

# Water Level Meter User Manual





### **What's this manual about?**

This manual tells you about the Water Level Meter and how to use it to measure the depth of water in standpipes, wells and boreholes.

### **Who does this apply to?**

Installers, field engineers and technicians who need to acquire water level measurements using a Water Level Meter.

# Welcome!

Thank you for choosing the Water Level Meter.

This manual has been written to provide you with relevant information and to guide you in best practice when using a Water Level Meter in order for you to gain the most from our product.

Please read this manual thoroughly before use to help avoid any problems and keep it handy when using a Water Level Meter.

## **Water Level Meter**

Water Level Meters are used to measure the depth of water in standpipes, wells and boreholes.

The meter comprises a Stainless Steel probe fitted to a flexible graduated cable which is wound on to a hand reel containing a transistorised switched circuit, audio and visual indicators and a battery.

The Water Level Meter is simple to use and being portable can be used at many locations. The tape design prevents it from sticking to wet surfaces, such as the lining of a borehole, ensuring accurate and easily acquired measurements.

There are two versions of the Water Level Meter; one with a small diameter probe and one with a diameter standard probe. The standard probe version is also available with an optional digital temperature indicator.

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PRECISELY MEASURED  
instrumentation and monitoring

## OVERVIEW & INTRODUCTION

### Important information

The following symbols are used throughout this manual



IMPORTANT  
INFORMATION



QUESTION



WARNING



TIP



**! Important:** Failure to adhere to the warnings in this manual may result in network disruption and possible data loss.

Failure to observe the warning may result in injury, product malfunction, unexpected readings or damage to the product that may invalidate its warranty.



Tips give additional information that may be helpful when using a Water level Meter.

### PRODUCT CHANGES

Soil Instruments Limited has an on-going policy of design review and reserves the right to amend the design of their product and this instruction manual without notice.

### WARRANTY

Please refer to Soil Instruments Limited terms and conditions of sale for warranty information. Batteries are a consumable item and are excluded from any warranty.

### DISPOSAL

Products marked with the  symbol are subject to the following disposal rules in European countries:

- This product is designated for separate collection at an appropriate collection point
- Do not dispose of as household waste
- For more information, contact Soil Instruments Limited or the local authority in charge of waste management.

## System Description

### Things You Need to Know

#### FEATURES

- One instrument reads at many locations
- Contoured tape for accurate readings
- Tape range; 30m–500m with 1mm divisions
- Lightweight
- Audible (buzzer) and visual (LED light) water level alert signals
- Sensitivity adjustment for variations in water conductivity
- Digital temperature indicator option available
- Non-stretch polyethylene coated steel tape
- Ø12mm slimline probe available

#### BENEFITS

- Easily portable
- Tape design prevents tape sticking to wet surfaces
- Economic water level monitoring
- Ideal for boreholes with small diameters

## System Components

### OVERVIEW

A Water Level Meter is used for measuring the piezometric level within a water well or an access tube containing a Casagrande or Standpipe Piezometer.

The Water Level Meter can be used in standpipes up to 25 degrees from vertical.

Each Water Level Meter comprises a Stainless Steel sensor probe fitted to a graduated cable that is wound on to a reel containing a transistorised switching circuit, audio (buzzer) and visual (light) indicator, sensitivity control and battery.

The sensor probe incorporates an insulating gap which acts as a switch, the circuit being completed when contact is made with the water.

The cable consists of a non-stretch contoured tape with stranded steel conductors, graduated at one millimetre intervals.

The probe is lowered down a borehole on the end of the tape. When it makes contact with water a buzzer sounds and an LED light comes on, both located on the reel. A reading can then be taken from the tape at the top of the borehole to record the water depth.

A sensitivity control is accessible inside the hand reel to enable adjustment to suit the water conductivity.

## Water Level Meter Components



## Quick Guide to Using a Water Level Meter



Follow the precautions outlined in this manual at all times to properly maintain the Water Level Meter.



It is essential that the equipment covered by this manual is handled, operated and maintained by competent and suitably qualified personnel.

### BEFORE YOU GO TO SITE:

Unpack the Water Level Meter and familiarise yourself with the product.



The sensitivity control is factory adjusted to suit the water conductivity of purified water; under normal conditions no user adjustment is required. If the Water Level Meter is to be used in salt or brackish water the sensitivity control may need to be adjusted to enable correct functionality.

Please refer to *Probe Sensitivity Adjustment & Battery Replacement Guide* in this manual for instructions.



When used in salty or contaminated water the probe should be rinsed clean in fresh non-contaminated water after use, very high salt concentrations may result in inconsistent readings or malfunction of the probe.

**WHEN YOU ARE IN THE FIELD:** Soil Instruments recommend an **basic** skill level for using a Water Level Meter.

STEP	ACTION
1	Lower the probe down the borehole until the audio (buzzer) and visual (light) indicators from the reel signify the presence of water
2	Raise the probe until the audio and visual indicators stop
3	Slowly re-lower the probe until the audio and visual indicators are clear and distinct
4	Record the depth at the top of the borehole using the graduated measuring tape
5	When all readings have been completed, clean the probe and tape before re-winding the tape back onto the reel



Take precautions to safeguard the integrity of the measuring tape. Do not bend, kink or allow the tape to drag over sharp edges or surfaces and always wind the tape back on to the reel when not in use.



Ensure that the tape is read at the same reference mark at the top of the borehole each time a depth reading is taken to ensure maximum accuracy of readings.

**REMOVABLE NOSE PIECE CARE**

The Water Level Meter has a detachable nose piece which can be removed for cleaning. This process needs to be done after every use to prevent build up of dirt and debris. When re-attaching the nose to the body, a fair amount of force needs to be used to make sure it doesn't come undone. The best way to make sure just enough force is applied when re-attaching the nose is to use a small screwdriver through one of the nose holes. The resulting force applied should be enough to be more than finger tight but not too tight to prevent the nose from being detached in the future.



