

# Water Level Logger

## *In-Situ Level TROLL® Water Level Monitors and Loggers*

Get water level data the way you want it, when you want it with industry-leading water level/pressure and temperature data loggers. By partnering with In-Situ® Inc., you receive durable Level TROLL® Data Loggers that provide years of service, accurate results, intuitive software, and real-time functionality.

### FEATURES

- Increase productivity:**  
 Reduce training and installation time with In-Situ Inc.'s intuitive software platform and integrated components. Patented twist-lock connectors, included on Level TROLL Loggers and RuggedCable® Systems, ensure error-free deployments.
- Set up real-time networks:**  
 Access data 24/7 and receive event notifications when you connect data loggers to telemetry systems, radios, or other third-party data collection platforms. Control gates, pumps, alarms, and other equipment by using built-in Modbus/RS485, SDI-12, or 4-20 mA communication protocols.
- Streamline analysis and reporting:**  
 Automate water level corrections and post-processing, graph data, and accelerate report generation with Win-Situ® Software. Easily export data to Excel®, a web-based management service, or data analysis software.
- Deploy in all environments:**  
 Install loggers in fresh water, saltwater, and contaminated waters. Solid titanium, sealed construction outperforms and outlasts specially-coated data loggers.
- Log accurate data:**  
 Get optimal accuracy under all operating conditions. Sensors undergo NIST®-traceable factory calibration across the full pressure and temperature range. For applications requiring the highest levels of accuracy, use a vented (gauged) system.
- Get long-lasting operation:**  
 Reduce trips to the field with low-power loggers that typically operate for 10 years.



Level TROLL  
700

Level TROLL  
500

Level TROLL  
400

Baro TROLL

**CALL GEOTECH TODAY (800) 833-7958**

**Geotech Environmental Equipment, Inc.**

2650 East 40th Avenue • Denver, Colorado 80205

(303) 320-4764 • **(800) 833-7958** • FAX (303) 322-7242

email: sales@geotechenv.com website: www.geotechenv.com

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### APPLICATIONS

- **Aquifer characterization:**  
Slug tests and pumping tests
- **Coastal:**  
Tide/harbor levels & wetland/estuary research
- **Hydrologic events:**  
Crest stage gages, storm surge monitoring, & flood control systems
- **Long-term, real-time groundwater & surface water monitoring**
- **Mining & remediation**

### EVERY APPLICATION & BUDGET

Use maintenance-free, non-vented systems for long-term monitoring and at flood-prone or highhumidity sites.

Use high-accuracy, vented systems to conduct aquifer tests and to view barometrically compensated water level data in real time.

Forget to set a level reference at the beginning of a deployment? Automate level corrections by using Win-Situ Software's post-level correction Wizard.

### BaroTROLL® DATA LOGGER

Using a non-vented system? Collect barometric pressure and temperature data with a titanium BaroTROLL Data Logger in order to compensate data for barometric pressure fluctuations.

Calculating barometric efficiency? Use the BaroTROLL Logger with vented systems.

Win-Situ® Baro Merge® Software automates post correction of water level data.



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## In-Situ Level TROLL® Water Level Monitors and Loggers

