Atex Oil Water Interface Meter

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1. Instructions specific to hazardous area installations

(Reference European ATEX Directive 94/9/EC, Annex II, 1.0.6.)

The following instructions apply to equipment covered by certificate numbers Sira 04ATEX2366:

The equipment may be located where flammable gases and vapours of group IIB may be present. The equipment is only certified for use in ambient temperatures in the range -20□C to +40□C and should not be used outside this range.

The equipment has not been assessed as a safety-related device (as referred to by Directive 94/9/EC Annex II, clause 1.5).

Installation of this equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice (EN 60079-14 within Europe).

Repair of this equipment shall be carried out by the manufacturer or in accordance with the applicable code of practice (IEC 60079-19).

If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised.

Aggressive substances-e.g. acidic liquids or gases that may attack metals, or solvents that may affect polymeric materials
Suitable precautions -e.g. regular checks as part of routine inspections or establishing from the material's data sheet that it is resistant to specific chemicals

We are reminding all customers that under certain conditions, if used incorrectly, they could give rise to an electrostatic discharge. As a precaution to avoid such discharges, we are reminding customers that the instrument must be used as follows:

- The instrument must be grounded before lowering the tape into a tank, well, etc and remain grounded until the tape is withdrawn.
- Care should be taken to avoid rubbing on the flanges during use.
- If no suitable grounding point is available, it is recommended that an earthing rod or spike is used.

Following these precautions will ensure continued safe operation with this instrument.
The Oil/Water Interface Meter has been certified to Hazardous Area Classification

Ex II 1G Ex ia IIB T4 Ga

VAN WALT
equipment for soil and water research

Operating Instructions

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Caution: **Only use Duracell battery MN1604.**
Only change battery in safe area.
This product must be grounded before introduction into a tank, well, etc, and remain grounded until complete withdrawal.
Only clean with a damp cloth when removing tape/probe from a tank, well, etc.
The meter may be used outdoors. However, it should not be used in positions where it may be subjected to long periods of inclement weather without further protection.

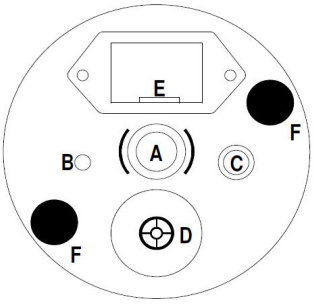
General Information: This product does not have an auto-power off facility. It must be switched **ON** and **OFF.**
In standby mode the battery will last for approximately 36 hours. Any maintenance should **only** be carried out in safe area.

2. Quick Start Instructions

The Interface Meter is very simple to operate. These instructions detail the basic operating procedures:

Caution: This product must be grounded before introduction into a tank, well, etc., and remain grounded until complete withdrawal.

1. Turn on the Interface Meter by pressing button (A) in the centre of the reel. The Battery light will illuminate (B); this will stay on until the unit is switched off.
2. When the probe is lowered into Hydrocarbon product the Oil/Water light (C) and beeper (D) will be on continuously. A reading should be taken from the measuring tape to a fixed reference point.
3. Lower the probe further into the well until the water signal is given. Then carefully raise the probe until the product (oil) signal is given (light (C) will flash and beeper will sound intermittently). Note the reading.
4. Deducting the first distance measured from the second will define the thickness of the product.



A- ON/OFF switch
B- Battery light
C- Oil/Water light
D- Beeper
E- Battery Compartment
F- Disk retaining fixings

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To ensure the Interface Meter provides reliable and long term service, follow these general guidelines:

- Avoid sharp edged borehole casing.
- Avoid entanglement with other equipment in boreholes and wells.
- Do not use the unit as a guide for backfilling boreholes with sand etc. - the probe and tape may get locked into the backfill.
- Always clean and dry the probe after use.
- Always rewind the tape onto the reel after use.

3. Introduction

The Interface Meter is used to determine the thickness of floating product above the water table. It can also detect and measure sinking layers of DNAPLs.

