

### Principle of Operation

The Leakwise ID-223 Oil Sheen Monitoring System 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 do hydrocarbons and 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 oil. It also enables continuous monitoring of oil layer buildup and the measurement of its thickness.

### ID-223 Description

The high frequency transmitter antenna is mounted on a patented float built in a guiding cage. The floating detector maintains its position precisely at the liquid/air interface, despite fluctuations in the liquid level. It has two field adjustable alarm points for:

- Low oil alarm – upon detecting the presence of a first predefined layer of hydrocarbons
- High oil alarm – upon detecting when the hydrocarbon layer has continued to build up to a second predefined thickness

The ID-223 can detect as little as 0.3 mm layer of oil on water reliably, repeatedly and without false alarms. It can also monitor on-line changes in oil layer thickness up to 25 mm. The Signal Processor relays are used for local and remote alarm and control. Delay in the relays' response time enables reliable detection regardless of occasional waves and/or turbulence.

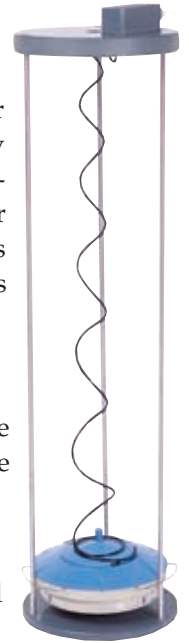
A stilling well can be used for extreme conditions. A built-in test feature is continuously monitoring failure free system operation.

### Applications

To cover most applications the following ID-223 models are available: ID-223/500, ID-223/2000 and ID-223/2500. The ID-223 models can be installed in dry or wet sumps to detect oil leakage or spillage from:

- Above-ground oil storage
- Transformers in sumps at switchyards and remote power distribution substations
- It can also be used to monitor wastewater discharge after treatment.

Additional applications are available in detecting and monitoring floating hydrocarbons in: sewer systems, oil/water separators, cooling water trenches and canals, storm water run-offs, open channels, retention ponds, boiler condensate tanks and ground-water remediation system.



# ID-223 Technical Specifications

## Operational and Design Information

**Operation** Floating detector capable of monitoring hydrocarbons and other organic solvents on flowing water and in dry and wet sumps

### Operating Range

**Resolution** 0.3 mm of hydrocarbon on water or brine  
**Measuring Range** 0.3 – 25 mm of hydrocarbon on water or brine  
**Water Level Variation** Various ranges are available  
 Minimum: 40 – 70 mm, Maximum: 2500 mm (higher ranges available)  
**Temperature** Detector: 0° C to 70° C, higher temperatures available  
 PS-220 Enclosure: -40° C to 85° C

### Materials

**Detector** Hydrocarbon resistant polymers, 316 stainless steel

### Dimensions

Detector Model	ID-223/500	ID-223/2000	ID-223/2500
Detector Floating Range (other ranges available)	40 – 500 mm	70 – 2000 mm	70 – 2500 mm
Guiding Cage Diameter	180 mm	560 mm	280 mm
Detector Diameter	160 mm	160 mm	160 mm
<b>Signal Processor Encl.</b>	<b>NEMA 4X (IP-65)</b>	<b>NEMA 7</b>	<b>EEx d</b>
	275 x 230 x 130 mm	215 x 260 x 175 mm	305 x 235 x 190 mm

### Electrical Rating

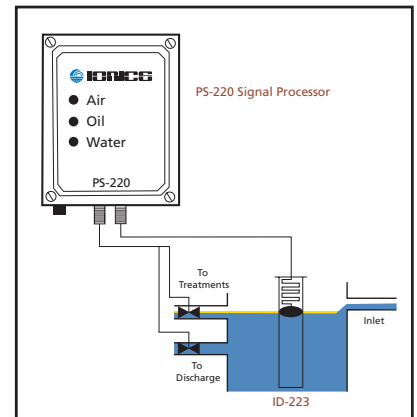
**Wiring Connections** 18 AWG maximum  
**Input Power Options** 220/110 VAC, 12/24 VDC (@3.5 Watts), 12/24 VDC solar powered  
**Distance to PS-220** Up to 1200 m subject to hazardous area restrictions.  
**Wireless** See Leakwise WL data sheet for battery powered wireless operation.  
**PS-220/RL/LI** Basic Analog Signal Processor and power supply including:  
 Two Alarm Relay Contacts: SPDT Rated 3A at 220 Volts normally open and normally closed and 3 indicating lights: Air/Oil/Water, built-in diagnostics feature

### Output Options

**420** 4-20 mA signal proportional to hydrocarbon thickness up to 1 inch (25 mm) – current source  
**420/BG** Bar-Graph display (20 Bars) of hydrocarbon thickness and 4-20 mA output  
**AUD** Audio Alarm  
**WL** Wireless communication (see Leakwise WL data sheet)  
**DSP-220** Digital Signal Processor for multiple ID-220 series sensor control with data logging capabilities and various output options, including: relays, lights, 4-20 mA and RS-232 or RS-422 communications (See DSP-220 data sheet for more details)

### Certifications

**ID-223 Detector** Intrinsically Safe – EEx ia IIC T4  
**PS-220 Enclosure** Explosion Proof: North America – NEMA 7, Class I, Div. 1, Groups C & D  
 Europe – EEx d IIC T6  
**Combined System Performance** Approved for operation in hazardous location  
 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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