

Bid Specifications: Pulsar + Single Gas Detector

Physical Characteristics	
Size	Instrument shall not exceed 4.50”x 2.50”x 0.75” total size
Weight	Less than 4.4 ounces (125 grams)
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 (strong waterspray and fine particle dust).
Display Location	Display is viewable from the front.
Carrying Attachments	Unit shall have option of being provided with various belt or pocket attachment methods including: <ul style="list-style-type: none"> • High strength steel “suspender style” clip • Swivel Mount “cell phone style” clip
Protective Jacket	Instrument shall be provided with an optional Cordura® Nylon protective jacket with shoulder straps.

User Interfaces	
Display Type	Liquid crystal display (LCD) with large, easy to read characters.
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.

Monitoring Capability													
Sensor Types	Instrument shall be available with the following gas sensing options: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Gas Type</th> <th style="text-align: left;">Range</th> <th style="text-align: left;">Resolution</th> </tr> </thead> <tbody> <tr> <td>Oxygen</td> <td>0-25%</td> <td>0.1%</td> </tr> <tr> <td>Carbon Monoxide</td> <td>0-500 ppm</td> <td>1 ppm</td> </tr> <tr> <td>Hydrogen Sulfide</td> <td>0-200 ppm</td> <td>1 ppm</td> </tr> </tbody> </table>	Gas Type	Range	Resolution	Oxygen	0-25%	0.1%	Carbon Monoxide	0-500 ppm	1 ppm	Hydrogen Sulfide	0-200 ppm	1 ppm
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Hydrogen Sulfide	0-200 ppm	1 ppm											

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.
“Instrument On” Indicator	The instrument shall be provided with a periodic heartbeat signal indicating the instrument is in operation.

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. User should have the ability to enable/disable STEL and TWA functions from the instrument keypad without the use of a computer hookup.
Password protection	User settable functions (alarm values, expected cal gas value, etc.) shall always be protected with a three digit password.
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.

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Instrument Alarms	
Visual Alarms	Visual alarms shall consist of bright flashing LED's and a positive indication on the display as to which gas sensor is in alarm.
Audible Alarm	The audible alarm shall be rated at 95 dB.
Vibrating alarm	The unit shall have an option to be equipped with a vibrating alarm.
Oxygen Alarms	The oxygen channel will have alarm setpoints for both oxygen deficiency and oxygen enrichment.
Alarms Setpoints	Alarm set points 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

Instrument Power	
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.

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.
One-button Calibration	Instrument shall be capable of being calibrated to known gas concentrations with push of a single button.
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 instrument.

Certifications	
Intrinsic Safety Approval	The detector must be approved by : <ul style="list-style-type: none"> U. S. and Canadian Nationally Recognized Testing Laboratories as intrinsically safe to Class I, Division 1, Groups A B, C and D. T code T4, T_{amb}= -20 to 50°C European Testing Laboratory as ATEX II 1 G EEx ia IIC T4 +50C T code T4, T_{amb}= -20 to 50°C European EMC complies to EN50270
Manufacturing System Quality Approvals	The instrument manufacturer must be certified compliant with ISO 9001 provisions.

Environmental	
Temperature	Normal Operation: -20 to 50° C H2S -40 to -20° C for short (15 minute) periods
Humidity	15-90% RH (non condensing) continuous 5-95% RH (non condensing) for short periods

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Maintenance, Warranties	
Sensor Replacement	Sensor shall be easily accessed and replaced by users if desired by the purchaser.
Battery Replacement	Battery 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, less battery.
Warranty, Case and Electronics	The instrument electronics and mechanical components shall be provided with a lifetime warranty.