

Ultima[®] OPIR-5 Open Path Gas Detector

Ultima OPIR-5 Open Path Detector for Hydrocarbon Gas Detection

Description

The Ultima OPIR-5 Detector is an open path IR gas detector that provides continuous monitoring of combustible hydrocarbon gas concentrations. The system consists of an IR source and receiver which continuously monitor for methane in both the 0 to 5000 ppm•meter and 0 to 5 LEL•meter range. A 0 to 2000 ppm•meter and 0 to 1 LEL•meter range is also available for monitoring propane. The Ultima OPIR-5 Detector provides two 4 to 20 mA analog signals proportional to each of the above ranges, in addition to a digital display and relay contacts.

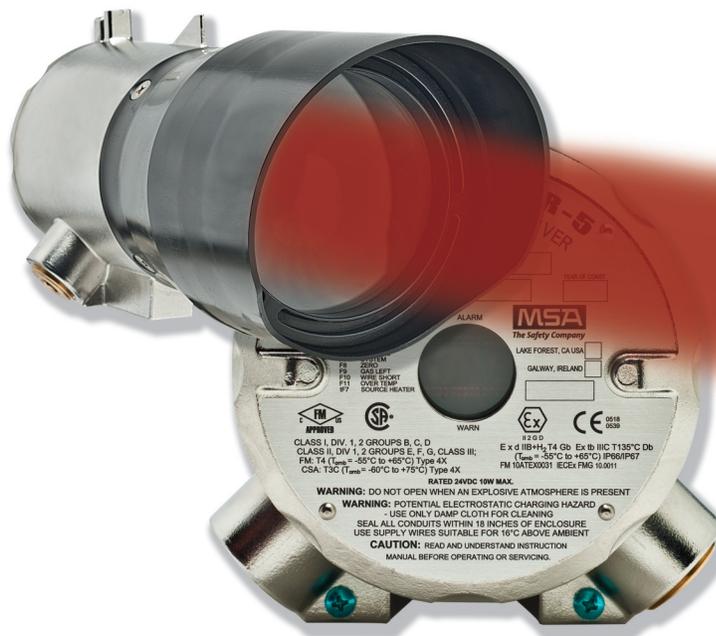
The Ultima OPIR-5 Detector is easily aligned using the digital display and adjustable mounting arms, therefore it does not require any bulky setup equipment (e.g. digital volt meters, handheld alignment aids). The Ultima OPIR-5 Detector's sensitivity can be checked by placing a test gas film in front of the receiver.

The Ultima OPIR-5 Detector is calibrated at the factory and needs no further calibration. It also requires little maintenance except for a periodic visual inspection, test gas film check, and cleaning of the windows to assure dependable performance.

Sensor data and status information from the receiver can be transmitted up to 9,000 feet to any industrial analog to digital (A/D) converter for use in multipoint computer-based monitoring.

Applications

- Compressor Stations
- Drilling and Production Platforms
- Fence Line Monitoring
- Fuel Loading Facilities
- Gas Turbines
- LNG/LPG Processing and Storage Facilities
- Petrochemical Tanks
- Tank Farms
- Wastewater Treatment
- Bus Garages, Train Stations and Tunnels



Features and Benefits

Dual detection range enables sensitivity to both small (ppm•meter) and large (LEL•meter) gas leaks

Performance approved for use in harsh environments

Single detection beam improves accuracy and reduces drift

Up to 100 meter path length

Multiple communication outputs (HART, ModBus, AMS Support) provide complete status and control capability in the control room

