GENERAL MONITORS
Protection for life.

MODEL IR400

Infrared Point Detector for Combustible Gas Detection

Features

- No routine calibration required
- True fail-to-safe operation
- Multiple communication outputs
- Heated optics
- Dirty optics indication
- Wireless capability

Benefits

- Low maintenance
- True gas detection performance
- Provides complete status and control capability in the control room
- Eliminates condensation
- Discriminates between true fault and cleaning requirements
- Compatible with ELPRO Technologies wireless devices

Description

The Model IR400 infrared (IR) point detector is a microprocessor-based combustible gas detector that continuously monitors combustible gases in the lower explosive limit (LEL) range and provides a 4 to 20 mA analog signal proportional to the 0 to 100% LEL concentration. The detector also monitors other conditions such as supply voltage and optical path integrity.

The IR400 detection principle is based on measuring the absorption of infrared radiation passing through a volume of gas using a dual beam, single detector method. The IR detector measures the intensity of two specific wavelengths, one at an absorption wavelength and another outside of the absorption wavelength. The gas concentration is determined by a comparison of these two values.

Configurations with analog output, Modbus, and HART are available. The IR400 provides a two-wire RS-485 addressable communications link conforming to the Modbus protocol that is used to monitor the IR400's status and settings in order to simplify installation and maintenance. Data available through HART or Modbus, such as configuration device settings and stored maintenance records, can be used to perform diagnostics and take corrective action before a problem occurs.

The IR400 is calibrated at the factory and needs no routine field calibration. It requires only a periodic cleaning of the windows and re-zeroing to ensure dependable performance.

Applications

- Chemical Plants
- Compressor Stations
- Drilling and Production Platforms
- Fuel Loading Facilities
- LNG/LPG Processing and Storage Facilities
- Oil Well Logging
- Refineries
- Wastewater Treatment Facilities

MODEL IR400

System Specifications

Detector Type: Infrared absorption type

Measuring Range: 0 to 100% LEL
0 to 100% by volume (methane only)

Gases: Methane, propane, ethane, butane, hexane, pentane, benzene
Consult factory for other gases

Detector Life: Greater than 5 years

Accuracy: (@ 25°C) ± 3% LEL at < 50% LEL reading
± 5% LEL at > 50% LEL reading

Zero Drift: < 2% per year

Response Time: (with 100% LEL methane applied)
T50 < 7 s, T60 < 8 s, T90 < 10 s

Readout/Relay Display Modules: DC110; DC130; TA102A; IR4000 display, and relay alarms

Accessories: Junction box, duct mount junction box, calibration cup, flow block, splash guard, rain guard, portable purge calibrator

Classification: Class I, Divisions 1 & 2, Groups B, C & D
Ex d, IIB+H_2 T5, IP66, Type 4X
Ex tD A21 T100°C

Warranty: Two years

Approvals: ATEX, IECEx, CE Marking, FM 6310, 6320 and CSA 22.2 No. 152-M1984 Performance Approved
HART Registered, SIL 3 suitable
FM Certified to IEC 61508

Environmental Specifications

Operating Temperature Range: -40°F to +167°F
(-40°C to +75°C)

Storage Temperature Range: -58°F to +185°F
(-50°C to +85°C)

Humidity: 5% to 100% RH, non-condensing

Electrical Specifications

Input Power: 20-36 VDC @ 200 mA max.
24 VDC nominal

Analog Signal: 0-21.7 mA (600 Ohms max.)

Start up, Fault (non-HART)	0 mA
Start up, Fault (HART)*	1.25 mA
Cal, Zero, Gas Check*	1.5 mA
Dirty Optics*	2.0 mA
0 to 100% LEL	4 to 20 mA (proportional)
Over-range	20 to 21.7 mA

** Under HART, the analog output minimum level can be configured as 3.5 mA or as stated above, depending on user selection.*

RFI / EMI Protection: Complies with EN55011, EN50270

Cable Requirements: Max. distance between IR400 and power source @ 24 VDC nominal (20 Ohm loop resistance):
14 AWG (2.0 mm²) – 2606 ft (794 m)

Max. distance for analog output (500 Ohms max):
14 AWG (2.0 mm²) - 9000 ft. (2740 m)

Faults Monitored: Re-calibration Error, EPROM Checksum Error, Optics Failure / Blockage; Low Supply Voltage, EEPROM Checksum Error, Reference or Active Lamp Failure, Heater Failure, Time to Re-zero unit, Short circuit on CAL_IO wire

RS-485 Output: Modbus RTU, suitable for linking up to 128 units or up to 247 units with repeaters

Baud Rate: 2400, 4800, 9600, or 19200 BPS

HART: *(optional)* HART 6, HART Device Description Language available. AMSAware

Wireless Communication: Available with ELPRO Technologies wireless devices

Mechanical Specifications

Diameter: 2.9 inches (74 mm)

Length: 8.87 inches (225 mm)

Weight: 3 lbs (1.35 kg) - aluminum
6 lbs (2.7 kg) - stainless steel

Mounting: 3/4" NPT

Housing: Marine aluminum or stainless steel

Standard Configuration: IR400-0-01-1-2-0-1-0
Methane, Modbus, aluminum, splashguard w/screen, no junction box

Specifications subject to change without notice.

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