Banshee343 Ultrasonic Gas Leak Detector
Wide Area Coverage For Toxic and Combustible Gases

The Banshee343 is an advanced leak detection system utilizing four ultra-sensitive acoustic sensors which constantly monitor wide areas for ultrasound generated from the release of pressurized gas. This advanced gas sensing technology never requires calibration or replacement, for the life of the instrument.

Ideally suited for monitoring well ventilated outdoor applications, the Banshee343 has been engineered to withstand even the most extreme conditions. Performance is not affected by inclement weather, wind direction, leak direction or any potential gas dilution with an instantaneous response to all gas types.

- **Instantaneous Response To All Gas Leaks (LEL or ppm)**

- **Certified temperature range of -55°C — +85°C**

- **'SonicCAL System' — Automated Self Test and Sensor Cleanse, Failsafe Operation and Maintenance Free**

- **Widest Area of Coverage, 40 Meter Radius Through Four Independent Sensors**

- **4-20 mA Analog, Relay, RS485 Digital Interface**

- **Certified Worldwide for Hazardous Locations**

- **Widest Dynamic Range Available, 50db — 160dB**

- **Innovative Mapping Tool Helps Operators Achieve Optimum Performance At Site Location**

- **Programmable Time Delays to Allow For False Alarm Sources (Pressure Venting, etc)**

Four Multi-Directional Sensor Heads
Quad, independent sensor heads provide the widest overall detection range and reduce the possibility of obstruction, common with a traditional single microphone design.

Field-proven Ultrasonic Sensor Principle
Advanced acoustic sensors utilize the proven method of ultrasonic gas leak detection to protect your plant and personnel, with hundreds of installations worldwide. Ultrasound is generated from pressurized leaks of any gas type, providing simultaneous flammable and toxic gas coverage. The presence of a concentrated gas cloud for detection is never required, making this technology ideal for wide area coverage in outdoor applications.

Sealed Ceramic Sensor Housing
Piezo-electric sensor heads are encased in a virtually indestructible ceramic housing and sealed against temperature, moisture and industrial contaminants.

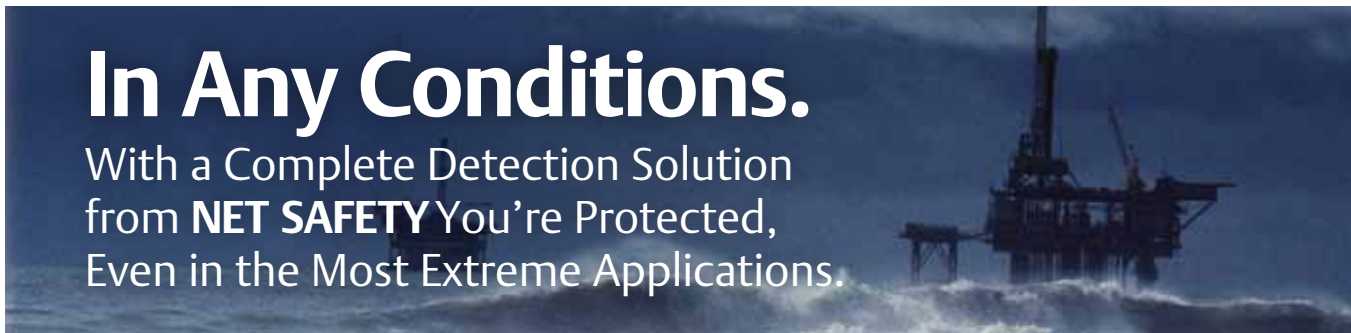### Sensor Design - They Just Keep Working
Each sensor is completely free of moving parts and will not age, will not drift, and will never need replacing under normal working conditions. Maintenance free protection with proven reliability.

Patented Failsafe 'SonicCAL System'
Our full diagnostic system runs an automated broadband self-test every 15 mins applying a true pressurized gas leak to confirm each sensors detection capability and removes any potential external contaminants such as sand, oil or dust.

Built for Extreme Conditions
Dealing with extreme heat or cold? We've got you covered with an operational temperature ranges of -55°C to +85°C! Corrosion resistant stainless steel housing is available, and every unit is rated IP66/67.

