

# ***GROUNDWATER LEVEL MONITORING***

*Water Level Loggers*

*Water Level & Salinity Profilers*

*Oil / Water Interface Meters*

*Leachate Level & Temp. Meters*

**In-Situ Level TROLL**

**Level & Temp Dataloggers**

The Level TROLL® contains everything needed for monitoring level/pressure and temperature all in one design. There are 3 data logging instruments to choose from (Level TROLL 700, 500, 300) and all are manufactured for accuracy, ruggedness and easy usability. You can have total confidence whatever your application when using Level TROLL® products.

**BaroTROLL**

**Barometric Pressure logger**

The BaroTROLL® is used to measure and log barometric pressure and temperature changes. It can be used by itself or together with a non-vented (absolute) Level TROLL® to compensate the level readings for fluctuations in barometric pressure where vented cable cannot be used.

**Superior Accuracy and Performance**

In-Situ® uses the newest sensor technologies. All instruments undergo an extensive full-scale calibration procedure for both pressure and temperature.

**Rugged and Reliable**

All Level TROLL sensors are designed for use in many applications. Deploy 316 stainless steel (300) and titanium (500, 700) sensors into most types of environmental waters.

**Flexible Communications**

The Level TROLL 300, 500 and 700 instruments feature Modbus (RS485), SDI-12 and 4-20mA outputs. Connect each of these units to a SCADA or PLC system.

**Ordering Information**

- Level TROLL 300, 500 or 700
- + Required range
- + Cable or Suspension Wire
- + Download/Communications

**Level TROLL 300**

Simple, reliable and economical. Ideally suited for non-vented long-term level and/or pressure monitoring.

**Level TROLL 500**

Highly accurate, reliable, and affordable. Ideally suited for long-term level and/or pressure monitoring. Fresh or marine.

**Level TROLL 700**

Our top-of-the-line unit. Powerful and flexible level monitoring. Optimized for multi-step aquifer testing, precision level monitoring, and research.



**In-Situ Level TROLL - Applications**

Application	Level TROLL 300 (316 SS)	Level TROLL 500 (Titanium)	Level TROLL 700 (Titanium)	Recommended cable type
Aquifer characterization		O	X	Vented
Economical, long-term monitoring in fresh water	X			Suspension wire
High-accuracy, long-term monitoring in brackish, saltwater or fresh water		X	O	Vented
Lake and reservoir monitoring	O	X	O	Vented or non-vented
Storm water monitoring		X	O	Vented
Tide/harbor fluctuations monitoring		O	X	Vented
Wetlands/estuaries monitoring		X	O	Vented or non-vented
River and stream gauging	O	X	O	Vented or non-vented
Crest stage gauging	X	O	O	Non-vented or suspension wire
Flood and storm surge monitoring	X	O	O	Non-vented or suspension wire
Dewatering	O	X	O	Vented or non-vented
Landfill monitoring groundwater	X	O	O	Non-vented
Municipal and process monitoring	O	X	O	Vented or non-vented
Real-time monitoring via telemetry	O	X	O	Vented or non-vented

X = Recommended, O = Can also be used

**Win-Situ® Software**

Win-Situ® 5.0 takes a fresh new approach to monitoring instrument control software with a large, easy to read display, icon based buttons and friendly wizards. The basic functions are Home (real-time data view), Logging, Calibration, Setup, and MyData--are organised by five large tabs at the top of the screen. When connected, the unit type and serial are displayed on every screen. A dashboard includes the time of the instrument along with battery and memory gauges.

Data logging setup has never been easier with our new setup Wizard. The Logging Setup Wizard guides every step, including setting reference points and display modes, to ensure error free logging configuration.

With such easy software, you'll spend more time getting data and less time reading manuals!



**Level TROLL Accessories**

**Twist-Lock Cable**

Surprisingly simple and incredibly reliable. Just press together and twist until they lock! Twist-Lock cables are available vented or non-vented with rugged titanium connectors (2 year warranty). Select between polyurethane, FEP or halogen-free cable jackets that are custom length up to 1212m. All Twist-Lock Cables include a Kellems® grip for easy suspension. (Level TROLL 300, 500, 700)

**Twist-Lock Hanger**

The Twist-Lock Hanger is a combination backshell cap and hanger to anchor a pre-programmed BaroTROLL® or non-vented (absolute) Level TROLL® in a well or other site while taking data. No communication capabilities. No venting. Allows use of inexpensive hanging cable.

**TROLL Cable Extender**

The TROLL cable extender is a titanium adapter for joining two lengths of Level TROLL® Rugged deployment cable. Twist-Lock connectors mate with mating connectors on cable so you can take two cables and Twist-Lock them together. The TROLL® Cable Extender seals the cables and provides a weight bearing connection.



**Rugged Reader**

Introducing the New RuggedReader®. Collect, store, analyze and transfer data using this ultra-rugged, multi-purpose, hand-held PC. When coupled with any of In-Situ's TROLL® Water Quality or Level instruments, the RuggedReader® delivers a reliable, easy-to-use data management system that will stand up to the harshest conditions. Improved smart battery, faster processing speed, a more flexible interface and the latest Microsoft® operating system make the new RuggedReader® a must have.

