OBSERVER-*i*

Ultrasonic Gas Leak Detector

General Monitors

*The **OBSERVER-i** is the world's first ultrasonic gas leak detector equipped with Artificial Neural Network (ANN) real-time broadband acoustic sound processing technology. This technology is based on extensive studies and real recording of gas leak sounds and industrial background noise from a wide array of industry sources over the years. The ANN algorithm has been "trained" with these recordings to automatically distinguish between unwanted acoustic background noise and dangerous gas leaks.*

Description

With ANN technology, the OBSERVER-i makes it possible to fully analyze the sound spectrum as low as 12 kHz since common high pass filters are not used. This provides a broader leak detection range which also increases sensitivity to smaller gas leaks, without interference from unwanted background noise.

ANN technology enables the OBSERVER-i to be installed without time consuming "training" sequences, and provides industry-leading detection distance, with unprecedented suppression of false alarms. In addition, ANN technology ensures that the OBSERVER-i has the same gas leak detection coverage in high and low noise areas. The device requires no alarm set points or trigger levels to be configured, nor do these alarm parameters need to be adjusted if background ultrasound were to increase or decrease over time.

The OBSERVER-i is backwards compatible with earlier versions of the Observer by means of the Classic Mode setting wherein ANN is disabled and the legacy electrical interface is used.

The OBSERVER-i features the patented Senssonic™ self-test function. This well-proven self-test checks the device's electrical integrity and microphone every 15 minutes and ensures the OBSERVER-i is operational at all times. The microphone and the microphone windscreen are constantly monitored to ensure that the detector always has optimal sensitivity and detection coverage.

Features & Benefits

Features	Benefits
Artificial Neural Network (ANN)	Improved detection range and background noise rejection prevents false alarms
Senssonic™ integrated acoustic self-test	Failsafe operation
One-person acoustic sound check with traceable portable test unit	High reliability and trouble free maintenance
HART and Modbus	Provides complete status and control capability in the control room
Event logging	Stores fault, sound check, calibration, and alarm event history
Detects gas leaks from 2 BAR (29 psi) pressure	Very small gas leaks can be detected quickly

Applications

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

General Monitors by MSA

Specifications

System Specifications	
Detector Type	Ultrasonic (acoustic) gas leak detector
Background Noise Rejection Method	Artificial Neural Network (ANN)
Gas Leak Recognition Method	Artificial Neural Network (ANN)
Min. Acoustic Det. Frequency (ANN Mode)	12 kHz
Min. Detection Limit	40 dB (u)
Accuracy	±3 dB
Self-test	Performed every 15 minutes
Min. Pressure Requirement	2 BAR (29 psi)
Detector Coverage (ref. Methane)	**Enhanced Mode (ANN) (@ 0.1 kg/sec):** FQHI setting: 17 meters (56 ft.) Default *Ultra-high to low background noise* FQLO setting: 28 meters (92 ft.) *Medium to low background noise* **Classic Mode (@ 0.1 kg.sec):** Ultra-high: 7 meters (23 ft.) High: 12 meters (39 ft.) Medium: 18 meters (59 ft.) Low: 24 meters (79 ft.)
Response Time	< 1 s (speed of sound)
Approvals Classification	**ATEX/IECEx:** Ex d ia IIB+H2 Gb T6, Ex tb IIIC T85°C Db (Ta = –40°C to +60°C) **CSA:** Ex d ia IIB+H2 Gb T6, Ex tb IIIC T85°C Db **FM/CSA:** Class I, Div. 1, 2 Groups B,C,D; Class II, Div. 1, 2 Groups E,F,G; Class III, T5 (Ta = –40°C to +60°C)
Approvals	ATEX, CSA, FM, IECEx, CE HART 6.0 registered FM certified to IEC 61508 (SIL 3)
Accessories	1701 Test and Calibration Unit SB100 Bump Test Tool
Device Drivers	DDL, DTM available at *generalmonitors.com*
Warranty	2 years

Electrical Specifications	
Input Power	15–36 VDC, 250 mA max. 24 VDC, 170 mA nominal
Relay Ratings (optional)	8 A @ 250 VAC
Current Output (sink or source)	**Status Indications:** 0 mA: Start up, no power 1 mA: Pulsed acoustic error 3 mA: Unit inhibit **Classic Mode:** 4–20 mA, 40–120 dB (u) **ANN Mode:** 4–12 mA, 40–120 dB (u) 16 mA, warning 20 mA, alarm
EMC/RFI	EMC Directive 2004/108/EC EN 61000-6-2, EN 61000-6-4
Serial Digital Communication	HART, Modbus
Cable Requirements	Max. cable length between Observer-i and power source @ 24 VDC (20 ohm) 2.08 mm² (14 AWG) – 1,809 m (5,928 ft)
Environmental Specifications	
Operating Temperature Range	–40°C to 60°C (–40°F to 140°F)
Operating Humidity Range	10–95% RH, non-condensing
Mechanical Specifications	
Housing	Stainless Steel AISI 316L
Dimensions	203 x 203 x 201 mm (7.99 x 7.99 x 7.91 in)
Weight	7.5 kg (16.6 lbs)
Conduit Entries	M20 x 1.5 (additional ¾" NPT adapter available)
Mounting Holes	2 x mounting screws – M8 x 19 max
Ingress Protection	IP66 / Type 4X
Standard Configuration	OBSERVER i-1-1-1-1-1-1

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.*

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