**ENGINEERING SPECIFICATION**

**SPC3-1112 Series Carbon Monoxide Gas Controller**

# SECTION XXXXX CARBON MONOXIDE MONITORING AND CONTROL SYSTEM

## PART 1 – GENERAL

**1.1 RELATED DOCUMENTS**

Applicable portions of all documents listed in the index as well as Section XXXXX apply to work of this section.

**1.2 SCOPE**

Work under this section of the specifications shall include the furnishing and installation of a complete gas monitoring and control system including all related accessories.

**1.3 SUBMITTALS**

Furnish submittal data for the following materials and equipment in accordance with the requirements of Section XXXXX “General Requirements for Mechanical Trades.”

1. Gas monitoring and control system.

1. All related devices.

**PART 2 – PRODUCT SPECIFICATIONS**

**2.1 CONTROL PANEL**

1. The controller shall provide continuous monitoring of the designated gas levels in the assigned area and control the ventilation system via the output relays of the SPC3 controller in accordance with all applicable codes and standards.
2. The controller shall have the ability to interface via binary outputs or one (1) 0/4-20mA /0/2-10 VDC selectable output to any compatible electronic analog control, DDC/PLC control or automation system.

1. The controller shall have a built-in electrochemical CO. The sensor shall have plug-in technology for ease of troubleshooting and replacement of the element. Solid state sensing devices shall not be acceptable.
2. The controller shall accept one (1) remote 4-20mA analog input from other remote devices such as an additional gas sensor/transmitter, temperature or humidity sensor.
3. The sensor range shall be factory set to 0-250 PPM Carbon Monoxide. The controller shall cover between 5,000 and 10,000 square feet of the area and placement shall be as shown on the drawings.
4. The sensor stability and resolution shall be ± 3 PPM of reading and shall have a repeatability of ± 3% of reading, with a response time of less than 50 seconds to a 90% step change. The long-term output drift shall not exceed more than 0.4% of signal loss per month. The permissible ambient working temperature shall be 14°F to 122°F (-10°C to 50°C) and permissible ambient humidity of 15 to 95% RH, non-condensing. The sensor shall require no routine maintenance other than periodic calibration, and the life expectancy shall be 5 years under normal service. The manufacturer shall provide a 1-year warranty for materials and workmanship.
5. The control panel shall be powered by either 24VDC or 24VAC. The controller shall be capable of 4-stage control, assignable to up to two (2) relay outputs, one (1) 24 VDC switched output, (1) audible alarm and (1) 0/4-20mA /0/2-10 VDC selectable output assignable as low, high or average.
6. The control panel shall have a menu-driven keypad and status indicator LED’s located on the front; Flashing Orange = Low Alarm, Flashing Red = High Alarm, Yellow = Fault/Fail, Green = Power On. The controller shall have a manual reset for the audible alarm. The relays shall be selectable for latching or automatic reset.
7. The control panel shall include two (2) lines LCD display of 16 characters at a 1-digit resolution. The display shall show the status of all active sensors.
8. The controller shall be contained in a NEMA4X enclosure. The controller shall be installed on walls or columns approximately 5 feet above the floor or as shown on the drawings.
9. The CO detection system shall be NRTL performance tested and certified to ANSI/UL 2075.

**2.2 SUPPLIER**

The contractor shall supply the PolyGard® Series SPC3-1112 analog controller, by INTEC Controls; phone (858) 578-7887; fax (858) 578-4633.

**2.3 WARRANTY**

The manufacturer shall provide a 1-year warranty for materials and workmanship.

### PART 3 – EXECUTION

**3.1 INSPECTION**

General: Examine areas and conditions under which the gas monitoring and control system shall be installed. Related items shall be examined as well.

**3.2 CONTROL SEQUENCE**

The controller shall operate according to the specifications recommended by the manufacturer. The operation shall be as follows:

* + - 1. The controller shall be factory set to 25 PPM for the low alarm and 100 PPM for the high alarm.
			2. The controller shall continuously detect the surrounding air for any traces of carbon monoxide gas.
			3. When 25 PPM is reached, the sensor shall activate the low alarm relay and the corresponding devices, such as the exhaust fans, dampers, etc.
			4. If the gas level continues to increase to 100 PPM, the high alarm shall activate the associated remote devices, such as the horn/strobe and any other audio/visual alarms, etc.
			5. The sensor shall continue to monitor the specified gas and it shall not be possible to reset the alarm until the gas level has dropped either 4 or 10% below the alarm set points, as selected.
			6. Where VFD’s are used the analog output will be used to proportionally speed up the exhaust fan.

**3.3 OPERATION AND MAINTENANCE MANUALS**

The operation and maintenance manuals shall contain all information necessary for the operation, maintenance, replacement, installation, and parts procurement for the entire gas detection system. This documentation shall include specific part numbers.

**3.4 AS-BUILT DOCUMENTATION**

Following project completion and testing, the BAS contractor will submit as-built drawings reflecting the exact installation of the system.

**3.5 CALIBRATION/VERIFICATION**

Calibration shall not be necessary to verify system operation. The user shall verify operation by applying the appropriate test gas to the corresponding sensor. The calibration kit can be used for system verification or sensor calibration when required. The contractor shall provide one calibration kit. It may be purchased from INTEC Controls; phone (858) 578-7887; fax (858) 578-4633.