**Features**

- Rugged Construction
- IP-67 rating
- Lightweight and easy to hold
- Easy-to-use keypad
- User-Accessible Expansion
- Large, High-Contrast Display
- Powerful Win-Situ® Software



**TROLL LINK Telemetry**

Flexible and economical TROLL® Link Telemetry Systems offer reliable data retrieval from remote locations.

TROLL Link Telemetry Systems provide:

- Satellite or cellular options that guarantee communication from nearly any location.
- Faster data access at a lower total cost than other data retrieval methods.
- Full compatibility with Level TROLL® 300, 500, 700, Aqua TROLL® 200 or TROLL® 9500 instruments.
- User-defined configuration options for monitoring and alarming.
- A solar-powered option to eliminate on-site power supply.
- Remote access to instruments using Win-Situ® Plus software

## Level TROLL Specifications

	Level TROLL 300	Level TROLL 500	Level TROLL 700
<i>Operational Temp. Range</i>	-20°C to 80°C	-20°C to 80°C	-20°C to 80°C
<i>Storage Temperature</i>	-40°C to 80°C	-40°C to 80°C	-40°C to 80°C
<i>Diameter, OD</i>	20.82mm	18.3mm	18.3mm
<i>Length</i>	22.9cm	21.6cm	21.6cm
<i>Weight</i>	0.24kg	0.197kg	0.197kg
<i>Output Options</i>	Modbus (RS485) SDI-12, 4-20mA	Modbus (RS485) SDI-12, 4-20mA	Modbus (RS485) SDI-12, 4-20mA
<i>Housing Material</i>	Stainless Steel	Titanium	Titanium
<i>Nose Cone Material</i>	Black Delrin®	Black Delrin®	Black Delrin®
<i>Internal Battery</i>	3.6V lithium	3.6V lithium	3.6V lithium
<i>Battery Life</i>	5 yrs or 2M readings*	5 yrs or 2M readings*	5 yrs or 2M readings*
<i>Cable Connect</i>	Direct Read or Wire	Direct Read or Wire	Direct Read or Wire
<i>External Power</i>	8-36VDC	8-36VDC	8-36VDC
<i>Memory</i>	1MB	2MB	4MB
<i>Data Records**</i>	50,000	100,000	350,000
<i>Fastest Logging Rate</i>	1 per sec	2 per sec	4 per sec
<i>Fastest Output Rate</i>			
<i>Modbus</i>	2 per sec	2 per sec	2 per sec
<i>SDI-12</i>	2 per sec	2 per sec	2 per sec
<i>4-20 mA Update Rate</i>	2 per sec	2 per sec	2 per sec
<i>Measurement Types</i>	Linear, Fast Linear, Event	Linear, Fast Linear, Event	Linear, Fast Linear, Linear Average, Step Linear, Event, and True Logarithmic Silicon strain gauge Titanium
<i>Pressure Sensor</i>	Silicon strain gauge	Silicon strain gauge	Silicon strain gauge
<i>Sensor Material</i>	Stainless steel	Titanium	Titanium
<i>Sensor Accuracy</i>			+/- 0.05% @ 15°C
<i>Full Scale</i>	+/-0.1% @ 15°C +/- 0.1% over calibrated temperature range	+/-0.05% @ 15°C +/- 0.1% over calibrated temperature range	+/- 0.1% over calibrated temperature range +/- 0.005% or better Non-Vented***
<i>Sensor Resolution</i>	+/- 0.01% or better	+/- 0.005% or better	Non-Vented***
<i>Sensor Ranges Available</i>	Non-Vented*** (30 psia) 0-35ft (10.5m) (100 psia) 0-200ft (60m) (300 psia) 0-650ft (200m)	Non-Vented*** (30 psia) 0-35ft (10.5m) (100 psia) 0-200ft (60m) (300 psia) 0-650ft (200m) (500 psia) 0-1100ft (340m) Vented (5 psig) 0-11.5ft (3.5m) (15 psig) 0-35ft (11m) (30 psig) 0-70ft (21m) (100 psig) 0-230ft (70m) (300 psig) 0-700ft (210m) (500 psig) 0-1150ft (350m)	Vented (5 psig) 0-11.5ft (3.5m) (15 psig) 0-35ft (11m) (30 psig) 0-70ft (21m) (100 psig) 0-230ft (70m) (300 psig) 0-700ft (210m) (500 psig) 0-1150ft (350m)
<i>Burst Pressure</i>	Maximum 2X range Burst 3X range	Maximum 2X range Burst 3X range	Maximum 2X range Burst 3X range
<i>Units of Measure – Pressure</i>	Psi, kPa, bar, mbar, mmHg, inHg, cmH2O, and inH2O	Psi, kPa, bar, mbar, mmHg, inHg, cmH2O, and inH2O	Psi, kPa, bar, mbar, mmHg, inHg, cmH2O, and inH2O
<i>Units of Measure – Level</i>	m, mm, cm, in, ft	m, mm, cm, in, ft	m, mm, cm, in, ft
<i>Calibrated Temperature</i>	0°C to 50°C	-5°C to 50°C	-5°C to 50°C
<i>Temperature Accuracy</i>	+/- 0.3°C	+/- 0.1°C	+/- 0.1°C
<i>Temperature Resolution</i>	0.1°C	0.01°	0.01°
<i>Units of Measure</i>	Fahrenheit, Celsius	Fahrenheit, Celsius	Fahrenheit, Celsius

\* 1 reading = time and date plus all available parameters polled or logged from device

\*\* Data records = one reading with time stamp

\*\*\* Recommended for Baro TROLL® and Baro TROLL® 100 for post correcting non-vented instruments



## Rugged TROLL® 100 and 200 Instruments

The Rugged TROLL 100 and 200 instruments are designed for long- and short-term groundwater and surface-water monitoring. The non-vented (absolute) instruments monitor and record changes in water level, pressure, and temperature. Use with a Rugged BaroTROLL® for optimum accuracy. All instruments are compatible with the user-friendly Win-Situ® 5 or Win-Situ® Mobile software platform for programming and data retrieval.

