potentially hazardous situations. Rechargeable lithium-ion battery packs keep instruments running for up to 20 hours.

Ordering Information

Description	UL P/N	CSA P/N
Instrument Only Kits		
MONOCHROME DISPLAY, LEL, O_2, CO, H_2S	10116924	10115118
COLOR DISPLAY, LEL, O_2, CO, H_2S, PID	10165445	
Standard Kits *Monochrome Display, 10 ft. (3 m) Sampling Line, 1 ft. (0.3 m) Probe*		
MONOCHROME DISPLAY, LEL, O_2, CO, H_2S	10116926	10115120
Standard Kits *Color Display, 10 ft. (3 m) Sampling Line, 1 ft. (0.3 m) Probe*		
COLOR DISPLAY, LEL, O_2, CO, H_2S	10116928	10115142
COLOR DISPLAY, LEL, O_2, CO, H_2S, PID	10165446	

Accessories

P/N	Description
10042621	Sample probe
10040665	10 ft. (3 m) sample line
801582	Water stop filter, 10 pack
10045035	58 L, quad gas (LEL, O_2, CO, H_2S)
10095774	Vehicle charger
10034391	Demand regulator kit

Sensor Options & 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.
PID	0-2000 ppm / 1.0 ppm	0-999 ppm / 0.1 ppm

MSA XCell® Technology

MSA revolutionizes sensor technology with design reakthroughs 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/H_2S 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 advance notice to user, reducing service outages

ALTAIR 4XR Multigas Detector

The MSA ALTAIR 4XR Multigas Detector is the world's toughest and most reliable four-gas monitor. Proven MSA XCell Sensors are among the fastest available, and when paired with the MSA ALTAIR Connect app, this detector can text alarm notifications to supervisors, team members, or other interested parties.

- < 15-second sensor response time
- 4-year standard warranty
- 5-year expected life
- 24-hour battery run-time
- Agency-certified IP68 rating *(2 m for 1 hour)*
- Can survive incidental 25-ft. (7.6 m) drops
- Meets MIL-STD-810 drop test requirements
- Optional real-time event notification
- Instrument compliance with exclusive red-green LED bump status indicators

Charcoal (left)
Glow-in-the-Dark (right)

Ordering Information

P/N	Description
10178557	LEL, O_2, CO, H_2S (North American charger) charcoal
10178558	LEL, O_2, CO, H_2S (North American charger) glow-in-the-dark

Accessories

P/N	Description
10152669	ALTAIR Pump Probe with charger
10153104	25 ft. (7.6 m) Sample Line for Pump Probe
10082834	JetEye IR Adapter with USB connector
10045035	58 L, quad gas (LEL, O_2, CO, H_2S)
467895	Flow control regulator
10095774	Vehicle charger

Sensor Options & Specifications

Gas Type	Range	Resolution
LEL	0-100%	1%
O_2	0-30% Vol.	0.1% Vol.
CO	0-1999 ppm	1 ppm
H_2S	0-200 ppm	1 ppm
H_2S-LC	0-100 ppm	0.1 ppm
NO_2	0-50 ppm	0.1 ppm
SO_2	0-20 ppm	0.1 ppm

ALTAIR io™ 4 Gas Detection Wearable

With fully integrated cellular connectivity right out-of-the-box, the ALTAIR io 4 Gas Detection Wearable delivers real-time visibility to help drive safety and productivity across workers, worksites, and workflows.

- Available through MSA+, our comprehensive subscription program including hardware and software, gives you access to powerful cloud-based solutions enabling faster implementation, increased warranty coverage and automatic software and firmware upgrades—with minimal capital expense.
- Designed with fully integrated connectivity for real-time visibility across your worksites from day one.
- CAT-M LTE cellular connectivity and integration with the MSA Grid.
- Deploys in seconds, right out of the box. No IT required.
- Rugged, durable design and industry-leading XCell® Sensors.
- Survives a 25-foot drop test.
- Breakthrough sensor design enables faster response and shorter span calibrations.

Ordering Information

P/N	Description
10245598	LEL, O_2, CO, H_2S *(US outright purchase)*
10248523	LEL, O_2, CO, H_2S *(US outright purchase)*
SUBSCRIPTION	*Please contact MSA Customer Service*

Accessories

P/N	Description
10152669	ALTAIR Pump Probe with charger
10153104	25 ft. (7.6 m) Sample Line for Pump Probe
10045035	58 L, quad gas (LEL, O_2, CO, H_2S)
467895	Flow control regulator

Sensor Options & Specifications

Gas Type	Range	Resolution
LEL	0-100%	1%
O_2	0-30% Vol.	0.1% Vol.
CO	0-1999 ppm	1 ppm
H_2S	0-200 ppm	1 ppm
H_2S-LC	0-100 ppm	0.1 ppm

ALTAIR 2X Gas Detector

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

Built Tough

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

- Withstands extreme impacts with rugged polycarbonate housing and passes 25 ft. (7.6 m) 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

Ordering Information

Detector Type (Low, High Alarm in ppm)	P/N
ALTAIR 2X Single-Gas Detector	
CO (25, 100)	10153986
CO-H_2 (25, 100)	10154074

Detector Type (Low, High Alarm in ppm)	P/N
ALTAIR 2X Two-Tox Gas Detector	
CO/H_2S (CO: 25, 100; H_2S: 10, 15)	10154040
CO-H_2/H_2S (CO: 25, 100; H_2S: 10, 15)	10154071
CO/H_2S-LC (CO: 25, 100; H_2S: 5, 10)	10154072
CO/NO_2 (CO: 25, 100; NO_2: 2.5, 5)	10154073

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 at 1 ft. (0.3 m) 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 & 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 ft. (3 m) drop test and IP67-rated for water-and-dust resistance.

Ordering Information

P/N	Instrument Type	Low Alarm	High Alarm	STEL	TWA
10076729	Hydrogen Cyanide (HCN)	4.7 ppm	10 ppm	10 ppm	4.7 ppm

Accessories

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

The Importance of Calibration & 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.

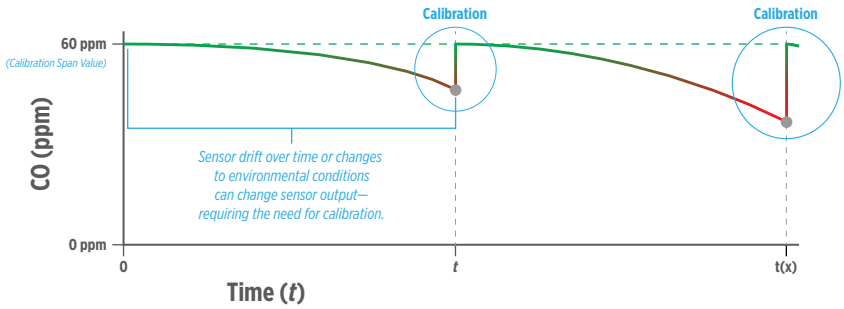
Sensor drift

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.

