



Critical Environment Technologies

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ENGINEERING SPECIFICATION SAMPLE # MAC-5

Vehicle Exhaust Detection System for CO & NO2

Supply a two channel, self-contained gas detection system, model MAC-EMCO-END, for the monitoring of Carbon Monoxide and Nitrogen Dioxide, housed in a rugged, wall mount, drip-proof PVC enclosure with hinged, secured door. System power shall be 24 VDC or 24 VAC (nominal) or optional 120 VAC. The system shall have one integral electrochemical CO sensor and one integral electrochemical NO2 sensor. The measurement range shall be 0 - 200 ppm CO in air and 0 - 10 ppm NO2 in air. Area of monitoring coverage is up to 5,000 to 7,000 square feet per sensor.

The monitor shall provide a tri-colour indicating light for each sensor for power, low alarm, high alarm, and fault condition, one audible alarm for each sensor with one silence push-button and two SPDT dry contact alarm relays for each sensor, each rated 5A at 240 VAC. There shall be an optional LED digital display of concentration for each sensor. The system must be accurate enough to measure to government workplace hazardous gas exposure standards. The system shall also provide user adjustable time delays for "delays on make" and "delays on break" for each sensor to allow custom configuration of fan control by the system relays, if desired.

The controller shall provide a circuit test button for each sensor to allow the user to confirm system operation and exhaust fan control from the panel. The controller shall also provide a push-button to allow the user to override the system control and operate exhaust fans continuously for 15-minute segments to evacuate air from specific parts of the parking garage. The controller shall automatically test the electrochemical CO sensor and the electrochemical NO2 sensor on a monthly basis and activate a fail alarm (flashing red LED and audible alarm) upon detection of CO or NO2 sensor failure. The controller shall provide automatic "calibration due" notification to the end user for each sensor. Installation height for the gas detection controller with integral CO and NO2 sensor is 4' to 6' from the floor.

System operation shall be as follows: System relays are normally energized in non-gas-alarm state so they act in fail-safe operation. Upon detection of 50 ppm CO in air or 0.7 ppm NO2 in air, the system shall illuminate the Low alarm LED (amber) and any relays programmed to respond to low gas alarm shall de-energize activating single-speed exhaust fans or low speed of two-speed exhaust fans plus make up air fans. Upon detection of 100 ppm CO in air or 1.5 ppm NO2 in air, the system shall illuminate the High alarm LED (red), the system audible alarm will be activated and any relays programmed to respond to high gas alarm shall de-energize activating high speed of two-speed exhaust fans or remote alarm devices. Audible alarm can be silenced from the front panel push button. In the event of a fail condition, the system audible alarm shall be activated and the fail LED on the front panel shall flash red for each sensor.

The contractor shall provide all wiring, conduit and interconnection required for a successful installation. Manufacturer shall provide one on-site visit to test and commission the gas detection system. A detailed report shall be provided after the site visit.

Approved manufacturer:

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