### Affordable Titanium Data Loggers

- Use instruments in harsh environments – Titanium construction offers chemical- and corrosion-resistance.
- Customize data logs for your application – Linear, fast linear, and event logging modes are available.



### Simplified Setup and Data Retrieval

- Program and download data from a Rugged TROLL 100/200 or Rugged BaroTROLL with the Rugged TROLL® docking station.
- Communicate with a deployed Rugged TROLL 200 by using the low-cost Rugged TROLL® Com device, which connects to either a RuggedReader® handheld PC or a desktop/laptop computer.

### Flexible Deployment Options

- Use suspension wire with hanger for long-term deployments requiring minimal instrument access (for all instruments).
- Use direct-read cable with the Rugged TROLL 200 or Rugged BaroTROLL for applications requiring real-time data access.
- Access data when you need it – The Rugged TROLL 200 or Rugged BaroTROLL can be connected to a TROLL® Link telemetry system or SCADA system via Modbus/RS485 or SDI-12.

### Applications

- Coastal wetland and estuary research
- Crest stage gaging
- Drilling and well development
- Flood and storm surge monitoring
- Landfill monitoring

# Rugged TROLL® 100 and 200 Instruments

General	Rugged TROLL 100 & 200	Rugged BaroTROLL®
<b>Temperature ranges</b>	Operational: 32-122° F (0-50° C) Storage: -40-176° F (-40-80° C) Calibrated: 32-122° F (0-50° C)	Operational: 32-122° F (0-50° C) Storage: -40-176° F (-40-80° C) Calibrated: 32-122° F (0-50° C)
<b>Diameter</b>	1.03 in (2.62 cm)	1.03 in (2.62 cm)
<b>Length</b>	5.68 in (14.43 cm)	5.68 in (14.43 cm)
<b>Weight</b>	0.37 lb (170 g)	0.37 lb (170 g)
<b>Materials</b>	Titanium body; Delrin® nose cone, hanger, backend	Titanium body; Delrin nose cone, hanger, backend
<b>Output options</b>	Rugged TROLL 100: USB or RS232 via docking station Rugged TROLL 200: USB or RS232 via docking station; Modbus/RS485 or SDI-12 via Rugged TROLL 200 cable	USB or RS232 via docking station; Modbus/RS485 or SDI-12 via Rugged TROLL 200 cable
<b>Battery type &amp; life</b>	3.6V lithium; 5 years or 2M readings <sup>1</sup>	3.6V lithium; 5 years or 2M readings <sup>1</sup>
<b>External power</b>	Rugged TROLL 100: NA Rugged TROLL 200: 8-36 VDC	8-36 VDC
<b>Measurement current</b>	14 mA typical	14 mA typical
<b>Sleep current</b>	20 µA typical	20 µA typical
<b>Memory</b>	1.0 MB	1.0 MB
<b>Data records<sup>2</sup></b>	65,000	65,000
<b>Data logs</b>	Rugged TROLL 100: 1 log Rugged TROLL 200: 2 logs	2 logs
<b>Fastest logging rate</b>	1 per second	1 per minute
<b>Fastest output rate</b>	Rugged TROLL 200 only Modbus & SDI-12: 1 per second	Modbus & SDI-12: 1 per second
<b>Log types</b>	Linear, Fast Linear, and Event	Linear
<b>Sensor Type/Material</b>	Piezoresistive; Ceramic	Piezoresistive; Ceramic
<b>Range</b>	30 ft (9.0 m) (Burst: 60 ft) 100 ft (30 m) (Burst: 134 ft) 250 ft (76 m) (Burst: 368 ft)	7.0 to 30.0 psi; 0.5 to 2 bar
<b>Accuracy @ 15° C</b>	Typical ±0.1% full scale (FS)	Typical ±0.1% FS
<b>Accuracy (FS)</b>	±0.3% FS max. <sup>3</sup>	±0.3% FS max. <sup>3</sup>
<b>Resolution</b>	±0.01% FS or better	±0.01% FS or better
<b>Units of measure</b>	Pressure: psi, kPa, bar, mbar, mmHg Level: in, ft, mm, cm, m	Pressure: psi, kPa, bar, mbar, mmHg, inHg
<b>Temperature Sensor</b>	Silicon	Silicon
<b>Range</b>	Calibrated: 32-122° F (0-50° C)	Calibrated: 32-122° F (0-50° C)
<b>Accuracy</b>	±0.3° C	±0.3° C
<b>Resolution</b>	0.01° C or better	0.01° C or better
<b>Units of measure</b>	Fahrenheit, Celsius	Fahrenheit, Celsius
<b>Warranty</b>	1 year	1 year

<sup>1</sup> Battery life guaranteed when used within the factory-calibrated temperature range.

