



# ALTAIR<sup>®</sup> 2X Gas Detectors

## Bid Specifications

Physical Characteristics	
Size	L x W x D without clip: 3.5 x 2.125 x 1 in. (89 x 54 x 25 mm).
Weight	113 g (4 oz.) with clip.
Handling	1-button, gloved-hand operation.
Case material	Polycarbonate with rubber over-molding.
Display	Large-character monochrome LCD. Characters must be at least 0.86" tall.
Colors	Charcoal gray or off-white glow-in-the-dark

User Interfaces	
Pushbutton	Must have only 1 pushbutton.
Bump status indicator	Bump pass: green LED flash every 15s, large onscreen checkmark. Bump fail or expiration: red LED flash every 15s, no checkmark.
Sensor life indicator	Must notify user when sensor is close to and reaches its end of life.
Sleep mode	Must have option to enable sleep mode to extend battery life.
Backlight	Must backlight LCD with button press. Backlight duration must be adjustable.
Inadvertent shutoff	Must require 3s button press-and-hold to protect against inadvertent shutoff.

Basic Operational Features	
Zero adjustments	Must provide Fresh Air Setup (FAS) function at user's discretion.
Zero adjustment safety lockout	Must not allow FAS in a non-fresh air environment. Must ignore FAS and go into alarm if a dangerous level of gas is present.
Time/date	Must be able to set with MSA Link™ Software.
Last calibration date	Must be able to display last successful calibration date.
Bump test	Devices with XCell <sup>®</sup> Pulse Technology feature stand-alone bump test that eliminates need for bottled gas due to pulse and flow check process. Devices with standard XCell Sensor require calibration gas to perform bump test.
Bump test due indicator	Must notify user of expiration of last successful bump via red LED flash every 15s, as well as disappearance of onscreen check mark.
Calibration	Shall be performed using specified regulators, tubing and calibration gas.
Calibration due indicator	Must inform user when next calibration is due. Enabled by default for devices with XCell Pulse Technology; disabled for devices with standard XCell Sensors.

Sensor Type & Performance																												
Gases	<p>Instrument shall be capable of measuring the following gas(es):</p> <table border="0"> <tr> <td>H<sub>2</sub>S</td> <td>H<sub>2</sub>S/CO</td> </tr> <tr> <td>H<sub>2</sub>S-LC (low concentration)</td> <td>H<sub>2</sub>S/CO-H<sub>2</sub>*</td> </tr> <tr> <td>CO</td> <td>H<sub>2</sub>S-LC/CO*</td> </tr> <tr> <td>CO-HC (high concentration)*</td> <td>H<sub>2</sub>S-LC/SO<sub>2</sub></td> </tr> <tr> <td>CO-H<sub>2</sub> (hydrogen-resistant)*</td> <td>NO<sub>2</sub>/CO*</td> </tr> <tr> <td>SO<sub>2</sub></td> <td></td> </tr> <tr> <td>NO<sub>2</sub>*</td> <td>*Contact MSA for availability.</td> </tr> <tr> <td>Cl<sub>2</sub>*</td> <td></td> </tr> <tr> <td>NH<sub>3</sub>*</td> <td></td> </tr> </table>	H <sub>2</sub> S	H <sub>2</sub> S/CO	H <sub>2</sub> S-LC (low concentration)	H <sub>2</sub> S/CO-H <sub>2</sub> *	CO	H <sub>2</sub> S-LC/CO*	CO-HC (high concentration)*	H <sub>2</sub> S-LC/SO <sub>2</sub>	CO-H <sub>2</sub> (hydrogen-resistant)*	NO <sub>2</sub> /CO*	SO <sub>2</sub>		NO <sub>2</sub> *	*Contact MSA for availability.	Cl <sub>2</sub> *		NH <sub>3</sub> *										
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	Gas	Low Alarm	High Alarm	STEL	TWA
Standard alarm set points	H <sub>2</sub> S	10 ppm	15 ppm	15 ppm	10 ppm
	H <sub>2</sub> S-LC	5 ppm	10 ppm	10 ppm	1 ppm
	CO	25 ppm	100 ppm	100 ppm	25 ppm
	CO-HC	25 ppm	100 ppm	100 ppm	25 ppm
	SO <sub>2</sub>	2 ppm	5 ppm	5 ppm	2 ppm
	NO <sub>2</sub>	2.5 ppm	5 ppm	5 ppm	2.5 ppm
	Cl <sub>2</sub>	0.5 ppm	1 ppm	1 ppm	0.5 ppm
	NH <sub>3</sub>	25 ppm	50 ppm	35 ppm	25 ppm
	Contact MSA for alternate and custom set points.				
Typical t(90) response times	Gas	t(90)			
	H <sub>2</sub> S	< 15s			
	CO	< 15s			
	SO <sub>2</sub>	< 15s			
	NO <sub>2</sub>	< 40s			
	Cl <sub>2</sub>	< 30s			
NH <sub>3</sub>	< 40s				
Sensor life	4 years				
Sensor warranty	H <sub>2</sub> S, CO, SO <sub>2</sub> , NO <sub>2</sub> sensors		3 years		
	Cl <sub>2</sub> , NH <sub>3</sub> sensors		2 years		
Sensor life indicator	Must notify user when sensor is close to and reaches its end of life.				
Sensor missing alarm	Real-time alarm if sensor recognizes internal failure or loses communication.				
Built-in sensor control circuitry	Must have built-in control circuitry (including drive circuits, memory, microprocessor, and analog to digital converter) for sensor level control and compensation.				
Sensor plug-and-play	Must be able to change which gas that instrument detects by simply swapping sensors. * Cl <sub>2</sub> & NH <sub>3</sub> must be used with filter-free front case				

