



## ALTAIR

### [ Bid Specification ]

Physical Characteristics	
Size	Instrument shall not exceed 3.4" x 2.0" x 1.0" in total size.
Weight	4.0 oz including clip.
Handling	Unit shall be easy to operate.
Case Material	Conductive rubber housing.
Environmental Protection	Instrument shall be rated to IP67 protection levels for dust/water ingress.
Display Location	Display is viewable from the front.
Carrying Attachments	Unit shall have various optional belt attachments: <ul style="list-style-type: none"><li>▪ Suspend style clip</li><li>▪ Lanyard</li><li>▪ Cell phone belt clip</li></ul>
Event log	Unit shall be equipped with standard event data logging of no less than 25 events before overwriting oldest logged events.

User Interfaces	
Display Info	Liquid crystal display [LCD] with large, easy to read characters. Must display remaining instrument life with a single button press as well as: <ul style="list-style-type: none"><li>▪ Alarm set points</li><li>▪ Peak readings</li><li>▪ Total time in alarm since activation</li></ul>
Alarms	Must be equipped with visual, vibrating and audible alarms. Audible alarms sound at an average of 95 dB @ 1 foot. Visual alarms shall be bright and must be viewable from top, front and sides.
Buttons	Unit must have no more than one pushbutton to operate. No access to internal switches shall be necessary for any instrument operations.
Data Access	Access to the data log shall be non-intrusive using MSA Infrared Link to IBM-compatible computers and MSA FiveStar® Link® version 4.3 or higher.
Bump test	Display shall have an indication of successful bump test for 24 hours after conducting bump test.
Operating Lifetime	Instrument shall operate continuously for > 24 months.
Confidence flash	Unit shall periodically (average every 60 seconds) confirm proper operation by: <ul style="list-style-type: none"><li>▪ confidence flash on Alarm LEDs</li><li>▪ confidence dot on display (heartbeat indicator)</li></ul>



Monitoring				
Instrument activation	Instrument shall have provisions to prevent inadvertent activation.			
Inadvertent Shut Off	Once activated, instrument must not turn off inadvertently.			
Sensor Types	Instrument shall be available with the following gas sensing capabilities:			
	<i>Gas Type</i>	<i>Sensor Type</i>	<i>Range</i>	<i>Resolution</i>
	Oxygen	Echem	0-25%	0.1 Vol.%
	Carbon Monoxide	Echem	0-500 ppm	1 ppm
Hydrogen Sulfide	Echem	0-100 ppm	1 ppm	

Instrument Power	
Battery	Instrument shall be powered by non-replaceable lithium battery.
Battery Life Indication	The monitor shall provide the user with an icon depicting 'low battery' near the end of battery life.
Instrument Shutdown	Instrument must clearly indicate end of life by audible and visual display information.

Instrument Alarms	
Visual Alarms	Instrument must consist of bright flashing LEDs visible from front, top and sides.
Audible Alarm	The audible alarm shall be rated at no less than 95 dB @ 1 ft on average.
Vibrating Alarm	Instrument shall be standard-equipped with vibrating alarm.
Alarm Set Points	The instrument shall have two alarm set points.
Changing Set points	Alarm set points shall be manually adjustable prior to activation, or with the use of IR communication after activation of unit.

Calibration	
Calibration	Unit must be maintenance-free but shall offer a calibration option as required by specific industries and applications.
Calibration set point	Calibration set points shall be user-adjustable.
Tools	Calibration must be easily accomplished utilizing no other tools than tubing, gas cylinder and regulator.



Data Storage	
Event logging	Instrument must be equipped standard with event logging.
Capacity	The log capacity shall be no less than 25 latest events.
Record Content	Event log entries shall contain as a minimum <ul style="list-style-type: none"><li>Alarm: type, value, time and date</li><li>Alarm clear: type, value, time and date</li><li>Calibration: pass/fail, time and date</li><li>Bump: pass/fail, time and date</li><li>Error non-shutdown: error type, time and date</li><li>End of life: reason, alarm minutes, months life, time and date</li></ul>
Data Retention	Instrument data stored in the memory shall remain accessible at the end of instrument life.
Data transmission	< 60 seconds using MSA FiveStar Link version 4.3 or higher.

Certifications	
Intrinsic Safety Approval	The detector must meet global approvals per: <ul style="list-style-type: none"><li>UL Class 1, Division 1, Groups A, B, C and D</li><li>CSA Class 1, Division 1, Groups A, B, C and D</li><li>ATEX II 2G EEx ia IIC T4</li><li>Australia Ex ia IIC T4</li></ul>
Quality System	The instrument manufacturer must be certified compliant with ISO 9001 provisions.
Manufacturing	Instrument must be manufactured in the USA.

Environmental	
Temperature	Normal Operation: -20 to 50 °C
Humidity	10-95% RH non condensing

Maintenance & Warranty	
Maintenance	Units shall be maintenance-free over its lifetime.
Warranty	The instrument shall have a full two-year warranty or 18hours of alarm (1080 minutes).