<sup>2</sup> 1 record = date/time plus 2 parameters logged (no wrapping) from device within the factory-calibrated temperature range.

<sup>3</sup> Across factory-calibrated temperature range.

Specifications are subject to change without notice. Delrin is a registered trademark of E.I. du Pont de Nemours & Co.

## Accessories

### Rugged BaroTROLL Instrument

Use the economical, titanium Rugged BaroTROLL instrument with either a Rugged TROLL 100 or 200 instrument. Win-Situ Baro Merge™ software simplifies post-correction of non-vented water level data.

### Rugged TROLL® 200 Cable

Use the non-vented Rugged TROLL 200 cable to access a Rugged TROLL 200 or Rugged BaroTROLL. Use the Rugged TROLL 200 cable suspension kit to anchor the cable in place. The following configurations are available:

- Modbus/RS485 stripped and tinned cable or SDI-12 stripped and tinned cable — Use with PLC, telemetry system, or logger
- Modbus/RS485 top-of-well cable — Use with Rugged TROLL Com and laptop PC or RuggedReader® handheld PC

<b>Jacket options</b>	TPU (thermoplastic polyurethane)
<b>Conductors</b>	4 conductors, 24 AWG, polypropylene insulation
<b>Diameter</b>	Cable: 0.200 in (5.1 mm) Connector: 1.03 in (26.1 mm)
<b>Minimum bend radius</b>	5X cable diameter
<b>Break strength</b>	150 lb (68 kg)

### Rugged TROLL® Com Communication Device

Use the Rugged TROLL Com device for communication between a cabled Rugged TROLL 200 or Rugged BaroTROLL instrument and a RuggedReader handheld PC or a desktop/laptop computer. The Rugged TROLL Com communicates via Modbus/RS485.

<b>Operating temp. range</b>	-4-122° F (0-50° C)
<b>Storage temp. range</b>	-40-176° F (-40-80° C)
<b>Materials</b>	Delrin, rubber, copper pins
<b>Environmental rating</b>	IP67 with battery cover closed
<b>Dimensions (LxWxH)</b>	3.5 x 1.14 x 1.88 in (8.9 x 2.9 x 4.8 cm)
<b>Input connection</b>	Modbus/RS485
<b>Output connection</b>	Available with either USB or RS232
<b>Power source</b>	9V alkaline battery, user-replaceable
<b>Cable</b>	Black polyurethane, 3 ft (91 cm) long

### Rugged TROLL® Docking Station

Use the docking station to program and download data from the Rugged TROLL 100 or 200 or from the Rugged BaroTROLL. The docking station is available with either a USB or RS232 communication interface. USB communication allows fast data transfer to a PC. The RS232 version is used with a PC or a RuggedReader handheld PC.

## In-Situ Aqua TROLL 100 & 200

### Conductivity + Level + Temp Data Logger

Conductivity measurements can be used to characterize water quality changes relative to a baseline or to estimate the concentration of contaminants. Aqua TROLL® instruments simplify groundwater and surface water monitoring.

#### Two models available:

- Aqua TROLL® 100—Measures and logs conductivity and temperature.
- Aqua TROLL® 200—Measures and logs conductivity, water level/pressure, and temperature. Dynamic density compensation delivers superior water level accuracy.

#### Flexible Communications

- Built-in Modbus/RS485, SDI-12, and 4-20 mA simplify SCADA and telemetry system integration.
- Uses Win-Situ® software platform

#### Extended Deployments

- Titanium housing safeguards against corrosion.
- Batteries last a minimum of 5 years when reading every 15 minutes guaranteed.
- TROLL® Shield antifouling system significantly reduces biofouling.



### Aqua TROLL Specifications

	Aqua TROLL		Aqua TROLL
Length	31.5cm	Conductivity	Balanced 4-electrode cell
Diameter	18.3mm	Sensor Type	PVC, Titanium
Weight	0.5 kg	Sensor Material	5µS/cm – 100,000µS/cm
Housing Material	Titanium	Range	+/- 0.5% of reading plus 1 µS/cm from 5 µS/cm to 80,000 µS/cm
Nose Cone Material	Black Delrin®	Accuracy	+/- 1.0% of reading from 80,000 µS/cm to 100,000 µS/cm
Output Options	Modbus RS-485, SDI-12, 4-20 mA	Resolution	0.1µS/cm
Fastest Polling Rate	Modbus RS485 1 per sec	Parameters Supported*	µS, mS 5 µS/cm – 100,000 µS/cm
	SDI-12 1 per sec	Actual Conductivity	5 µS/cm – 100,000 µS/cm
	4-20 mA 1 per sec	Specific Conductivity**	0 – 42 PSU
Pressure Range of Operation	5 psi – 500 psi	Salinity***	ppt 0 – 82 ppt
Operating Temperature Range	-20°C – 65°C	TDS	10 Ohms-cm – 200,000 Ohms-cm
Storage Temperature	-40°C – 65°C	Resistivity	0.98 – 1.14 gm/cm3
Power		Density (Water)	Silicon Strain Gauge
Internal Battery	3.6V lithium	Pressure/Level****	Titanium
External Power	8-36 VDC	(Aqua TROLL 200 only)	30, 100, 300, 500 psia
Typical Battery Life	Guaranteed - 5 yrs or 200,000 readings*	Sensor Type	10.9, 60.1, 200.7, 341.3 m
	4MB, 380,000 data points**	Material	5, 15, 30, 100, 300, 500 psig
Logging Memory	Linear 1 per minute	Range, Non-Vented	33.5, 11, 21, 70, 210, 351 m
	Linear Average*** 1 per sec	Range, Vented	
Log Types	Event*** 1 per sec	Unit of Measure	PSI, KPa, mm, cm, m, in., ft., Bar, mBar, mmHg
Fastest Reading* Rate	Linear 1 per minute		@ 15°C +/- 0.05% Full Scale (FS)
	Linear Average*** 1 per 2 sec		0°C to 50°C +/- 0.1% FS
	Event*** 1 per sec	Accuracy*α*	-20°C to -1°C and 51°C to 80°C +/- 0.25% FS
Maximum Number of Logs	50		+/- 0.005% FS or better
Temperature			2X Range
Material	Titanium		3X range
Range	-20°C to 65°C	Resolution	
Unit of Measure	Celsius or Fahrenheit	Max. Pressure	
Accuracy	+/- 0.1°C	Burst Pressure	
Resolution	0.01°C		

