



Global Water
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WL550

OIL WATER INTERFACE METERS



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Operating Manual

Covers Models: AHA500, AHB500, AHC500, AHD500, AHE500, AHF500, AHG500,
AHK500, AHL500, AHM500, AHN500, AHO500, AHP500, AHQ500

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10/13/10

02-083



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Congratulations on your purchase of a Global Water WL500, oil water interface meter. This instrument has been quality tested and approved for providing accurate and reliable measurements. We are confident that you will find the meter to be a valuable asset to your applications. Should you require assistance, our technical staff will be happy to help.

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I. Quick Start Guide

1. To turn the unit on, push the red start button once briefly. Note that the unit will make a short lived beep when it is turned on. Pushing the start button briefly (less than 4 seconds*) a second time will power down the unit, at which time it will make a short pulsing sound. It will also make this sound when it turns off automatically after 10 minutes.
2. When the unit is turned on and the battery is low but will still allow for reliable operation, the buzzer will make a longer pulsing tone, but will then resume normal operation.
3. If the battery is too low for the unit to function properly it will power itself down right after being turned on or it will make a continuous low volume tone until the battery is removed.
4. There are two adjustments on the circuit board marked Water and Oil. They are sealed to keep out moisture and should not be changed without calling for technical support.

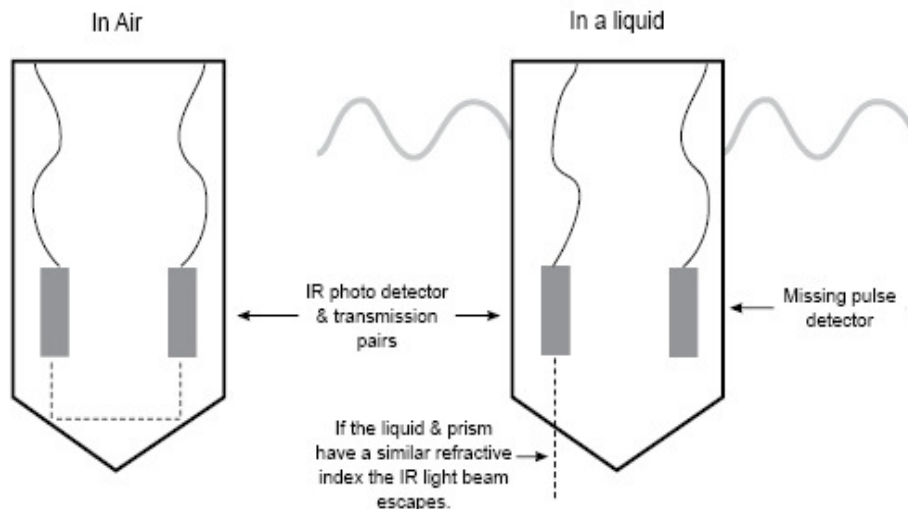


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II. Principle of Operation

The instrument detects the presence of water with the two stainless steel pins and electronic circuit that measures current flowing through water which is not distilled.

The instrument detects oil with the prism assembly. An infrared light beam is emitted from the sensor. This beam strikes the prism at a 45 degree angle and is refracted internally as a result of Snell's Principle. If the prism is immersed in a liquid with an optical index similar to that of the prism, the light beam will not be refracted internally and will escape from the prism assembly. A missing pulse detector indicates the prism is in a liquid. A microprocessor, determines that if the prism assembly is in a conductive fluid it must be water.



III. Battery Installation & First-Time Use

Only change the battery in a safe area. Make certain to follow the polarity for the correct placement of the battery in the drawer. Although quite difficult, it is possible to put some batteries in backwards, so if you have any difficulty placing the battery in the holder, VERIFY the polarity. The battery drawer cannot be inserted backwards.



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For standard logic, that is a solid tone in oil and a pulsing tone in water, remove and replace the battery without holding down the start button.

To reverse the above logic, hold down the red start button while inserting the battery drawer. The unit will now produce a solid tone in water and a pulsing tone in oil.

The unit will make a brief audible tone when the battery is first installed, until the auto off feature powers the unit down into the sleep mode after 15 minutes. When the unit is on, but not in any liquid, the red LED will flicker briefly every few seconds, so that the operator knows the unit is turned on.

IV. Basic Reel Features

The dipmeters come equipped with a probe holder and well casing bracket/hook.

When taking a reading it is possible to hang the reel from the well casing and use the frame leg to guide the tape into the well. The frame leg should protect the tape from the sharp edges of the well casing. In the event the tape will be exposed to the well casing's sharp edges, do not use the reel in the above position but order a separate tape guide suitable for your specific requirements.

The unit has a reel brake at the back of the frame. To lock the reel, tighten the brake in the clockwise direction.

If equipped, make certain to use the grounding strap located at the back of the reel.

Additional Features-Pump Monitoring Mode

During a pump test or draw down test, the unit can be used to alert the operator that the pump will run dry soon.

While the unit is in any liquid, hold down the start button for at least 4 seconds, and the audio signal will stop and the unit will go into pump alarm mode.

Once the probe is removed from the liquid or the liquid level drops below the probe, the audio signal will resume.



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To turn off this feature or resume normal operation, simply hold down the start button for at least 4 seconds.

If you hold down the start button for 4 seconds while the probe is not in a liquid, it will signal that the probe is in the air and the signal will only stop once the probe is immersed in a liquid.