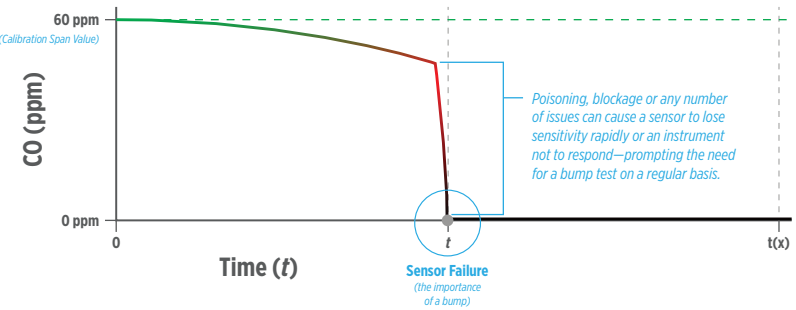
What is Calibration?

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 stand-point. 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 Automated Test System provides simple, intelligent testing and calibration of MSA ALTAIR and ALTAIR PRO Single-Gas Detectors and ALTAIR 4XR 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. MSA Grid Live Monitor features: secure web-based setup and access, IT-free maintenance, real-time worker health and safety notifications, incident and compliance awareness, management and reports, and is exclusively for ALTAIR 4XR and 5X Detectors.

- 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 Automated Test System is optimized for use with MSA XCell Sensors, providing up to 50% cost of ownership reduction
- At-a-glance indicators include low calibration gas volume, expiration warnings, and test stand status
- MSA Grid Fleet Manager has replaced MSA Link Pro Software
- 18 languages available for test stand

Ordering Information

	1 Valve (for use with 1 calibration gas cylinder)		4 Valve (for use with 1-4 calibration gas cylinder[s])	
	Charging	*No-Charging*	*Charging*	*No-Charging*
ALTAIR / ALTAIR PRO SINGLE-GAS DETECTOR	—	10128644	—	10128643
ALTAIR 4XR MULTIGAS DETECTOR	10128630	10128642	10128629	10128641
ALTAIR 5X MULTIGAS DETECTOR	10128626	10128628	10128625	10128627

Accessories

P/N	Description
10127422	ALTAIR 4XR Detector Multi-unit Charger
10127427	ALTAIR 5X Detector Multi-unit Charger
10161803	ALTAIR 4XR/4X & 5X (2:2) Detector Multi-unit Charger
10105756	Electronic Cylinder Holder
10125135	Standard Cylinder Holder
10034391	Demand regulator kit
10127111	Memory Card

Calibration Cylinders & Accessories

P/N	Description
10034391	Demand flow regulator (universal)
10050985	Kit, case with Gas Miser® Regulator, demand flow RP (includes tubing and fitting, less gas)
10041225	Calibration tubing with Quick-Disconnect fitting
10045035	58 L quad gas (60 ppm CO, 20 ppm H_2S, 15% O_2, 1.45% CH_4)
10048280	34 L quad gas (60 ppm CO, 20 ppm H_2S, 15% O_2, 1.45% CH_4)
10048789	34 L cylinder (60 ppm CO, 15% O_2, 1.45% CH_4)
711072	34 L Econo-Cal® cylinder (10 ppm HCN)

ALTAIR io™ Dock

The ALTAIR io 4 Dock enables effortless calibration and bump testing which helps to improve compliance and safety. When in the ALTAIR io Dock, the ALTAIR io 4 Gas Detection Wearable knows when it needs a bump test and immediately runs the appropriate test. When the ALTAIR io 4 device is in the Dock, all compliance reporting is sent immediately to your MSA Grid account, helping to minimize the risks associated with manual record keeping or data file management.

- Simultaneous testing of multiple detectors and sensor configurations
- Test bank can include up to three-cylinder holders and 10 test stands with no messy calibration gas tubing
- Gas cylinders can be RFID-enabled or manually configured
- Cylinder Holder LEDs provide Light band indication of low, empty, or expired calibration gas
- No networking required for compliance reporting to the cloud-based MSA Grid account
- The display indicates current Bank status including current cylinder expiration and pressure in PSI or Bar, while Test Stand LEDs and display indicates current test and test stand status
- The ALTAIR io 4 Dock Leverages the ALTAIR io 4 device connectivity for fast, correct test system setup with no complex user-interface
- Test Modes include:
  - Bump test only
  - Calibration only
  - Bump test with calibration on failure of bump
  - Smart Mode—Dock will perform a bump test or calibration as required by the Grid-configured gas detector settings without user intervention

ALTAIR io Dock Test Stand & Cylinder Holder (top)

ALTAIR io Charge smart charger (bottom)

Ordering Information

P/N	Description
10242914	ALTAIR io Dock Test Stand, global, purchase

Accessories

P/N	Description
10242913	ALTAIR io Dock Cylinder Holder, global, purchase
10242927	ALTAIR io CHARGE 5-Device Smart Charger, purchase

MSA operates in over 40 countries worldwide. To find an MSA office near you, please visit ***MSAsafety.com/offices***.

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ALTAIR® 4XR Multigas Detector

Rugged. Reliable.

WE KNOW WHAT'S AT STAKE.

SAFETY AT THE *SPEED OF NOW*

BE SAFER

With rapid-response sensors.

- LEL
- CO
- O_2
- SO_2
- H_2S
- NO_2

POWERED BY XCell SENSORS

2X FASTER

THAN INDUSTRY AVERAGE

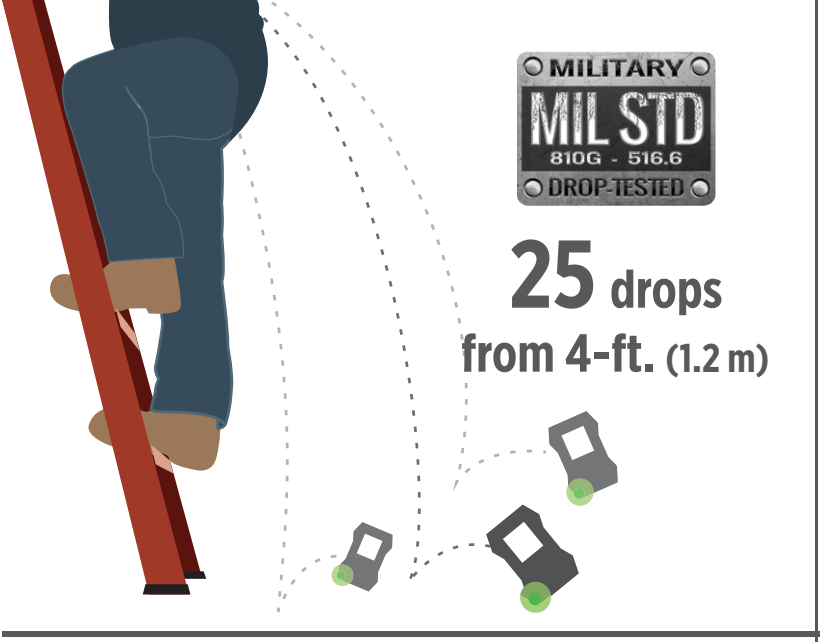
FLEET MANAGER COMPATIBLE

INFORMATION ACCESS

- Receive a daily e-mail notification about your fleet's status. Quickly discern what needs your attention and take action.
- Access your fleet information easily—at anytime and from anywhere.
- Find, download and share reports as you need them—calibrations, detector records or alarms.