\* 1 reading = time and date plus all available parameters polled or logged from device.  
 \*\* 1 data point = time and date plus one parameter logged.  
 \*\*\* External power supply or battery pack required when using event testing, recommended when using linear average testing.

\* Parameters derived at 25°C and Actual Conductivity range of 5µS/cm – 100,000 µS/cm with a +/-0.05% plus 1µS/cm accuracy;  
 \*\* Derived from Standard Methods 2510B.  
 \*\*\* Defined by the Practical Salinity Scale 1978 Standard Methods 2520B.  
 \*\*\*\* Real time Level compensation for Density of water.  
 α\* Accuracy with 4-20 mA output option: +/- 0.25% FS.

### **Plopper Level Meter**

The mechanical Plopper, combined with rugged surveyor's tape, enables precise water level measurement without batteries. When the tape is lowered, the Plopper emits a crisp "plop" as it contacts the water surface. The measurements obtained are accurate and repeatable. The Plopper is designed exclusively for use with portable purge/sampling equipment.



### **Fox Whistle Level Meter**

A Fox Whistle is an open ended tube with a small hole in the top which hangs from a tape measure. As air is pushed through the hole when it comes in contact with water, a sharp whistle sound is made. A reliable yet inexpensive way to measure water levels in monitor wells. Available in 20mm and 25mm diameters with a 30m tape lengths.



Note: Fox Whistles and Ploppers are unsuitable where ambient noise may occur at ground surface, as it may be difficult to hear the whistle/plop.

### **Ordering Information**

<b>WMLPLOP103</b>	Plopper - (requires tape)
<b>CVLFW20</b>	Fox Whistle 20mm dia - (requires tape)
<b>GSAFW25</b>	Fox Whistle 25mm dia - (requires tape)
<b>EEQTAPE30</b>	Tape Only, ABS Case FGR, 30m

### **Kolor Kut Water Finding Paste**

No more guess work! This golden brown coloured paste turns a brilliant red upon contact with water giving you an accurate water gauge that is easily visible even under adverse lighting conditions. You can also use it to successfully gauge all petroleums and by-products for water content, plus sulphuric acid, nitric acid, hydrochloric acid, ammonia, soap solutions, salt and other chloride solutions.

### **Kolor Kut Gasoline Finding Paste**

A most effective top level indicator, this light pink paste turns to a contrast of red upon contact with gasoline, naphtha, kerosene, gas oil, crude oil, jet fuels and various chemicals.

### **Ordering Information**

<b>TTAWATERPASTE</b>	Water Finding Paste 85gm tube
<b>TTAHYDROCPASTE</b>	Gasoline Finding Paste 62gm jar



### Aqua Dipper Pro

The Aqua Dipper Pro water level meter is a top of the line instrument providing exceptional value.

The Aqua Dipper Pro water level meter, used by professionals, has been designed to provide a long and reliable service life, and is backed up by a limited 5 year warranty (excludes tape, bag, batteries. Other conditions apply). Accuracy begins with a top quality, heavy duty tape. Each tape is tested to ensure compliance with appropriate ASME standards.

These tough tapes have a breaking load of over 150 kg. The tape is made from high tensile steel, ensuring resistance to stretching even at abnormal loads.

Everything on the unit from the ergonomic vinyl carry handle to the easy clean, full depth stainless steel probe has been carefully designed to give you the very best water level meter. Each unit includes a sturdy padded nylon carrying bag.