NET SAFETY MONITORING INC.

EMERSON™
Process Management

In Any Conditions.

With a Complete Detection Solution
from **NET SAFETY** You're Protected,
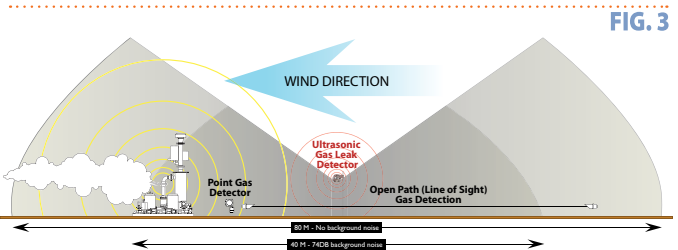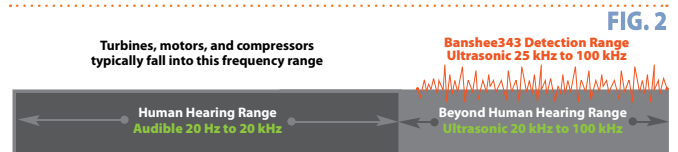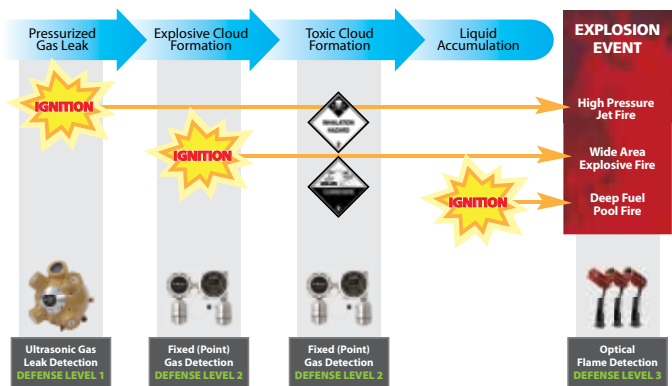Even in the Most Extreme Applications.

ULTRASONIC DETECTION OVERVIEW

Ultrasonic (acoustic) gas leak detection technology functions through the constant monitoring of wide areas by advanced acoustic sensors specially tuned to process ultrasound emitted from pressurised gas leaks. This detection technology has several advantages: it does not have to wait until a gas concentration has accumulated to potentially dangerous concentrations, it does not require a gas cloud to eventually make physical contact with a sensor, and the response is instantaneous for all gas types (FIG.3).

Simply put, the ultrasonic leak detector only triggers an alarm when inaudible, ultrasound is detected (between 25 - 100 kHz) — which is only produced with the release of highly pressurized gas (FIG.2). This makes for extremely reliable and efficient performance by the detection system as there is no poisoning of sensors, it never requires field calibration, and all background noises are accurately filtered or eliminated through time delay settings.

Pressurized Gas Release Episode — Event • Effect • Defense **FIG. 1**

Pressurized Gas Leak	Explosive Cloud Formation	Toxic Cloud Formation	Liquid Accumulation	EXPLOSION EVENT

IGNITION → High Pressure Jet Fire
IGNITION → Wide Area Explosive Fire
IGNITION → Deep Fuel Pool Fire

Ultrasonic Gas Leak Detection DEFENSE LEVEL 1	Fixed (Point) Gas Detection DEFENSE LEVEL 2	Fixed (Point) Gas Detection DEFENSE LEVEL 2	Optical Flame Detection DEFENSE LEVEL 3

FIG. 2

Turbines, motors, and compressors typically fall into this frequency range

Banshee343 Detection Range Ultrasonic 25 kHz to 100 kHz

Human Hearing Range Audible 20 Hz to 20 kHz | **Beyond Human Hearing Range Ultrasonic 20 kHz to 100 kHz**