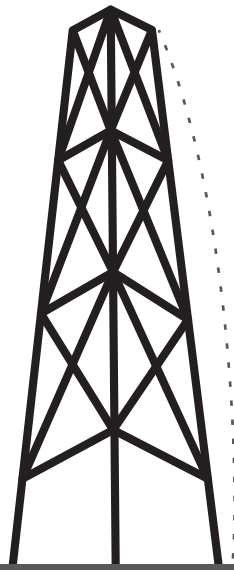
FLEET COMPLIANCE

- Ensure your gas detectors are ready for work (bump tested, calibrated and with sensors functioning properly). Reduce downtime.
- Proactively decommission any equipment that requires maintenance.
- Understand which equipment are in use (by whom) and which ones are available.



MILITARY
MIL STD
810G - 516.6
DROP-TESTED

25 drops
from 4-ft. (1.2 m)



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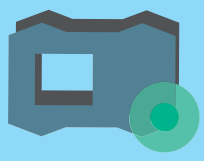
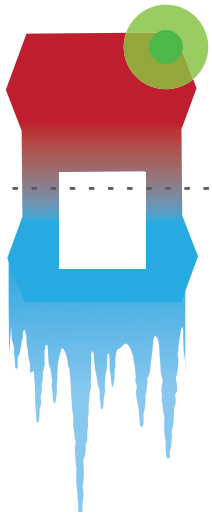
25-ft. (7.5 m)
drop onto concrete

IP68
Waterproof to 6-ft. (2 m)
for 1 hr.



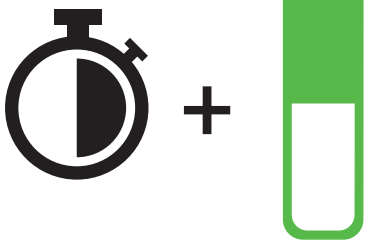


+140° F
(+60° C)

-40° F
(-40° C)

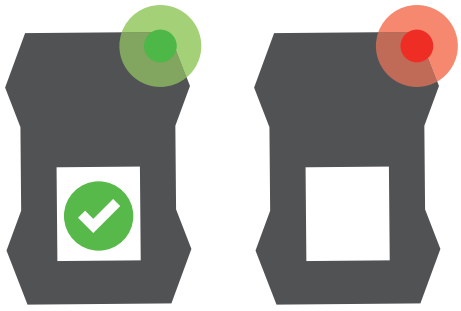
BUILT TO WORK WHEREVER YOU WORK

FAST, EFFICIENT MAINTENANCE



1/2 Time + 1/2 Test Gas

COMPLIANCE AT A GLANCE



Bumped Not Bumped

GUARANTEED PERFORMANCE

Instrument & Sensor Warranty

Specifications and Order Information

Specification	Description		
GAS TYPES	Gas	Range	Resolution
	LEL	0-100%	1%
	O_2	0-30%	0.1%
	CO	0-1999 ppm	1 ppm
	H_2S	0-200 ppm	1 ppm
	H_2S-LC	0-100 ppm	0.1 ppm
	SO_2	0-20 ppm	0.1 ppm
	NO_2	0-50 ppm	0.1 ppm
WARRANTY	4 years (+ optional 1-year extension)		
DURABILITY	25 ft. (7.5 m) drop protection MIL-STD-810G drop protection Certified IP68 rating		
TEMPERATURE RANGE	-40°F to +140°F -40°C to +60°C		
RELATIVE HUMIDITY	5% - 95% intermittent 15% - 90% non-condensing		
POWER	Rechargeable Li-polymer battery 20-hour run-time < 4 hour charge time		
PHYSICAL	4.4 " x 3.0" x 1.4" 11 cm x 7.6 cm x 3.5 cm 8 oz. (228 g)		
DATALOGGING	> 50 hours (adjustable) > 500 event logs		

ALTAIR 4XR Multigas Detector			
Configuration	*Case Color*	*USA/CAN*	*ATEX*
LEL, O_2, CO, H_2S	Charcoal	10178557	10178573
LEL, O_2, CO, H_2S	Phosphorescent	10178558	10178569

Need something different? Contact MSA for options.

Kits with ALTAIR (LEL, O_2, CO, H_2S & Charcoal Case)	
34 liter gas cylinder (1.45% CH_4, 15% O_2, 60 ppm CO, 20 ppm H_2S) Regulator (0.25 l/min)	10178356
ALTAIR Pump Probe 34-liter gas cylinder (1.45% CH_4, 15% O2, 60 ppm CO, 20 ppm H_2S) Regulator (0.25 l/min)	10178357

MSA GALAXY® GX2 Automated 4XR Test Stands for 1 Gas Cylinder				
Integrated 4XR Charger	*N. America*	*Europe*	*UK*	*Australia*
Yes	10128630	10128639	10128659	10128669
No	10128642	10128651	10128661	10128671

Need to accommodate multiple cylinders? Contact MSA for options.

Calibration Gas	
1.45% CH_4, 15% O_2, 60 ppm CO, 20 ppm H_2S	
34-liter cylinder	10048280
58-liter cylinder	10045035

ALTAIR Pump Probe with Charger	
For USA/Canada	10152669
For ATEX/IEC	10052668

Don't need a charger? Contact MSA for options.

XCell® Sensor Replacement Kits	
EX Combustible	10106722
O_2	10106729
CO/H_2S	10106725
CO/H_2S-LC	10121213
CO-H_2/H_2S	10121214
SO_2/H_2S-LC	10121215
CO/NO_2	10121217

Certifications

North America

USA
Class I, Division 1, Groups A, B, C & D Class II Division I, Groups E, F, & G Class III, Division I

Ambient temperature: -40°C to +60°C; T3

Canada CSA
CAN/CSA C22.2 No. 152 Combustible Gas Detection Instruments C22.2 No. 152
Performance Ambient Temperature: -20°C to +54°C; T3
C22.2 No. 157 Intrinsic Safety Ambient Temperature: -40°C to +54°C; T3

Europe

Directive 2014/34/EU (ATEX): II 1G Ex ia da IIC T3 Ga, -40°C to +60°C, IP68

CE 0080
Directive 2014/30/EU (EMC): EN50270 Type 2, EN61000-6-3

IEC

IECEx
Ex ia da IIC T3 Ga, -40°C to +60°C, IP68

MSA operates in over 40 countries worldwide. To find an MSA office near you, please visit ***MSAsafety.com/offices***.

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ALTAIR® 4XR Multigas Detector

Rugged. Reliable.

WE KNOW WHAT'S AT STAKE.

SAFETY AT THE *SPEED OF NOW*

BE SAFER

With rapid-response sensors.

