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SECTION 15xxx

INDOOR AIR QUALITY GAS DETECTION SYSTEM.
(According to ASHRAE 62.1, Local Building Codes and applicable for Office Buildings,
Schools, Auditoriums, Hospitals and Shopping Malls).

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1.0 GENERAL

1) Provide a complete installation of a Carbon Dioxide - CO2 - gas detection system with Temperature and Relative Humidity sensing capabilities and audible/visual alarm devices that are linked to a Controller Unit (Stand-alone system) or a Building Automation System (BAS).

2) The system shall include, but not be limited to, the following:

    1.   Future expandability
    2.   Display of CO2 concentration
    3.   Ability to modify alarm set points
    4.   Daisy-chain capability

2.0 PRODUCTS

2.01 DETECTION UNIT - IAQPOINT

A. The equipment analog version shall be able to communicate a 4-20 mA signal through an RS485 interface either to a VA301C Controller or a BAS. The detection unit digital version shall be able to communicate with a BAS using a BACnet MS/TP, Modbus or LON protocol. The detector shall use the Dual-Channel Non-Dispersive Infrared sensing technology (NDIR) and be able to monitor Carbon Dioxide (CO2) concentration within two ranges: 0-2000 ppm or 0-10 000 ppm (user selectable). It shall have a response time of less than 60 seconds for a 90% step change.

B. The detector shall also be able to simultaneously monitor the temperature (either in Celsius or Fahrenheit) and the Relative Humidity in addition to Carbon Dioxide. The temperature range shall be within -4 to 122 °F (-20 to 50°C) and the relative humidity range shall be within 0 to 95%. It shall have a footprint not larger than 3.9x2.5x1.2 " (99x63.5x30.5 mm). It shall be easily installed into an electrical box when wall-mounted and weighs no more than 0.44 lb (200 g). It shall have a duct-mount version that weighs no more than 0.66 lb (300 g) and that allows an easy and simple insertion of the sampling tubes and.

C. The detector's power requirements are 20 to 30 Vac or 18 to 30 Vdc, 0.5 A, 50/60 Hz. Its digital version shall be equipped standard with a graphic LCD 122 x 32 displays and be programmable by three buttons in the front panel. It shall allow a choice of communication baud rates among 4800, 9600, 38400 or 57600 Bd.

The sensor alarm level is to be activated at following level:

	Set point	Sensor Location	Coverage
Carbon Dioxide (CO2)	800 ppm	5 ft (1.5 m) above floor	20 ft (6 m)

Local Building Codes recommendations have preference over these parameters. Coverage can differ depending on application.

2.02 CONTROLLER VA301C (If a stand-alone system)

A. The control panel must be capable of communicating digitally with the networked transmitter and relay modules through RS-485 Modbus communication buses. Each communication bus must be capable of accepting a combination of up to 32 addressable transmitters, relay modules or annunciator panels at a maximum distance of 2000'. One power supply bringing either 17-27Vac or 24-38 Vdc (always respect minimum voltage requirements at device) will be sufficient to power the entire gas detection network including the controller and sensors.

B. The control panel 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. The control panel must include a 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.

C. The control panel must include a real-time clock that enables operation of the outputs for a specific timeframe. The control panel 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 allow for the activation of outputs upon certain number of a specific group (3/4, 1/2, 1/3, and 1/4) of transmitters reaching their alarm levels. A total of 128 groups can be assigned.

D. The control panel will be capable of communicating with an annunciator panel that can serve as a remote display panel in a secondary control room. The control panel 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. The data logging capability must provide long-term data logging to determine trends. The control panel must collect data automatically and must store it on a digital Flash media card.

2.03 ACCESSORIES

A. Power Transformers

B. Others

3.00   EXECUTION

3.01   INSTALLATION

Install the Indoor Air Quality monitoring system as indicated in the Contract Drawings and as recommended by the manufacturer of equipment in the User's Manual and in compliance with Local Codes.

3.02   SEQUENCE OF OPERATION

When the IAQ monitoring system detects a CO_2 level above the set point, fresh air will be circulated through the demand controlled ventilation. Fresh air will be circulated only through the areas of the building with high CO_2 levels, thus reducing the need for continuous ventilation and conditioning of outside air to internal settings.

3.03   COMMISSIONING

Follow the instructions indicated by the manufacturer of equipment in the User's Manual.

3.04   WARRANTY.

The IAQPoint has a limited warranty of 5 years.

END OF SECTION