### SPECIFICATIONS

GENERAL	Level TROLL 400	Level TROLL 500	Level TROLL 700	BaroTROLL
<b>Temperature Ranges<sup>1</sup></b>	Operational: -20-80°C (-4-176°F) Storage: -40-80°C (-40-176°F) Calibrated: -5-50°C (23-122°F)	Operational: -20-80°C (-4-176°F) Storage: -40-80°C (-40-176°F) Calibrated: -5-50°C (23-122°F)	Operational: -20-80°C (-4-176°F) Storage: -40-80°C (-40-176°F) Calibrated: -5-50°C (23-122°F)	Operational: -20-80°C (-4-176°F) Storage: -40-80°C (-40-176°F) Calibrated: -5-50°C (23-122°F)
<b>Diameter</b>	1.83 cm (0.72 in.)	1.83 cm (0.72 in.)	1.83 cm (0.72 in.)	1.83 cm (0.72 in.)
<b>Length</b>	21.6 cm (8.5 in.)	21.6 cm (8.5 in.)	21.6 cm (8.5 in.)	21.6 cm (8.5 in.)
<b>Weight</b>	197 g (0.43 lb.)	197 g (0.43 lb.)	197 g (0.43 lb.)	197 g (0.43 lb.)
<b>Materials</b>	Titanium body; Delrin® nose cone	Titanium body; Delrin nose cone	Titanium body; Delrin nose cone	Titanium body; Delrin nose cone
<b>Output Options</b>	Modbus/RS485, SDI-12, 4-20 mA	Modbus/RS485, SDI-12, 4-20 mA	Modbus/RS485, SDI-12, 4-20 mA	Modbus/RS485, SDI-12, 4-20 mA
<b>Battery Type &amp; Life<sup>2</sup></b>	3.6V lithium; 10 years or 2M readings	3.6V lithium; 10 years or 2M readings	3.6V lithium; 10 years or 2M readings	3.6V lithium; 10 years or 2M readings
<b>External Power</b>	8-36 VDC	8-36 VDC	8-36 VDC	8-36 VDC
<b>Memory</b> <i>Data Records<sup>3</sup></i> <i>Data Logs</i>	2.0 MB 130,000 50	2.0 MB 130,000 50	4.0 MB 260,000 50	1.0 MB 65,000 2
<b>Log Types</b>	Linear, Fast Linear, and Event	Linear, Fast Linear, and Event	Linear, Fast Linear, Linear Average, Event, Step Linear, True Logarithmic	Linear
<b>Fastest Logging Rate</b>	2 per second	2 per second	4 per second	1 per minute
<b>Fastest Output Rate</b>	Modbus: 2 per second SDI-12 & 4-20 mA: 1 per second	Modbus: 2 per second SDI-12 & 4-20 mA: 1 per second	Modbus: 2 per second SDI-12 & 4-20 mA: 1 per second	Modbus: 2 per second SDI-12 & 4-20 mA: 1 per second
<b>Real-time Clock</b>	Accurate to 1 second/24-hr period	Accurate to 1 second/24-hr period	Accurate to 1 second/24-hr period	Accurate to 1 second/24-hr period
<b>SENSOR TYPE/ MATERIAL</b>	Piezoresistive; titanium	Piezoresistive; titanium	Piezoresistive; titanium	Piezoresistive; titanium
<b>Range</b>	<b>Absolute (non-vented)</b> 30 psia: 11 m (35 ft.) 100 psia: 60 m (197 ft.) 300 psia: 200 m (658 ft.) 500 psia: 341 m (1120 ft.)	<b>Gauged (vented)</b> 5 psig: 3.5 m (11.5 ft.) 15 psig: 11 m (35 ft.) 30 psig: 21 m (69 ft.) 100 psig: 70 m (231 ft.) 300 psig: 210 m (692 ft.) 500 psig: 351 m (1153 ft.)	<b>Absolute (non-vented)</b> 30 psia: 11 m (35 ft.) 100 psia: 60 m (197 ft.) 300 psia: 200 m (658 ft.) 500 psia: 341 m (1120 ft.) 1000 psia: 693 m (2273 ft.) <b>Gauged (vented)</b> 5 psig: 3.5 m (11.5 ft.) 15 psig: 11 m (35 ft.) 30 psig: 21 m (69 ft.) 100 psig: 70 m (231 ft.) 300 psig: 210 m (692 ft.) 500 psig: 351 m (1153 ft.)	30 psia (usable up to 16.5 psi; 1.14 bar)
<b>Burst Pressure</b>	Max. 2x range; burst > 3x range	Max. 2x range; burst > 3x range	Max. 2x range; burst > 3x range	Vacuum/over-pressure above 16.5 psi damages sensor
<b>Accuracy @ 15°C<sup>4</sup></b>	±0.05% full scale(FS)	±0.05% FS	±0.05% FS	±0.05% FS
<b>Accuracy (FS)<sup>5</sup></b>	±0.1% FS	±0.1% FS	±0.1% FS	±0.1% FS
<b>Resolution</b>	±0.005% FS or better	±0.005% FS or better	±0.005% FS or better	±0.005% FS or better
<b>Units of Measure</b>	Pressure: psi, kPa, bar, mbar, mmHg, inHg, cmH <sub>2</sub> O, inH <sub>2</sub> O Level: in., ft., mm, cm, m	Pressure: psi, kPa, bar, mbar, mmHg, inHg, cmH <sub>2</sub> O, inH <sub>2</sub> O Level: in., ft., mm, cm, m	Pressure: psi, kPa, bar, mbar, mmHg, inHg, cmH <sub>2</sub> O, inH <sub>2</sub> O Level: in., ft., mm, cm, m	Pressure: psi, kPa, bar, mbar, mmHg, inHg, cmH <sub>2</sub> O, inH <sub>2</sub> O
<b>TEMPERATURE SENSOR</b>	Silicon	Silicon	Silicon	Silicon
<b>Accuracy &amp; Resolution</b>	±0.1°C; 0.01°C or better	±0.1°C; 0.01°C or better	±0.1°C; 0.01°C or better	±0.1°C; 0.01°C or better
<b>Units of Measure</b>	Celsius or Fahrenheit	Celsius or Fahrenheit	Celsius or Fahrenheit	Celsius or Fahrenheit
<b>WARRANTY<sup>6</sup></b>	3 years	3 years	3 years	3 years

<sup>1</sup> Temperature range for non-freezing liquids. <sup>2</sup> Typical battery life when used within the factory-calibrated temperature range. <sup>3</sup> 1 data record = date/time plus 2 parameters logged (no wrapping) from device within the factory-calibrated temperature range. <sup>4</sup> Across factory-calibrated pressure range. <sup>5</sup> Across factory-calibrated pressure and temperature ranges. <sup>6</sup> 3-year warranty effective after December 31, 2013; visit [www.in-situ.com/warranty](http://www.in-situ.com/warranty) for warranty effective through December 31, 2013. Up to 5-year (total) extended warranties are available for all sensors – call for details. Delrin is a registered trademark of E.I. du Pont de Nemours and Company.



Specifications are subject to change without notice.

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