
In-Situ Inc.
MADE IN THE U.S.A!
NEW!
MULTI-PARAMETER WATER QUALITY
TROLL® 9500
Water Quality Monitoring Made Easy!
Higher Reliability & Ease of Use
Lower Total Cost of Ownership
Proven Accuracy & Standard Methods
FREE 24/7 Technical Support—Always!
CALL 1-800-446-7488 • 1-970-498-1500 • EXPERIENCE THE TROLL 9500 AT WWW.IN-SITU.COM

In-Situ Inc.

TROLL® 9500

FRESH WATERS
WASTE WATERS
MARINE WATERS

PROFESSIONAL WATER QUALITY

Easy-to-change batteries (2 X D-cells) with an IP67 rated waterproof battery compartment.

Proven reliable Twist-Lock™ connectors with fully detachable custom cable lengths. Also extendable!

Maximum flexibility—up to 9 field-replaceable sensors all in less than a 4.7cm (1.85") diameter.

Save time and money by using Quick-Cal solutions to validate or calibrate in less than 5 minutes.

Satisfaction Guaranteed!

We're so confident that you'll find the TROLL 9500 easy to use and our customer care to be the best in the industry that if you're not satisfied in 30 days, we'll refund your purchase.

Lower Total Cost of Ownership

*The TROLL 9500 saves time and money with convenient features like Quick-Calibrations, automated Low-Flow sampling, field-replaceable sensors, long-lasting internal power, and more. Our field-proven Optical D.O. sensor (**RDO**™) reduces maintenance and the need to visit the site.*

Higher Reliability

*The TROLL 9500 features a corrosion-resistant housing that is suitable for fresh, waste, and marine waters. The battery compartment and cable connector are IP67 rated **even when detached**. Sensors are field replaceable for easy maintenance and calibration. Plus, we offer 24 hours / 7 days a week FREE technical support for your peace of mind when working in the field.*

Proven Accuracy

*A factory report using NIST-traceable standards where applicable is included with each unit. Rigorous, independent 3rd-party validation proves our Optical D.O. (**RDO**) is the most accurate and rugged sensor in the industry. **Ask us for a free report!***

Easy Operation

The TROLL 9500 features innovations like Quick-Cal solutions, Twist-Lock connectors, and user-friendly software that make your job easier.

Certified traceability to NIST standards where applicable. A calibration report is included.

Improve your data with the industry's most rugged and accurate optical D.O. sensor.

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USB or RS-232 communications

SDI-12 capable

For humid environments, try a MAXUM desiccant. Protects vented cables from moisture entry.

Pocket-Situ Software

View and log data with a field-worthy RuggedReader. This IP67-rated handheld PC automatically synchronizes data with your PC when used with Pocket-Situ™ software.

Twist-Lock cables make changing cables easy. Twist on and lock tight. Simple and reliable. No tools required.

Extend cables by attaching two together. Maximize the value of your investment!

Use TROLL 9500 with vented cables or a sealed backshell

NEW! SnapFit battery system—takes 2 D-sized alkaline or optional lithium batteries for added life.

MULTI-PARAMETER WATER QUALITY

Win-Situ Software

Win-Situ sets the standard for ease-of-use. Friendly Wizards guide every step from instrument setup to calibration and data logging. View data as a graph or report and easily export data to MS Excel® with a click of a button!

Profiler view displays real-time data in a meter or graphical format. Data may be logged to the RuggedReader or PC. Flow-Sense™ software helps automate low-flow sampling events and final report generation.

The TROLL 9500 is a powerful, portable unit built to obtain data reliably and accurately. Satisfaction guaranteed!

Water quality sensors are field replaceable. Sensors remember their calibration so you don't need to. Calibrate in the office and replace in the field.

TROLL 9500 VERSIONS:

LTS

LTS stands for "**L**evel, **T**emperature, and one additional **S**ensor" such as conductivity, pH, or dissolved oxygen. This version also includes internal data logging. It can be used for coastal applications or to measure ground water quality over time.

Profiler

Ideal for water quality sampling or profiling. The Profiler allows for any of the key water parameters such as pH, ORP, D.O., conductivity/salinity, temperature, depth. Memory is not included, but data can be logged to a RuggedReader or a PC.

Profiler XP

The Profiler XP offers the same features as the 'Profiler' unit, but with the option to use XP or "**E**xtended **P**arameter" sensors, such as turbidity, ammonium, nitrate, and chloride.

Professional

This version offers the highest value for most applications allowing for all the key parameters similar to the 'Profiler' PLUS internal data logging for recording trends over time.

Professional XP

The most capable TROLL 9500 that offers the same features as the 'Professional' unit, but with the option to use XP or "**E**xtended **P**arameter" sensors, such as turbidity, ammonium, nitrate, and chloride.

