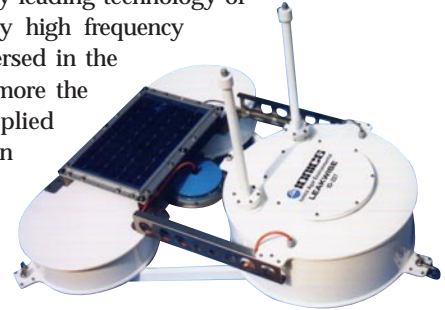


LEAKWISE® ID-227WL Oil Sheen Monitoring System

Wireless Oil Spill Detection System for Marine Applications

Principal of Operation

The Leakwise ID-227WL Oil Sheen Monitoring sensor uses the industry-leading technology of Electromagnetic Energy Absorption. The instrument consists of a very high frequency transmitter connected to a mismatched antenna. The antenna is immersed in the monitored fluids. The higher the energy absorption of the fluid, the more the loading on the antenna, and therefore, more energy which has to be supplied by the transmitter. Since water absorbs much more energy than hydrocarbons and hydrocarbons absorb more than air, the loading in water is higher. If the antenna is surrounded by an oil layer or oil/water mixture, the loading is reduced in proportion to the reduction in water content. This unique, patented technique enables the detection of small layers of free oil on water or in air when there is no liquid. It also enables continuous monitoring of oil layer buildup and the measurement of its thickness. This technique also distinguishes between the presence of hydrocarbon and air when there is no liquid.



ID-227WL Description

The system consists of a Wave Rider Buoy incorporating:

- An oil detection sensor
- A wireless digital signal processor
- Wireless communication antennas
- A solar panel with battery

The wave rider buoy is designed to maintain the position of the sensor's detecting antenna at the liquid-air interface, despite fluctuations in the liquid level due to waves and tide.

The ID-227WL sensor can detect as little as 0.3 mm layer of oil on water reliably, repeatedly and without false alarms. It has five levels of adjustable oil alarm set points for monitoring on-line changes in oil layer thickness up to 20 mm. The wireless digital signal processor (DSP-220 WL) transmits alarm and status messages via satellite and/or cellular and/or other wireless methods in the form of e-mail, SMS message or other message media. An alarm message will be transmitted when an oil alarm set point is violated. A status message is transmitted every programmable time interval, thus enabling monitoring the oil layer thickness trend. A built-in test feature is continuously monitoring failure free system operation.

Applications

The ID-227WL is designed to be installed off-shore near oil tanker buoy terminals, jetties and piers in order to detect floating oil sheens resulting from spills or leaks which may occur during the loading/discharge process.

Additional applications are available in detecting and monitoring floating hydrocarbons near off-shore oil rigs and in lagoons, lakes, rivers, open channels and large retention ponds.



ID-227WL Technical Specifications

Specifications subject to change without prior notice.

Operational and Design Information

Operation Floating wireless detector capable of monitoring hydrocarbons and other organic solvents on water

Operating Range

Detection Range 0.3-20 mm of hydrocarbon on water or brine
Working Wave Height Maximum 2 meters
Tide Range Unlimited
Current Up to 4 knots (for higher current – consult factory)
Survival Conditions Extreme sea conditions
Minimum Liquid Depth 15 cm
Ambient Temperature 0°-50° C (For other temperature – consult factory)

Materials

Detector Hydrocarbon resistant polymers, 316 stainless steel
Wave Rider Hydrocarbon resistant polymers or marine aluminum

Dimensions

Wave Rider Buoy Diameter 1100 mm, height 700 mm, weight 25 kg

Electrical Rating

Built-in Power Supply 12 V @ 10 W Marine Solar Panel + 12 V @ 5AH sealed Lead-Acid battery + battery charger
Power Autonomy Continuous operation on sunny days (average three hours of sun per day)
Five days of autonomy on cloudy days (no sun at all)

Signal Processor

WSP-220 High performance wireless signal processor, low power consumption
Message Media E-mail or SMS as standard. Fax, pager, etc. – depending on local service providers
Message Types 1-STATUS messages at predetermined intervals
2-ALERT message when an oil threshold (1 of 5) is crossed, or when the sensor is taken out of the water
3-FAIL messages for low battery and internal checks
Message Format Status/Alert/Fail, Date, Time, Unit ID, Liquid Status, Measured Signal, Battery Voltage
Programmability Direct connection to a PC for a thorough setup or software updates;
Over-the-air parameters setup and calibration

Wireless Options

ORB VHF transceiver + VHF antenna working on the ORBCOMM satellite system
GSM900 GSM 900 MHz cellular transceiver + GSM antenna
DUAL Dual Mode: ORBCOMM + Cellular
GSM GSM for North America band – consult factory
CDMA CDMA cellular – consult factory
AMPS AMPS cellular – consult factory
PTP Point-To-Point radio link – consult factory

Output Options

AUD Local audio oil alarm
RL 1 relay for alarm/control of an externally wired device
GPS GPS receiver + antenna for accurate positioning

Certifications

ID-227 Detector Intrinsically Safe – EEx ia IIC T4
Solar Panel FM approved – Class I, Division 2, Groups C & D
Combined System For operation in Zone 2 (Europe) or Division 2 (North America) hazardous location
Performance EPA – Conforms to EPA/530/UST-90-009 for groundwater monitoring systems
TÜV – Type approval in accordance with WHG (Water Resources Law) § 19 h



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MC01-109
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