Unitized display for ease of operation and reduced cost

Automatic gain control compensates for dirty optics, rain and fog

System Specifications

Sensor Type	Infrared absorption detects hydrocarbon gases over an open path
Ranges	Methane 0 to 5000 ppm•meter 0 to 5 LEL•meter
	Propane 0 to 2000 ppm•meter 0 to 1 LEL•meter
Path Length	LEL•meter: 5-30 m, 20-100 m ppm•meter: 5-30 m, 20-100 m
Response Time	T ₉₀ ≤ 3 s
Repeatability	≤ ±5%
Linearity	≤ ±5% of full scale for each scale or ±10% of applied gas, whichever is greater
Classification	Class I, Div 1 & 2, Groups B, C & D; Class II, Div 1 & 2, Groups E, F & G Class III; Type 4X Class I, Zone 1, IIB+H2 II 2 G D, Ex d IIB+H2 T4 Gb Ex tb IIIC T135°C Db, IP66/67 (T _{amb} =-55°C to +65°C)
	Haz Loc T3C (T _{amb} =-60°C to +75°C);
Performance Verified	T4 (T _{amb} =-55°C to +65°C)
Calibration	No calibration required. Field background zero adjustment provided
Modes	Setup, alignment, test gas, run
Accessories	Test gas films, mounting arm, mounting base, scope, attenuation plate
Warranty	Two years
Approvals	CSA, FM, ATEX, IEC Ex, CE Marking. SIL-3 suitable. HART-registered.
Standard Configuration	OPIR5-1-1-1-1-2-2-1-1-1-1-1 Methane, dual 0-20 mA, 1.25mA HART, ModBus, relays, mounting arm, 20-100 m path length, NPT

Environmental Specifications

Operating Temperature Range	-67°F to +149°F (-55°C to +65°C)
Operating Humidity Range	0-95% RH, non-condensing

Mechanical Specifications

Housing	316 stainless steel
Source	5.3" dia. x 12.4" length (135 mm dia. x 315 mm length)
Receiver	5.3" dia. x 12.4" length (135 mm dia. x 315 mm length)
Conduit Entries (2)	¾" NPT (standard) M25 (optional)

Electrical Specifications

Input Power	20 to 36 VDC range 24 VDC @ 12 W (max.) – source 24 VDC @ 10 W (max.) – receiver (w/relays) 24 VDC @ 5 W (max.) – receiver (no relays, heater off) <i>Consult factory for lower power consumption options for other configurations</i>		
Dual Analog Signals	700 Ohm load max.		
		0-5000 ppm•meter	0-5 LEL•meter
	0 mA*	Startup/Fault	Startup/Fault
	1.5 mA*	Test Gas/Setup	Test Gas/Setup
	2 mA*	Beam Block	Beam Block
	4-20mA**	0-5000 ppm•m	0-5 LEL•m
	4-12 mA***	0-5000 ppm•m	-----
	12-20 mA***	-----	0-5 LEL•m
	21.7 mA	Over-range	Over-range
Relay Ratings	8 A @ 250 VAC / 8 A @ 30 VDC res. max. Four (4) SPDT - Fault, ppm Warning, LEL Warning and Alarm		
RS-485 Output	ModBus RTU with block and single data transfer modes		
Baud Rate	2400, 4800, 9600, 19200 or 38400 BPS		
HART	HART 6, HART Device Description available. AMS Device Management Support		
RFI/EMI Protection	Complies with EN 61000-6-4 and EN 50270		
Sample Cable Distances	For cable resistance of 3 ohms/1,000 ft, max. distance between OPIR-5 and power source @ 24VDC: - 14 AWG - 1,330 ft (405 m) - receiver - 14 AWG - 1,040 ft (317 m) - source		
	For 16 AWG cable with cable resistance of 5 ohms/1,000 ft, max. distance for analog output (100 ohms max.): - 10,000 ft (3,048 m)		
Wireless Communication	Available with ELPRO Technologies wireless devices		
Digital Display	LED indication of scale displayed; two digit, seven segment (auto range change)		

* HART units can be configured to never output current less than 3.5 mA if the host equipment is incapable of working below this level.

** 0 to 2000 ppm•meter and 0 to 1 LEL•meter on propane unit.

*** Using optional split range.

Note: This bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



MSA Corporate Center
1000 Cranberry Woods Drive
Cranberry Township, PA 16066 USA
Phone 724-776-8600
www.MSAnet.com
U.S. Customer Service Center
Phone 1-800-MSA-INST
Fax 1-800-967-0398

MSA Canada
Phone 1-800-MSA-INST
Fax 1-800-967-0398
MSA Mexico
Phone 01-800-672-7222
Fax 52-44-2227-3943
MSA International
Phone 724-776-8626
Toll Free 1-800-672-7777
FAX 724-741-1559

Offices and representatives worldwide
For further information:

