Honeywell

Engineering Specifications

Searchline Excel

GENERAL: This specification details the operating characteristics of the Searchline Excel Open Path Hydrocarbon Gas Detector.

1.0 ELECTRICAL:

1.1 Operating Voltage: The detector shall operate between 18 and 32 VDC (24VDC nominal)

1.2 The operating current draw shall not exceed:

1.2.1 Transmitter

1.2.1.1 Turbo-mode (below 0°C): 7.5W max

1.2.1.2 Normal operation: 5.5W max

1.2.2 Receiver: 8W max

1.3 The device wiring shall be either:

1.3.1 3-wire current source

1.3.2 3-wire current sink

2.0 MECHANICAL:

2.1 The detector range shall be indicated based on the customer requirements.

2.1.1 Short range: 15 ft to 130 ft

2.1.2 Medium range: 65 ft to 390 ft

2.1.3 Long range: 390 ft to 650 ft

2.2 The Transmitter and receiver shall be mounted upon a robust, adjustable mounting bracket which bolts to a mounting plate designed to accommodate a variety of junction boxes, accessories, and mechanical mounting configurations.

2.3 The transmitter/receiver enclosure material shall be constructed of 316 stainless steel

2.4 The detector shall be suitable for use in a hazardous areas

2.5 The detector shall be IP 66/67

2.6 The detector shall be certified to operate from -40°C to +65°C

2.7 The system shall be designed to allow installation and alignment to be performed by a single technician.

2.8 The system shall contain no moving parts.

2.9 Accessories:

2.9.1 The system shall include an option for an installation kit which includes:

2.9.1.1 Junction box

2.9.1.2 Mounting plates

2.9.1.3 Flexible conduit and

2.9.1.4 Related hardware

2.9.2 The system shall provide an option for an alignment kit which includes:

2.9.2.1 Telescope

2.9.2.2 Carry case

2.9.2.3 Gas test filters

2.9.2.4 Handheld interrogator (optional)

2.9.3 The system shall be supplied with two sunshade/deluge protectors for protection against direct sunlight, heavy rainfall, and washdowns.

3.0 SENSOR TECHNOLOGY:

3.1 General

3.1.1 The open path gas detector shall consist of a transmitter unit that sends an infrared beam to a receiver unit up to 650 feet away and can be located where a flammable hydrocarbon gas cloud is likely to occur.

3.1.2 The detector shall operate on the principle of infrared absorption.

3.1.2.1 The transmitter should produce a collimated infrared beam produced by a Xenon arc flashlamp.

3.1.2.2 The infrared signal shall be collimated using mirrors to enable a more uniform beam, thus reducing alignment sensitivity.

3.1.3 The transmitter beam shall be produced in such a way that it generates a distinctive signature that allows the receiver to differentiate between the beam pulses and both natural and artificial sources of infrared radiation.

3.1.3.1 The transmitter flashlamp shall pulse at precisely 4Hz for approximately one microsecond.

3.1.3.2 The precise timing and short duration shall produce a distinct optical signature.

3.1.4 The receiver shall collect the infrared radiation from the transmitter and perform measurements to enable hydrocarbon gases in the beam path to be detected.

3.1.4.1 The receiver shall utilize two filtered detectors which serve as the reference and the sample.

3.1.4.1.1 The sample detector input shall be filtered at wavelengths where strong infrared absorption is exhibited by the target gas.

3.1.4.1.2 The reference detector input shall be filtered at nearby wavelengths where strong infrared absorption is not exhibited by the target gas.

3.1.5 The system shall incorporate heated optics designed to minimize the build-up of humidity, condensation, snow, or ice on the glass windows that could obscure the optics in extreme conditions.

3.1.5.1 The transmitter shall be capable of configuration in turbo heating mode for use in conditions of low ambient temperature to provide additional heating power to minimize condensation, frosting, and snow buildup.

3.1.5.2 The receiver shall utilize proportional heating controlled by the internal microcontroller and adjusted based on window temperature.

3.1.6 The system shall be designed for use in potentially hazardous environments.

3.1.7 The system shall operate in the presence of catalytic poisons without impact to the operation of the sensor.

3.1.8 The system shall not require the presence of oxygen.

3.1.9 The system shall operate from a range of 0 – 5 LEL meters (LEL.m) of methane as standard with the capability of factory configuration to other hydrocarbon gasses

3.1.10 The receiver shall be microprocessor controlled with integral self-diagnostics and fault finding capabilities.

3.1.11 The detector shall be proven in use to provide immunity from sunlight and minimize the effects of environmental factors such as rain, fog, ice, snow, and condensation.

3.1.12 The infrared beam shall be invisible and eye safe.

3.2 Repeatability

3.2.1 The certified repeatability shall be < +/- 0.4 LELm.

3.3 Response time

3.3.1 The system speed of response shall be T90 < 3 seconds.

3.4 Operating Humidity

3.4.1 The detector shall operate in a range of 0 – 99% rH (non-condensing).

4.0 COMMUNICATION:

4.1 The primary output of the receiver shall be a signal in the range of 4 – 20mA and is available as either:

4.1.1 Current source

4.1.2 Current sink

4.2 The system shall indicate equipment warnings and faults with a signal of less than 4mA.

4.3 The receiver shall provide a built-in RS485 digital communications link.

5.0 CERTIFICATIONS / APPROVALS:

5.1 The detector shall have Class I, Div 1, Groups B, C & D approval.

5.2 SIL 2 certifications

5.2.1 The detector shall be certified to SIL requirements as per IEC 61508 such that in a 1oo1 system the device is suitable for use in a SIL2 system.

6.0 MANUFACTURER CAPABILITY REQUIREMENTS:

6.1 As a minimum, the gas monitoring equipment manufacturer must meet the following requirements:

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

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

7.0 DETECTOR:

7.1 The detector shall be Searchline Excel or equivalent.

Find out more

www.honeywellanalytics.com

Contact Honeywell Analytics:
Honeywell Analytics Inc.
405 Barclay Blvd.
Lincolnshire, IL 60069
USA
Tel: +1 847 955 8200
Toll free: +1 847 955 8210
Fax: +1 847 955-8210
detectgas@honeywell.com

Technical Services
ha.us.service@honeywell.com

www.honeywell.com

10/10