- LEL
- CO
- O_2
- SO_2
- H_2S
- NO_2

POWERED BY XCell SENSORS

2X FASTER

THAN INDUSTRY AVERAGE

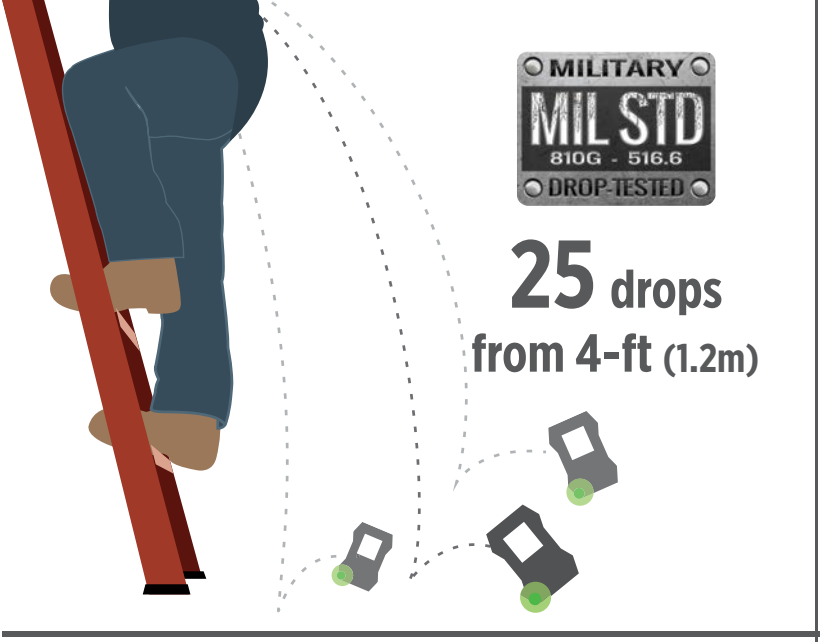
FLEET MANAGER COMPATIBLE

INFORMATION ACCESS

- Receive a daily e-mail notification about your fleet's status. Quickly discern what needs your attention and take action.
- Access your fleet information easily – at anytime and from anywhere.
- Find, download and share reports as you need them—calibrations, detector records or alarms.

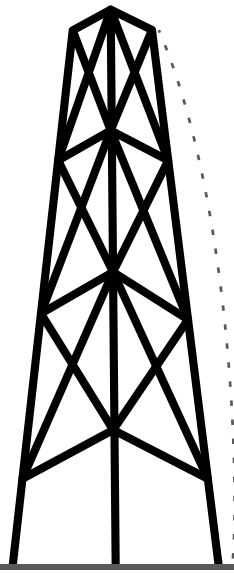
FLEET COMPLIANCE

- Ensure your gas detectors are ready for work (bump tested, calibrated and with sensors functioning properly). Reduce downtime.
- Proactively decommission any equipment that requires maintenance.
- Understand which equipment are in use (by whom) and which ones are available.



MILITARY
MIL STD
810G - 516.6
DROP-TESTED

25 drops
from 4-ft (1.2m)



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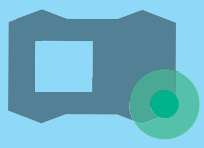
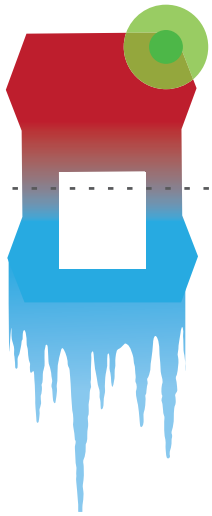
25-ft (7.5m)
drop onto concrete

IP68
Waterproof to 6-ft (2m)
for 1 hr



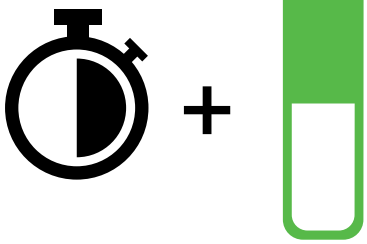


+140° F
(+60° C)

-40° F
(-40° C)

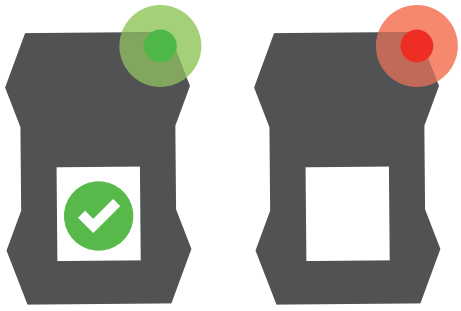
BUILT TO WORK WHEREVER YOU WORK

FAST, EFFICIENT MAINTENANCE



1/2 Time + 1/2 Test Gas

COMPLIANCE AT A GLANCE



Bumped | Not Bumped

GUARANTEED PERFORMANCE

Instrument & Sensor Warranty

Specifications and Order Information

Specification	Description		
GAS TYPES	Gas	Range	Resolution
	LEL	0-100%	1%
	O2	0-30%	0.1%
	CO	0-1999 ppm	1 ppm
	H_2S	0-200 ppm	1 ppm
	H_2S-LC	0-100 ppm	0.1 ppm
	SO_2	0-20 ppm	0.1 ppm
	NO_2	0-50 ppm	0.1 ppm
WARRANTY	4 years (+ optional 1-year extension)		
DURABILITY	25 ft. (7.5 m) drop protection MIL-STD-810G drop protection Certified IP68 rating		
TEMPERATURE RANGE	-40°F to +140°F -40°C to +60°C		
RELATIVE HUMIDITY	5% - 95% intermittent 15% - 90% non-condensing		
POWER	Rechargeable Li-polymer battery 24-hour run-time < 4 hour charge time		
PHYSICAL	4.4 " x 3.0" x 1.4" 11 cm x 7.6 cm x 3.5 cm 8 oz (228 g)		
DATALOGGING	> 50 hours (adjustable) > 500 event logs		

ALTAIR 4XR Gas Detector			
Configuration	*Case Color*	*USA/CAN*	*ATEX*
LEL, O_2, CO, H_2S	Charcoal	10178557	10178573
LEL, O_2, CO, H_2S	Phosphorescent	10178558	10178569

Need something different? Contact MSA for options.

Kits with ALTAIR (LEL, O_2, CO, H_2S & Charcoal Case)	
34 liter gas cylinder (1.45% CH_4, 15% O_2, 60 ppm CO, 20 ppm H_2S) Regulator (0.25 l/min)	10178356
ALTAIR Pump Probe 34-liter gas cylinder (1.45% CH_4, 15% O2, 60 ppm CO, 20 ppm H_2S) Regulator (0.25 l/min)	10178357

MSA GALAXY® GX2 Automated 4XR Test Stands for 1 Gas Cylinder				
Integrated 4XR Charger	*N. America*	*Europe*	*UK*	*Australia*
Yes	10128630	10128639	10128659	10128669
No	10128642	10128651	10128661	10128671

Need to accommodate multiple cylinders? Contact MSA for options.

Calibration Gas	
1.45% CH_4, 15% O_2, 60 ppm CO, 20 ppm H_2S	
34-liter cylinder	10048280
58-liter cylinder	10045035

ALTAIR Pump Probe with charger	
For USA/Canada	10152669
For ATEX/IEC	10052668

Don't need a charger? Contact MSA for options.

XCell Sensor Replacement Kits	
EX Combustible	10106722
O2	10106729
CO/H2S	10106725
CO/H2S-LC	10121213
CO-H2/H2S	10121214
SO2/H2S-LC	10121215
CO/NO2	10121217

Certifications

North America

USA

Class I, Division 1, Groups A, B, C & D Class II Division I, Groups E, F, & G Class III, Division I

Ambient temperature: -40°C to +60°C; T4

Canada CSA

CAN/CSA C22.2 No. 152 Combustible Gas Detection Instruments C22.2 No. 152
Performance Ambient Temperature:
-20°C to +54°C; T4
C22.2 No. 157 Intrinsic Safety Ambient Temperature:
-40°C to +54°C; T4

Europe

Directive 2014/34/EU (ATEX): II 1G Ex ia da IIC T4 Ga, -40°C to +60°C, IP68

CE 0080
Directive 2014/30/EU (EMC): EN50270 Type 2, EN61000-6-3

IEC

IECEx
Ex ia da IIC T4 Ga, -40°C to +60°C, IP68

MSA operates in over 40 countries worldwide. To find an MSA office near you, please visit ***MSAsafety.com/offices***.

