



ALTAIR® 5X Multigas Detector

Bid Specifications

Physical Characteristics

| | |
|-------------------------------------|--|
| GAS DELIVERY | Unit shall have non-detachable integral pump that is capable of sampling up to 75 ft. (22.86 m) at 0.3 lpm for standard versions of the ALTAIR 5X Multigas Detector. |
| SIZE, PUMPED UNIT WITHOUT IR | Instrument shall not exceed 6.68"L x 3.52"W x 1.95"H (16.9 cm L x 8.9 cm W x 4.2 cm H) in total size. |
| SIZE, PUMPED UNIT WITH IR | Instrument shall not exceed 6.68"L x 3.52"W x 1.65"H (16.9 cm L x 8.9 cm W x 5.0 cm H) in total size. |
| SIZE, PUMPED UNIT WITH PID | Instrument shall not exceed 6.69" L x 3.53" W x 2.02" H (17.0 cm L x 9.0 cm H x 5.1 cm H) in total size. |
| WEIGHT | Weight shall not exceed 1 lb. (453 g) or 1.15 lb. (680 g) (IR version). |
| HANDLING | Unit shall be a 1-hand operation device. |
| CASE MATERIAL | Unit shall have rugged rubberized armor. |
| ENVIRONMENTAL PROTECTION | Instrument shall be minimum IP65-rated for dust and water ingress. |
| DISPLAY LOCATION | Instrument display shall be viewable from the front. |

Physical Characteristics

| | | | |
|---|---|---------------------------|----------------------------|
| SENSOR CONFIGURATION | User shall be able to enable/disable individual sensor channels. | | |
| SENSOR MISSING ALARM | All sensor channels provide missing sensor alarm if sensor has been removed and sensor channel has not been disabled. | | |
| COMBUSTIBLE GAS DISPLAY | Instrument shall be capable of displaying combustible gas reading as % Lower Explosive Limit (LEL) or by % volume. | | |
| PRESSURE COMPENSATION | Instrument oxygen sensor shall have built-in pressure compensation. | | |
| SENSOR TYPES | <i>Gas Type</i> | <i>Range</i> | <i>Resolution</i> |
| <i>Instrument shall be available with the following gas sensing options</i> | Combustible | 0-100% LEL | 1% LEL |
| | Combustible | 0-5% Vol. CH ₄ | 0.05% Vol. CH ₄ |
| | Oxygen | 0-30% Vol. | 0.1% Vol. |
| | Carbon monoxide | 0-2000 ppm | 1 ppm |
| | Carbon monoxide | 0-10,000 ppm | 5 ppm |
| | Hydrogen sulfide | 0-200 ppm | 1 ppm |
| | Hydrogen sulfide | 0-100 ppm | 0.1 ppm |
| | Sulfur dioxide | 0-20 ppm | 0.1 ppm |
| | Chlorine | 0-10 ppm | 0.05 ppm |
| | Ammonia | 0-100 ppm | 1 ppm |
| | Nitrogen dioxide | 0-20 ppm | 0.1 ppm |
| | Nitrogen dioxide | 0-50 ppm | 0.1 ppm |
| | Chlorine dioxide | 0-1 ppm | 0.01 ppm |
| | Phosphine | 0-5 ppm | 0.05 ppm |
| | Hydrogen cyanide | 0-30 ppm | 0.5 ppm |
| | Carbon dioxide, CO ₂ | 0-10% Vol. | 0.01% Vol. |
| | Butane, C ₄ H ₁₀ | 0-25% Vol. | 0.1% Vol. |
| | Methane, CH ₄ | 0-100% Vol. | 1% Vol. |
| Propane, C ₃ H ₈ | 0-100% Vol. | 1% Vol. | |
| VOC | 0-2000 ppm | 0.1 ppm | |

Basic Operational Features

| | |
|---------------------------------------|--|
| INSTRUMENT BUTTONS | Buttons on instrument must be easy to operate while user wears gloves. |
| INADVERTENT SHUTOFF | Instrument shall be designed to protect against accidental shutoff. |
| ZERO ADJUSTMENTS | Instrument shall provide Fresh Air Setup (FAS) function at user's discretion. |
| ZERO ADJUSTMENT SAFETY LOCKOUT | FAS function shall not allow unit to zero out hazardous readings. |
| CONFIDENCE SIGNALS | Instrument shall provide periodic audible and visual signals indicating instrument operation. User shall have option of disabling audible and visual signals if desired. |
| TIME/DATE | Instrument must be able to display time and date. User must be able to reset time and date without tools. |
| LAST CALIBRATION DATE | Instrument must be able to display last successful calibration date. |
| INSTRUMENT POWER-ON | Power-on instrument button must be clearly marked. |

