

## **Engineering Specifications**

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### **Sensepoint XCD**

1.0 General Description: The Sensepoint XCD is a comprehensive solution designed to operate in hazardous locations and utilize sensor technologies to detect toxic, flammable, and oxygen depletion gas hazards using infrared, catalytic bead, or electrochemical-based sensors. With a tri-color backlight LCD Sensepoint XCD provides “safety at a glance.” This specification details the operating characteristics and features of the Sensepoint XCD.

#### 2.0 Electrical requirements

- 2.1 Operating Voltage – The transmitter shall operate between 16VDC and 32VDC (24VDC Nominal).
- 2.2 The transmitter shall utilize removable terminals for sensor input, power, and output wiring. Terminals shall be labeled and provide a minimum of two inputs per polarized wire connections to allow for daisy chain power configuration.
- 2.3 The transmitter must allow for user configured transmitter output options as one of the following:
  - 2.3.1 Three wire source 4-20mA
  - 2.3.2 Three wire sink 4-20mA
- 2.4 The transmitter shall come standard with 3 relays and be capable of Modbus® RTU communication output.

#### 3.0 Mechanical Requirements

- 3.1 The enclosure shall be constructed of either 316 Stainless Steel or LM25 Aluminum painted with marine certified paint for corrosion protection.
- 3.2 The enclosure must have four standard integral mounting holes.
  - 3.2.1 The enclosure shall be capable of mounting to a standard 2” to 6” pipe utilizing a pipe mounting kit.
  - 3.2.2 The enclosure shall be capable of mounting to a ceiling utilizing a ceiling mounting kit.
  - 3.2.3 The use of mounting straps or brackets shall not be used for standard wall installations.
- 3.3 The enclosure shall have a minimum of two ¾” NPT or M20 threaded conduit/cable entries to allow for expanded mounting options.
- 3.4 The enclosure shall include certified stopping plugs to close unused conduit/cable entries.
- 3.5 The transmitter shall allow access to the terminals, wiring connections, and PCBA without the use of tools.
- 3.6 The transmitter must allow for the start-up and commissioning procedure to be completed without opening the enclosure.

3.7 The PCBA housing must mechanically self align in the enclosure, without the use of tools.

#### 4.0 Transmitter Features

- 4.1 The transmitter must utilize a common local user interface for electrochemical (toxic and oxygen), catalytic bead (combustible) and point and open path (combustible) infrared sensing technology.
- 4.2 The transmitter shall be capable of providing password controlled access security to the menu structure for calibration, maintenance and configuration of the device.
- 4.3 The transmitter shall be capable of simulating the alarm events for validation of proper system connection without the use of gas.
- 4.4 The transmitter shall be capable of producing a signal in the range of 4-20 mA to test warning and notification devices without the use of calibration gas.
- 4.5 The transmitter shall be capable of inhibiting the output during maintenance to avoid false alarms.
- 4.6 The transmitter shall allow for user configured calibration intervals reminder which provide an advance notification to the user that calibration is due.
- 4.7 The standard transmitter must include sensor weather protection and bump test port.

#### 5.0 Transmitter display

- 5.1 The transmitter display must be a tri-color backlight liquid crystal display (LCD).
  - 5.1.1 A steady "green" LCD must indicate normal operation mode
  - 5.1.2 A flashing "yellow" LCD must indicate a fault condition.
  - 5.1.3 A flashing "red" LCD must indicate a alarm condition.
- 5.2 The LCD must have a backlight for operation in limited visibility environments which automatically illuminates during integration of the unit.
- 5.3 The display must indicate the gas being monitored, status of the transmitter, sensor full scale range, and measurement units on the LCD.

#### 6.0 Non-intrusive calibration

- 6.1 All sensor/transmitters can be calibrated without opening any enclosures.
- 6.2 Calibration shall be completed via the local display utilizing magnetic switches.
  - 6.2.1 The device shall not use clamp on devices or wireless remote controls to perform calibration or configuration operations.
- 6.3 Calibration of the sensor shall be so that only one person is required to complete calibration.
- 6.4 Successful calibration must be visually indicated via the LCD.
- 6.5 Sensors shall utilize a pluggable socket design for easy replacement of sensors in the field without the need for disconnecting wires inside of the transmitter.

## 7.0 Sensing technology

7.1 The transmitter must utilize a common local user interface for electrochemical (toxic and oxygen), catalytic bead (combustible) and point and open path (combustible) infrared sensing technology.

### 7.2 Electrochemical (toxic and oxygen) sensors

7.2.1 Sensors shall be contained in sensor modules mounted external to the main enclosure.

7.2.2 The full scale range of the sensor shall be configurable.

7.2.3 The transmitter shall employ a cell fault diagnosis routine to check for cell presence, cell dry out, and cell open or short circuit. In the event of a cell failing this test, a sensor fault shall be displayed. This fault diagnosis will be automatically initiated by the transmitter at 8-hour intervals. It must also be initiated on power up, sensor exchange, or sensor cell exchange.

7.2.4 Sensors shall employ a dual-reservoir design to increase performance in extreme environments. The sensor design must allow for electrolyte expansion in high humidity environments to prevent cells from bursting.

### 7.3 Catalytic bead and infrared combustible sensors

7.3.1 The catalytic bead sensor must utilize specially matched pairs of poison resistant combustible gas detection elements.

7.3.2 The catalytic bead sensor must have a typical operation life greater than 5 years.

7.3.3 Sensors shall be contained in sensor modules mounted external to the main enclosure.

7.3.4 The catalytic bead sensor shall detect for an over range condition and report the condition.

## 8.0 Transmitter Outputs

8.1 The standard transmitter output signal shall be 4 to 20mA.

8.2 The transmitter shall provide for the following outputs:

8.2.1 Modbus® digital communication protocol via a pluggable terminal block on the Modbus® interface circuit board. The Modbus® RTU protocol shall use ASCII/Hex protocols for communication.

8.2.2 Three form "C" alarm and fault relays.

8.2.2.1 Relays shall be single-pole, double-throw rated at 5 amps at 240VAC.

8.2.2.2 Transmitter shall provide a remote reset for alarm silencing

8.2.2.3 The relays shall be capable of configuration for:

8.2.2.3.1 Latching / Non-Latching

8.2.2.3.2 Normally Open / Normally Closed

8.2.2.3.3 Alarms rising / Alarms falling

## 9.0 Approvals

9.1 The transmitter shall have the following hazardous area approvals:

9.1.1 UL Class I, Div 1, Groups B, C, and D; Class 1, Zone 1 (-40C to 65C)

9.1.2 CSA Class 1, Div 1, Groups B, C and D; T5 Tamb (-40C to 65C)

9.1.3 ATEX – EX II 2 GD Ex d IIC Gb T6 (Ta -40C to 65C): IP66

9.2 The transmitter shall have the following performance approvals:

9.2.1 CSA 22.2 No. 152

9.2.2 IEC/EN 60079-29-1, EN 61779-4:2000 Toxic and Oxygen

10.0 Manufacturer Capability Requirements - As a minimum, the gas monitoring equipment manufacturer must meet the following requirements.

10.1 Manufacturer shall be capable of supplying all equipment necessary to check or calibrate the sensor/transmitter.

10.2 The manufacturer must be capable of providing on site service with factory trained personnel.

11.0 The transmitter shall be a Honeywell Analytic Sensepoint XCD or equivalent.