V. Operating the unit in the field

The oil/water interface meter can be tested in most containers to detect water. It will even detect distilled water that contains some dissolved solids. It is more sensitive to water, since the pins are often coated with oil or product that coats the water sensing pins. The unit will not typically detect product if there is more than low ambient light conditions or a white container. This is completely normal and the unit should NOT be recalibrated, since most wells are very deep and have very little ambient light.

The water level meter is not as sensitive to water and will not usually detect commercial quality distilled water.

It is possible to recalibrate the unit for very viscous oils, for a severely scratched prism assembly or for very conductive water, for example brine or salt water intrusions.

Adjustment of water sensitivity or hydrocarbon sensitivity

DO NOT CHANGE WITHOUT CALLING FOR TECHNICAL SUPPORT FIRST

There are two small potentiometers located on the circuit board. One is labeled water. Turn clockwise for very pure/low conductivity water. For saltwater turn counterclockwise. For white PVC casing or a heavily emulsified layer, turn the fluid potentiometer counterclockwise. For highly viscous oils, turn the fluid potentiometer clockwise. Before beginning field work, it is worthwhile to test the unit quickly in any container to verify it will detect water. The unit will sound continuously if the battery is low. Since the battery is easily changed without any tools, it is recommended that a spare battery be included in the carry case/field kit.



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The probe is fully pressure rated and the oil/water interface meter will detect both floating and sinking product. To avoid the probe suddenly striking obstructions in the well, lower the probe at a moderate speed.

The most accurate readings will be possible when the probe first detects oil as it is being lowered. Upon removal however, very viscous oil will drip from the probe, in some cases completely covering the prism and the instrument may indicate it is still immersed in product. To avoid this, when in very viscous oil, remove the probe more slowly right at the oil/air interface for a more accurate reading.

As the probe passes through the oil/water interface, the oil will have a tendency to be dragged down with the probe, which essentially coats the water sensing pins. For that reason, the most accurate reading of the oil/water interface will be possible when it is measured as the probe is being RAISED or removed from the water and is entering the oil or floating product.

The above effects are very small and will not seriously affect the accuracy of the instrument, however for very precise readings, it is possible to reduce the above effect to less than the resolution of the instrument.

Do not use the probe to measure sand backfill as the tape and or probe can very easily trapped or locked into the backfill. A very small volume of sand will make it impossible to remove the tape and probe.

Cleaning the Dipmeter

The probe and prism or electrode assemblies are made from Stainless steel, Teflon, Nylon and Delrin. To ensure optimum performance, clean the meter after every use. Although not cleaning the unit, will not harm the unit, it will typically perform more satisfactorily if it is clean. Equal parts vinegar and water can be used to clean the water sensing electrodes after removing the battery! Soak in the solution overnight for several hours then wipe clean. REMOVE BATTERY FIRST.

However do not use ANY abrasives, partially halogenated hydrocarbons, or water soluble organic solvents to clean the probe or unit. Alcanox 10%, detergent 10% can be used to clean the probe and reel. Rinse thoroughly with water right after cleaning with detergent or Alcanox.



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VI. Troubleshooting

Unit makes no sound when start button pushed.

- a. Battery is reversed or is flat. Replace battery in a safe area. Check polarity.

Unit makes no sound in water.

- a. Verify water is not distilled. Clean water sensing electrodes.

Unit sounds constantly

- a. Battery is low. Replace.
- b. The connection to the tape and module should be checked. Clean the tape to module connection by attaching and detaching 4-6 times. This will remove any oxides that may have formed. This is rare but can happen and it is very easy to remedy.
- c. Clean the prism assembly.



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VII. Customer Support:

Call Global Water for tech support: 800-876-1172 or 916-638-3429 (many problems can be solved over the phone). Fax: 916-638-3270 or Email: globalw@globalw.com.

When calling for tech support, have the following information ready:

1. Model #.
2. Unit serial number.
3. P.O.# the equipment was purchased on.
4. Our sales number or the invoice number.
5. Repair instructions and/or specific problems relating to the product.

Be prepared to describe the problem you are experiencing including specific details of the application, installation, and any additional pertinent information.

In the event that the equipment needs to be returned to the factory for any reason, please call to obtain an RMA# (Return Material Authorization). Do not return items without an RMA# displayed on the outside of the package. Include a written statement describing the problems.

Send the package with shipping prepaid to our factory address. Insure your shipment; Global Water's warranty does not cover damage incurred during transit.



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VIII. Technical Specifications

Power source:	9 volt alkaline battery (use only Duracell MN1604) User replaceable
Dimensions:	H 362mm X W 294 X D 230 Reel
Weight:	2.7 Kg
Tape weight/30m:	0.45 kg
Probe diameter:	16 mm
Tape length:	Available based on the model: 30M, 60M, 100M, 150M, 200M, 300M
Tape accuracy:	Class II, EC standard measuring devices (972/362/EC), 1st amendment 78/629/EC, and 2nd amendment 85/146/EC Permissible errors according to table 7.1 -a + bL (a=0,1 mm, b=0,1 mm, L= length m) for 10 m tape maximum permissible tolerance is $0,3 + 10 \times 0,1 \text{ mm} + \pm 1,3 \text{ mm}$
Operating temperature:	
Reel:	-20 to +60 C
Probe:	-20 to +85 C
Relative humidity:	0-99% Non condensing
Reel Seal:	IP
Materials of manufacture:	
Reel:	Aluminum-powder coated, nylon
Frame:	Steel-powder coated, stainless steel
Probe:	Stainless steel, Delrin, Nylon, Viton
Tape:	Band/Core: High tensile steel
Conductors:	Stainless steel