



## ALTAIR™ Pro Single-Gas Detector

[ Bid Specification ]

| Physical Characteristics        |  |
|---------------------------------|--|
| <b>Size</b>                     | Instrument shall not exceed 3.4" x 2.0" x 1.0" in total size.  |
| <b>Weight</b>                   | 4.0 oz including clip.   |
| <b>Handling</b>                 | Unit shall be easy to hold and operate.  |
| <b>Case Material</b>            | Polycarbonate with rubber overmolding.   |
| <b>Environmental Protection</b> | Instrument shall be rated to IP67 protection levels for dust/water ingress.<br>IP54 for O2-R remote oxygen version   |
| <b>Display Location</b>         | Display is viewable from the front.  |
| <b>Carrying Attachments</b>     | Unit shall have various optional belt attachments: <ul style="list-style-type: none"><li>▪ Suspender style clip</li><li>▪ Lanyard</li><li>▪ Cell phone belt clip</li><li>▪ Hard hat clip</li></ul> |
| <b>Event log</b>                | Unit shall be equipped with standard event data logging of no less than 50 events before overwriting oldest logged events.   |
| <b>Data log</b>                 | Unit shall be equipped with standard data logging feature.   |

| User Interfaces           |  |
|---------------------------|--|
| <b>Display Info</b>       | Liquid crystal display [LCD] with large, easy to read characters. Must display gas concentration in PPM or display % O2.   |
| <b>Alarms</b>             | Must be equipped with visual, vibrating and audible alarms. Audible alarms sound at an average of 95 dB @ 1 foot.<br>Visual alarms shall be bright and must be viewable from top, front and sides.                         |
| <b>Buttons</b>            | Unit must have no more than one pushbutton to operate. No access to internal switches shall be necessary for any instrument operations.  |
| <b>Data Access</b>        | Access to the event and data log shall be non-intrusive using MSA Infrared Link to IBM-compatible computers and MSA FiveStar® Link® version 4.5 or higher.   |
| <b>Bump test</b>          | Display shall have a checkmark as an indication of a successful bump test for 24 hours after conducting the bump test.   |
| <b>Operating Lifetime</b> | Typical battery life is > one year installed. Sensors life is two years. Both the sensor and the battery must be replicable.   |
| <b>Confidence flash</b>   | 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> |
| <b>Backlight</b>          | A backlight shall activate at the start of any alarm situation or by a simple press of a button.   |



| Monitoring                   |   |                    |              |                   |            |
|------------------------------|---|--------------------|--------------|-------------------|------------|
| <b>Instrument activation</b> | Instrument shall have provisions to prevent inadvertent activation. A three second button hold is needed to turn the unit on. |                    |              |                   |            |
| <b>Inadvertent Shut Off</b>  | Once activated, instrument must not turn off inadvertently. A five second button hold is needed to turn the unit off/         |                    |              |                   |            |
| <b>Sensor Types</b>          | Instrument shall be available with the following gas sensing capabilities:  |                    |              |                   |            |
|                              | <b>Gas Type</b>   | <b>Sensor Type</b> | <b>Range</b> | <b>Resolution</b> |            |
|                              | Oxygen  | echem              | 0-25%        | 0.1 Vol.%         |            |
|                              | Carbon Monoxide   | echem              | 0-1500 ppm   | 1 ppm             |            |
|                              | Hydrogen Sulfide  | echem              | 0-200 ppm    | 1 ppm             |            |
|                              | CO FIRE   | echem              | 0-1500 ppm   | 1 ppm             |            |
|                              | CO STEEL  | echem              | 0-1500 ppm   | 1 ppm             |            |
|                              | Hydrogen Cyanide  | echem              | 0-30 ppm     | 0.5 ppm           |            |
|                              | Chlorine  | echem              | 0-20 ppm     | 0.1 ppm           |            |
|                              | Chlorine Dioxide  | echem              | 0-1.00 ppm   | 0.02 ppm          |            |
|                              | Sulfur Dioxide  | echem              | 0-20 ppm     | 0.1 ppm           |            |
|                              | Nitrogen Dioxide  | echem              | 0-20 ppm     | 0.1 ppm           |            |
|                              | Ammonia   | echem              | 0-100 ppm    | 1 ppm             |            |
|                              | Phosphine   | echem              | 0-5.00 ppm   | 0.05 ppm          |            |
| Remote Oxygen (O2-R)         | echem   | 0-25%              | 0.1 Vol.%    |                   |            |
| <b>Standard Alarm Points</b> | Instrument shall be available with the following standard alarm points:   |                    |              |                   |            |
|                              | <b>Gas</b>  | <b>Low</b>         | <b>High</b>  | <b>STEL</b>       | <b>TWA</b> |
|                              | Oxygen  | 19.50%             | 23.00%       | N/A               | N/A        |
|                              | Carbon Monoxide   | 25 ppm             | 100 ppm      | 100 ppm           | 25 ppm     |
|                              | Hydrogen Sulfide  | 10 ppm             | 15 ppm       | 15 ppm            | 10 ppm     |
|                              | CO FIRE   | 25 ppm             | 100 ppm      | 100 ppm           | 25 ppm     |
|                              | CO STEEL  | 75 ppm             | 200 ppm      | 200 ppm           | 75 ppm     |
|                              | Hydrogen Cyanide  | 4.5 ppm            | 10 ppm       | 10 ppm            | 4.5 ppm    |
|                              | Chlorine  | 0.5 ppm            | 1.0 ppm      | 1.0 ppm           | 0.5 ppm    |
|                              | Chlorine Dioxide  | 0.1 ppm            | 0.3 ppm      | 0.3 ppm           | 0.1 ppm    |
|                              | Sulfur Dioxide  | 2 ppm              | 5 ppm        | 5 ppm             | 2 ppm      |
|                              | Nitrogen Dioxide  | 2 ppm              | 5 ppm        | 5 ppm             | 2 ppm      |
|                              | Ammonia   | 25 ppm             | 50 ppm       | 50 ppm            | 25 ppm     |
|                              | Phosphine   | 0.3 ppm            | 1.0 ppm      | 1.0 ppm           | 0.3 ppm    |
| Remote Oxygen                | 19.50%  | 23.00%             | N/A          | N/A               |            |



