

ALTAIR[®] Multigas Detector

SPECIFICATIONS



PHYSICAL CHARACTERISTICS

Size, pumped unit	Instrument shall not exceed 6.68"L x 3.52"W x 1.95"H in total size.
Size, diffusion unit	Instrument shall not exceed 6.68"L x 3.52"W x 1.65"H in total size.
Weight	Weight shall not exceed 1 lb.
Handling	Unit shall be a one-hand operation device.
Case material	Unit shall have a 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.

USER INTERFACES

Display type	Liquid crystal, high contrast display [LCD] (1.79" x 1.39") with large icons should be visible in bright sunlight.
Backlight	Unit provides backlight for low-light viewing. Backlight time-out to conserve power 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 while gloves are worn.
Data access	Access to the data log shall be non-intrusive using infrared links to Windows-ready PCs.

MONITORING CAPABILITY

Gases	Instrument shall be capable of measuring at least 11 gases: combustible gas, oxygen, CO, H ₂ S, SO ₂ , Cl ₂ , NO ₂ , NH ₃ , PH ₃ , HCN, ClO ₂																																				
Sensor configuration	User shall be able to enable/disable individual sensor channels.																																				
Sensor missing alarm	All sensor channels provide a 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 types	<p><i>Instrument shall be available with the following gas sensing options:</i></p> <table border="1"> <thead> <tr> <th>Gas type</th> <th>Range</th> <th>Resolution</th> </tr> </thead> <tbody> <tr> <td>Combustible</td> <td>0-100% LEL</td> <td>1% LEL</td> </tr> <tr> <td>Oxygen</td> <td>0-25% Vol</td> <td>0.1% Vol</td> </tr> <tr> <td>Carbon monoxide</td> <td>0-999 ppm</td> <td>1 ppm</td> </tr> <tr> <td>Hydrogen sulfide</td> <td>0-200 ppm</td> <td>1 ppm</td> </tr> <tr> <td>Sulfur dioxide</td> <td>0-20 ppm</td> <td>0.1 ppm</td> </tr> <tr> <td>Chlorine</td> <td>0-10 ppm</td> <td>0.1 ppm</td> </tr> <tr> <td>Ammonia</td> <td>0-100 ppm</td> <td>1 ppm</td> </tr> <tr> <td>Nitrogen dioxide</td> <td>0-20 ppm</td> <td>0.1 ppm</td> </tr> <tr> <td>Chlorine dioxide</td> <td>0-1 ppm</td> <td>0.01 ppm</td> </tr> <tr> <td>Phosphine</td> <td>0-5 ppm</td> <td>0.1 ppm</td> </tr> <tr> <td>Hydrogen cyanide</td> <td>0-30 ppm</td> <td>0.1 ppm</td> </tr> </tbody> </table>	Gas type	Range	Resolution	Combustible	0-100% LEL	1% LEL	Oxygen	0-25% Vol	0.1% Vol	Carbon monoxide	0-999 ppm	1 ppm	Hydrogen sulfide	0-200 ppm	1 ppm	Sulfur dioxide	0-20 ppm	0.1 ppm	Chlorine	0-10 ppm	0.1 ppm	Ammonia	0-100 ppm	1 ppm	Nitrogen dioxide	0-20 ppm	0.1 ppm	Chlorine dioxide	0-1 ppm	0.01 ppm	Phosphine	0-5 ppm	0.1 ppm	Hydrogen cyanide	0-30 ppm	0.1 ppm
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BASIC OPERATIONAL FEATURES

Instrument buttons	Buttons on instrument must easy to operate with gloves on.
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 will 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 the last successful calibration date.
Instrument power-on	Power-on instrument button must be clearly marked.

ADVANCED DISPLAY AND SOFTWARE OPTIONS

Industrial hygiene displays	Instrument shall have the 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 cal gas values, etc.] shall be protected by a 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 type of gas sensors installed, and measurement units for each gas.

INSTRUMENT ALARMS

MotionAlert™ feature	Instrument shall offer a standard MotionAlert feature. When activated, instrument shall eventually go into latch alarm when no instrument movement is detected for 30 seconds.
InstantAlert™ feature	Instrument shall have an InstantAlert feature to allow users to manually activate all alarms if the 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 @ 1ft.
Vibrating alarm	Unit shall be offered with standard vibrating alarm.
Lockalarm™ feature	Combustible channel shall have non-resettable latching alarm when combustible gas level exceeds 100% LEL or 5.00% Vol CH ₄ .
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 will 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 15 hours at room temperature.
Power supply	Instrument shall be equipped with a rechargeable lithium-ion battery and have Alkaline option available.
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 calibration cap, 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 push buttons. Internal instrument access or tools shall not be necessary for calibration.
Calibration time	Zero calibration shall not exceed 10 seconds; span calibration shall not exceed 90 seconds.
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	In addition to standard diffusion mode, monitor must be available with internal pump option.
Sampling system 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 feet away within 9 seconds or from 80 feet within 15 seconds..
Fluid ingress protection	Sample probe shall be offered, designed to prevent water and debris from entering instrument.

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 an average of 200 hours [at one-minute intervals] without overwriting existing information in normal use.
Gas record content	Data log entries shall contain as a minimum date, time, and record of peak and average readings for each gas sensor [oxygen shall be recorded as maximum and minimum for the 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	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• Reset of PEAK, Min, STEL, and TWA values

CERTIFICATIONS

Intrinsic safety approval	Detector must be approved to: CE ATEX II 2G EEx ia d IIC T4 -20°C to +50°C UL Class 1, Division 1, ABCDEFG CSA C22.2 No. 157 Class I Div. 1 Groups ABCD ANZ Ex ia s I/IIC T4 (Zone 0)
Manufacturing system quality approvals	Instrument manufacturer must be certified compliant with ISO 9001 provisions.

ENVIRONMENTAL

Temperature	Normal operation: 0 to 40° C Extended: -20 to 50° C
Humidity	15-90% RH [non condensing] continuous 5-95% RH [non condensing] for short periods

MAINTENANCE & WARRANTIES

Sensor replacement	Sensors shall be easily accessed and replaced by users if desired by the purchaser.
Warranty, consumables	Instrument shall have a two-year back-to-back warranty under normal use conditions including CO/H ₂ S/LEL/O ₂ sensors. Other sensors shall be warranted for at least 12 months.

Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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