

Model GIR900 Infrared Combustible Gas Sensor



- *Optical gas detector based on infrared operating principle*
- *Immune to poisoning*
- *Factory calibrated. No field calibration required*
- *No moving parts, no maintenance*
- *No Oxygen required to detect hydrocarbons*
- *Reading immune to wind velocity*
- *Suitable for on-shore or off-shore use*
- *Designed to UL, CSA, FM and CENELEC standards*
- *0-20 mA Analog output*
- *Maintains calibration even after exposure to high gas concentrations*
- *Continuous background of hydrocarbon gas does not shorten life*

THE DETECTOR

The GIR900 Infrared Gas Sensor is a completely self-contained device that measures the concentration of hydrocarbon gas accumulated in a protected area and transmits this information to a central point.

OPERATING PRINCIPLE

The GIR900 Infrared Gas Sensor uses the proven non-dispersive infrared (NDIR) principle to detect and monitor the presence of gas. Using an infrared source lamp and an optical sensor with a narrow-band filter, an analysis of the optical absorption through the gas allows the concentration of the target gas to be determined. The strong fundamental absorption band centered at 3.32 micrometers is used for the detection of hydrocarbons. This allows short optical path lengths to be used while maintaining good resolution. A second infrared sensor operating at a wavelength not affected by the target gas is used to eliminate effects resulting from ambient and physical variations. These include temperature changes, source and filter degradation and particle scattering.

OPERATIONAL CHARACTERISTICS

The GIR900 is designed to operate over the 0-100% LEL range and is particularly suitable for the reliable monitoring of general hydrocarbon levels in industrial safety applications.

Each GIR900 includes a high-reliability microprocessor based transmitter/controller. The transmitter converts the output from the infrared sensor elements to a standard 0-20 mA signal which may be connected to a suitable NOVA-5000 Gas Detection Module, or to any other device with a standard 0-20 mA input. Output levels between 4 and 20 mA indicate the measured concentration of gas (0 to 100% LEL). An output of 2 mA indicates that the detector is in the calibration mode, while 0 mA indicates a malfunction or fault. Calibration of the transmitter output is initiated by activating the "calibrate" input on the transmitter. Calibration is completely automatic, requiring no hand adjustment of potentiometers. Calibration data is stored in the non-volatile RAM of the transmitter.

The GIR900 is suitable for the most demanding applications. A large body mass insures excellent vibrational characteristics when used off-shore. Corrosion resistant materials permit use in harsh environments.



ARCHITECTS AND ENGINEER'S SPECIFICATIONS

Combustible gas sensing capability shall be provided by poison immune infrared gas detectors, contained in explosion-proof housings. The detector shall include control electronics which converts the measured gas concentration in percent LEL to the industry standard 0-20 mA signal. Calibration shall be completely automatic, with data stored in non-volatile RAM in the detector, and shall not require any operator adjustment. The detector shall be suitable for on-shore or off-shore use, and the manufacturer's data shall so state. Safety Systems Technology Model GIR900 Infrared Combustible Gas Sensor, or approved equivalent, shall be supplied.



**Model GIR900 Sensor
with 950-1 Junction Box**

TECHNICAL SPECIFICATIONS

Power Input:	24 Volts DC nominal Will operate within specifications at any supply voltage between 16 and 32 VDC.
Range:	0-100% LEL Hydrocarbon
Warm-up Time:	6 minutes operational, 20 minutes to specification
Operating Temperature:	-4°F to +122°F, -20°C to +50°C
Relative Humidity:	0 to 95% non-condensing
Ingress Protection:	IP40, IP52 (with dust cover), IP66 (with spray shield)
Signal Output:	0.16 mA per % LEL
Resolution:	2% LEL
Repeatability:	Zero: $\pm 0.1\%$ of full scale Signal: $\pm 0.05\%$ of full scale
Maintenance Interval:	6 months for verification of performance only
Analog Output:	Standard 0-20 mA, self-powered source
Size:	2.2 inches (5.8 mm) diameter x 3.5 inches (88.9 mm) long Conduit connection is 3/4 inch NPT thread
Weight:	2 pounds (0.91 kg)
Approval Code:	Class I Division 1 Groups B,C,D

ORDERING INFORMATION

PART NO.	DESCRIPTION
900-x	Model GIR900 Infrared Combustible Gas Sensor with 0-20 mA output. Stainless Steel housing. Replace x in part number to specify desired gas: 2=Methane, 3=Propane, 5=Butane, 7=Ethane, 8=Pen-tane.

OPTIONAL ACCESSORIES

950-1	Junction Box with mounting ears and terminal block for sensor connections. Copper free Aluminum. Class I Groups C,D. Two 3/4 inch NPT connections for conduit or cable glands.
851-1	Rain Shield to protect sensor from rain or snow
852-1	Dust Cover with 40 micron filter to protect sensor from airborne dust
854-1	Duct Mounting Assembly Kit for extracting a sample from an air duct
854-1-10	Water Spray Shield to protect sensor from hose sprays
858-1	Remote Calibration Adapter for applying test gas to sensor.



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