Do not overtighten the nose piece, otherwise it won't be able to be removed in future uses. Undertightening may result in the loss of the nose piece.

# PROBE SENSITIVITY & BATTERY REPLACEMENT GUIDE

## Probe Sensitivity Adjustment

Soil Instruments recommend an **intermediate** skill level for adjusting the sensitivity of the Water Level Meter.



Take care not to damage any of the wiring.

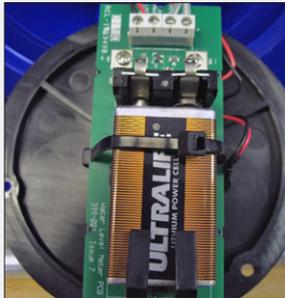
STEP	ACTION
1	Unscrew the three screws from the faceplate on the front of the reel
2	Carefully lift the faceplate away to expose the wiring, battery and circuit board
3	Raise and lower the probe through the surface of water, either within the standpipe or a container, whilst adjusting the sensitivity control using a small, flat-bladed screwdriver. The audio (buzzer) and visual (light) indicators should operate definitely and distinctly when the probe is in the water and cease as soon as the probe is removed from the water
4	Carefully replace the battery housing ensuring that wires are not trapped, replace the faceplate and tighten the three fixing screws

STEP 1



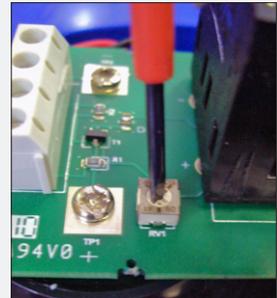
Faceplate

STEP 2



Battery and circuit board

STEP 3



Sensitivity control

## Battery Replacement

Soil Instruments recommend an **basic** skill level for replacing the battery of the Water Level Meter.



Take care not to damage any of the wiring when replacing the battery of the Water Level Meter.

STEP	ACTION
1	Unscrew the three screws from the faceplate on the front of the reel
2	Carefully lift the faceplate away to expose the wiring, battery and circuit board
3	Ensure you have a new 'PP9' 9V battery and a cable tie to hand
4	Cut the cable tie securing the battery and withdraw the battery
5	Insert a new battery observing the correct polarity
6	Replace the cable tie



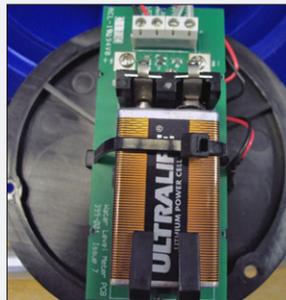
Make sure you insert the battery observing the correct polarity.

STEP 1



Faceplate

STEP 2



Battery and circuit board

## APPENDICES

### Appendix A – FAQ's & Troubleshooting Guide



#### **Why are there no audio (buzzer) or visual (light) indicators when the probe is in contact with water, even under test conditions (under running water)?**

There are three possible reasons; the battery is exhausted, the battery is inserted incorrectly or there is damage to the tape. Replace the battery and/or ensure it is inserted with the correct polarity and visually inspect the tape. If the problems persists, please contact [www.soilssupport.com](http://www.soilssupport.com) for assistance.

#### **Why does the audio (buzzer) and visual (light) indicators work under test conditions (under running water) but cease to work within a known wet borehole?**

The water within the borehole is too hard and/or pure to conduct sufficient electricity to trigger the probe circuit. Adjust the sensitivity towards the 'high' sensitivity position and re-attempt the reading. Please refer to *Probe Sensitivity Adjustment & Battery Replacement Guide* in the previous chapter of this manual for instructions.

#### **Why does the audio (buzzer) and visual (light) indicators remain activated after the probe has been withdrawn from the water in the borehole?**

The water within the borehole contains salt containments which lowers the electrical resistance, making it easier to conduct electricity. Adjust the sensitivity towards the 'low' sensitivity position and re-attempt the reading. It is advisable to clean the probe to remove salt or hydrocarbon products before making the adjustment.



## EC Declaration of Conformity

Soil Instruments Ltd., located at 34 Bell Lane, Uckfield, East Sussex, TN22, 1QL, United Kingdom.

We hereby declare that the devices described below are in conformity with the directives listed. In the event of unauthorized modification of any devices listed below, this declaration becomes invalid.

**Type: WATER LEVEL METER.**

**Product Model: W7.**

**Relevant EC Directives and Harmonized Standards:**

**2004/108/EC** Electromagnetic Compatibility directive, as amended by **EN61326-1, ed3**

The product(s) to which this declaration relates is in conformity with the essential protection requirements of 2004/108/EC Electromagnetic Compatibility directive, as amended by EN61326-1, ed3. The products are in conformity with the following standards and/or other normative documents:

**EMC: Harmonized Standards: EN 61326-1:2006 Lab Equipment, EMC**

IEC61000-6-3:2007 Emission standard for residential, commercial and light-industrial environments

IEC61000-4-2:2008 Electrostatic discharge immunity test

IEC61000-4-3:2006 Radiated, radio-frequency, electromagnetic field immunity test

IEC61000-4-4:2012 Electrical fast transient/burst immunity test

IEC61000-4-5:2005 Surge immunity test

IEC61000-4-6: 2008 Immunity to conducted disturbances, induced by radio-frequency fields

IEC61000-4-11:2004 Voltage dips, short interruptions and voltage variations immunity tests

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The items comply with all applicable Essential Requirements of the Directives.

Philip Day

A handwritten signature in black ink, appearing to read "Philip Day", with a long horizontal flourish extending to the right.

Date: May, 17, 2016

Manufacturing Manager,

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