



*The Model 2400 Vault Gas Monitor is a continuous Combustible Gas and Carbon Monoxide monitor for personnel and facility safety in confined spaces.*

The Model 2400 is ideal for continuously monitoring both Combustible Gas (Methane) and Carbon Monoxide in confined spaces such as utility vaults to reduce the hazard of gas explosion and to maintain personnel safety. Each model offers the full performance features you desire including uninterrupted power supply, longlife sensors five alarm relays, and both audible and visual alarm indication.

The Vault Gas Monitor is housed in a NEMA-3 hinged enclosure with the input power connector, relay output connector, fuse, and sensor housings accessible externally.

### Sensors

The Model 2400 has the sensors mounted on the bottom of the enclosure. This configuration provides protection from dust and moisture contamination. The sensors can easily be replaced without removal of the monitor from its permanent mounting. Two of these sensors are for gas detection and the third contains two separate thermocouple devices to permit direct measurement of ambient temperature.

**Methane Sensor:** Detects methane and other explosive gases. The calibration range is between 5% and 25% of LEL for Methane. The sensor is relatively insensitive to CO. The Methane sensor is a metal-oxide semiconductor-type solid-state device for long life.

**Carbon Monoxide (CO) Sensor:** The wide range CO sensor on the Model 2400-01 has a range of 50-200 ppm. This sensor is a metal-oxide semiconductor-type solid-state device for long life. The low range CO sensor on the Model 2400-21 has a 0-100 ppm range to meet current OSHA and NIOSH safety regulations. This low range CO sensor is a long life electrochemical sensor.

**Temperature Sensor:** Each sensor is compensated for variations of ambient temperature over a range of 0 to 40°C.



The sensors are mounted in anodized aluminum protective housings and the solid state sensors are protected by 60 micron flame arrestors. The sensors are isolated from the main electronics enclosure to provide EMI/RFI isolation.

### Reliable Uninterrupted Power Supply

An EMI/RFI Line Filter is provided to filter the AC power line from high frequency noise. The power supply includes a built-in constant current NiCad battery charger with over 1 amp capacity. The six "D" size NiCad batteries can be fully charged in less than 14 hours and will provide up to nine hours back-up power.

### Alarm Relays

There are five alarm relays on the Model 2400. All are SPDT with 6 Amp dry non-inductive contacts.

- **Failure Relay:** Activated when either gas sensor becomes defective or if both the AC and battery back-up power supplies fail.
- **Carbon Monoxide Relay:** Activated when concentration of CO exceeds the calibrated threshold setting (100 ppm for the 2400-01 or 35 ppm for the 2400-21).
- **Combustible Gas Relay:** Activated when the concentration of Methane exceeds the calibrated threshold setting (factory set at 5000 ppm CH<sub>4</sub>).
- **Ventilation Relay:** Activated when either the CO or CH<sub>4</sub> gas concentration exceed their calibration levels.

# Model 2400 Vault Gas Monitor

• **Remote Indicator Relay:** Activated when the Failure Relay or the Ventilation Relay is activated. The following conditions will activate the Remote Indicator Relay which is normally connected to a Remote Indicator box: excess CO or excess Methane, AC and Battery failure, CO or Methane sensor failure.

Power Indicators consists of a Power-ON Lamp (green) and Low Battery Indicator (red).

The Combustible Gas (Methane) and CO sensor circuits have three status lights each for Safe (green), Alarm (red) and Sensor Failure (red).

### Alarm Indicators

The front panel has one audible alarm, eight annunciator lights and one test button.