0816-102-MC / 03.2023

ALTAIR® 2X, 4XR & 5X Gas Detectors & ALTAIR io™ 4 Gas Detection Wearable

Electrochemical Sensor Cross-Sensitivity Data*

It is quite common for electrochemical sensors to be cross-sensitive to specific gases other than the target gas of interest. Cross-sensitivities are limited as much as possible by sensor design, but some interactions still exist. The tables below are a general guide to these common cross-sensitivities which can be used to understand gas detector readings in environments where multiple gases may be present.

Using Cross-Sensitivity Data

Below you will find multiple scenarios to aid in the use of the provided cross-sensitivity data. It is important to note that cross-sensitivities are additive. Thus when the target gas and cross-sensitive gas are present, the sensor reading will combine both concentrations to provide a summed reading on the detector

XCell CO Sensors					
Scenario	*Gas in Environment*	*Environmental Gas Concentration (ppm)*	*CO Cross-Sensitivity*	*Gas Detector CO Reading (ppm)*	*Actual CO in Environment (ppm)*
Target Gas Concentration	CO	50	100%	50	50
Cross-Sensitive Gas in Environment	NO	50	84%	42	0
Target Gas & Cross-Sensitive Gas in Environment	CO/NO	50 CO/50 NO	100% CO/ 84% NO	50 + 42 = 92	50
Negative Cross-Sensitive Gas in Environment	HCN	20	–5%	–1	0
Target Gas & Cross-Sensitive Gas in Environment	CO/HCN	50 CO/20 HCN	100% CO/–5% HCN	50 + (–1) = 49	50

MSA XCell® Sensor Cross-Sensitivity Data*

XCell CO & CO-HC Sensors			
Gas Applied	*Concentration Applied (ppm)*	*CO Cross-Sensitivity*	*CO Reading***
CO	100	100%	100
H_2S	40	0%	0
SO_2	9	-4%	-1
NO_2	11	0%	0
NH_3	25	0%	0
Cl_2	10	0%	0
NO	50	84%	42
HCN	30	-5%	-2
Toluene	53	0%	0
Isopropanol	100	-8%	-8
H_2	100	48%	48

XCell H_2S & H_2S-LC Sensors			
Gas Applied	*Concentration Applied (ppm)*	*H_2S Cross-Sensitivity*	*H_2S Reading***
H_2S	40	100%	40
CO	100	1%	1
SO_2	9	14%	2
NO_2	11	-1%	-1
NH_3	25	-1%	-1
Cl_2	10	-14%	-2
NO	50	25%	13
HCN	30	-3%	-1
Toluene	53	0%	0
Isopropanol	100	-3%	-3
H_2	100	0%	0

MSA XCell® Sensor Cross-Sensitivity Data* (cont.)

XCell SO_2 (Single) Sensors			
Gas Applied	*Concentration Applied (ppm)*	*SO_2 (Single) Cross-Sensitivity*	*SO_2 Reading***
SO_2	24.5	100%	25
CO	1000	0.0%	0
H_2S	199	0.1%	1
NO_2	10	-80%	-8
NH_3	121	-0.1%	-1
Cl_2	15.3	0.7%	1
PH_3	5	18%	1
HCN	50.4	5%	3
Isopropanol	500	0%	0
H_2	2000	1%	20
Acetylene	100	4%	4

XCell SO_2 (Two-Tox) Sensors			
Gas Applied	*Concentration Applied (ppm)*	*SO_2 (Two-Tox) Cross-Sensitivity*	*SO_2 Reading***
SO_2	10	100%	10
CO	60	0%	0
H_2S	20	0%	0
NO_2	10	-90%	-9
NH_3	25	0%	0
Cl_2	10	0%	0
PH_3	0.5	0%	0
HCN	11.2	45%	5
Isopropanol	500	0.4%	2
H_2	1000	0.3%	3

XCell CO H_2-RES Sensors			
Gas Applied	*Concentration Applied (ppm)*	*CO H_2-RES Cross-Sensitivity*	*CO Reading***
CO	100	100%	100
H_2S	40	0%	0
SO_2	9	–4%	–1
NO_2	11	0%	0
NH_3	25	0%	0
Cl_2	10	0%	0
NO	50	130%	65
HCN	30	–5%	–2
Toluene	53	0%	0
Isopropanol	100	–8%	–8
H_2	100	5%	5

XCell NO_2 Sensors			
Gas Applied	*Concentration Applied (ppm)*	*NO_2 Cross-Sensitivity*	*NO_2 Reading***
NO_2	10	100%	10
CO	60	3.3%	2
SO_2	10	–86%	–9
H_2S	20	–271%	–55
NH_3	25	0%	0
O_3	1	100%	1
HCN	4.7	2%	1
Acetylene	100	–1%	–1
H_2	1000	–0.1%	–1
NO	50	3%	2
H_2	100	0%	0

XCell NH_3 Sensors			
Gas Applied	*Concentration Applied (ppm)*	*CO H_2-RES Cross-Sensitivity*	*CO Reading***
NH_3	25	100%	25
CO	45	0%	0
H_2S	20	75%	15
SO_2	10	–39%	–4
NO_2	2	–74%	–2
H_2	1000	0%	0

XCell Cl_2 Sensors			
Gas Applied	*Concentration Applied (ppm)*	*NO_2 Cross-Sensitivity*	*NO_2 Reading***
Cl_2	10	100%	10
CO	45	0%	0
H_2S	20	–0.7%	–1
SO_2	10	–34%	–4
NO_2	2	19%	1
H_2	1000	0%	0

** These cross-sensitivity values are intended for reference only and may change under varying environmental conditions, varying concentrations, varying sensor lots, and varying sensor age. These tables do not contain a complete or inclusive list of cross-sensitive gases, but rather is a sampling of the most common examples.*

*** All values have been rounded up to the nearest 1 ppm*

**** Transient effect*

Cross-Sensitivity Data (Non-XCell Exotic Sensors)

NO_2 Sensors			
Gas Applied	*Concentration Applied (ppm)*	*NO_2 Cross-Sensitivity*	*NO_2 Reading***
CO	300	0%	0
H_2S	15	–8%	–2
SO_2	5	0%	0
NO	35	0%	0
Cl_2	1	100%	1

ClO_2 Sensors			
Gas Applied	*Concentration Applied (ppm)*	*ClO_2 Cross-Sensitivity*	*ClO_2 Reading***
Alcohols	1000	0%	0
CO	100	0%	0
Cl_2	1	60%	1
O_3	0.25	280%	1
H_2	3000	0%	0
H_2S	20	–25%	–5