USE IT FOR:

Surface water, Ground water interaction, Estuary monitoring, Saltwater intrusion, Watershed and source water protection, Stream restoration, Beach monitoring, NPDES discharge, NPS monitoring, Wastewater influent, Effluent, Storm water runoff monitoring, Reservoir & lake monitoring, Dredging operations, Low-flow sampling, Vertical profiling, Process water, Aquaculture

ACCESSORIES:

Quick-Cal Solutions
Saves time and money. Calibrates pH, ORP, conductivity, and Clark D.O. all together in typically under 5 minutes.

Assurance Plus Programs
Protect your investment with extended warranties & maintenance programs.

Cable Reels and Well Accessories
Cable reels make deployment of long cables manageable. We have reels to handle cables of all lengths.

Additionally, ask about our well docking accessories. Provides a secure way to anchor a sonde in a well.

Low-Flow Pumps

Low-Flow Sampling System
Considering this technique to improve the quality of your samples? Try the TROLL 9500 Low-Flow Sampling System. The included 'Flow-Sense' software steps you through entry of well/flow information as well as setup of stabilization criteria. When finished, a report can be generated automatically.

SENSOR TECHNOLOGIES:

Optical Dissolved Oxygen (RDO)
> No photobleaching
> No hydration effects
> No membranes
> No stirring
> Excellent in anoxic conditions
> 3 year warranty
Proven to be the most accurate and rugged D.O. technology.

Temperature
Temperature is a critical water quality parameter and is also used to compensate readings from D.O., pH, conductivity, and ISE nutrient sensors. This precision sensor is accurate and fast responding.

Dissolved Oxygen Clark Electrode
Clark D.O. electrodes are a time-tested, reliable way to measure dissolved oxygen. Easy-to-use replaceable membrane caps.

Membrane and cleaning kits are a must to maintain quality measurements.

Conductivity • Salinity TDS • Resistivity
Conductivity is key to any water quality program. Salinity, TDS, and specific gravity are derived from this sensor. Low and high-range sensors are available to measure up to 200mS.

Level / Pressure
Measure down to the millimeter! In-Situ depth sensors feature extreme accuracy and compensation over the entire temperature & pressure range.

Ranges include 11, 21, 70, and 211 meters. A calibration report is included with each unit.

Fixed Sensor

Turbidity Wiper
In high fouling environments or when measuring turbidity over time, a turbidity wiper is a must.

Wiper is independent from turbidity sensor and removable for easy maintenance.

Standard Sensors

pH • ORP • pH/ORP
A large internal reference provides for longer field use. Plus, they have been tested and rated for depths up to 246m!

Available in pH only, ORP only, and pH/ORP combo sensors.

Barometric Pressure
Barometric pressure is required to calculate percent saturation values for D.O. Also useful to understand effects of barometric pressure on the water system.

XP Sensors

Turbidity + Level Turbidity only
Add turbidity by itself or with a depth sensor. Turbidity follows the ISO7027 standard and offers a wide operating range from 0-2000 NTU

NTU or FNU units are available.

Fixed Sensor

ISE Nutrient Sensors Nitrate • Ammonium • Chloride
These ISE sensors can be used as a profiling tool to indicate gross changes in nutrient levels. Temperature compensated calibration option.

ONLY FROM IN-SITU:

D.O. Field Bubbler Kit
Image getting a perfect D.O. calibration with minimal setup. The D.O. Bubbler Kit is designed for easy setup in the office or on site. Plus, air-saturated water calibrations give more accurate results! Only from In-Situ.

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TROLL® 9500

SPECIFICATIONS

TROLL 9500

Versions

	Application / use for:	Available WQ sensor ports**	Accepts 'XP' sensors	Internal data logging	Logs data with RuggedReader
Profiler	Profiling, dip and sample	4	--	--	Yes
Profiler XP	Profiling, dip and sample	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) RDO sensor adapter: 88.4mm (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, FEP* or polyurethane (cable)
Water tightness rating	Housing (not including sensors): up to 2500 psi (1200m / 1600 ft) / Battery compartment: IP67 without 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) RDO requires 2 lithium batteries or external power

Standard Sensors

	Accuracy	Range	Depth Rating	Response Time (T90)	Methodology
Barometric Pressure	± 0.3% FS	0 – 16.5 psia	Meets highest rating	< 30 sec per 30m (100 ft) cable	
Temperature	± 0.1°C	-5°C – 50°C	Meets highest rating	< 30 sec	EPA 170.1
Level	± 0.05% FS	15 psi	11m / 35 ft	In thermal equilibrium: Instantaneous	
Depth, Pressure		30 psi	21m / 69 ft	In thermal change—	
		100 psi	70m / 231 ft	Instantaneous to ± 2% FS,	
		300 psi	210m / 692 ft	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	246m / 807 ft	< 15 sec, pH 7 to pH 4	Std.Mthds. 4500-H+, EPA 150.2
ORP (single or pH/ORP combo)	± 4.0 mV	± 1400 mV	246m / 807 ft	< 15 sec	Std.Mth ds. 2580
Dissolved Oxygen					
RDO (Optical D.O.)	± 0.1 mg/L	0 – 10 mg/L	Meets highest rating	O2 increasing, 16 seconds;	ASTM #D888-05 Method C
	± 0.2 mg/L	10 – 20 mg/L		O2 decreasing ,45 seconds	ASTM #D888-05 Method C
Clark electrode	± 0.2 mg/L	0 – 20 mg/L,	246m / 807 ft	1-mil membrane: 1–2 min@25°C	Std.Mthds. 4500-O G, EPA 360.1
		0 – 200% saturation		2-mil membrane: 90 sec–3 min	
Conductivity					
Low	± 0.5% or 2 µS/cm	5 – 20,000 µS/cm***	Meets highest rating	Instantaneous	Std.Mthds. 2510, EPA 120.1
High	± 0.5% + 2 µS/cm	150 – 112,000 µS/cm****	Meets highest rating	Instantaneous	Std.Mthds. 2510, EPA 120.1

