RADIUS® BZ1 AREA MONITOR BID SPECIFICATIONS

The Radius® BZ1 Area Monitor is Industrial Scientific's multi-gas area monitor capable of detecting up to seven gases simultaneously. As a standalone device with extensive run time and all-weather design, the Radius is used in industrial workplaces and hazardous applications when environmental conditions, infrastructure, and other business considerations make installed gas detection systems or mass coverage of personal portable instruments impractical.

PHYSICAL CHARACTERISTICS

Dimensions	29 x 29 x 55 cm (11.5 x 11.5 x 21.5 in)
Weight	7.5 kg (16.5 lb)
Display	Instrument shall have a 11.2 cm (4.4 in) monochrome LCD display
Keypad	Instrument shall have 3 pushbuttons to operate
Battery	Instrument shall be powered by a nickel-metal hydride (NiMH) battery
Temperature Range	-20 °C to 55 °C (-4 °F to 131 °F)
Operating Humidity Range	15% to 95% relative humidity (RH) noncondensing (continuous)
Storage Temperature Range	-20 °C to 55 °C (-4 °F to 131 °F)
Pressure Range	1 atm ± 0.2 atm
Downward-Facing Sensors	Instrument sensors shall face downward and into a protected gas path to prevent interference from weather conditions while allowing for 360° detection of gases

ALARMS

Alarm Indicators	**Audible –** Instrument shall have an audible alarm capable of emitting a 108 decibel (dB) audible alarm at a distance of 1 m (3.3 ft) **Visual –** Instrument visual alarm LEDs shall be visible from the front, back, and sides, and shall use blue and red LEDs
Alarm Action Messages	Instrument shall be able to provide text instruction when in alarm Instructions shall be customizable and allow for unique messages based on the gas and alarm level
Full-Screen Alarms	Instrument shall have the option to display the gas type and gas reading as full screen when the instrument is in alarm
Alarm Customization	Instrument shall allow the user to select an audible alarm pattern and a combination of alarm signals (visual and/or audible)
Latched Alarms	Instrument shall provide a setting that allows alarms to be latched, requiring that the instrument operator acknowledge alarms, thereby preventing missed alarms
Redundant Alarms	Instrument shall be equipped with redundant hardware for audible and visual alarms

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SENSORS

Sensor Options	

Gas Type	Type	Range	Resolution
Combustible*	Catalytic Bead	0-100% LEL	1% LEL
Carbon Monoxide*	Electrochemical	0-1,500 ppm	1 ppm
Carbon Monoxide (high range)	Electrochemical	0-9,999 ppm	1 ppm
Carbon Monoxide (Low Hydrogen interference)*	Electrochemical	0-1,000 ppm	1 ppm
Chlorine	Electrochemical	0-50 ppm	0.1 ppm
Hydrogen	Electrochemical	0-2,000 ppm	1 ppm
Hydrogen Cyanide	Electrochemical	0-30 ppm	0.1 ppm
Hydrogen Sulfide*	Electrochemical	0-500 ppm	0.1 ppm
Sulfur Dioxide*	Electrochemical	0-150 ppm	0.1 ppm
Nitrogen Dioxide*	Electrochemical	0-150 ppm	0.1 ppm
Oxygen*	Electrochemical	0-30% vol	0.1% vol
Nitric Oxide	Electrochemical	0-1,000 ppm	1 ppm
Ammonia	Electrochemical	0-500 ppm	1 ppm
Carbon Monoxide/ Hydrogen Sulfide*	Electrochemical	0-1,500 ppm	1 ppm
		0-500 ppm	0.1 ppm
Phosphine	Electrochemical	0-5 ppm	0.01 ppm
Carbon Dioxide	Infrared (IR)	0-5% vol	0.01%vol
Volatile Organic Compounds	PID	0-2,000 ppm	0.1 ppm