PH_3 Sensors			
Gas Applied	*Concentration Applied (ppm)*	*PH_3 Cross-Sensitivity*	*PH_3 Reading***
AsH_3	0.15	67%	1
SiH_4	1	90%	1
B_2H_6	0.3	35%	1
GeH_4	0.6	92%	1
SO_2	5	20%	1
H_2	1000	0.1%	1
C_2H_4	100	1%	1
CO	1000	0.1%	1

HCN Sensors			
Gas Applied	*Concentration Applied (ppm)*	*HCN Cross-Sensitivity*	*HCN Reading***
H_2S	20	300%	60
NO_2	10	–180%	–18
Cl_2	10	12%	2
NO	50	1%	1
SO_2	20	10%	2
CO	400	0.1%	1
H_2	400	0.1%	1
C_2H_4	80	0.1%	1
NH_3	20	1%	1
CO_2	50000	0.1%	50

NO Sensors			
Gas Applied	*Concentration Applied (ppm)*	*NO Cross-Sensitivity*	*NO Reading***
CO	300	0%	0
SO_2	5	0%	0
NO_2	5	30%	2
H_2S	15	10%	2

** These cross-sensitivity values are intended for reference only and may change under varying environmental conditions, varying concentrations, varying sensor lots, and varying sensor age. These tables do not contain a complete or inclusive list of cross-sensitive gases, but rather is a sampling of the most common examples.*

*** All values have been rounded up to the nearest 1 ppm*

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0800-177-MC / 04.2025

MSA
The Safety Company

MSA XCell® Sensors

WE KNOW WHAT'S AT STAKE.

MSA XCell Sensors are a breakthrough in sensor design, enabling faster response and shorter span calibrations, saving you time and money. **ASIC** (application-specific integrated circuit) technology inside of each sensor provides greater control and higher performance than other sensors on the market.

Every XCell Sensor is built by MSA with a proprietary embedded ASIC microchip that drives the sensor and converts its output to a digital signal. This microchip is much more than a digital sensor; XCell Sensors perform real-time environmental corrections, provide plug-and-play capabilities and deliver greater RF immunity with higher overall performance.

MSA XCell Sensors have a typical life of more than four years*, double the industry average. By miniaturizing sensor controlling electronics and placing them inside of the sensor itself, MSA XCell Sensors offer superior response time, stability, accuracy, and reliability. MSA is proud to offer XCell Sensors with:

- State-of-the-art automated assembly for greater control and reliability.
- Laser-welded sensor housings to eliminate opportunities for leaks.
- End-of-sensor-life warning to minimize downtime and inventory replacement.

With less time spent on calibration and bump tests, you save on calibration gas, maintenance costs and in turn, save money. But most importantly, MSA's industry-leading response times help to save lives.

Combustible

Ex Sensor (PN 10106722)

Gas	Combustible (LEL)
Package	Single gas
Range	0-100% LEL or 0-5% CH_4
Resolution	1% LEL or 0.05% Vol CH_4
Response Time (typ)	t(90) <15 seconds (pentane) t(90) <10 seconds (methane)
Alarm Setpoint	Min 5% LEL/ Max 60% LEL
Warranty	3 years
Advantages	• Long life: >4-year life using dual detector beads means fewer sensor replacements over the instrument's life. • Durable: patented support system allows sensor to survive a 25-foot drop in an ALTAIR® 4XR Multigas Detector. • Response: industry-leading response time not only helps to save lives, but your time and money as well. • Performance: run up to 3 shifts with XCell Sensor's low power consumption. • Resilience: extremely robust filter helps to keep sensors free of poisons and inhibitors.

Ex-M Sensor (PN 10121212)

Gas	Combustible (LEL)
Package	Single gas
Range	0-100% LEL or 0-5% CH_4
Resolution	1% LEL or 0.05% Vol CH_4
Response Time (typ)	t(90) <15 seconds (pentane) t(90) <10 seconds (methane)
Alarm Setpoint	Min 2% LEL/ Max 60% LEL
Warranty	3 years
Advantages	• Specialized: additional stability for extended CH4 exposures found in mining/liquefied natural gas (LNG) applications • Long life: >4-year life using dual detector beads means fewer sensor replacements over the instrument's life • Resilience: extremely robust filter helps to keep sensors free of poisons and inhibitors

Refers to most standard XCell Sensors. Specific exotic gas and special application sensors have shorter expected lives. Please refer to www.MSASafety.com for additional information.

Ex-H Sensor (PN 10121211)

Gas	Combustible (LEL)
Package	Single gas
Range	0-100% LEL or 0-5% CH_4
Resolution	1% LEL or 0.05% Vol CH_4
Response Time (typ)	t(90) <15 seconds (pentane) t(90) <10 seconds (methane)
Alarm Setpoint	Min 5% LEL/ Max 60% LEL
Warranty	1 year
Advantages	• Specialized: increased response to select solvents and heavy hydrocarbons (acetone, nonane, methyl ether keytone (MEK), xylene)

**Not available for CSA-approved instruments.*

Oxygen

O_2 Sensor (PN 10106729)

Gas	Oxygen
Package	Single gas
Range	0-30% Vol O_2
Resolution	0.1% O_2
Response Time (typ)	t(90) <10 seconds
Alarm Setpoint	Min 5% Vol/ Max 24% Vol
Warranty	3 years
Advantages	• Long life: >4-year life, more than 100% additional life than other lead-based sensors • False-alarm rejection: don't be fooled; XCell Sensors are immune to pressure spikes • Durable: when other sensors freeze, XCell Sensors keep working down to -40°C

Carbon Monoxide

CO/H_2S Sensor (PN 10106725)

Gas	Carbon monoxide
Package	Two-tox
Range	0-1999 ppm CO
Resolution	1 ppm CO
Response Time (typ)	t(90) <15 seconds
Alarm Setpoint	Min 7 ppm/ Max 1700 ppm
Warranty	3 years
Advantages	• Long life: >4-year life means fewer sensor replacements over the instrument's life • Reliability: virtually no cross-channel interference brings accuracy to a new level • Stability: when it comes to helping to save lives, be secure in knowing that XCell Sensors are rock solid performers • Response: industry-leading response time not only helps to save lives, but your time and money as well • Resilience: extremely robust filter means that you see the gas of interest

CO-HC Sensor (PN 10121216)

5X

Gas	Carbon monoxide (high concentration)
Package	Single gas
Range	0-10,000 ppm CO
Resolution	5 ppm CO
Response Time (typ)	t(90) <15 seconds normal temperature
Alarm Setpoint	Min 10 ppm/ Max 8500 ppm
Warranty	3 years
Advantages	• Performance: extended range for high concentration CO applications. • Long life: >4-year life means fewer sensor replacements over the instrument's life • Reliability: feel confident that XCell Sensor's linearity provides accuracy across the entire readable range • Response: industry-leading response time not only helps to save lives, but your time and money as well • Resilience: extremely robust filter means that you can even operate within environments where alcohol vapors may be present

H_2S/CO H_2 RES Sensor (PN 10121214)

4XR io4 5X

Gas	Carbon monoxide (hydrogen-resistant)
Package	Two-tox
Range	0-1999 ppm CO
Resolution	1 ppm CO
Response Time (typ)	t(90) <15 seconds normal temperature
Alarm Setpoint	Min 7 ppm/ Max 1700 ppm
Warranty	3 years
Advantages	• Performance: this XCell Sensor has 10 times less sensitivity to hydrogen (<5% Cross Sensitivity) • Long life: >4-year life means fewer sensor replacements over the instrument's life • Response: industry-leading response time not only helps to save lives, but your time and money as well • Resilience: extremely robust filter means that you see the gas of interest