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-NO3 D
Ammonium (NH4+)	± 10%	0.14 – 14000 ppm N	14m / 46 ft	< 60 sec (T98), 1.4 to 14 ppm N	Std.Mthds. 4500-NH3 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	

Logging

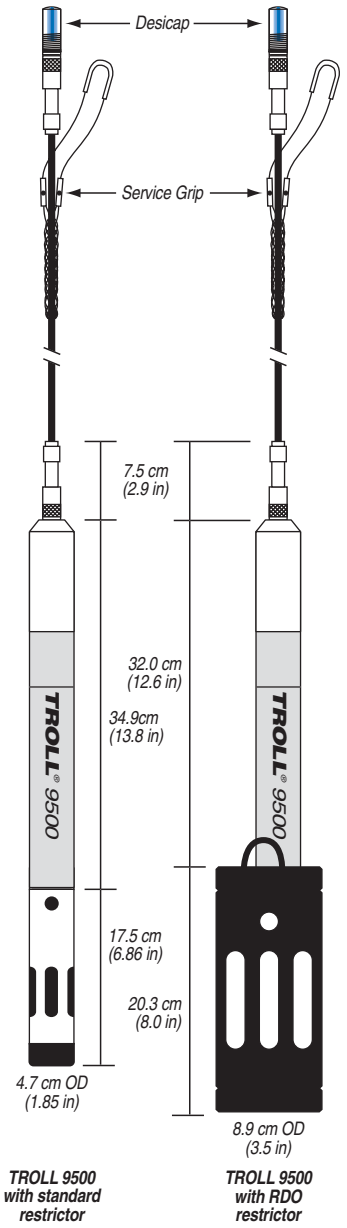
Data Logging	16 programmable tests (defined, scheduled to run or stored) / Logging Modes: Linear, Linear Average, Event
Memory	4 MB (1,000,000 individual readings)
SDI-12	Optional with SDI-12 adapter

Battery Life Estimates (assuming a 15-minute sampling interval and 20°C)

Battery Type	Sensors	Total Data Records	Hours	Days	Months
2 D-sized lithium batteries	Wiper, Temp, Pressure, Baro, Turb, RDO, pH, Cond	121,760	8,117	338	11
2 D-sized lithium batteries	Wiper, Temp, Pressure, Baro, Turb, DO, pH/ORP, Cond	134,110	8,941	373	12
2 D-sized alkaline batteries	Wiper, Temp, Pressure, Baro, Turb, DO, pH/ORP, Cond	69,514	4,634	193	6

* No anode or cathode to scrub or clean.
** Available water quality sensor ports. TROLL 9500 LTS version supports Level, Temperature, and one water quality Sensor.
*** Full operating range 3 µS/cm – 60,000 µS/cm
**** Full operating range 70 µS/cm – 200,000 µS/cm

Dimensions



TROLL 9500 with standard restrictor **TROLL 9500 with RDO restrictor**

Twist-Lock Cables

Connector*	***Twist-Lock*** connector ***OR*** stripped & tinned wire
Number of conductors	6
Internal Conductor Material	Polypropylene
Diameter	6.7mm (0.265")
Break strength	127 kg (280 lbs)

Cable Types:
Vented or Non-Vented Polyurethane
Vented or Non-Vented Halogen-Free Polyurethane - LSZH rated
Vented FEP (Generic Teflon®)

Warranty

The TROLL 9500 and all sensors (excluding RDO and ISE sensors) come with a one-year warranty.
Warranty on RDO sensor is 3 years. ISE sensors 90 days.
Standard Twist-Lock cables include a one-year warranty. RuggedTwist-Lock cables 2 years.

Minimum Computer System Requirements: 400MHz Pentium® II, 128MB RAM, 100MB free disk space, Internet Explorer® 5.0 or higher, Windows® 2000 Professional SP2 or better, or Windows XP Professional SP1 or better

FRESH WATERS ***WASTE*** WATERS ***MARINE*** WATERS

PURCHASE • RENT • LEASE TROLL 9500 TODAY!

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