Simultaneous Gas Readings	Instrument shall be capable of measuring and displaying up to seven gas types simultaneously
Physical Sensors	Instrument shall accept installation of up to six physical gas sensors
DualSense® Technology	Instrument shall allow two sensors to measure for the same gas (noted with * above) The two sensors shall increase accuracy and reduce the frequency of bump tests
Span Reserve Percentages	Instrument shall use span reserve percentages to indicate a sensor's remaining life, reducing instrument downtime as maintenance may be planned in advance

WIRELESS

LENS™ Wireless	Instrument shall support a wireless mesh network that allows connected instruments to communicate alarms and gas readings without the need for wires, routers, or a central controller
Peer Alarms	Instrument shall share alarm data, including the name or serial number of the peer and the cause of the alarm, with all instruments in the network
Peer Readings	Instrument shall allow users to view the readings of any other gas monitor in the network
Peer Lost Alarms	Instrument shall provide the option of notifying connected units that a peer has unexpectedly disconnected from the network
Group Lost Alarms	Instrument shall provide the option of notifying the user if the unit is expectedly disconnected from the network

WIRELESS (CONTINUED)

Network Groups	Wireless technology shall support multiple networks on one worksite without interference
Maximum Peers	Wireless technology shall support up to 25 instruments concurrently on the same network
Encryption	Wireless communications shall be encrypted using an AES-128 cypher, with the option for users to establish a custom encryption key
Range	Wireless system shall allow two connected units to communicate wirelessly when 300 m (~1,000 ft) apart under line of sight conditions
Frequency	Wireless technology shall operate on an ISM license-free band (2.405 - 2.480 GHz)
Personal Monitor Connectivity	Wireless technology shall allow instruments to communicate alarm events to and from personal monitors
iNet Now	Instrument shall be compatible with a live monitoring system, allowing any web-enabled device to see the status of the instrument at any time
Live Alerts	Instrument shall be compatible with a live monitoring system that allows supervisors and safety professionals to receive texts and/or email alerts when alarm conditions exist

MAINTENANCE

Modularity	Instrument shall have a modular design with a component that makes it possible to easily remove the unit's software, data logs, sensors, and pump for maintenance
Docking Stations	Instrument shall be compatible with a docking station that synchronizes data, controls settings, and automates maintenance tasks such as zeroing, calibration, and bump testing
Manual Calibration and Bump Testing	Instrument shall allow users to manually calibrate and manually perform a bump test with basic equipment (gas cylinder, regulator, and calibration cup and/or tubing) and the help of on-screen prompts
Cloud-Based Management	Instrument and docking station shall be compatible with a cloud-based solution that allows for configuration and continuous management of the gas-detection program from any mobile browser or web-enabled PC Cloud-based solution may be used by internal or external service teams to provide routine and emergency support, including bump tests, calibrations, instrument or sensor replacement, hardware and software updates, documentation of logged data, and other support services
Charge Time	Instrument shall be chargeable, from completely discharged to fully charged, using a charger within 8 hours
Maintenance Warnings	Instrument shall have customizable maintenance warnings that indicate when calibration, bump testing, and/or zeroing are past due
Maintenance Reminders	Instrument shall allow for customization of maintenance reminders **Calibration Due –** Instrument shall be able to display notifications that indicate when calibration is next due **Bump Test Due –** Instrument shall be able to display a notification when bump testing is overdue **Dock Due –** Instrument shall be able to display a notification when it should be docked for calibration, bump testing, and data synchronization

