

TROLL® 9500 Multiparameter Water Quality Monitoring Instrument

The TROLL® 9500 water quality instrument simplifies multiparameter monitoring. The TROLL® 9500 is a powerful, portable unit that houses up to nine water quality sensors, internal power, and optional data logging capabilities.

Lower total cost of ownership

- Save time and money with automated low-flow sampling, field-replaceable sensors, long-lasting internal power, connection to TROLL® Link telemetry systems for remote data management, and more.
- Reduce maintenance and site visits with the field-proven RDO® sensor.

Higher reliability

- Corrosion-resistant housing suitable for fresh, waste, and marine waters
- Field-replaceable sensors for easy maintenance and calibration
- Free technical support 24 hours a day, 7 days a week

Proven accuracy

- A factory report, using NIST®-traceable standards where applicable, is included with each unit.
- Rigorous, independent third-party validation proves the In-Situ® RDO performs to its specifications over long-term deployments.

Easy operation

- Innovations like Quick Cal check solutions, Twist-Lock cable connectors, and user-friendly software make your job easier.

Available Models

LTS: LTS stands for “Level, Temperature, and one additional Sensor” such as conductivity, pH, or optical dissolved oxygen (RDO). Includes internal data logging. Use for coastal applications or to measure groundwater quality over time.

PROFILER: Ideal for water quality sampling or profiling. Allows for any of the key water parameters such as pH, ORP, DO, conductivity/salinity, temperature, or depth. Memory is not included, but data can be logged to a RuggedReader® or a PC.

PROFILER XP: Offers the same features as the Profiler unit, but with the option to use XP or “Extended Parameter” sensors, such as turbidity, ammonium, nitrate, and chloride.

PROFESSIONAL: Offers the highest value for most applications. Supports the key parameters similar to the Profiler, and includes internal data logging capabilities.

PROFESSIONAL XP: The most capable TROLL 9500 instrument offers the same features as the Professional unit, but with the option to use XP or “Extended Parameter” sensors, such as turbidity, ammonium, nitrate, and chloride.

Applications

- **Environmental monitoring**
- **Estuary evaluations**
- **Long-term deployments**
- **Low-flow sampling**
- **Mine water quality analysis**
- **Remediation projects**
- **Spot checking**
- **Stormwater outfall studies**
- **Surface water testing**
- **TMDL assessments**
- **Vertical profiling**



Specifications

Versions	Application	Available sensor ports ¹	Accepts XP sensors	Internal data logging	Logs data with RuggedReader®
Profiler	Profiling, spot checking	4	—	—	Yes
Profiler XP	Profiling, spot checking	4	Yes	—	Yes
Professional	Long-term monitoring and/or profiling	4	—	Yes	Yes
Professional XP	Long-term monitoring and/or profiling	4	Yes	Yes	Yes
LTS	Long-term monitoring	1	—	Yes	Yes

General

Dimensions	47mm (1.85 in) OD X 47.3cm (18.6 in); with RDO sensor adapter: 88.4 mm (3.5 in) OD, 20.3cm (8.0 in) long
Weight	1.9 kg (4.2 lbs)
Wetted materials	PVC, 316L stainless steel, Acetal, Viton®, nylon, Tefzel® or polyurethane (cable)
Water tightness rating	IP68 with all sensors and cable attached; Battery compartment: IP67 w/o the battery cover or cable attached
Output options	SDI-12 (optional with SDI-12 adapter), ASCII streaming mode or binary command
Internal power	2 internal user-replaceable D batteries (alkaline or high-power lithium)

¹Available water quality sensor ports. TROLL 9500 LTS version supports level, temperature, and one water quality sensor.

Standard Sensors	Accuracy	Range	Depth Rating	Response Time (T90)	Methodology
Barometric Pressure	±0.3% FS	7–16.5 psia	Meets highest rating	<30 sec per 30m (100 ft cable)	Silicon strain gauge
Temperature	±0.1°C	-5°C–50°C	Meets highest rating	<30 sec	EPA170.1
Level, Depth, Pressure	±0.05%FS	0–15 psi	11m / 35 ft	In thermal equilibrium:	Silicon strain gauge
		0–30 psi	21 m / 69 ft	instantaneous	(vented or absolute)
		0–100 psi	70 m / 231 ft	In thermal change:	
		0–300 psi	210 m / 692 ft	instantaneous to ±2% FS	
				30–60 min to ±0.1% FS	
				1.5–2 hr to ±0.05% FS	
pH (single or pH/ORP combo)	±0.1 pH units	0–12 pH units	246 m / 807 ft	<15 sec, pH 7 to pH 4	Std. Mthds. 4500-H, EPA1502
ORP (pH/ORP combo)	±4.0 mV	±1400 mV	246 m / 807 ft	<15 sec	Std. Mthds. 2580
Dissolved Oxygen					
RDO (Optical DO) ²	±0.1 mg/L	0–8 mg/L	Meets highest rating	30 sec	ASTM #D888-05 Method C
	±0.2 mg/L	8–20 mg/L		30 sec	ASTM #D888-05 Method C
Clark electrode	±0.2 mg/L	0–20 mg/L	246 m / 807 ft	1-mil membrane: 1–2 min @25°C	Std. Mthds. 4500-O-G, EPA360.1
		0–200% saturation		2-mil membrane: 90 sec–3 min	
Conductivity					
Low	±0.5% or 2µS/cm	5–20,000 µS/cm ³	Meets highest rating	Instantaneous	Std. Mthds. 2510, EPA 120.1
High	±0.5% + 2µS/cm	150–112,000 µS/cm ⁴	Meets highest rating	Instantaneous	Std. Mthds. 2510, EPA 120.1

² No anode or cathode to scrub or clean ³ Full operating range 3 µS/cm – 60,000 µS/cm ⁴ Full operating range 70 µS/cm – 200,000 µS/cm

Extended Parameter (XP) Sensors

Turbidity	±5% or 2 NTU/FNU	0–2000 NTU/FNU	105m / 346 ft	Instantaneous (5 sec for first reading)	ISO 7027
Nitrate (NO₃⁻)	±10%	0.14–14000 ppm N	14m / 46 ft	< 60 sec (T98), 1.4 to 14 ppm N	Std. Mthds. 4500-NO ₃ D
Ammonium (NH₄⁺)	±10%	0.14–14000 ppm N	14m / 46 ft	< 60 sec (T98), 1.4 to 14 ppm N	Std. Mthds. 4500-NH ₄ D, EPA 350.3
Chloride (Cl⁻)	±15%	0.35–35500 ppm Cl	70m / 231 ft	< 60 sec (T98), 3.54 to 35.45 ppm Cl	Std. Mthds. 4500-Cl D

Logging

Data logging	16 programmable tests (defined, scheduled to run, or stored) / Logging modes: linear, linear average, event
Memory	4 MB (1,000,000 individual readings)
SDI-12	Optional with SDI-12 adapter



Sub-4 in with turbidity, pressure, and RDO.



View of sensors on sub-4 in with turbidity, pressure, and RDO.



View of sensors on sub-2 in with pH, conductivity, and RDO.



Sub-2 in with turbidity, pressure, and 3 additional sensors

Warranty

The TROLL 9500 instrument and all sensors (excluding RDO and ISE sensors) come with a 1-year warranty. Warranty on the RDO sensor is 3 years. Warranty on RDO sensor caps is 2 years. Warranty on ISE sensors is 90 days. Warranty on RuggedCable® systems is 2 years.



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