Device Power	
Battery	Must be equipped with replaceable lithium battery.
Battery life indication	Must display estimated remaining battery run time via icon when powered on.
Battery run time	18 months (assumes 8-hr work day and depends upon environmental conditions, mode of operation and alarm frequency).

Settings & Display Options	
Device settings	Must be able to adjust device settings with MSA Link Software.
Reset of functions	Must be able to reset PEAK, STEL and TWA manually or with MSA Link Software.

Device Alarms	
Visual alarms	Flashing ultra-bright LEDs visible from the top, bottom, front, back, and sides.
Audible alarm	95 dB @ 1ft (30 cm).
Vibrating alarm	Standard.
Alarm set points	Must be adjustable with MSA Link Software.
STEL & TWA	Standard. Enabled by default; can be disabled using MSA Link Software.

Bump Test & Calibration	
Manual bump test and calibration	Must be able to initiate and perform manual bump test and calibration.
Automatic bump test and calibration	Must be compatible with MSA GALAXY <sup>®</sup> GX2 Automated Test System bump test and calibration system. External system shall automatically recognize, bump and/or calibrate instrument and provide ability to retain all calibration records.
Bump & calibration tools	Must not require external calibration cap.
Calibration frequency	Extended 2-month interval for devices with the XCell Pulse Technology Sensor; 6 months for devices with standard XCell Sensors. Assumes no bump failures.
Calibration time	Must not require application of gas for more than 60s.

Data logging (Instrument Data Storage)	
Event log	Must record up to 75 most recent events (depends upon event type/frequency).
Data logging	Must provide standard data logging.
Data log record intervals	Time interval between data records shall be user-selectable from 15s to 15 min.

Data log capacity	@ default settings - single gas: > 150 hours; two-tox: > 100 hours
Activity record content page	Instrument data log shall record and be capable of reporting significant instrument events including: <ul style="list-style-type: none"> <li>• Gas and battery alarms.</li> <li>• End-of-sensor-life warnings.</li> <li>• Fresh air setups, sensor re-zeroing, calibrations, bumps, pulse and flow checks.</li> <li>• Battery voltage and elapsed run time.</li> <li>• Resets of PEAK, STEL and TWA.</li> </ul>
Data retention	Must retain data stored in memory in event of sudden instrument power loss.

### Environmental & Durability

Ingress protection	Agency-certified dust- and water-tight IP67 construction.
Drop test	Must survive multiple 25-ft drops onto concrete.
Temperature	Normal operation: -10° to 40° C Extended range: -20° to 50° C Extreme range: -40° to +60° C
Humidity	10-95% RH (non-condensing)

### Maintenance & Warranties

Sensor & battery replacement	Sensor and battery shall be easily accessed and replaced. Shall not require removal of printed circuit boards.
Warranty	Chassis and electronics 3 years H <sub>2</sub> S, CO, SO <sub>2</sub> , NO <sub>2</sub> sensors 3 years Cl <sub>2</sub> , NH <sub>3</sub> sensors 2 years Consumable parts (such as filters, fuses and replaceable batteries) are not covered under warranty.

### Certifications

USA/Canada	cCSAus Class I Div 1 Groups A, B, C, D Class II Div 1 Groups E, F, G Class III Tamb = -40C to +60C T4 USA: UL 913 7th Edition Canada: CSA 22.2 No. 157
ATEX	FTZU II 2G Ex ia IIC T4 Gb -40C to +60C
IEC/Australia/New Zealand	FTZU Ex ia IIC T4 Gb -40C to +60C