Advanced Display & Software Options

| | |
|------------------------------------|---|
| INDUSTRIAL HYGIENE DISPLAYS | Instrument shall have capability of displaying PEAK, STEL and TWA at user's discretion. User shall have ability to enable/disable STEL and TWA functions. |
| INSTRUMENT SETTINGS | All settable instrument parameters (alarm set points, expected calibration gas values, etc.) shall be protected by user-selectable password. |
| RESET OF FUNCTIONS | User shall be provided with capability of resetting PEAK, STEL and TWA readings in the field. |
| MEASUREMENT UNITS | Unit shall be capable of displaying both types of gas sensors installed and measurement units for each gas. |

Instrument Alarms

| | |
|-----------------------------------|---|
| MOTIONALERT™ FEATURE | Instrument shall offer standard MotionAlert feature. When activated, instrument shall eventually activate latch alarm when no instrument movement is detected for 30 seconds. |
| INSTANTALERT™ FEATURE | Instrument shall have InstantAlert feature to allow users manual activation of all alarms if situation requires. |
| VISUAL ALARMS | Visual alarms shall consist of bright, flashing LEDs on top and bottom of instrument and positive indication on unit's display for alarm type identification. |
| AUDIBLE ALARM | Audible alarm shall be rated at a typical >95 dB. |
| VIBRATING ALARM | Unit shall be offered with standard vibrating alarm. |
| LOCKALARM™ CIRCUIT FEATURE | Catalytic combustible channel shall have non-resettable latching alarm when combustible gas level exceeds 100% LEL, or 5.00% Vol. CH ₄ when no 0-100% Vol. CH ₄ IR sensor is installed. |
| AUTO RECOVER FEATURE | Catalytic combustible channel shall auto recover from Lockalarm Circuit situation if 0-100% Vol. CH ₄ IR sensor is installed and reading returns to low methane levels. |
| OXYGEN ALARMS | Oxygen channel shall have alarm set points for both oxygen deficiency and oxygen enrichment. |
| ALARMS SET POINTS | Alarm set points must be user-settable. |
| STEL AND TWA ALARM | Instrument shall provide audible, visual and vibrating alarms if STEL or TWA levels are exceeded. Alarm set points for STEL and TWA shall be user-selectable. |
| BATTERY ALARMS | Monitor shall provide user with 10-minute warning of battery power loss in all environmental conditions. Power consumption alarms shall activate audible, visual and vibrating alarms. |

Instrument Power

| | |
|--------------------------------|--|
| RUN TIME | Instrument run time shall be at least 20 hours at room temperature. IR version run time shall be at least 17 hours at room temperature. PID version run time shall be at least 13 hours at room temperature. 5XM version run time shall be at least 18 hours at room temperature. |
| POWER SUPPLY | Instrument shall be equipped with rechargeable lithium-ion battery. Alkaline option available (except IR or PID). |
| BATTERY LIFE INDICATION | Monitor shall provide icon depicting estimated remaining battery operation time. Battery icon must always be visible when instrument is powered on. |
| CHARGING CRADLE | Optional charging cradle shall be offered. |
| CHARGER INPUT VOLTAGES | Chargers shall be available for 110VAC/220 VAC and 12-24 VDC. |
| CHARGING STATUS | Both instrument and charging cradle shall provide visual indication of battery charging status. |

Calibration

| | | |
|-------------------------------|--|------------------|
| CALIBRATION TOOLS | Unit shall require no special tools for calibration other than cylinder, regulator and tubing to supply gas to instrument. | |
| CALIBRATION ACCESS | Calibration access can be hidden behind password when desired. | |
| PUSHBUTTON CALIBRATION | Calibration shall be easily performed using instrument's pushbuttons. Internal instrument access or tools shall not be necessary for calibration. | |
| CALIBRATION TIME | Span calibration shall not exceed 60 seconds for LEL, O ₂ , CO, H ₂ S, SO ₂ , and NO ₂ XCell Sensors and PID. Other gases shall not exceed the following span calibration times: | |
| | <i>Gas Type</i> | <i>Span Time</i> |
| | Chlorine | 2 minutes |
| | Ammonia | 2 minutes |
| | Nitrogen dioxide (Series 20) | 4 minutes |
| | Chlorine dioxide | 6 minutes |
| | Phosphine | 4 minutes |
| Hydrogen cyanide | 4 minutes | |
| AUTOMATIC CALIBRATION | Instrument shall be compatible with optional automated test and with calibration system able to store data. External system shall automatically recognize and calibrate instrument and retain all calibration records. | |