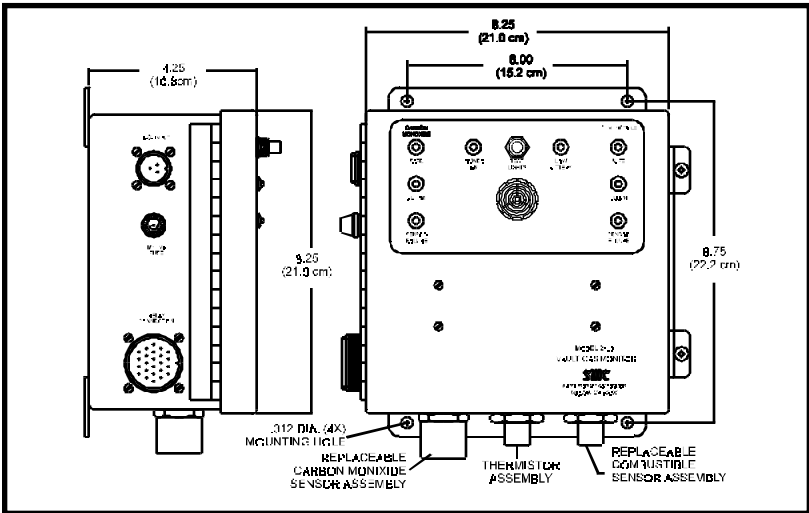
The Audio Alarm will sound a continuous tone of 68 dB at 2900 Hz when either the CO or Methane gas concentration exceed their calibrated threshold levels. The alarm points can be varied individually on both the Methane gas and Carbon Monoxide sensors.

### Test Lamps Button

A momentary push button is provided for testing the operation of all lamps, the ventilation, Methane, and CO relays and the audio alarm. The relays can be disabled during calibration or for maintenance testing.

## SPECIFICATIONS

<b>INPUT POWER:</b>	120 Volt/60 Hz or 240 Volt/50 Hz 12 Watts Maximum	<b>OUTPUT RELAY RATING:</b>	Five SPDT (Form C), 6 Amp non-inducting at 120/240 VAC 6 Amp non-inducting at 28 VDC, 1/8 HP Load at 120 VAC, 170 W or 1800 VA
<b>ALARM CALIBRATION RANGE</b>		<b>GAS SENSORS:</b>	
Combustible Gas:	2500-12,500 ppm Methane (5%-25% LEL)	2400-01	Two solid-state metal-oxide semiconductor sensors in separate housings.
Carbon Monoxide:	50-200 ppm (2400-01) 0 - 100 ppm (2400-21)	2400-21	One solid-state metal-oxide semiconductor sensor (Methane) and one electrochemical sensor in separate housings.
<b>FACTORY ALARM CALIBRATION:</b>		<b>TEMPERATURE SENSOR:</b>	Two solid-state thermistors
Combustible Gas:	5000 ppm Methane	<b>AUDIBLE ALARM:</b>	68 dB at 2900 Hz
Carbon Monoxide:	100 ppm (2400-01) 35 ppm (2400-21)	<b>ENCLOSURE:</b>	NEMA-12 hinged front panel with mounting flanges
<b>RESPONSE TIME:</b>	Less than 30 seconds	<b>FUSE:</b>	1/4 Amp 250 VAC
<b>OPERATING TEMPERATURE RANGE:</b>		<b>SIZE:</b>	8.7 X 8.2 X 4.2 inches (22.2 X 21.0 X 10.8 cm)
Standard	32 to 104°F (0 to 40°C)	<b>WEIGHT:</b>	12 lb. (26 Kg)
Extended Temperature Option:	-4 to 140°F (-20 to 60°C)		
<b>INPUT CONNECTOR:</b>	3 pin (Amphenol) Mil-Spec Type MS 3106A-14S-7S		
<b>OUTPUT CONNECTOR:</b>	24 pin (Amphenol) Mil-Spec Type MS 3106A-2428S		
<b>BATTERIES:</b>	6 "D" Size NiCad Pack - 4 Amp hour (9 hours of life at 25°C)		



### ORDERING INFORMATION

- 2400-01 Combustible & Carbon Monoxide Monitor
- 2400-21 Combustible & Carbon Monoxide Monitor, Low CO
- 2401-00 Remote Alarm Indicator for 2400-XX
- 2404-00 Smoke Detector for 2400-XX

