



ALTAIR® 4XR Multigas Detector

Bid Specifications

Physical Characteristics

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| SIZE | Instrument shall not exceed 4.4" L x 3.0" W x 1.4" D (11.2 cm x 7.6 cm x 3.5 cm). |
| WEIGHT | 8 oz (228 g) |
| HANDLING | Instrument shall be a one-hand operation device |
| CASE MATERIAL | Rubberized over-mold. |
| ENVIRONMENTAL PROTECTION | Instrument shall be approval agency-certified to IP68 protection levels for dust and water ingress. Instrument shall be capable of immersion in up to 6.5 ft (2m) of water for 1 hour. |
| IMPACT PROTECTION | Instrument shall exceed MIL-STD-810G repeated drop test requirements. Instrument shall be capable of surviving an incidental 25-ft (7.62-m) drop. |
| COLOR | Charcoal or phosphorescent (glow-in-the-dark) housing. |

User Interfaces

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| DISPLAY TYPE | Liquid crystal display (LCD) with large, easy-to-read characters and icons. |
| BACKLIGHT | Unit must provide white backlight for low-light viewing. Backlight time-out must be user-adjustable. |
| KEYPAD/SWITCHES | Unit must have no more than three switches or pushbuttons to operate. There shall be no requirement to access hidden or internal switches for any instrument operations. Buttons must be easy to operate when users wear gloves. |
| DATA ACCESS | Access to data log and event log through infrared link to Windows-ready PCs. |

Monitoring Capability

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| GASES | Instrument shall be capable of measuring up to four gases: combustible gas, O ₂ , and either H ₂ S/CO, H ₂ S-LC/CO, H ₂ S-LC/SO ₂ , or CO/NO ₂ . | | |
| SENSOR CONFIGURATION | Ability 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 0-5% CH ₄ by volume. | | |
| PRESSURE COMPENSATION | Instrument oxygen sensor shall have built-in pressure compensation. | | |
| SENSOR LIFE MONITORING | Instrument shall be able to alert user when a particular sensor nears end of life following instrument calibration. | | |
| SENSOR TYPES <i>Instrument should be available with the following gas sensing options</i> | Gas Type | Range | Resolution |
| | Combustible | 0-100% LEL 0-5% Vol CH ₄ | 1% LEL 0.05% Vol CH ₄ |
| | O ₂ | 0-30% Vol | 0.1% Vol |
| | CO | 0-1999 ppm | 1 ppm |
| | H ₂ S | 0-200 ppm | 1 ppm |
| | H ₂ S Low Concentration | 0-100 ppm | 0.1 ppm |
| | SO ₂ | 0-20 ppm | 0.1 ppm |
| | NO ₂ | 0-50 ppm | 0.1 ppm |

Basic Operational Features

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| INSTRUMENT BUTTONS | Buttons on instrument must be clearly marked and intuitive |
| 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 LOCKOUT | FAS function will not allow unit to zero out hazardous readings. |
| CONFIDENCE SIGNALS | Periodic audible and visual signals shall indicate instrument operation. User must be able to disable audible and visual signals. |
| BUMP TEST STATUS INDICATORS | Instrument shall be capable of indicating its bump test status. <ul style="list-style-type: none"> • Bump PASS: flashing green LED in top right corner and on-screen checkmark. • Bump FAIL or expiration: flashing red LED in top right corner and no checkmark |
| 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. |

Sensor Characteristics and Performance

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| SENSOR LIFE | Sensors shall have an expected life of four years. | | | | | | |
| END OF LIFE SENSOR INDICATOR | Instrument shall indicate when sensor is close to and at its end of life following calibration. | | | | | | |
| TYPICAL t(90) RESPONSE TIMES | <table border="0"> <tr> <td>Combustible sensor</td> <td>< 10 seconds (methane); < 15 seconds (pentane)</td> </tr> <tr> <td>O₂ sensor</td> <td>< 10 seconds</td> </tr> <tr> <td>CO, H₂S, SO₂ & NO₂ sensors</td> <td>< 15 seconds</td> </tr> </table> | Combustible sensor | < 10 seconds (methane); < 15 seconds (pentane) | O ₂ sensor | < 10 seconds | CO, H ₂ S, SO ₂ & NO ₂ sensors | < 15 seconds |
| Combustible sensor | < 10 seconds (methane); < 15 seconds (pentane) | | | | | | |
| O ₂ sensor | < 10 seconds | | | | | | |
| CO, H ₂ S, SO ₂ & NO ₂ sensors | < 15 seconds | | | | | | |
| ALL SENSORS | All sensors shall have built-in 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 provide the following poison resistance at minimum: <ul style="list-style-type: none"> •3000 ppm* hours to H₂S •90 ppm* hours to silicone | | | | | | |
| 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 crosschannelinterference. Sensor shall be designed for two-toxic gas detection in the same physical envelope as a single gas sensor. | | | | | | |
| CO/NO₂ SENSOR | CO/NO ₂ sensor shall be designed with extremely robust carbon filter for CO channel to block interference. Sensor shall be designed for two-toxic gas detection in the same physical envelope as a single gas sensor. | | | | | | |
| H₂S/SO₂ SENSOR | H ₂ S/SO ₂ sensor shall be designed to meet the measurement requirements for lowered exposure limit guidelines for H ₂ S. Sensor shall be designed for two-toxic gas detection in the same physical envelope as a single gas sensor. | | | | | | |