Sampling Systems

| | |
|-------------------------------------|--|
| SAMPLING MODES | Instrument shall be available with internal pump. |
| SAMPLING SYSTEMS FILTERS | Pump must contain user-replaceable filters to prevent liquids and dust ingress. |
| ALLOWABLE SAMPLE LINE LENGTH | Instrument must be capable of sample draw from 50 ft. within 9 seconds or from 80 ft. (24.38 m) within 15 seconds. (Should be 1 ft./second rule of thumb, will verify in testing. Tubing up to a certain length (TBD) will need to be 1/16" ID and then 1/8" ID for anything longer.) Standard version ALTAIR 5X Detector. |
| FLUID INGRESS PROTECTION | Sample probe shall be offered that is designed to prevent water and debris from entering instrument. |
| REACTIVE GAS MONITORING | Special sample probe shall be offered when used with Cl ₂ , NH ₃ and ClO ₂ . |

Sensor Characteristics and Performance

| | | |
|--------------------------------------|--|---|
| SENSOR LIFE | LEL, O ₂ , CO, H ₂ S, NO ₂ . SO ₂ XCell sensors and IR sensors shall have expected 4-year life. NH ₃ and Cl ₂ sensors shall have expected 3-year life. | |
| END-OF-LIFE SENSOR INDICATOR | Instrument shall notify user when sensor is close to and at its end-of-life following calibration. | |
| TYPICAL t(90) RESPONSE TIMES' | <i>Gas Type</i> | <i>Response Time</i> |
| | Combustible sensor | <10 seconds (methane) < 15 seconds (pentane) |
| | Oxygen sensor | < 10 seconds |
| | CO sensor | < 15 seconds |
| | H ₂ S sensor | < 15 seconds |
| | NH ₃ sensor | < 40 seconds |
| | SO ₂ sensor | < 10 seconds |
| | NO ₂ sensor | < 15 seconds |
| | Cl ₂ sensor | < 30 seconds |
| | IR CO ₂ | < 35 seconds |
| | IR CH ₄ | < 34 seconds |
| | IR C ₄ H ₁₀ | < 35 seconds |
| | PID 10.6eV 2000 ppm | < 10 seconds |

Sensor Characteristics and Performance (continued)

| | |
|-----------------------------------|---|
| ALL SENSORS | All sensors should have built-in/dedicated control circuitry, including drive circuits, memory, microprocessor, and analog-to-digital converter to all for sensor level control and compensation. |
| OXYGEN SENSOR | Oxygen sensor shall be lead-free and use non-consumable chemical reaction. |
| COMBUSTIBLE SENSOR | Combustible sensor must have at minimum the following poison resistance: 3000 ppm*hours to H ₂ S 90 ppm*hours to silicon |
| CO / H₂S SENSOR | CO / H ₂ S sensor shall be designed with extremely robust carbon filter for CO channel to block interference. Sensor shall be designed for virtually no cross-channel interference. |
| NH₃ SENSOR | NH ₃ sensor shall use non-consuming chemical reaction and self-recover after significant gas exposures. Sensor shall have 3-year or greater expected life. |
| SO₂ SENSOR | SO ₂ sensor shall have response time of 10 seconds or less, use non-consuming chemical reaction and self-recover after significant gas exposures. Sensor shall have 3-year or greater expected life. |
| NO₂ SENSOR | NO ₂ sensor shall have response time of 15 seconds or fewer. Sensor shall have 4-year or greater expected life. |
| CL₂ SENSOR | Cl ₂ sensor shall have minimal drift even under dry conditions. Sensor shall have virtually no cross-interference with CO, H ₂ S and SO ₂ . Sensor shall have 3-year or greater expected life. |
| IR SENSORS | IR sensor shall not rely upon mirror to obtain appropriate path length, as mirrors are highly susceptible to humidity and to condensing atmospheric conditions. |

¹ All response times are calculated using manufacturer-recommended operation.

² Dirt, dust and cleanliness of sampling line can and will impact response time.

Data Logging (Instrument Data Storage)

| | |
|-------------------------------------|---|
| DATA LOGGING | Instrument must be available with standard data logging. |
| EVENT LOG | Instrument shall record at least 1000 events. |
| DATA LOG CAPACITY | Data log shall record and store data for average of 200 hours (at 1-minute intervals) without overwriting existing information during normal use. |
| GAS RECORD CONTENT | Data log entries shall contain as minimum date, time and record of peak and average readings for each gas sensor (oxygen shall be recorded as maximum and minimum for these intervals). |
| ATMOSPHERIC RECORD | Instrument shall have provisions to record atmospheric temperature changes. |
| RECORD INTERVALS | Time span among data records shall be user-selectable from 15 seconds to 15 minutes. |
| DATA RETENTION | Instrument data stored in memory shall not be lost or corrupted in event of sudden instrument power loss. |
| ACTIVITY RECORD CONTENT PAGE | Instrument data log shall record and be capable of reporting significant instrument events including: <ul style="list-style-type: none"> • Gas and battery alarms. • Fresh air setups, sensor re-zeroing and calibrations. • Battery voltage and elapsed run time. |