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EASE OF USE

Start-Up Messages	Customizable start-up message shall have the option to display and require acknowledgement
Start-Up Information	Instrument shall have one-button activation and display the date, time, user name, site name, and sensor settings during start-up
Configurable User Interface	Instrument shall provide customization options that allow maintenance task prompts (including bump testing, zeroing, and calibration) and informational screens (including sensor settings and maintenance reminders) to be hidden or displayed
Text Mode	Instrument shall have the option of displaying gas readings as words rather than numbers, e.g., an O_2 reading of 20.8% vol can display as "OK"
Languages	Instrument shall have the option of selecting English, Spanish, French, or German for the display language
Time	Instrument shall display the time while displaying gas readings
Selectable Time Format	Instrument shall allow time to display using a 12-hour or 24-hour clock
Confidence Indicator	Instrument must be capable of providing periodic signals indicating instrument operation User shall have option of selecting none, audible, visual, or audible and visual signals
View Installed Sensors and Setpoints	Instrument shall be capable of displaying the installed gas sensors and the alarm setpoints during operation
Quick Status Screen	Instrument shall be able to display the installed sensors, serial number, and battery charge level when powered off
Always On	Instrument shall offer always on functionality to prevent unauthorized shutdown while in use
Shutdown in Alarm	Instrument shall provide a setting to prevent unauthorized shutdown while in alarm, including when always on functionality is disabled
Field Configurable	User shall have the option to configure instrument settings directly on the instrument

RUN TIME

Standard Four-Gas	**Without Pump/Wireless Enabled –** Instrument shall operate for 7 continuous days (168 hours) **With Pump/Wireless Enabled –** Instrument shall operate for 3.5 continuous days (84 hours)
Electrochemical Sensors Only	**Without Pump/Wireless Enabled –** Instrument shall operate for 30 continuous days (720 hours)
Intrinsic Safety Power Supply	Instrument shall be compatible with an external intrinsic safety power supply that extends continuous standard four-gas run time to over one month

WARRANTY

Instrument Warranty	Instrument, including batteries and internal pumps, shall be warranted for 2 years
Sensor Warranty	All sensors shall be warranted for 2 years

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PUMP OPTIONS

Without Pump (Diffusion)	Instrument shall be available as a diffusion instrument
With Integral Pump (Aspirated)	Instrument shall be available with an integral pump that is capable of sampling up to 30.48 m (100 ft)

DURABILITY

Ingress Protection	Instrument shall be IP66
External Dust Filters	Instrument shall have replaceable dust and water filters to protect the sensors from damage due to dust, debris, and liquids

ASSET MANAGEMENT

On Screen Company Name, User, and Site	Instrument shall display an informational screen that provides the company name, user, and site
Writeable Labels	Instrument shall have writeable labels to facilitate instrument identification and management

DATA LOG

Data Log	Instrument data log must store at least 90 days of data for a unit that has six installed sensors and is set to record data every 10 seconds
Custom Data Log Intervals	Instrument shall provide a setting that allows users to select the data log interval
Data Log Status	Instrument shall display an informational screen that provides the percentage of the data log capacity used and an estimate of the time remaining until the data log reaches capacity
Event Log	Instrument event log must store up to 60 alarm events, 30 error events, and 250 calibrations and bump tests

USERS & SITES

Last Five Users	Instrument users shall be able to manually change user assignments through settings
Last Five Sites	Instrument users shall be able to manually change site assignments through settings

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CERTIFICATIONS

ATEX	Ex da ia IIC T4 Ga, Equipment Group and Category II 1G Ex db ia IIC T4 Gb with IR sensor installed, Equipment Group and Category II 2G
China CPC	China CPC
China EX	Ex d ia IIC T1 Ga; Ex d ia IIC T4 Gb IR sensor
CSA	Class I, Division 1, Groups A, B, C, and D; T4 Class I, Zone 0, Ex da ia IIC T4 Ga, and Class I Zone 1 Ex db ia IIC T4 Gb with IR sensor installed C22.2 No. 152 applies only to %LEL thermo-catalytic reading
IECEx	Ex da ia IIC T4 Ga Ex db ia IIC T4 Gb with IR sensor installed
INMETRO	Ex da ia IIC T4 Ga; Ex db ia IIC T4 Gb IR sensor
KC	Ex d ia IIC T4
UL	Class I, Division 1, Groups A, B, C, and D; T4 Class 1 Zone 0 AEx da ia IIC T4 Ga1 Class 1 Zone 0 AEx db ia IIC T4 Gb with IR sensor installed

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