



Sirius Multigas Detector

[Bid Specifications]

Physical Characteristics	
Size	Instrument shall not exceed 6.50"x 3.61"x 2.60" in total size.
Weight	Less than 1.45 pounds (500 grams) with Alkaline Pack.
Handling	Unit shall be easily held in one hand.
Case Material	High strength non-corrosive plastic, will prevent spark generation.
Environmental Protection	Instrument shall be rated to IP54 protection levels for dust and water ingress (water spray and fine particle dust).
Display Location	Display is viewable from the front.
Carrying Attachments	Unit shall have option of being provided with various options for belt and wrist attachment, D-Ring w/ Retractable Lanyard
Protective Jackets	Instrument shall be provided with various optional protective jackets with shoulder straps. These cases shall be available with: <ul style="list-style-type: none"> • High Visibility Cordura® Nylon • Rubber Boot
RFI	Instrument shall have no response when an antenna of 5 watt transceiver of frequency 470 MHZ or 150 MHZ is 12 inches or more away from instrument. Must pass IEC801, EN50.081-1 and EN50.082-2.

User Interfaces	
Display Type	Liquid crystal display [LCD] with large, easy to read characters.
Gas Readings	All gas readings must be displayed simultaneously.
Backlight	Unit must be provided with backlight for low light viewing. <ul style="list-style-type: none"> • Backlight must turn off automatically to conserve power.
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.
Data Access	Access to the data log shall be non-intrusive using commercially available infrared links to IBM compatible computers.
VOC ppm Reading	VOC ppm reading must be displayed on main page. Specific gas must be easily accessible to select.
Response Factors (RFs)	RFs must be intuitive to use and must automatically calculate corrected ppm. User shall be able to select by gas name, rather than response factor. A minimum of 100 factory set gases with corresponding RFs with applicable bulbs must be permanently programmed into the unit.
Gas List	Gas list shall be able to be customized by the user. User shall be able to enter 1 new custom gas name and response factor through the user interface and 10 through the Datalink.

Monitoring Capability													
Number/ Type of Gases	Instrument shall be capable of measuring up to four gases including combustible gas, oxygen, CO and H ₂ S, as well as VOCs.												
Combustible Gas Display	The instrument shall be capable of displaying the combustible gas reading as % Lower Explosive Limit (LEL).												
Pressure Compensation	The instrument oxygen sensor shall have built-in pressure compensation.												
Sensor Types	Instrument shall be available with any combination of the following gas sensor capabilities, including a single sensor only: <table border="1" data-bbox="503 1900 1136 2005"> <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>0-500 ppm</td> <td>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	0-500 ppm	1 ppm
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combustible	0-100% LEL	1% LEL											
oxygen	0-25% Vol	0.1% Vol											
carbon monoxide	0-500 ppm	1 ppm											

	hydrogen sulfide	0-200 ppm	1 ppm
	VOC	0-200	0.1 ppm = 100 ppb
	VOC	200-2000	1 ppm
	VOC (optional)	0-9900 ppb	100 ppb

Basic Operational Features

Instrument Turn-on	Button to turn instrument on must be clearly marked.
Inadvertent Shutoff	The instrument must be designed to protect against accidental shut off.
Zero Adjustments	The instrument shall provide a Fresh Air Setup (FAS) function at the user's discretion.
Zero Adjustment Safety Lockout	The FAS function will prevent users from zeroing out hazardous readings.
Audible "Instrument On" Indicator	The instrument shall be provided with a periodic audible signal indicating the instrument is in operation. The user shall be provided with the option to disable the audible signal if desired.
Time/Date	Instrument must be able to display time and date with the optional data logging package. User must be able to reset time and date without tools.

Advanced Display and Software Options

Industrial Hygiene Displays	The gas detector must have the capability of displaying PEAK, STEL, and TWA at the user's discretion. Peak must always be available.
Resettable Readings	User shall be provided capability to reset STEL, TWA, and PEAK readings.
Languages	The instrument shall be designed using language independent symbols for all commonly used functions.

Instrument Alarms

Visual Alarms	Visual alarms shall consist of bright flashing LEDs, a positive indication on the display as to which gas sensor is in alarm, and the alarm type. A green Safe LED must be present. Alarms must be visible in all lighting conditions from a distance of 5 feet.
Audible Alarm	The audible alarm shall be rated at 90 min dB at 1 foot. Must be able to be silenced with the press of a single button. PID must be able to be turned off by the user.
Lamp Error	Lamp error must display when lamp fails.
Lockalarm™ Feature	The combustible channel must have a non-resettable, latching alarm when the combustible gas exceeds 100% LEL.
Oxygen Alarms	The oxygen channel will have alarm setpoints for both oxygen deficiency and oxygen enrichment.
Alarm Setpoints	Alarm setpoints must be user settable.
STEL and TWA alarm	The instrument shall provide an audible alarm if the STEL or TWA levels are exceeded. The user will be able to select alarm setpoints for STEL and TWA (toxic channels only).
Power Alarms	The monitor will provide a minimum of 5 minutes warning to user of battery power loss in all environmental conditions. <ul style="list-style-type: none"> Power alarms shall be both audible and visually indicated on display
Sampling System Faults	The instrument shall have a pump malfunction and blocked flow alarm. This alarm system should not be dependent upon a pressure or flow sensor.

