



Features – Functions - Benefits

- Optical NDIR sensor technology
- Range of sensitivity 0-5000 ppm CH4
- Minimum detectable level 100 ppm
- Built-in color graphic HMI
- Embedded 12 month 1/m data logging
- Output - Modbus RTU 9600 bps
- No periodic calibration required
- Annual bump test and zero recommended
- > 10 year life expectancy

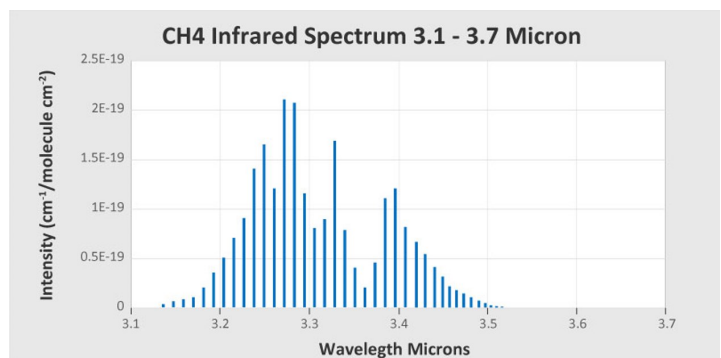
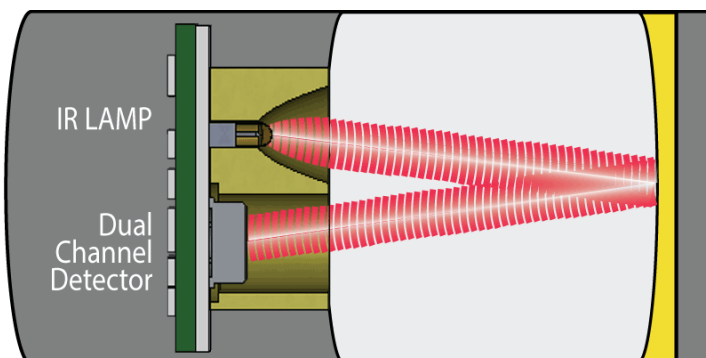
Description

Safeguard Analytics Model **IR-5100D-CH4** is an infrared based gas sensor designed to continuously detect and monitor combustible hydrocarbon gas in ambient air. Hydrocarbon gases are detected and measured using the non-dispersive infrared radiation absorbance technique as a source signal. The sensors are equipped with a built in real time digital display, magnetic interface switches and full script user interface instructions. Other options include a 4-20 mA DC analog output and local alarm relays.

Model IR-5100D-CH4 infrared gas detection sensors consist of a light source and a dual channel pyro-electric detector mounted in a common optical chamber with an external retroreflector to provide an open gas sensing chamber. Each dual channel detector is fitted with two optical filters. One channel functions as a reference detector and is fitted with a filter where there are no particular gas absorbance lines. The other channel functions as an active detector and is fitted with a filter that lets through IR light in the wavelength of the target gases – hydrocarbons typically absorb in the 3.25-3.4 micron region. As gas enters the optical chamber less of the source radiation reaches the active detector while the reference detector is unchanged. This differential in light reaching the pyro-electric detectors is the measurement signal.

Each IR-5100D-CH4 is calibrated at the factory and requires no routine field calibration. Annual maintenance should include a visual inspection, a gas sample bump test and cleaning of the sapphire window.

Principle of Operation



Model SA-5100D-CH4

Specifications*

System

Detector Type	Non dispersive infrared (NDIR) HC absorption
Detection Method	Diffusion captive open path optical chamber
Range of Sensitivity	0-5000 ppm CH4
Minimum Detectable Level	100 ppm ± 25 ppm
Response Time	T90 less than 90 seconds
Warranty	2 Years

User Interface

Digital Display	Real time readings and full script user
User Interface	Magnetic Wand- zero and span calibration
System Status Indicators	Green – normal operation Amber – level 1 warning Red – level 2 warning Blue – fault condition detected
OpCheck Performance Diagnostics	Zero stability Response time Span drift Signal stability Signal strength

Mechanical

Enclosure Material	Electropolished 316 stainless steel
Dimensions	3.4" OD, 8.1" L 86.5mm OD, 206 mm L

Electrical Specifications

Input Voltage	10-30 VDC, Nominal 24VDC
Power Consumption	Gas Measurement Module 2.5 watts
Serial Output	Modbus RTU 9600 bps
Optional Local Alarm Relays	Alarm level 1 & 2 + Fault Form "C" 2A contacts

Area Classification

Hazardous Location	Class I; Division 1; Groups BCD Class I Zone 1; Group IIB +H2
--------------------	--

Environmental

Temperature Range	-40°F to +158°F, -40°C to +70°C
Humidity Range	15-95% non-condensing

*Specifications subject to change without notice

Response Factor Data ** Methane 1.0

Gas	RFD	Gas	RFD	Gas	RFD	Gas	RFD	Gas	RFD
Acetic Acid	.38	Cyclopropane	1.00	Ethyl Benzene	1.07	Methanol	.41	Iso-Propyl Alcohol	.54
Acetone	.38	Decane	1.00	Ethylene Oxide	2.39	n-Nonane	1.53	Propylene	.80
Benzene	1.07	Diesel	.41	n-Heptane	.98	n-Octane	1.34	Toluene	1.00
n-Butane	2.39	Ethane	.38	n-Hexane	1.00	n-Pentane	.77	Vinyl Acetate	1.43
Cyclopentane	.98	Ethylene	.38	Methane	1.00	Propane	.63	Xylene	1.00

**Unless specified otherwise Model SA-5100L HC sensors are calibrated to a methane response factor. Refer to the product guide to order sensors calibrated for other hydrocarbon detection applications

Optional Components and Accessories

Part Number	Description	Part Number	Description
909-30008	Cast aluminum junction box w/solid lid	909-10007	Local display (MODBUS MASTER) (data logger)
909-30009	Cast aluminum junction box w/glass lens	909-10004	Local alarm relay module
909-30010	316 stainless steel junction box w/solid lid	909-10012	LoRaWAN transmitter module
909-30011	316 stainless steel junction box w/glass lens	909-10013	MODBUS transmitter module 915 MHz
909-10005	Standard connector board	909-10001	Magnetic wand



Phone: 936-342-2300

Email: sales@safeguardanalytics.com