

## SECTION 15xxx

### **PARKING GARAGES GAS DETECTION SYSTEM (Applicable for Maintenance Garages, Fire Stations, Loading Docks, and Ambulance Bays, according to Local Building Codes).**

#### **1.0 GENERAL**

- 1) Provide a complete installation of a toxic gas detection system including a main control panel, sensors, and audible/visual alarm devices that can be linked directly to 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. Automatic and manual fan start/stop
  6. Display of alarm status

#### **2.0 PRODUCTS**

##### **2.01 DETECTORS E<sup>3</sup>Point Model E3SB (Surface-mount) or E3DB (Duct-mount)**

- 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 a Building Automation System (BAS) through a BACnet MS/TP Master Node. 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 directly to the BAS. For local activation of fans or louvers (or other equipment) an on-board DPDT relay rated at 5 A, 30 Vdc or 250 Vac (resistive load) will be activated at programmable set points (and programmable time delays) through the BAS. An LCD display will provide local gas concentration readings.
- C. Transmitter will be capable of operating within relative humidity ranges of 5-95% non-condensing 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 (3m).

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

<b>GASES</b>	<b>1st ALARM SET POINT (TLV-TWA)</b>	<b>2nd ALARM SET POINT (TLV-STEL)</b>	<b>3<sup>rd</sup> ALARM SET POINT</b>	<b>MOUNTING HEIGHT</b>	<b>COVERAGE (RADIUS)</b>
Carbon Monoxide (CO)	25 PPM	200 PPM	225 PPM	5 ft (150 cm) above finished floor	50 ft (15 m)
Nitrogen Dioxide (NO <sub>2</sub> )	0.72 PPM	2.0 PPM	9.0 PPM	1 ft (30 cm) from ceiling	50 ft (15 m)
Hydrogen Sulphide (H <sub>2</sub> S)	10 PPM	15 PPM	20 PPM	1 ft (30 cm) above finished floor	23ft (7m)
Hydrogen (H <sub>2</sub> )	25% LEL	50% LEL	90% LEL	1 ft (30 cm) from ceiling	23ft (7m)
Oxygen (O <sub>2</sub> )	19.5 % Vol.	22.0 % Vol.	22.5 % Vol.	5 ft (150 cm) above finished floor	23ft (7m)
Methane (CH <sub>4</sub> )	25% LEL	50% LEL	90% LEL	1 ft (30 cm) from ceiling	23ft (7m)
Propane (C <sub>3</sub> H <sub>8</sub> )	25% LEL	50% LEL	90% LEL	1 ft (30 cm) above finished floor	23ft (7m)

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

## **2.02 ACCESSORIES**

### **A. Strobe and Horn type STAS for 24Vac, FHS-240 for 24 Vdc or STACKSTAS for 120 Vac**

Strobe & Horn combo unit will be capable of operating within relative humidity ranges of 0-100% and temperature ranges of -30° F to 150° F (-35° C to 66° C). Rating of horn will be no less than 72dB at 10 feet. Intensity of light will be no less than 40W and will flash at a frequency of 1 per second. Unit will be certified by CSA. Honeywell Analytics.

### **B. Power Transformer type T100VA, T200VA, T300VA or Class 2 device type T100VAC2, T200VAC2 or T300VAC2**

Transformer shall have an input voltage of 120 Vac and an output voltage of 24 Vac with a VA range of 50-300. Operating frequency shall be 60 Hz. Unit will provide insulation systems up to 130° C (50-1300 VA). Unit will operate at sound levels of less than 40 db. Transformers shall be of fused type.

### **C. Relay Modules VA301R8**

Relay module will be powered by the control panel's power output or by power transformer rated at 24 Volts AC or DC (always respect minimum voltage requirements at device). Module must be capable of communicating digitally with the Honeywell, Inc. controller through an RS-485/MODBUS communication port. Relay module will have eight relays rated at no lower than 5 A, 30Vdc or 250 Vac (resistive load). Honeywell Analytics model VA301R8

#### **D. 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.

### **3.00 EXECUTION**

#### **3.01 INSTALLATION**

A. Install hazardous 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 exhaust fan motor starters/ HVAC control panel as recommended by manufacturer of equipment.

#### **3.02 SEQUENCE OF OPERATION**

A. If any NO<sub>2</sub> sensor detects .72 PPM gas, the exhaust fans operate and motorized dampers open. Low Alarm indicators light for point in alarm. If hazardous gas not cleared after 30 minutes or you reach 2 PPM, High Alarm indicator lights on the main panel and remote strobe & horn to activate, Audible Alarm to sound and contacts to operate the exhaust fans.

B. If any CO sensor detects 25 PPM gas, all fans operate and dampers open. Low Alarm LED lights for point in alarm. If any sensor detects 200 PPM gas, the Audible Alarm sounds and High Alarm indicator lights on the main panel and remote strobe & horn activate.

#### **3.03 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.

#### **3.04 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 4005 Matte Blvd., Unit G, Brossard, Quebec, Canada, J4Y 2P4, 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**