Instrument Power

Rechargeable Option	The instrument shall have available a rechargeable pack option that can be charged on or off the instrument.
Battery Life Indication	The monitor shall provide the user with a "gas gauge" depicting estimated remaining battery operation time. <ul style="list-style-type: none"> Battery gas gauge must always be visible when the instrument is turned on
Replaceable Option	The instrument shall have available a replaceable battery pack which can accept commercially available alkaline batteries.
Charger	The charger must be able to fully charge a depleted battery pack in less than 6 hours.
Charger Input Voltages	Chargers must be available for 110VAC/220VAC and 12-24VDC.

Calibration	
Calibration Tools	The unit shall require no special tools for calibration other than cylinder, regulator, and tubing to supply gas to instrument.
Pushbutton Calibration	Calibration must be easily accomplished utilizing push buttons on the face of the instrument. Internal instrument access or tools shall not be necessary for calibration.
Calibration Cylinder Mixtures	In a standard four-gas configuration (Combustible, O ₂ , CO, H ₂ S), it shall be calibrated from one cylinder. Isobutylene may be in its own cylinder.
One-button Calibration	Instrument shall be capable of being calibrated to known gas concentrations with push of a single button.
Automatic Calibration	The instrument shall be compatible with optional automated calibration and data storage systems. This external system shall automatically recognize and calibrate the instrument and retain all calibration records (reference separate system specifications).
Low Cost Calibration Kit	The instrument shall be available with an optional low-cost gas testing kit to verify performance in field. This kit shall operate with a trigger-type aerosol canister and shall be capable of checking the performance of the standard four gas instrument (Combustible, O ₂ , CO, H ₂ S), as well as Isobutylene (for calibrating VOCs).
Calibration History	"Last calibrated on" software message communicated to user at turn-on sequence.

Sampling Systems	
Sampling Modes	The monitor shall be available in pumped version.
Pump Power Source	The pump shall use the instrument power supply, thereby, not requiring an additional battery pack or chargers.
Sampling System Filters	The instrument must contain user replaceable filters to prevent the ingress of liquids and dust into the instrument. The filter cover must be readily accessible without disassembling the instrument.
Sample Line Attachment	Sample lines must be attached using sealed quick disconnect fittings for secure attachment.
Allowable Sample Line Length	Instrument must be capable of drawing a sample from up to 25 feet away.
Fluid Ingress Protection	A sample probe that has provisions to prevent water and debris from entering the sample line must be available.

Data logging [Instrument Data Storage]	
Data Logging	Instrument must be available with datalogging as an optional feature.
Datalog Capacity	The datalog shall record and store data for an average of (16 hrs. minimum) (with 5 channels at three minute intervals) without overwriting existing information in normal use.
Gas Record Content	Datalog entries shall contain as a minimum the date, time and a record of the peak reading for each gas sensor (oxygen shall be recorded as maximum and minimum for the intervals).
Atmospheric Records	Datalog shall record at a minimum of 15 minute intervals the internal instrument temperature.
Record Intervals	The time between data records shall be user selectable (from 15 seconds to 15 minutes).
Data Retention	Instrument data stored in the memory shall not be lost or corrupted in the event of sudden instrument power loss or removal of the battery pack.
Activity Record Content	Instrument datalog shall record and be capable of reporting significant instrument events including: <ul style="list-style-type: none"> • Gas, pump, and battery alarms • Fresh Air Setups, sensor rezeroing and calibrations • Battery type and voltage

Certifications

Intrinsic Safety Approval	<p>The detector must be approved by:</p> <ul style="list-style-type: none"> - Hazardous Locations: <ul style="list-style-type: none"> US - UL 913 for marking Class 1 Div 1 Group ABCD *Canada - CSAC22.2 No. 157 for marking Class 1 Div 1 Group ABCD *Europe: - ATEX II 2G EEX ib d IIC T3 –20C Ta ≤50C (d is for 20L) IEC 529 IP54 must be met to as part of hazardous location EN 50014/EN 50018 (flameproof), EN 50019, EN 50020 - EMC/RFI <ul style="list-style-type: none"> US - 47 CFR part 15 *ATEX/Europe - EN 50270 – typ 2/ EN 50081-1 - Performance: <ul style="list-style-type: none"> *Canada - CSA C22.2 No. 152 *ATEX/Europe (combustible) EN 61779-1, 4 (O2) EN 50104 (SW) EN 50271 - Low Voltage Safety (charging): <ul style="list-style-type: none"> *Europe : LVD Low Voltage Directive for chargers and any other accessories that require greater than 50VAC or 75VDC - Performance US ISA 12.13 – Combustible - Performance US ISA 92.04 - O2 <p><i>*Approval pending, call MSA for latest status.</i></p>
Manufacturing System Quality Approvals	Instrument manufacturer must be certified compliant with ISO 9001 provisions.

Environmental

Temperature	<p>Normal operation: 0 to 40° C</p> <p>Extended: -20 to 50° C</p>
Humidity	0-95% RH (non condensing) for 8 hours
Pressure	0.8 to 1.1 bar

Maintenance & Warranties

Sensor Replacement	Sensors shall be easily accessed and replaced by users if desired by the purchaser.
Warranty, Consumables	The instrument shall have a two-year warranty on ALL components except for PID sensor including the Ion Chamber which shall have a 1-year warranty.
Warranty, Case and Electronics	The instrument electronics and mechanical components shall be provided with a lifetime warranty.