| <b>Instrument Power</b>        |  |
|--------------------------------|--|
| <b>Battery</b>                 | Instrument shall be powered by a replaceable CR2 lithium battery. Only Energizer EL1CR2, Varta CR2, or Panasonic CR2 batteries should be used. |
| <b>Battery Life Indication</b> | The monitor shall provide the user with an icon depicting battery life.  |
| <b>Instrument Shutdown</b>     | Instrument must clearly indicate end of life by audible and visual display information.  |

| <b>Instrument Alarms</b>   |  |
|----------------------------|--|
| <b>Visual Alarms</b>       | Instrument must consist of bright flashing LEDs visible from front, top and sides.   |
| <b>Audible Alarm</b>       | The audible alarm shall be rated at no less than 95 dB @ 1 ft on average.  |
| <b>Vibrating Alarm</b>     | Instrument shall be standard-equipped with vibrating alarm.  |
| <b>Changing Set points</b> | Alarm set points shall be manually adjustable prior the first time the units are turned on, or with the use of IR communication at any time. All alarms (LOW, HIGH, TWA, and STEL) must be field adjustable. |

| <b>Calibration</b>           |   |
|------------------------------|---|
| <b>Calibration</b>           | Unit must be able to be zeroed and calibrated easily using one button   |
| <b>Calibration set point</b> | Calibration gas concentration set points shall be user-adjustable.  |
| <b>Tools</b>                 | Calibration must be easily accomplished utilizing no tools other than tubing, cylinder and regulator. No calibration cap shall be required. |

| <b>Data Storage</b>   |  |
|-----------------------|--|
| <b>Event logging</b>  | Instrument must be equipped standard with event logging.   |
| <b>Capacity</b>       | The log capacity shall be no less than 50 latest events.   |
| <b>Record Content</b> | 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> |
| <b>Data Retention</b> | Instrument shall remain accessible at the end of instrument life.  |
| <b>Data logging</b>   | The instrument must be equipment standard with a data logging function. The default setting is three minute peak readings. This sample rate shall be configurable via PC from 15 seconds to 15 minute peaks or one minute peak average   |



| <b>Certifications</b>            |   |
|----------------------------------|---|
| <b>Intrinsic Safety Approval</b> | 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 Tcode T4</li><li>▪ CSA Class 1, Division 1, Groups A, B, C and D Tcode T4</li><li>▪ ATEX II 2G EEx ia IIC T4</li><li>▪ Australia Ex ia IIC T4</li></ul> |
| <b>Quality System</b>            | The instrument manufacturer must be certified compliant with ISO 9001 provisions.   |
| <b>Manufacturing</b>             | Instrument must be manufactured in the USA.   |

| <b>Environmental</b> |                                |
|----------------------|--------------------------------|
| <b>Temperature</b>   | Normal Operation: -20 to 50 °C |
| <b>Humidity</b>      | 10-95% RH non condensing       |

| <b>Maintenance &amp; Warranty</b> |  |
|-----------------------------------|--|
| <b>Maintenance</b>                | Units shall have replicable sensors and battery.   |
| <b>Warranty</b>                   | The instrument shall have a full two-year warranty. Warranty does not cover the battery. One year warranty on SO <sub>2</sub> , NO <sub>2</sub> , Cl <sub>2</sub> , ClO <sub>2</sub> , NH <sub>3</sub> , HCN, and PH <sub>3</sub> sensors. |