Certifications

| | |
|----------------------|--|
| NORTH AMERICA | |
| USA/UL | Class I, Division 1, Groups A, B, C & D Class II, Division 1, Groups E, F & G Class III, Division 1 Ambient temperature: -40°C to +50°C; T4 ALTAIR 5X Multigas Detector with alkaline battery pack T3/T4 ALTAIR 5X or ALTAIR 5X iR Multigas Detector with rechargeable battery pack T4 |
| CANADA CSA | Class I, Division 1, Groups A, B, C & D CAN/CSA C22.2 No. 152 Combustible Gas Detection Instruments C22.2 No. 152 Performance Ambient Temperature: -20°C to +50°C C22.2 No. 157 Intrinsic Safety Ambient Temperature: -40°C to +50°C ALTAIR 5X Multigas Detector with alkaline battery pack T3/T4 ALTAIR 5X or ALTAIR 5X iR Multigas Detector with rechargeable battery pack T4 |
| MINING | MSHA 30 CFR Part 22 PADEP |



Certifications (continued)

| | |
|--|--|
| <p>EUROPE ATEX DIRECTIVE 94/9/EC</p> | <p>ALTAIR 5X Multigas Detector: II 2G Ex d ia mb IIC Gb IP65 – Zone 1 when XCell® Ex Sensor is installed. II 1G Ex ia IIC Ga IP65 – Zone 0 when XCell Ex Sensor is not installed. ALTAIR 5X Multigas Detector with rechargeable battery pack T4 I M1 Ex ia I Ma</p> <p>ALTAIR 5X iR Multigas Detector II 2G Ex d e ia mb IIC T4 Gb IP65 CE 0080 Directive 2004/108/EEC (EMC): EN 50270 Type 2, EN61000-6-3</p> |
| <p>AUSTRALIA / NEW ZEALAND ANZEX AUSTRALIA/NEW ZEALAND - TEST SAFE AUSTRALIA</p> <p>IECEX - TEST SAFE AUSTRALIA</p> | <p>ALTAIR 5X & ALTAIR 5X iR Multigas Detector Ex ia sa IIC T4 (Zone 0) IP65 ALTAIR 5X Multigas Detector with alkaline battery pack T3/T4 ALTAIR 5X or ALTAIR 5X iR Multigas Detector with rechargeable battery pack T4 Ex ia sa I (Zone 0) IP65</p> <p>ALTAIR 5X & ALTAIR 5X iR Multigas Detector Ex ia mb d IIC IP65 – Zone 1 when XCell Ex Sensor is installed. Ex ia IIC IP65 – Zone 0 when XCell Ex Sensor is not installed. ALTAIR 5X Multigas Detector with alkaline battery pack T3/T4 ALTAIR 5X or ALTAIR 5X iR Multigas Detector with rechargeable battery pack T4 Ex ia I IP65 – Zone 0</p> |
| <p>MANUFACTURING SYSTEM QUALITY APPROVALS</p> | <p>Instrument manufacturer must be certified as compliant with ISO 9001 provisions.</p> |

Environmental

| | |
|--|---|
| <p>TEMPERATURE NORMAL OPERATION EXTENDED SHORT PERIODS (15 MINUTES)</p> | <p>0° to 40° C (32° to 104° F) -20° to 50° C (-4° to 122° F) -40° to +50° C (-40° to +122° F, all except PID)</p> |
| <p>HUMIDITY</p> | <p>15-90% RH (non-condensing) continuous 5-95% RH (non-condensing) for short periods</p> |

Maintenance and Warranties

| | |
|-------------------------------------|---|
| <p>SENSOR REPLACEMENT</p> | <p>Sensors shall be easily accessed and replaced by users if desired by purchaser.</p> |
| <p>WARRANTY, CONSUMABLES</p> | <p>Instrument shall have 3-year back-to-back warranty under normal use conditions, including CO/H₂S/LEL/O₂/SO₂/NO₂ XCell and IR Sensors. NH₃ and Cl₂ shall be warranted for 2 years. Other sensors shall be warranted for at least 12 months.</p> |

Note: This Bulletin contains only a general description of the products shown. While product uses and performance capabilities are generally described, the products shall not, under any circumstances, be used by untrained or unqualified individuals. The products shall not be used until the product instructions/user manual, which contains detailed information concerning the proper use and care of the products, including any warnings or cautions, have been thoroughly read and understood. Specifications are subject to change without prior notice. MSA is a registered trademark of MSA Technology, LLC in the US, Europe, and other Countries. For all other trademarks visit <https://us.msasafety.com/Trademarks>.

MSA operates in over 40 countries worldwide. To find an MSA office near you, please visit [MSAsafety.com/offices](https://us.msasafety.com/offices).