UltraSonic™ EX-5 Gas Leak Detector

UltraSonic EX-5 Gas Leak Detector for High-Pressure Systems

Description

The UltraSonic EX-5 Gas Leak Detector from MSA is used to detect airborne leaks from high-pressure gas systems. The detector responds to the ultrasound generated from gas releases in open, well-ventilated areas, where traditional methods of detection may be unsuitable or dependent on ventilation. Because the UltraSonic Detector responds to the source of a gas release rather than the dispersed gas, it is unaffected by changing wind directions, gas dilution, and the direction of the gas leak. With its wide coverage radius, a single unit can monitor a relatively large area.

The UltraSonic EX-5 Detector is immune to many false signals and can be configured to filter short timescale ultrasonic noise that can produce nuisance alarms. Frequencies below 25 kHz are removed by a high pass filter, effectively eliminating interference from audible and low frequency ultrasonic noise. At the same time, setting the alarm trigger level above the ultrasonic background noise ensures immunity to other noise sources. The result is a reliable method of detection, able to monitor environments with high levels of ultrasound such as turbine rooms and compressor stations.

The UltraSonic Detector also features the Senssonic™ patented self-test for full failsafe operation. This self-test checks the electrical integrity of the device and microphone every 15 minutes and ensures that the detector is operational at all times. In addition to a 4-20 mA output, the UltraSonic Detector is available with ModBus or HART to enable asset management and process improvement.

Applications

- Floating Production Storage and Offloading Vessels (FPSOs)
- Gas Compressor and Metering Stations
- Gas Storage Facilities
- Gas Turbine Power Plants
- Hydrogen Storage Facilities
- LNG / GTL Trains
- LNG Re-gasification Plants
- Offshore and Onshore Oil and Gas Installations
- Petrochemical Processing Plants
- Refineries
- Underground Gas Storage Facilities

Features and Benefits

Advanced high precision stainless steel microphone enables instant detection of pressurized gas leaks
Senssonic™ integrated acoustic self-test provides full failsafe operation
HART and ModBus communication options provide complete status and control capability in the control room
Stainless steel 316L explosion-proof housing for corrosion resistance in harsh environments
One-person check and calibration with traceable portable test unit delivers high reliability and trouble-free maintenance
Three-digit LED display shows actual sound pressure level and alarm indication
Event logging stores fault, sound check, calibration, and alarm event history (requires HART communication)

MSA
The Safety Company

System Specifications	
Detector Type	Ultrasonic (acoustic) gas leak detector
Detector Frequency Range	25 kHz – 70 kHz
Dynamic Range	58 – 104 dB
Test Sound Source Frequency	40 ± 3 kHz
Test Sound Pressure	100 dB, 60 mm from sound source
Pressure Requirements	150 PSI for methane. Lower pressures are possible especially with lighter gases (e.g., hydrogen). Use of heavier gases results in reduced coverage.
Detector Coverage (ref. methane):	*Very low noise areas* (<58 dB) 43-65' radius at leak rate = .22 lb/s (0.1 kg/s) 130' + at leak rates ≥ 2.2 lb/s (1.0 kg/s) *Low noise areas* (< 68 dB) 30-39' radius at leak rate = .22 lb/s (0.1 kg/s) *High noise areas* (< 78 dB) 16-26' radius at leak rate = .22 lb/s (0.1 kg/s)
Electrical Classification	
CSA/FM	Class I, Div 1 & 2, Groups B, C, D; Class II/III, Div 1 & 2, Groups E, F, & G; Type 4X (T_{amb}= -40°C to +60°C)
ATEX/IECEx	Ex d ia IIB+H2 T6 Gb Ex tb IIIC T85°C Db; IP66 T3C (T_{amb}= -40°C to +60°C)
Response Time	< 1 s (speed of sound)
Warranty	Two years
Approvals	FM, CSA, ATEX, IECEx, CE Marking, HART registered, SIL 3 suitable
Accessories	Portable test and calibration unit, wind screen, sun shield, mounting bracket
Standard Part Number	UEX5-5111 4-20 mA source output, ModBus and HART, 3/4" NPT, screw terminals

Environmental Specifications	
Operating Temperature Range	-40° F to 140° F (-40°C to 60°C)
Operating Humidity Range	10 to 95% RH

Mechanical Specifications	
Housing	Stainless steel 316L
Dimensions	7.99 x 7.99 x 7.91 in (203 x 203 x 201 mm)
Weight	16.5 lbs (7.5 kg)
Conduit Entries	M20 x 1.5 or 3/4" NPT
Mounting Holes	2x mounting screws – M8 x 19 max

Electrical Specifications		
Input Power	15 – 36 VDC, 250 mA max.	
Analog Signal	0 mA 1 mA 3 mA 4-20 mA	Start up, other errors* Pulsed acoustic error* Unit inhibit* 58 dB – 104 dB
Relay Ratings (optional)	8 A @ 250 VAC / 8 A @ 30 VDC res. max. Relay 1: Error/fault indication Relay 2: Indication of trigger level	
RS-485 Output (optional)	ModBus RTU, suitable for linking up to 247 units with repeaters	
Baud Rate	2400, 4800, 9600, or 19200 BPS	
HART (optional)	HART 6, HART Device Descriptor available, AMSaware support	
RFI/EMI Protection	Complies with EN61010-1 and EN61000-6-2	
Cable Requirements	Max. cable length between UltraSonic EX-5 and power source @ 24 VDC (20 ohm) 14 AWG – 5,928 ft (1,809 m)	

* *With HART, current values are 1.25 mA.*
Specifications subject to change without notice.

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:

MSA
The Safety Company

ID 07-8303-MC / Nov 2011