



Aqua TROLL® Instruments

Conductivity, Temperature,
Plus Water Level Logging



Conductivity measurements can be used to characterize water quality changes relative to a baseline or to estimate the concentration of contaminants. The In-Situ® Aqua TROLL 100 and Aqua TROLL 200 Instruments measure and log conductivity and temperature. The Aqua TROLL 200 adds water level logging.

Rugged, Compact Design

- Use in harsh environments. Titanium construction resists fouling and is chemical- and corrosion-resistant.
- Deploy 1.83-cm (0.72-in) diameter instruments into narrow wells.

Extended Deployments

- Reduce power consumption. Batteries have a typical life of 5 years when reading every 15 minutes. 8-36 VDC input is compatible with external batteries and solar power.
- Use the TROLL® Shield Antifouling System to reduce biofouling and extend deployments by up to 6 weeks.

Accurate Results

- Use dynamic density compensation to collect accurate water level data in environments where salinity values may vary.
- Receive factory-calibrated instruments that are validated with NIST®-traceable standards.
- Deploy for long-term monitoring. Instruments operate with very low drift.

Flexible Communications

- Integrate into telemetry and SCADA systems. Outputs include standard Modbus/RS485, SDI-12, and 4-20 mA.
- Easily connect to RuggedReader® Handheld PC or PC.
- Use RuggedCable® Systems with titanium twist-lock connectors for quick, reliable connections.
- Simplify instrument setup, automate site management, and view real-time results with Win-Situ® Software.

Applications

- Aquifer storage and recovery systems
- Coastal deployments—Saltwater intrusion monitoring, storm surge analysis, and estuary/wetland research
- Remediation site and mine water monitoring
- Stormwater monitoring programs

Aqua TROLL® 100 and 200 Instruments

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Temperature ranges¹	Operational: -5 to 50° C (23 to 122° F) Storage: -40 to 65° C (-40 to 149° F) Calibrated: 0 to 50° C (32 to 122° F)	
Max. pressure for Aqua TROLL 100	500 psi (1153 ft)	
Dimensions & weight	Diameter (OD): 1.83 cm (0.72 in). Length: 31.5 cm (12.4 in) Weight: 0.5 kg (1.0 lb)	
Materials	Titanium body and sensors, Delrin® nose cone, and PVC conductivity cell	
Output options	Modbus/RS485, SDI-12, and 4-20 mA	
Battery type & life²	3.6V lithium. 5 years or 200,000 readings ³	
External power	8-36 VDC	
Memory	4.0 MB	
Data records⁴	190,000	
Data logs	50	
Log types⁵	Linear, Linear Average, and Event	
Fastest logging rate	Linear: 1 per minute. Linear Average: 1 per minute. Event: 1 per second	
Fastest output rate	1 per second	
Conductivity Sensor	Type: Balanced 4-electrode cell	
Methods	EPA Method 120.1; Standard Methods 2510	
Range, accuracy, & resolution	Range: 5 to 100,000 µS/cm Accuracy: ±0.5% of reading + 1 µS/cm when reading less than 80,000 µS/cm ±1.0% of reading when reading above 80,000 µS/cm Resolution: 0.1 µS/cm	
Parameters supported⁶	<i>Range</i>	<i>Units</i>
Actual conductivity	5 to 100,000 µS/cm	µS/cm, mS/cm
Specific conductivity⁷	5 to 100,000 µS/cm	µS/cm, mS/cm
Salinity⁸	0 to 42 PSU	PSU
Total dissolved solids	0 to 82 ppt	ppt, ppm
Resistivity	10 to 200,000 Ohms-cm	Ohms-cm
Density (water salinity)	0.98 to 1.14 g/cm ³	g/cm ³
Pressure/Level Sensor⁹	Type: Piezoresistive. Pressure/level are available only on the Aqua TROLL 200 Instrument.	
Range	<i>Absolute (non-vented)</i> 30 psia: 10.9 m (35.8 ft) 100 psia: 60.0 m (197 ft) 300 psia: 200.7 m (658.7 ft) 500 psia: 341.3 m (1120 ft)	<i>Gauged (vented)</i> 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)
Burst pressure	Maximum 2x range; burst > 3x range	
Accuracy & resolution¹⁰	Accuracy @ 15° C: ±0.05% full scale (FS) ¹¹ Accuracy 0 to 50° C: ±0.1% FS ¹² Resolution: 0.005% FS or better	
Units of measure	Pressure: psi, kPa, bar, mbar, mmHg, inHg, cmH ₂ O, inH ₂ O. Level: in, ft, mm, cm, m	
Temperature Sensor		
Method	EPA Method 170.1	
Accuracy & resolution	Accuracy: ±0.1° C. Resolution: 0.01° C or better	
Units of measure	Celsius or Fahrenheit	
Warranty	2 years. Up to 5-year extended warranties available—please call for details.	

TROLL® Shield Antifouling System Extends Deployments

When used at coastal and high-fouling sites, the TROLL Shield Antifouling System fights biofouling of the Aqua TROLL Instrument and its conductivity cell. Reduced sensor fouling extends deployments by up to 6 weeks and improves instrument accuracy and performance. Use the coiled copper guard with both the Aqua TROLL 100 and 200 Instruments. Use the copper nose cone with the Aqua TROLL 200. For optimum performance, replace the guard every 6 months.



24/7 Support

In-Situ technical specialists assist with instrument setup, application support, and troubleshooting. Call for free technical support.

¹ Temperature range for non-freezing liquids

² Typical battery life when used within the factory-calibrated temperature range

³ 1 reading = date/time plus all available parameters polled or logged from device

⁴ 1 data record = date/time plus 3 parameters logged (no wrapping) from device

⁵ External power or battery pack is recommended when using Linear Average or Event logging modes.

⁶ Parameters derived from temperature at 25° C and actual conductivity range of 5 to 100,000 µS/cm with a ±0.5% + 1 µS/cm accuracy

⁷ Derived from Standard Methods 2510B

⁸ Defined by the Practical Salinity Scale 1978; Standard Methods 2520B

⁹ Real-time level compensation based on water density

¹⁰ Accuracy with 4-20 mA output option: ±0.25% FS

¹¹ Across factory-calibrated pressure range

¹² Across factory-calibrated pressure and temperature ranges

Specifications are subject to change without notice.

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