Hydrogen Sulfide

CO/H_2S Sensor (PN 10106725)

4XR io4 5X

Gas	Hydrogen sulfide
Package	Two-tox
Range	0-200 ppm H_2S
Resolution	1 ppm H_2S
Response Time (typ)	t(90) <15 seconds
Alarm Setpoint	Min 2 ppm/ Max 175 ppm
Warranty	3 years
Advantages	• Long life: >4-year life means fewer sensor replacements over the instrument's life • Response: industry-leading response time not only helps to save lives, but your time and money as well • Stability: when it comes to helping to save lives, be secure in knowing that XCell sensors are rock solid performers

CO/H_2S-LC Sensor (PN 10121213)

Gas	Hydrogen sulfide (low concentration)
Package	Two-tox
Range	0-100 ppm H_2S
Resolution	0.1 ppm H_2S
Response Time (typ)	t(90) <15 seconds
Alarm Setpoint	Min 0.3 ppm/ Max 70 ppm
Warranty	3 years
Advantages	• Long life: >4-year life means fewer sensor replacements over the instrument's life • False-alarm rejection: don't be fooled; increased sensitivity means fewer false alarms, allowing you to work uninterrupted • Response: industry-leading response time not only helps to save lives, but your time and money as well

4XR io4 5X

Sulfur Dioxide

SO_2 Sensor (PN 10106727)

Gas	Sulfur dioxide
Package	Single gas
Range	0-20 ppm SO_2
Resolution	0.1 ppm SO_2
Response Time (typ)	t(90) <15 seconds
Alarm Setpoint	Min 0.5 ppm/ Max 17.5 ppm
Warranty	3 years
Advantages	• Long life: >4-year life outlasts competition by more than 33% • Response: industry-leading response time not only helps to save lives, but your time and money as well • Resilience: XCell Sensors continue to perform within low humidity environments when others do not

5X

H_2S/SO_2 Sensor (PN 10121213)

Gas	Sulfur dioxide
Package	Two-tox
Range	0-20 ppm SO_2
Resolution	0.1 ppm SO_2
Response Time (typ)	t(90) <15 seconds
Alarm Setpoint	Min 0.5 ppm/ Max 17.5 ppm
Warranty	3 years
Advantages	• Long life: >4-year life outlasts competition by more than 33% • Response: industry-leading response time not only helps to save lives, but your time and money as well • Resilience: XCell Sensors continue to perform within low humidity environments when others do not

4XR

Nitrogen Dioxide

CO/NO_2 Sensor (PN 10121217)

Gas	Nitrogen dioxide
Package	Two-tox
Range	0-50 ppm NO_2
Resolution	0.1 ppm NO_2
Response Time (typ)	t(90) <20 seconds
Alarm Setpoint	Min 0.5 ppm/ Max 47.5 ppm
Warranty	3 years
Advantages	• Long life: >4-year life means fewer sensor replacements over the instrument's life • Response: industry-leading response time not only helps to save lives, but your time and money as well • Stability: when it comes to helping to save lives, be secure in knowing that XCell Sensors are rock solid performers

Ammonia

NH_3 Sensor (PN 10106726)

Gas	Ammonia
Package	Single gas
Range	0-100 ppm NH_3
Resolution	1 ppm NH_3
Response Time (typ)	t(90) <40 seconds
Alarm Setpoint	Min 10 ppm/ Max 75 ppm
Warranty	2 years
Advantages	• Long life: >3-year life with patent-pending non-consuming reaction outlasts competition by more than 50% • Resilience: XCell NH3 Sensors recover from repeated exposures, meaning fewer sensor replacements • Response: industry-leading response time not only helps to save lives, but your time and money as well

Chlorine

**Not suitable for use in NH3-enriched environment*

Cl_2 Sensor (PN 10106728)

5X

Gas	Chlorine
Package	Single gas
Range	0-10 ppm CL_2
Resolution	0.05 ppm CL_2
Response Time (typ)	t(90) <30 seconds
Alarm Setpoint	Min 0.3 ppm/ Max 7.5 ppm
Warranty	2 years
Advantages	• Life: >3-year life, patent-pending non-consuming reaction outlasts competition by more than 50% • Response: industry-leading response time not only helps to save lives, but your time and money as well • Stability: when it comes to helping to save lives, be secure in knowing that XCell Sensors are rock solid performers • Resilience: XCell Sensors continue to perform within low humidity environments when others do not

XCell Sensor Applications

	Combustible			Oxygen	Carbon Monoxide			Hydrogen Sulfide		Sulfur Dioxide		Nitrogen Dioxide	Ammonia	Chlorine
	Ex	Ex-M	Ex-H	O_2	CO/H_2S	CO-HC	H_2S/CO H_2 RES	CO/H_2S	CO/ H_2S-LC	SO_2	H_2S/SO_2	CO/NO_2	NH_3	Cl_2
AEROSPACE	✓			✓										
AGRICULTURE	✓			✓	✓			✓	✓			✓	✓	
AUTOMOTIVE	✓			✓						✓	✓	✓		
AVIATION	✓			✓								✓		
CHEMICAL	✓		✓		✓			✓	✓	✓	✓	✓	✓	✓
FIRE	✓			✓	✓			✓	✓					
FOOD/BEVERAGE	✓			✓	✓			✓	✓	✓	✓	✓	✓	✓
FOUNDRIES	✓			✓	✓			✓	✓	✓	✓	✓		
HAZMAT	✓			✓	✓			✓	✓	✓	✓		✓	
HEAVY MANUFACTURING	✓			✓	✓			✓	✓	✓	✓	✓	✓	
HVAC	✓			✓								✓	✓	
INDOOR AIR QUALITY	✓			✓										
MARINE	✓				✓			✓	✓			✓	✓	✓
MEDICAL	✓												✓	
MINING		✓		✓	✓	✓		✓	✓			✓		
OIL/GAS/PETROLEUM	✓	✓	✓	✓	✓			✓	✓	✓	✓		✓	
PAPER/PULP	✓									✓	✓	✓	✓	✓
PHARMACEUTICAL	✓									✓	✓		✓	✓
POWER	✓									✓	✓	✓	✓	
SEMICONDUCTOR	✓											✓	✓	✓
STEEL	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	
WATER/WASTEWATER	✓				✓			✓	✓	✓	✓		✓	✓
WELDING	✓											✓	✓	

**Additional sensors available for detection of PH_3, HCN, ClO_2, NO, and CO_2 VOC in the ALTAIR 5X Platform.*

XCell Sensor Instrument Compatibility

	Ex	Ex-M	Ex-H	O_2	CO/H_2S	CO-HC	H_2S/CO H_2 RES	CO/ H_2S-LC	SO_2	H_2S/SO_2	CO/NO_2	NH_3	Cl_2
ALTAIR 4XR MULTIGAS DETECTOR	YES	YES	YES	YES	YES	NO	YES	YES†	NO	YES†	YES†	NO	NO
ALTAIR 5X MULTIGAS DETECTOR	YES	YES	YES	YES	YES	YES‡	YES	YES‡	YES	NO	YES‡	YES	YES
ALTAIR io™ 4 GAS DETECTION WEARABLE	YES	NO	NO	YES	YES	NO	YES	YES	NO	NO	NO	NO	NO

† Requires ALTAIR 4XR Multigas Detector software version 2.03 or greater‡Requires ALTAIR 5X Multigas Detector software version 1.27.06 or greater

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MSA
The Safety Company

Why is bump testing your portable gas detector important for safety?