The Interface Meter is designed and built by experienced field engineers and hydrogeologists who recognise and respond to the needs of the environmental monitoring market. The unit is extremely simple to use – the probe is lowered down a borehole or well casing and on contact with product a single tone and a steady light are triggered at the reel. When the probe reaches water, the tone becomes intermittent and the light flashes. By carefully recording the length of tape (from a fixed reference) to reach these two points, the product thickness can be calculated.

The Interface Meter incorporates a number of features to ensure reliable and efficient measurement of the oil/water interface.

The tape reel is of metal construction with stainless steel fittings. A unique hook on the frame allows the meter to hang on a borehole casing - useful during recovery and draw-down testing. Electronics are fully encapsulated to protect against water and mechanical damage, ensuring a long and trouble-free life. The electronic module is easily removed allowing de- contamination of the unit. The meter is powered by one 9 volt battery located in the reel module, easily removed without dismantling the reel.

Quality engineered tapes are resin-jacketed high tensile steel for strength and incorporate two durable stainless steel conductors. Tapes are available marked in metric and imperial units and the standard length is 30m - with longer version units made to order.
The stainless steel probe is ultra-slim - only 15mm in diameter. It is designed to be used in a wide range of well diameters down to 19mm. The probe/tape joint is a unique Viton and steel link which prevents excessive stress at this point.

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The unit is supplied complete with the following accessories:

- Carrying Bag
- Cleaning Kit
- Instruction manual

4. Maintenance

4.1 General

If the reel and frame need cleaning with water always remove the electronics module in the reel first by undoing the fixings (F) and sliding out the entire module. NOTE – only clean with as instructed below.

The battery is accessed by opening the compartment lid (E). NOTE – the operator should always ensure the correct battery type is fitted at all times, refer 'important notes' section at the beginning of this manual.

4.2 Care of Reel

If the reel and frame need cleaning with water and always remove the electronic front panel before washing. The reel may be cleaned with these solutions:

Aliphatics:	Hexane Heptane White Kerosene
Alcohols:	Methyl Isopropyl Isobutyl
Halogenated Hydrocarbons:	Freons TF Freons TE
Others:	Soap solution with Naptha Alconox 10% Most commercially available detergent based cleaning solutions

4.3 Care of Tape and Probe

The tape and probe can be cleaned and de-greased with the following:

Alcohols:	Methyl Isopropyl Isobutyl
Aliphatics:	Hexane Heptane
Halogenated Hydrocarbons:	Fully Halogenated Freon
Others:	Soap solution with Naptha Alconox 10%

Note: Do not clean the tape or probe with abrasives

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The probe lens is made from Amorphous Thermoplastic, highly resistant to many chemicals, but contact should be avoided with:

- Chloroform 1.1.2 Trichloroethane
- Partially Halogentaed Hydrocarbons such as Methylene Chloride, Ketones such as M.E.K. Phenol (saturated solution).

5. How To Use The Unit

5.1 How the unit works

The probe contains an infra-red emitter and an infra-red detector. When the unit is switched on in air, the infra-red emitter sends out an infra-red beam inside a 45 degree prism. The infra-red beam reflects off the internal face of the prism to the opposite face, which then reflects the beam to the detector. In this state the unit is silent. When the probe is lowered into fluids which are denser than air, the SNELL principle operates. The infra-red beam is not reflected internally, but exits the prism and the detector does not receive the infra-red beam. In this state the unit emits a continuous tone and the red light is on.

At the same time the two conductivity probes are testing for conductivity. If the fluid does not conduct electricity, the sound tone and light are solid - meaning the probe tip is in product.
If the fluid does conduct electricity, the tone is intermittent - meaning the probe is in water.

Solid tone	=	Product detection
Intermediate tone	=	Water detection

5.2 Taking Measurements

When taking measurements it is important the lens is cleaned prior to use. This will eliminate any spurious readings from a contaminated lens.
The probe should be lowered down the borehole in a controlled manner and not dipped in with the brake off. If the probe is dropped down a borehole damage to the probe could occur if it sticks the base of the well.