- Easy to read accurate (ASME Standard) heavy duty polyethylene jacketed tape with stainless steel conductors.
  - All tape scales are printed beneath the jacketing ensuring long life and readability
  - Full depth, easy clean stainless steel and Teflon® probe.
  - Strong, flexible link attaches cascade-proof 5/8 inch (16mm) dia. probe to the tape, providing tape protection at this vital junction.
  - Water and dust proof encapsulated electronics on a removable front panel that houses the single 9V battery drawer, audible and light signal, sensitivity control and circuit test button.
  - Durable UV and high impact resistant engineered plastic reel with all stainless steel fittings
  - "Third Hand" feature on casing allows unit to be suspended on well while test results are recorded
  - Polyester coated steel frame with a comfortable ergonomic vinyl grip and large convenient reel lock.
  - The standard tapes are marked in meters and mm
- Tape lengths available: 15m, 30m, 60m, 100m, thereafter in 50m increments. Intermediate lengths are to special order.
- Carrying bag and tape guide included polycarbonate reels (150m and longer models use aluminum reels for lightness).



### Aqua Dipper

Low Cost Water Level Meter for Drillers

The Aqua Dipper is a tough economical water level meter. The low cost and durability of the tape make it an ideal choice for well drillers and pump installers.

The Aqua Dipper has a strong tape wound on a tough aluminium reel mounted on a tubular steel frame. It is easy to use, easy to read and easy to change.

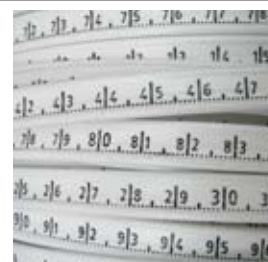
The Aqua Dipper gives you these features for easy use...

- Strong polyethylene measuring tape reinforced with Kevlar. Stainless Steel Conductors.
- Full depth rated probe 16mm diameter stainless steel and Teflon® construction.
- Dirt and Waterproof encapsulated electronic module includes a circuit/battery, test button, visual and audible signal and sensitivity control.
- Easy access 9V battery and draw.
  - \* Durable powder coated tubular steel frame with vinyl hand grip, casing hook, probe holder and large ergonomic brake.

Supplied with a drawstring slip cover.



Supplied with slip-cover carry bag



Tape Graduations

#### Order Information

**EEQAD(XX)** Aqua Dipper, with slip cover carry bag: choose tape length 15m, 30m, 60m, 100m, 150m, 200m, 250m, 300m and larger.

**EEQADPRO(XX)** Aqua Dipper Pro, with slip cover carry bag: choose tape length 15m, 30m, 60m, 100m, 150m, 200m, 250m, 300m and larger.

**HERDTTEMP** Temperature Sensor for Aqua Dipper Pro  
0 deg C - 110 deg C

**RFXRNS391** Hard plastic carry case with hinged lids



## Model 101 Water Level Meter

Provides accurate water level measurements in wells, boreholes and standpipes. The Model 101 Water Level Meter is the most accurate and reliable of the Solinst meters. It is easy to operate and marked each millimeter.

The Model 101 Water Level Meter uses the P6 pressure proof probe, attached to a permanently marked polyethylene tape, fitted on a well-balanced reel. The simple design is easy-to-clean, and hangs straight in wells. It is powered by a standard 9 volt battery housed in an easy-access battery drawer.

*Carry bag sold separately.*

### P6 Submersible Probe

12.7mm x 190mm

Stainless Steel, leak-proof probe.

Simple design, uses o-rings to allow submergence to 300m below water surface. It is easy-to-clean and hangs straight in the well.



### Ordering Information

**SOL101(XX)** Solinst 101 Water Level Meter, with P6 probe

Choose tape length 10m, 20m, 30m, 50m, 60m, 80m, 100m, 150m, 200m, 250m, 300m and larger.

**SOLBAG(S or M)** Solinst carry bag, black, padded canvas to protect your meter during transport

## Model 102 Low Cost Water Level Meter for Drillers

Designed to measure groundwater levels, Solinst Model 102 Water Level Meter features narrow diameter probes for use in wells as small as 3/8in. (10 mm). The strong, flexible cable has heavy-duty polyethylene jacket with permanent markings; each stainless steel conductor resists corrosion. Segmented weights make probes easier to handle. Rugged, sturdy design makes it ideal and cost effective for use in the field.

### Probes Options

Model 102 Water Level Meter probes are designed with segmented weights for flexibility. The Teflon® tip uses a recessed design to minimize signals in cascading water.

**P1** - 1/4in. dia. x 1-1/2in. long (6.4mm x 38mm) stainless steel, with 12 weights weighing 2.5 oz (70 g) - suitable for accessing narrow diameters

**P2** - 3/8in. dia. x 1-1/2in. long (10mm x 38mm) brass with 10 weights weighing 4.6oz (130g) - heavier probe for situations where weight is more important than size.



### Ordering Information

**SOL102(XX)** Solinst Model 102 Water Level Meter: choose tape length 30m, 50m, 60m, 80m, 100m, 150m, 200m, 250m, 300m and larger.

**RFXNS391** Hard plastic carry case with hinged lids

## Plastic Case for Water Level Meters

Protect your new water level meter with a hard carry case.

The RFXNS391 hard case features hinged lids, which can be tied or locked down for protection.



### Ordering Information

**RFXNS391** Hard plastic carry case with hinged lids

## TLC Meter

### Temperature, Level and Conductivity - measured in well

The new TLC Meter displays accurate measurements of conductivity and temperature on an LCD display that rotates for reading convenience. Water level and probe depth measurements are read off the accurate flat-tape marked each millimetre. The tape is housed on a standard Model 101 type reel. These features make the TLC Meter ideal for profiling conductivity and temperature in monitoring bores and open water.

