

SECTION 15xxx

PARKING GARAGES GAS DETECTION SYSTEM

1.0 GENERAL

- 1) Provide a complete installation of a toxic gas detection system including a main control panel, relay module and sensors that can be linked to a Controller or a Building Automation System (BAS).
- 2) The system shall include, but not be limited to, the following:
 1. Future expandability
 2. Display of toxic gas concentration
 3. Ability to modify alarm set points
 4. Display of alarm status

2.0 PRODUCTS

2.01 DETECTORS

E³Point Model E3SM + E3SCO (Carbon Monoxide), E3SM + E3NO2 (Nitrogen Dioxide)

- A. Transmitter will be powered by the control panel power supply rated at 24 Vac. Fully addressable gas transmitter must be capable of communicating digitally with controller through an RS-485 communication port. Gas transmitters must be installed in a true daisy chain with an end of the line resistor on the last transmitter. The gas transmitter will incorporate an electrochemical cell for toxic gas monitoring and catalytic bead sensor for combustible gases. Unit sensing cell must compensate for variations in relative humidity and temperature to maintain high levels of accuracy.
- B. When placed in a network configuration the transmitter will be capable of transmitting gas concentrations through the controller. For local activation of fans or louvers (or other equipment) an on-board DPDT relay 5 A, 30 Vdc or 250 Vac (resistive load) will be activated at programmable set points (and programmable time delays) through the control panel. An LCD display will provide gas concentration readings.
- C. Transmitter will be capable of operating within relative humidity ranges of 5-95% and temperature ranges of -4° F to 104° F (-20° C to 40° C).
- D. Unit will be certified to ANSI/UL 61010-1 label and CAN/CSA-C22.2 No. 61010-1. Transmitter must be manufactured in an ISO 9001-2000 production environment.
- E. The transmitter should have a plug-in capability for a gas cartridge with a smart sensor capable of self-testing.
- F. For local activation of audible alarms, the transmitter shall have an on-board device able to generate an audible output of 85 dBA @ 10 ft (3 m).

Detector alarm levels are to be activated and the unit is to be installed in accordance with the following parameters:

TOXIC GASES	1st ALARM SET POINT (TLV-TWA)	2nd ALARM SET POINT (TLV-STEL)	3 rd ALARM SET POINT	MOUNTING HEIGHT	COVERAGE RADIUS
Carbon Monoxide (CO)	25 PPM	100 PPM	225 PPM	5 ft above finished floor	50 ft
Nitrogen Dioxide	.7 PPM	2 PPM	9 PPM	1 ft below ceiling	50 ft

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Local Building Codes recommendations take precedence over these parameters. Coverage can differ depending on application

2.02 CONTROLLER: 301-C

A. The control panel must be capable of communicating digitally with the networked transmitters and relay modules through three RS-485 Modbus communication buses. Each communication bus must be capable of accepting a combination of up to 96 addressable transmitters, relay modules, or annunciator panels at a maximum distance of 2,000 feet. The power supply shall be of either 24 Vac or 24 Vdc

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B. The controller will manage four internal DPDT relays at fully programmable alarm levels (and within programmable time delays) and be capable of activating multiple relay modules of eight relays each. The relay rating will be no lower than 5 A, 30 Vdc or 250 Vac (resistive load).

C. The controller must include a self-test function that allows for the activation/deactivation of all the programmed outputs by simulating a continuous 5% increase/decrease value until the maximum/minimum value is reached.

D. The controller must include a real-time clock that enables operation of the outputs for a specific timeframe.

E. The controller must also include an energy saving feature that allows for output operation on alarms set at the max, min or average value of a specific group of transmitters. This feature must also allow for the activation of outputs upon a certain number of a specific group ($\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$) of transmitters reaching their alarm levels. A total of 128 groups can be assigned.

F. The controller will indicate the exact concentration of gas, the gas detected, and the location of the sensor by sweeping through the network and displaying the detected levels at each point on a graphic LCD display.

2.03 ACCESSORIES

A. Detector Guards E3PT- GUARD

The grid is made of a 9-gauge steel wire. The guard must be designed to allow calibration without removing the guards.

B. Splash guard enclosure (ECLAB)

ECLAB is made of plastic and allows E3 Point sensors to be mounted inside protective enclosure. Unit includes inlet baffles to facilitate airflow.

3.00 EXECUTION

3.01 INSTALLATION

A. Install carbon monoxide and nitrogen dioxide gas monitoring equipment including sensors, audible alarms, control panels as shown on Contract Drawings, and as recommended by manufacturer of equipment, and as required by authorities having jurisdiction.

B. Install conduit and wiring from sensors to control panel and to the fan starters/ HVAC control panel as recommended by manufacturer of equipment.

3.02 SAMPLE SEQUENCE OF OPERATION

A. If any CO sensor detects first alarm at 25 PPM or any NO2 sensor detects first alarm at .7 PPM, the exhaust fans operate and motorized dampers open. First alarm levels shall have a (30) second before delay in order to confirm sustained presence of gas concentrations. Low Alarm indicators light on Gas Monitoring System (301-C-DLC-BIP) reflects point in alarm. If toxic gas not cleared after 10 minutes or the level reaches 100 PPM CO or 2 PPM, High Alarm indicator lights on the main panel. Contacts to operate the exhaust fans at high speed.

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3.02 COMMISSIONING

A. After installation, test and calibrate equipment to demonstrate operation of functions described above under sequence of operation by manufactures certified service technician.

B. Provide testing kits (including gas bottles) for testing and calibration by Commission technician.

3.03 WARRANTY.

A. Limited Warranty

Honeywell Analytics, Inc. warrants to the original purchaser and/or ultimate customer ("Purchaser") of Vulcain products ("Product") that if any part thereof proves to be defective in material or workmanship within twelve (12) months, such defective part will be repaired or replaced, free of charge, at Honeywell Analytics' discretion if shipped prepaid to Honeywell Analytics at 405 Barclay Blvd., Lincolnshire, IL 60069, in a package equal to or in the original container. The Product will be returned freight prepaid and repaired or replaced if it is determined by Honeywell Analytics that the part failed due to defective materials or workmanship. The repair or replacement of any such defective part shall be Honeywell Analytics' sole and exclusive responsibility and liability under this limited warranty.

END OF SECTION