- First lower the probe into the well and note the depth of the top of the liquid (oil).
- Next lower the probe further into the well until the water signal is given.
- Now carefully raise the probe until the product (oil) signal is heard.
- Note this depth. This is the depth of the underside of the oil layer. You now have depth to product and depth to the interface of product and water.

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6. Trouble Shooting

Problem	Solution
Unit doesn't work when switched on.	Check the battery, green light off, replace battery.
The unit does not work with new battery.	Probe could be near infra-red light, test unit away from infra-red or incandescent light.
Unit does not work in normal light.	Check polarity and connection of removable electronic panel. Check for broken or loose wires, or dirt or corrosion on the contact strips on the back of the panel. If they are dirty, clean them.
Unit sounds continuously when probe enters well - even if not in product.	Check the lens is clean - unit is silent in daylight. Check the lens is not excessively scratched - if scratched, polish with a soft cloth and mildly abrasive cleaner to restore a smooth finish to the lens.
The unit emits the intermittent signal when the probe tip is in water – but changes to continuous signal when probe body contacts the water.	Check the ground wire is not shorting out on the signal wires (black and brown) in the hub.
It is difficult to detect the Interface when there is a heavy product.	Apply a small amount of detergent to the probe body and tip. Lower the probe into the well and find the top of the product. Lower the probe into the water then slowly draw up the probe to find the underside of the product layer.
A steady tone is emitted at the surface of the water in the well - when the well is known to have no product.	Lower then probe slowly down the well to enable the probe to enter the water slowly. It is recommended that a reading is taken as the probe passes down through the water - rather than when it is reeled in up through the water.
The unit emits a signal when the probe is removed from the well but not in any fluid.	Small amounts of fluid may be draining down the probe over the lens and causing sporadic signals.
The unit emits a continuous signal when measuring the water level in a cascading well.	The unit is not designed for cascading well use, as water running over the lens can cause the unit to signal "product".

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7. EC Declaration Of Conformity

PRODUCTS	IM1.1-20	Portable oil/water interface meter
	IM1.1-30	Portable oil/water interface meter
	IM1.1-60	Portable oil/water interface meter
	IM1.1-100	Portable oil/water interface meter

Geotechnical Instruments (UK) Ltd. declare that the item(s) described above are in compliance with the following standards:

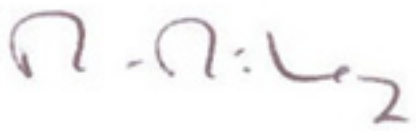
ATEX Directive 94/9/EC

Certification body:	SIRA Certification Service
Notified body number:	0518
Address:	Rake Lane, Eccleston, Chester, CH4 9JN
Certificate number:	Sira 04ATEX2366
Standards applied:	EN 60079-0:2006
	EN 60079-11:2007
	EN 60079-26:2007

EMC Directive 89/336/EEC

Standards applied:	EN50081-1:1994 Radiated Emissions
	EN50082-1:1992 Radiated Susceptibility
	EN50082-1:1992 E.S.D.
	EN50082-1:1992 Bulk Current Injection

Signed:



Dr. Roger Riley

NPI Manager & Authorised Person
Geotechnical Instruments (UK) L

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8. WEEE Compliance

The wheelie bin symbol displayed on equipment supplied by Geotechnical Instruments signifies that the apparatus must not be disposed of through the normal municipal waste stream but through a registered recycling scheme.

The Waste Electrical and Electronic Equipment directive (WEEE) makes producers responsible from July 1st 2007 in meeting their obligations, with the fundamental aim of reducing the environmental impact of electrical and electronic equipment at the end of its life.

Geotechnical is now registered with the Environmental Agency as a producer and has joined a recycling scheme provider who will manage and report on our electrical waste on the company's behalf.

Our Producer Registration Number is WEE/GB0052TQ

When your instrument is at the end of its life, please contact the Geotechnical Instruments sales team who will advise you on the next step in order to help us meet our WEEE obligations.