### Conductivity Made Easy

- Accuracy as good as 2% of readings
- Convenient Solinst reel and accurate tape
- Lengths to 100m
- Display that rotates for easy reading
- Standard 9V alkaline battery gives 90 hrs
- Auto-Off after 4 minutes
- Inexpensive
- Self prompting menu makes calibrations simple and performed in just a few minutes

### Flat Tape

The high quality polyethylene tape reels smoothly, remains flexible and hangs straight in the well, irrespective of temperature. The tape is mounted on a sturdy, Solinst reel, with a convenient battery drawer for the 9 Volt alkaline battery. Permanent markings each millimetre allow accurate readings. Stranded stainless steel conductors resist corrosion, provide strength and are non-stretch. They make the tape very easy to repair and splice. The dog-bone design reduces adherence to wet surfaces. Markings are permanently impregnated onto one side of the tape.

### Conductivity Measurements

The TLC Meter uses a 'smart' conductivity sensor with platinum electrodes to read conductivity from 0 – 80,000 $\mu$ S. The conductivity is displayed on the rotating screen along with the associated temperature measurement. The 'smart' conductivity probe displays conductivity which has been

standardized to 25°C, i.e. specific conductance. Both conductivity and temperature measurements stabilize within 20 seconds. Conductivity accuracy is 2% of reading from 100 - 80,000 $\mu$ S. Calibration is simple. You may use single point or double point calibration, and the TLC gives the highest accuracy for measurements close to the calibration point. It also gives higher accuracy when the probe is well cleaned. For further convenience, the TLC Meter uses automatic calibration solution detection.

### Applications

- Profiling conductivity and temperature in wells
- Open water
- Salt-water intrusion investigations
- Groundwater salinity monitoring
- Tracer tests
- General indication of chemical contamination level
- Early warning of changes in water quality



## Specifications

**Tape length** 30, 50 and 100 m  
**Temperature range** -15 to 60 Deg C  
**Temp accuracy** +/- 0.3Deg C  
**Conductivity range** 0 - 80,000  $\mu$ m/cm  
**Conductivity accuracy** 2% of reading  
**Conductivity value** Display shows corrected value to 25 Deg C.

## Ordering information

**SOLTLC30** TLC meter with 30 m tape, includes carry bag  
**SOLTLC50** TLC meter with 50 m tape, includes carry bag  
**SOLTLC100** TLC meter with 100 m tape, includes carry bag

*Tape guide included with every meter to protect tape over the well edge and to provide a reference mark.*

**EEQ0442-1413US-500ML**

Conductivity solution 1413  $\mu$ S/cm 500ml  
**EEQ0442-80MS-500ML** Conductivity solution 80,000  $\mu$ S/cm 500ml

## ATEX Certified Water Level Meter

The ATEX Dipmeter is a water level and leachate monitoring instrument designed for use in aggressive and dirty environments.

It has a polyethylene coated steel tape with graduations in centimetres and millimetres. The polyethylene jacket ensures the high durability of the unit. The ATEX Dipmeter is available in a number of lengths ranging from 30m to 100m. Easy to read markings ensure that increased accuracy of level monitoring can be reached. The ATEX Dipmeter suits any level monitoring at depths over 100m.

This equipment has been certified for use in potentially explosive atmospheres in accordance with ATEX directive 94/9/EC. Equipment group and category: EX II 2 G. Protection concept: Eex ia IIB T4 (-20 °C ≤ to Ta ≤ +40 °C). It is the responsibility of the operator to determine the protection concept and classification required for a particular application.

### Features

- Polyethylene coated steel tape for high accuracy
- Tapes marked in mm intervals
- Audio and optional visual indication at contact with water level
- Variable sensitivity dial
- Durable PVC storage reel and frame
- Slide out battery case
- Reel brake and probe holder



### Specifications

**Probe diameter** 16mm dia, 170mm long  
**Probe material** Stainless steel  
**Reel** Plastic mounted on a steel frame  
**ATEX Certification** EQUIPMENT GROUP AND CATEGORY: EX II 2 G. PROTECTION CONCEPT: EEX IA IIB T4 (-20 °C ≤ TO TA ≤ +40 °C)

### Ordering Information

**GIDM1.1-30** Dip Meter, 30m tape  
**GIDM1.1-60** Dip Meter, 60m tape  
**GIDM1.1-100** Dip Meter, 100m tape

## IP Dipper Pro Interface Meter

The IP Dipper Pro is an interface meter used to accurately measure the thickness of floating or sinking hydrocarbon products in groundwater. It features a slim 16mm probe and is ideal for wells, piezometers and direct push equipment as narrow as 19mm ID. The probe and tape will withstand hydrocarbons, solvents and other contaminants.

- Detects and measures LNAPL (floating) and DNAPL (sinking) hydrocarbons in groundwater.
- Slim 5/8in. (16mm) field replaceable stainless steel probe. Probe has a non removable 3/4in. (19mm) protector fitted as standard.
- Able to measure product layer as thin as 1mm.
- Easy to read accurate (ASME Standard) Kynar® jacketed tape with stainless steel conductors. Graduation 1mm. Standard tapes are printed beneath the jacketing. The print never wears off.
- Easy change single 9v battery.
- Includes tough nylon carry bag and a comprehensive cleaning kit.

