

# Water Level Logger

## *In-Situ Rugged TROLL® Water Level Monitor and Logger*

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® instrument 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.

### FEATURES

#### 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



**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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### SPECIFICATIONS

| General  | Rugged TROLL 100 & 200  | Rugged BaroTROLL®  |
|--|---|--|
| <b>Temperature Ranges:</b>   | Operational: 32-122°F (0-50°C)<br>Storage: -40-176°F (-40-80°C)<br>Calibrated: 32-122°F (0-50°C)  | Operational: 32-122°F (0-50°C)<br>Storage: -40-176°F (-40-80°C)<br>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<br>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<br>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><br><i>Data Records</i> <sup>2</sup><br><i>Data Logs</i> | 1.0 MB<br>65,000<br>Rugged TROLL 100: 1 log<br>Rugged TROLL 200: 2 logs   | 1.0 MB<br>65,000<br>2 logs   |
| <b>Fastest Logging Rate:</b>   | 1 per second  | 1 per minute   |
| <b>Fastest Output Rate:</b>  | Rugged TROLL 200 only<br>Modbus & SDI-12: 1 per second  | Modbus & SDI-12: 1 per second  |
| <b>Log Types:</b>  | Linear, Fast Linear, and Event  | Linear   |
| <b>Sensor</b>  |   |  |
| <b>Type/Material:</b>  | Piezoresistive; Ceramic   | Piezoresistive; Ceramic  |
| <b>Range:</b>  | 30 ft. (9.0 m) (Burst: 60 ft.)<br>100 ft. (30 m) (Burst: 134 ft.)<br>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<br>Level: in., ft., mm, cm, m   | Pressure: psi, kPa, bar, mbar, mmHg, inHg  |
| <b>Temperature Sensor</b>  |   |  |
| <b>Material:</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   |

### 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 Rugged-Reader® handheld PC.

#### 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 Rugged-Reader handheld PC or a desktop/laptop computer. The Rugged TROLL Com communicates via Modbus/RS485.

#### 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.

<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.

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