Advanced Display and Software Options

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| 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 installed gas sensors and measurement units for each gas. |

Instrument Alarms

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| MotionAlert™ FEATURE | Instrument shall offer MotionAlert feature. When activated, instrument will go into latch alarm when no instrument movement is detected for 30 seconds |
| InstantAlert™ FEATURE | Instrument shall have InstantAlert feature to allow users to manually activate 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 > 95 dB @ 1 ft (30 cm). |
| VIBRATING ALARM | Unit offers standard vibrating alarm. |
| LEL LATCHING ALARM | Combustible channel shall have non-resettable latching alarm when combustible gas level exceeds 100% LEL or 5.00% CH ₄ . |
| OXYGEN ALARMS | Oxygen channel has alarm set points for both oxygen deficiency and oxygen enrichment. |
| ALARM 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. User shall be able to select alarm set points for STEL and TWA. |
| BATTERY ALARMS | Instrument 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

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| RUN TIME | Instrument continuous run time shall be 24 hours. |
| POWER SUPPLY | Instrument shall be equipped with a rechargeable battery |
| 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/220VAC and 12-24VDC. |
| CHARGING STATUS | Instrument or charging cradle shall provide visual indication of battery charging status. |

Calibration

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| CALIBRATION TOOLS | Unit shall require no special tools for calibration other than calibration cap, cylinder, regulator, and tubing to supply gas to instrument. |
| PUSHBUTTON CALIBRATION | Calibration shall be easily performed using instrument's pushbuttons. Internal instrument access or tools shall not be necessary for calibration |
| CALIBRATION CYLINDER MIX | Calibration gas cylinders shall be offered in standard four-gas configurations: <ol style="list-style-type: none"> 1. Combustible, O₂, CO and H₂S 2. Combustible, O₂, H₂S and SO₂ 3. Combustible, O₂, CO and NO₂ Instrument shall be calibrated using one cylinder. |
| CALIBRATION TIME | Span calibration shall not exceed 60 seconds. |
| AUTOMATIC CALIBRATION | Instrument shall be compatible with optional automated test and calibration system that is able to store data. External system shall automatically recognize and calibrate instrument and retain all calibration records. |
| BUMP TEST STATION | Economical bump test station shall be offered to verify field performance. Test station shall be capable of checking performance of the instrument and store records. |

Sampling Systems

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| SAMPLING MODE | In addition to standard diffusion mode, instrument must be available with external powered pump probe option. |
| SAMPLING SYSTEM FILTERS | Pump must contain user-replaceable filters to prevent liquid and dust ingress. |
| SAMPLE LINE LENGTH | Instrument must be capable of sample draw from up to 50 ft (15 m) away. |
| FLUID INGRESS PROTECTION | Sample probe must prevent water and debris from entering instrument. |

Data Logging (Instrument Data Storage)

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| DATA LOGGING | Instrument must be available with standard data logging. |
| EVENT LOG | Instrument shall record at least 500 events. |
| DATA LOG CAPACITY | Data log shall record and store data for an average of 50 hours (at one-minute intervals) without overwriting existing information in 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 intervals). |
| ATMOSPHERIC RECORD | Instrument shall have provisions to record atmospheric temperature changes. |
| RECORD INTERVALS | Time span between 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 | <p>Instrument data log shall record and be capable of reporting significant instrument events including:</p> <ul style="list-style-type: none"> • Gas and battery alarms • Fresh air setups, sensor re-zeroing and calibrations • Battery voltage and elapsed run time • Reset of PEAK, Min, STEL, and TWA values |

Environmental and Durability

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| DROP TEST | Can survive 25+ consecutive 4-ft (1.2 m) drops (MIL-STD-810G drop test). Can survive incidental 25-ft (7.62-m) drop onto concrete |
| TEMPERATURE | Normal operation: -10° to 40°C Extended: -40° to +60°C |
| HUMIDITY | 15-90% RH (non condensing) continuous 5-95% RH (non condensing) Intermittent |

Maintenance & Warranties

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| SENSOR REPLACEMENT | Sensors shall be easily accessed and replaced by users if desired by purchaser. No printed circuit boards should require removal to access sensors. |
| WARRANTY, CONSUMABLES | Instrument shall have 4-year warranty on all components, including sensors and battery. |
| EXTENDED WARRANTY | Optional extended warranty shall be offered for an additional year (five years total). |



Certifications

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| NORTH AMERICA | USA / Canada CSA 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 +54°C; T4 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 |
| MANUFACTURING SYSTEM QUALITY APPROVALS | Instrument manufacturer must be certified as compliant with ISO 9001 provisions. |

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>.

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