

ID-227 Oil Sheen Sensor For Marine Applications

Applications

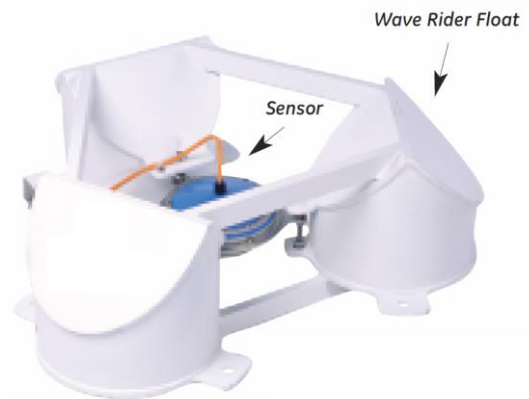
The Leakwise ID-227 sensor detects the presence of and monitors the buildup of thin layers of hydrocarbons or other organic solvents on water. It is used for early detection, warning, and control of oil leaks and spills in offshore applications such as intake towers of desalination plants, oil tanker loading buoys and piers, oil rigs and lagoons. In addition, the ID-227 is deployed in lakes, rivers, open channels and large retention ponds.

ID-227 Description

A Leakwise system consists of a controller and one or more sensors (also called detectors). The ID-227 sensor has a high frequency transmitter mounted on a Wave Rider buoy that maintains its position precisely at the liquid/air interface, despite fluctuations in the liquid level and waves. The ID-227 operates in an unlimited fluctuating liquid levels, and is controlled by the analog PS-220 Controller, which has two field-adjustable alarm points:

- Low oil alarm - Detection of a first predefined layer thickness of hydrocarbons
- High oil alarm - Detection of a hydrocarbon layer at a second predefined thickness

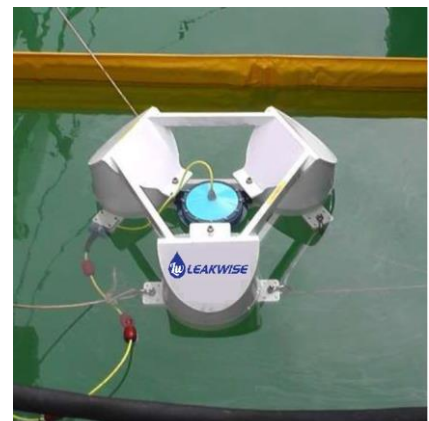
The ID-227 can detect as little as 0.3 mm (0.01 in) oil on water reliably, repeatedly, and without false alarms. It can also monitor on-line changes in oil layer thickness up to 20 mm (0.79 in). The ID-227 is connected to the Controller with a floating cable. The Controller relays are used for local and remote alarms and control. Continuous built-in diagnostics monitor sensor operation. An appropriate mooring should be designed and implemented according to actual site conditions.



Principle of Operation

The Leakwise sensors use a patented, high-frequency Electromagnetic Absorption technique. Each floating sensor houses a high-frequency electromagnetic energy transmitting and receiving antennas which continuously monitor the liquid surface. Since water absorbs more electromagnetic energy than hydrocarbons, changes in the absorption rate of water indicate the presence or buildup of hydrocarbons.

The Leakwise sensors can be used to detect and monitor the buildup of separated or emulsified non-soluble hydrocarbons on water and other aqueous solutions. No other oil sheen monitoring system does this.



Technical Specifications¹



ID-227 Sensor Specifications

Operation

Summary Floating sensor capable of monitoring hydrocarbons and organic solvents on water or brine.

Operating Range

Detection Range 0.3 - 20 mm (0.01 - 0.79 in) of hydrocarbon on water or brine
Minimum water Depth 30 cm (~12.0 in)
Tide Range Determined by mooring design and implementation
Working Wave Height Maximum 2 m (6.6 ft.)
Current Up to 1.5 knots
Survival Conditions Extreme sea conditions, depending on appropriate mooring
Mooring Designed and supplied by customer.
Should enable free floatation of the Wave Rider in all operational conditions.
Water Temperature 0 - 70° C (32 - 158° F); no freezing
Air Temperature -10 - 80° C (14–176° F)

Physical Specifications

Sensor Materials Hydrocarbon resistant polymers, 316 stainless steel
Wave Rider Materials Hydrocarbon resistant polymers, 316 stainless steel
Dimensions Wave Rider: Diameter 900 mm (35.4 in); height: 300 mm (11.8 in); weight 10 Kg (22.0 lb.)
Integral Cable 20 m (~66 ft.) supplied with sensor; first 10 m is a floating cable.

PS-220 Controller Specifications and Options

Specifications

PS-220 Description PS-220 Controller is an analog signal processor and power supply in a NEMA 4 enclosure, and supports a single ID-227 sensor.
Temperature Ambient temperature range: -40 - 85° C (-40 - 185° F)
Cable length to Sensor Up to 1,200 m (3,937 ft.) subject to hazardous area restrictions.
PS-220/RL/LI Two alarm relay dry contacts and one fail contact: SPDT rated 4A (3A for fail contact) at 250 VAC or 30 VDC, normally open and normally closed, and four indicating lights: Air/Oil/Water/Fail. Includes a built-in diagnostics feature.
Wiring Connections Terminal blocks: 14 AWG maximum for sensor and 4-20 mA output wires; 12 AWG maximum for power and relays wires.

Options

Enclosure Options **/N4** for NEMA 4X (IP65): 300 x 190 x 120 mm (12.0 x 7.5 x 4.7 in) (standard enclosure);
/N7 for NEMA 7: 278 x 259 x 166 mm (11.0 x 10.2 x 6.5 in);
/Exd for Ex d: 302 x 233 x 154 mm (12.0 x 9.2 x 6.1 in).
Input Power Options 220 or 110 VAC (50 - 60 Hz) or 9 - 36 VDC (@ 5 Watts); may also be solar powered.
/420 4-20 mA analog output proportional to hydrocarbon thickness up to 25 mm (1.0 in), current source
/420/BG Bar graph display (20 bars) of hydrocarbon thickness in addition to 4-20 mA analog output.
/CEN Zener Safety Barriers to allow installation of the sensor in hazardous areas.
/AUD Audio alarm option (available in weather-proof or explosion-proof enclosure).

Other Controllers – Refer to separate data sheets

SLC-220 Digital Signal Processor for Multiple (2 / 4 standard, more in a network) ID-220 Series sensor support, with various output options, including relay, lights, 4-20 mA, LCD, Modbus in RS-232 and RS-485 communication, and cellular remote connectivity.
WSP-220 Wireless communication – Point-to-Point data radio.

Sensor and PS-220 Controller Certifications

ID-227 Sensor ATEX Intrinsically Safe: II1G Ex ia IIC T4 Ga -40° C to +70° C. Also: IECEx and cETLus
PS-220 Enclosure For hazardous areas: North America - NEMA 7, Class I, Div 1, Groups B, C & D; NEMA 4 Europe – II2GD Ex d IIC T6 IP66
Combined System Performance Approved for operation in hazardous location
EPA - Conforms to Spill Prevention, Control and Countermeasure (SPCC) - Oil Pollution Prevention regulation (40 CFR part 112), and EPA/530/UST-90/009 - Leak Detection Methods
TÜV - Type approval in accordance with WHG (Water Resources Law) § 19 h
Manufacturing ISO 9001:2015 Certified

¹ Specifications may be subject to change without prior notice.
For special applications, it may be possible to offer products that deviate from the above specifications.