

## Bid Specifications: 9010 / 9020 Controllers

### PHYSICAL CHARACTERISTICS

Rack	Weight - 23 lbs.
	Dimensions- 5.25"H x19"W x10.5"D
	Enclosure Type - Metal Rack
	Max Number of Controller Boards - 10
	Mounting Provisions - Installation designed for rack.
General Purpose Plastic	Weight - 4 lbs.
	Dimensions - 7.5"x11.5"x5.25"
	Enclosure Type - IP54 Rated Plastic
	Max Number of Controller Boards - 1
	Mounting Provisions - Four mounting holes located on inside of enclosure for attaching to a flat surface.
NEMA Metal	Weight - 67 lbs.
	Dimensions - 22"x17"x13"
	Enclosure Type - NEMA 4X Metal Enclosure with Glass window for read-out viewing.
	Max Number of Controller Boards - 5
	Mounting Provisions - Four brackets located on top and bottom (2 each) for attaching to a flat surface.
NEMA Metal	Weight - 102 lbs.
	Dimensions - 24"x24"x13"
	Enclosure Type - NEMA 4X Metal Enclosure with Glass window for read-out viewing.
	Max Number of Controller Boards - 10
	Mounting Provisions - Four mounting lugs located on top and bottom (2 each) for attaching to a flat surface.
XP	Weight - 52 lbs.
	Dimensions - 15.5"x14"x8.6"
	Enclosure Type - Metal XP Enclosure that bolts shut on 3 unhinged sides.
	Max Number of Controller Boards - 1
	Mounting Provisions - Four mounting lugs located on top and bottom (2 each) for attaching to a flat surface.
XP	Weight - 86 lbs.
	Dimensions - 17"x18.3"x10.25"
	Enclosure Type - Metal XP Enclosure that bolts shut on 3 unhinged sides.
	Max Number of Controller Boards - 2
	Mounting Provisions - Four brackets located on top and bottom (2 each) for attaching to a flat surface.
NEMA Stainless (5 Board)	Weight - 67 lbs.
	Dimensions - 22"x17"x13"
	Enclosure Type - NEMA 4X Metal Enclosure with Glass window for read-out viewing.
	Max Number of Controller Boards - 5
	Mounting Provisions - Four brackets located on top and bottom (2 each) for attaching to a flat surface.
NEMA Stainless (10 Board)	Weight - 102 lbs.
	Dimensions - 24"x24"x13"
	Enclosure Type - NEMA 4X Metal Enclosure with Glass window for read-out viewing.
	Max Number of Controller Boards - 10
	Mounting Provisions - Four brackets located on top and bottom (2 each) for attaching to a flat surface.

### ENVIRONMENTAL

Temperature	The Operating Temperature range of the controller is -10° to +40°C (14° to 104°F).
Humidity	Operating Humidity range 0-90% RH, non-condensing

### POWER REQUIREMENTS

Input Power Requirement	115 / 230 VAC ± 15% 50/60 Hz or 24 VDC + 15% - 20%
Power for Sensor Transmitters	Power output shall be 5 to 500mA for constant current sensors, 3 to 24VDC for constant voltage sensors, and .9 amps at 24VDC for Ultima / Ultima X sensors

**CONTROLLER OPERATING REQUIREMENTS**

Controller Channels	The system shall have the ability to operate with 1 or 2 channel controller boards.
Sensor Transmitter Input Requirements	The remote sensors shall be factory-set to 2 or 3 wire connection depending on the specific application
STEL / TWA options	The controller shall have the ability to be set to alarm when relevant STEL and TWA values are exceeded.

**WARNING, ALARM CONTROL REQUIREMENTS**

Relays	Each module shall have two (SPDT) relays with change-over contacts for verification of Warning and Alarm conditions (common to both channels in the 9020 version).
Output capability	An RS-485 interactive serial interface is also available for connection to a printer. A customized transmission protocol ModBus RTU can be used for serial bus data transmission such as system configuration, gas concentration, alarm and failure events, alarm inhibit and reset.

**USER INTERFACES**

Display Type	Shall be a large 4-digit 7-segment back lit Liquid Crystal Display and bright LED's to provide ease of reading and alarm notification.
Display Information	The Display provides information on the gas concentration, alarm status, measurement units, flags indicating status and settings such as calibration interval, time-out function, alarm ON delay and alarm inhibit.
Unit of Measure Selection	Ability to choose from LEL, LELm, PPM, % Vol, g/m3 or blank
Security	Controller shall have user defined access codes to prevent accidental or undesired tampering
Alarm Acknowledge Switch	This local Audible Alarm push-button reset switch shall silence the Audible Alarm when alarm points are exceeded. The LED visual alarms will remain on as long as alarm levels are exceeded. This push-button will reset latched alarms if normal gas conditions exist.

**RELAY SET POINT and CONTACT RATINGS**

Warning and Alarm Relay Set Point Levels	Warning and Alarm Relay Set Points shall be customer selectable between 1-100% of the measuring range.
Failure Relay	Failure mode shall utilize two SPST relays in series and shall be normally energized.
Relay and Contact Rating	5A / 24VDC and 250VAC - resistive load.
LED's	Shall be high brightness LED's to provide ease of reading and alarm / failure notification
Contact Selections	Each unit shall have two, SPDT relays

**APPROVALS**

Approvals	Complies with UL / CSA 61010-1 per MET
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**WARRANTY**

Full Replacement Warranty	Instrument shall have one year parts and labor standard warranty with extended warranty available.
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**MAINTENANCE REQUIREMENTS**

Maximum System Maintenance	The Controller shall not require periodic maintenance other than verifying the Sensor Transmitter inputs are responding to the target gases.
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**MANUFACTURER**

Instrument Supply	The manufacturer must be capable of supplying all equipment used to check or calibrate the sensor / transmitter units.
Product Service	The manufacturer must be capable of providing on-site service with factory trained personnel.
On-site Training	The manufacturer must be capable of providing on site training for owner/operator.