Certified intrinsically safe to CSA and ANSI/UL standards. Class 9098-01 for hazardous locations. Class 9098-81 (USA) for hazardous locations. Class I groups A, B, C and D.



Supplied with padded carry bag

### Specifications

**Weight** 2kg  
**Tape per 30m** 1.28 kg  
**Height** 340 mm  
**Width** 250 mm  
**Depth** 200 mm  
**Probe dia** 19.05mm (including probe protector)

### Ordering information

**EEQIP(XX)** IP Dipper Interface Meter, including bag and cleaning kit. Specify tape length - 15m, 30m, 60, 100m and larger  
**HERHOILKIT** Field support kit for IP Dipper Pro and HOIL contains One probe, wrenches, battery, panel nuts & cleaning brush

AVAILABLE  
TO RENT

INTRINSICALLY  
SAFE

### Model 122 Interface Meter

The Model 122 Oil/Water Interface Meters give accurate measurements of product level and thickness in wells and tanks.

Determination of both floating non-aqueous liquids (LNAPL) and sinking non-aqueous liquids (DNAPL) is quick and easy.

The 5/8" (16 mm) diameter P1 probe allows easy access through tight spaces and into narrow wells. A steady light and tone indicate product. Water is indicated by intermittent signals.

**Features**

- 16mm diameter probe
- Accuracy to 1/200 ft or 1mm
- Clear signals
- Easy access batteries
- Automatic shut off after 10 min
- Automatic circuitry testing upon start-up
- Easy decontamination
- Model 122 is CSA approved for use in hazardous locations Class I, Groups C&D

**P1 Probe**

5/8" diameter (16 mm) stainless steel. The beam is emitted from within a cone-shaped tip made from rigid polyurethane. The tip is protected by an integral stainless steel shield.



**Ordering information**

SOL122(XX)  
Model 122 interface meter, specify probe and length. Available lengths: 15m, 30m, 50m, 60m, 80m, 100m, 200m, 300m, 350m, 400m and 450m

AVAILABLE TO RENT      INTRINSICALLY SAFE

### ATEX Certified Interface Meter

The ATEX certified oil water interface meter offers reliable; accurate and safe detection of floating non-aqueous phase liquids (LNAPL) and sinking dense non-aqueous phase liquids (DNAPL). The oil water interface meter is extremely easy to use and is supplied with a carry bag to protect the unit.

This equipment has been certified for use in potentially explosive atmospheres in accordance with ATEX directive 94/9/EC. Equipment group and category: EX II 2 G. Protection concept: Eex ia IIB T4 (-20 °C <= to Ta <= +40 °C). It is the responsibility of the operator to determine the protection concept and classification required for a particular application

**Features**

- ATEX certified -zone 0
- Accurate measurement
- Simple operation
- Portable and lightweight
- Sealed electronics
- Narrow diameter probe
- Audio/Visual signals
- Tough construction



**Ordering information**

- GTIIM1.1-30 Interface Meter, 30m tape in bag
- GTIIM1.1-60 Interface Meter, 60m tape in bag
- GTIIM1.1-100 Interface Meter, 100m tape in bag

12 MONTH WARRANTY      ATEX CLASSIFIED

### Heron Sm.Oil Small Interface Meter

- The smallest interface meter available!
- Small size but big features.

Heron's small interface meter is an economical unit that will measure to 20m below the top of the well, making it ideal for shallow wells or high water tables. The Sm.Oil interface meter measures the thickness of floating or sinking layers of hydrocarbon products in the groundwater. Many of these instruments are used by refineries, oil spill and remediation companies, land fills and site clean up projects.

- Certified intrinsically safe (CSA & ANSI/UL)
  - > Class 9098 01 hazardous locations
  - > Class 9098 81 Hazardous locations (USA)
  - > Class I groups A, B, C and D



**Specifications**

- Tape Length 20m
- Tape Graduations 1mm
- Probe dia 19.05mm (including probe protector)
- Weight 1.9 kg
- Power 9 volt battery
- Dimensions 20cm x 20cm x 25cm

**Ordering information**

HERSMOIL Heron Sm.Oil Interface Meter

INTRINSICALLY SAFE

## **Solinst 122 Mini Interface Meter**

The Solinst 122 Mini has all of the superior technology built into our Model 122 Interface Meter and more. The new Mini is of a convenient small size and operates for longer and on only one standard 9V battery. The very low power consumption enables 300 hours or more of normal use before the battery needs changing.

The ergonomic small reel holds 20m of narrow flat tape and is fitted with a shorter probe. The handle has a cushioned grip and a probe holder. Like the standard Model 122, the Mini Interface Meter gives a steady tone and light in product and intermittent signals in water.

### **Features**

- 16mm dia. probe
- CSA approved for use in hazardous locations Class I, Groups C&D
- Tape width only 6mm, marked every mm



### **Ordering information**

**SOLMINI122-20** Solinst 122 Mini, 20m

**ThermoFisher**  
SCIENTIFIC

**Australia:** For customer service, call 1300-735-295  
Visit us online at: [www.thermofisher.com.au](http://www.thermofisher.com.au)  
**New Zealand:** For customer service, call 0800-933-966  
Visit us online at: [www.thermofisher.co.nz](http://www.thermofisher.co.nz)

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