FIG. 3

WIND DIRECTION

Ultrasonic Gas Leak Detector

Point Gas Detector

Open Path (Line of Sight) Gas Detection

80 M - No background noise
40 M - 74DB background noise

The Net Safety Banshee343 detects deadly gas leaks at the speed of sound with wide area coverage without being affected by inclement weather, wind direction, leak direction or any potential gas dilution. When utilized together with Net Safety point gas detection and our optical flame detection, a complete and comprehensive safety system is ensured (FIG.1).
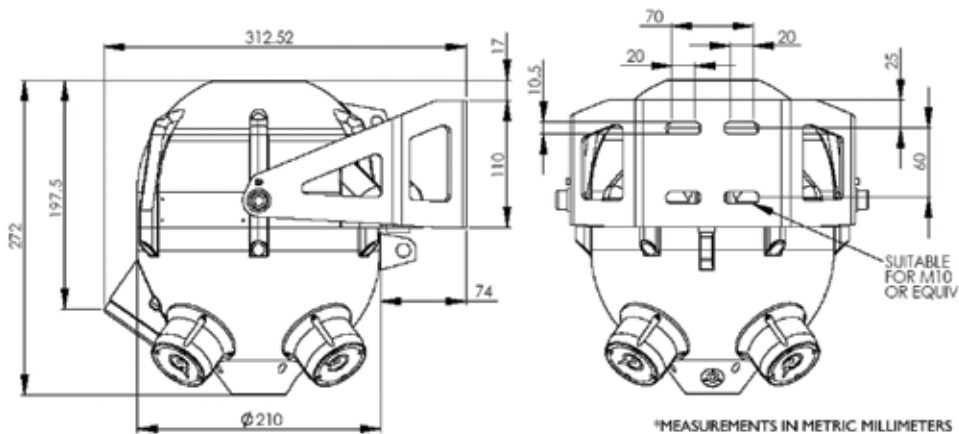
NET SAFETY
MONITORING INC.

EMERSON
Process Management

Banshee343 Ultrasonic Gas Leak Detector
Specifications

	NSM-SU343US		
Detection Frequency Range	25 kHz to 100 kHz		
Dynamic Range	50dB to 140db		
Area Coverage	40m+ Radius (background dependent)		
Response Time	Instantaneous (<1s - speed of sound)		
Programmable Alarm Delay	End user configurable alarm delay via 1 second variable increments		
Operating Temperatures	-55°C to +85°C		
Operating Humidity Range	0 to 100% RH, non-condensing		
Auto Test / Clean Procedure	SonicCal System (every 15min): Test-broadband gas release (tolerance: 100dB (± 3dB) — Clean-compressed air jet directed at the sensing face		
Ingress Protection	Rated IP66/67 to withstand harsh environments and temporary immersion		
Enclosure Material	Aluminum (epoxy coated) & 316 Stainless Steel		
Weight (with swivel)	5.0 kg (Stainless Steel option: 10 kg) approx.		
Conduit Entry	M20 x 2 (M25 x 2, 3/4 NPT x 2), M20 x 2 for serial detector link		
Mounting Bracket	AISI 316 Stainless Steel (included)		
Output Signals	Analog [0 mA: Zero/Low Power, 0.5 mA to 4.0 mA: Detector faults, 4-20 mA: 40dB—200dB]	3 Form C Relay Contacts [Error/Fault, Alarm, Maintenance]	RS-485 Digital Interface
Approvals / Classifications	**ATEX, IECEx** - ⓔ II 2G Ex d ib IIB+H2 T4 Gb (Tamb -55°C to +85°C) **CSA/ANSI, GOST, UL** - Class I, Division 1, Groups BCD (pending)		
Input Power	24 VDC (10.5 to 32 VDC)		
Power Consumption	250 mA - standard operation | 3 amps with heater (-40°C)		
Warranty	18 months		

*MEASUREMENTS IN METRIC MILLIMETERS

ACCESSORIES

- **NSM-01-TT**
Test Transmitter: Handheld Rechargeable Ultrasonic Sound Emitter

- **NSM-MT-01**
Mapping Tool: Handheld Rechargeable Ultrasonic Sound Receiver

- **NSM-SU343-GUI**
GUI Software Package. Graphical User Interface for RS485 Communication

- **NSM-PTV**
Performance Target Verification Kit

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EMERSON Process Management

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