Whitepaper

WE KNOW WHAT'S AT STAKE.

Why is bump testing your portable gas detector important for safety?

Why is bump testing your portable gas detector before each day's use a matter of safety?

Portable gas detection is an important part of a workers' safety equipment for certain environments and jobs. However, the accuracy and function of portable gas detectors can be reduced, impeded, or otherwise impacted over time, which could affect the instrument's ability to reliably warn and help protect against gas hazards. For example, environmental influences and harsh application conditions can affect the functionality of gas detectors. Those affects can be gradual over time or they can be more sudden. Also, those affects can sometimes be reversed and are sometimes permanent.

Bump testing the gas detector should alert the user of a nonfunctioning sensor

The traditional bump test consists in checking the instrument's ability to respond to a target gas within a given amount time. If the instrument does not respond or responds outside the test parameters, then something is affecting the instrument's functioning. For example, dirt or mud could block the gas inlet of an instrument. Some detectors on the market are not able to proactively warn you that gas entries are blocked. In cases such as these, a fully functioning sensor simply will not see gas. A bump test will indicate whether the sensor's function has been affected and give you the opportunity to identify the blockage, which may not be visible to the human eye.

To help users confirm that a bump test was done, the MSA ALTAIR family of gas detectors uniquely shows a Bump Test checkmark on their display for 24 hours after a successful bump test. A bump test quickly confirms whether the gas entries are free, and if your sensor is functioning.

Bump test frequency is often stipulated by national or corporate regulations

Bump testing before each days' use is generally a recommended, and sometimes required, safety practice to verify proper instrument operation. For example, the European standard EN 60079-29-2 and the International Standard IEC 60079- 29-2 stipulates a functional check for gas detectors before each day of use. The German BG RCI (Employers' Liability Insurance Association for Raw Materials and Chemical Industry) also requires a functional check before each day of use, in their code of practices T021 and T023.

Why is calibrating your gas detector important?

Calibration is the adjustment of the sensor(s) output to match the known traceable calibration gas concentration. It gives you an opportunity to provide optimum accuracy of the instrument. It can be performed if high accuracy is desired and also if a bump test fails. Calibration is important since all sensors on the market can have some amount of drift over time and are subject to potential uncontrollable effects such as over-exposures, poisoning, physical shocks, extreme environmental changes etc. These types of events could affect the sensor's effectiveness. MSA recommends calibration at least every six months; however, many countries and/or organizations have their own calibration guidelines that may require more frequent calibrations.

What other benefits come from proper calibration and bump testing of gas detectors?

1. Safety

Proper calibrations and bump tests help verify that a gas detector is working properly. If a gas detector is not properly maintained, the results may not be accurate which can impact the health and safety of workers entering a potentially hazardous space or environment.

2. Compliance

Regular calibrations are required for compliance under certain state and federal laws or industry standards. Verifying gas detectors are working can help prevent fines associated with non-compliant detector usage.

3. Productivity

Properly calibrated and bump tested gas detectors can help reduce the risk of costly incidents or work stoppages from gas leaks or exposure. For example, early detection of a gas leak during routine maintenance could help prevent costly and time-consuming projects such as replenishing leaking gases, repairing and replacing equipment following possible explosions, or remediation and cleaning up from large leaks that could harm workers, the environment, and surrounding communities.

How to help simplify maintenance and compliance of your portable gas detector fleet?

Staying up-to-date with the latest connected gas detection solutions is one way to help simplify the maintenance – including calibrations and bump tests – and compliance of your fleet. The ALTAIR io™ 4 Connected Gas Detector is a connected device that comes with built in cellular connectivity and integration with Grid software and the ALTAIR io™ Dock. Key features include:

1. Enhanced Fleet Management and Monitoring

Grid software provides a suite of powerful fleet management and monitoring capabilities including over-the-air updates for all of your devices, lifetime cloud logs with full device history, and fleet cloud configurations to align with your organisation's SOP. Grid Fleet Manager provides proactive safety management, dashboard overviews and record-keeping.

Available in multiple languages, Grid Fleet Manager is designed for proactive safety management; gas exposure email alerts, direct data input, live filtering, test and exposure queries, collecting and printing reports. These features allow the managers to have greater control over the user's ALTAIR family of gas detectors, including the newest, fully connected ALTAIR io™ 4.

2. Automated Calibrations and Bump Tests

The ALTAIR io Dock helps further simplify calibration and bump testing procedures. When an ALTAIR io 4 device is in the Dock, the unit knows when it needs a calibration or bump test based on settings established by the user, and automatically performs the appropriate function. All compliance reporting is sent immediately to the Grid, helping to minimise the risks associated with manual record keeping or data file management.

3. Anticipated Calibration Gas Refills

MSA+ Autofill – an option with an MSA+ subscription including ALTAIR io 4 devices and Grid – can help ensure you have the right gas ready when you need it for daily bump tests and fleet calibrations. Autofill allows you to spend less time planning and managing inventory while avoiding unnecessary downtime due to expired or empty cylinders. The ALTAIR io Dock automatically sends an alert when your cal gas supply is running low. With the click of a button, replacement cylinders will arrive at the designated location within days.

Why is bump testing your portable gas detector important for safety?

Amplify safety with automated test systems for bump testing and calibration of your gas detectors

MSA's GALAXY GX2 Automated Test System is an automated docking and calibration station provides simple, intelligent testing and calibration for non-connected portable gas detectors from the ALTAIR, ALTAIR 2X, ALTAIR PRO, ALTAIR 4XR and ALTAIR 5X range of detectors.

The easy-to-use automated test stand can offer high performance as either a stand-alone unit, or an integrated portable detector management system, allowing data access and control of the ALTAIR family gas detector fleet.

The ALTAIR io Dock enables calibration and bump testing which can help to improve compliance and safety dedicated to Altair io 4 Connected Gas Detector. What's more, the io Dock offers full connectivity without interacting with end-user IT infrastructure. Grid Live Monitoring is a cloud-based application, allowing control room operators to monitor gas readings, check the status of alarms in real-time and monitor worker locations if this feature is required. They can also interact directly with workers through push-to-device alarms and notifications, or efficiently coordinate single or mass evacuations. Live monitoring could reduce response time by up to 50%, enhancing workplace safety and potentially saving costs which are associated with delayed reactions to hazardous situations.

Both GALAXY GX2 and io Dock supports:

- Colour 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, optimised for use with MSA XCell® Sensors and can provide up to 50% cost of ownership reduction
- At-a-glance indicators include low calibration gas volume, expiration warnings and test stand status.

Are you ready to streamline your gas detector's compliance and maintenance? Click here to learn more about our solutions.

ALTAIR 2XP H_2S with XCell Pulse Technology Features the first stand-alone bump test, which eliminates the need for bottled gas!

- Bump test anytime, anywhere
- Based on proven science and patented sensor capabilities

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