



Aqua TROLL® Multiparameter Sondes



THE AQUA TROLL 500, 600, 700 AND 800 ARE FULLY CUSTOMIZABLE MULTIPARAMETER SONDES WITH INTERCHANGEABLE SENSORS AND SMARTPHONE INTERFACE THAT DELIVER ACCURATE DATA AND ENABLE SIMPLIFIED CALIBRATION, PANORAMIC DATA AND REPORT CREATION.

These flexible instruments are ideal for spot checking and profiling when paired with a Wireless TROLL® Com and the VuSitu® app, and for continuous, remote monitoring when used with VuLink telemetry and HydroVu® data services. VuSitu automatically sends all data logs, calibration reports and other files to your HydroVu account for secure data access, storage and management, all in one place.

The Aqua TROLL 500 and 600 are five-port multiparameter sondes, including four sensor ports and a wiper port. The Aqua TROLL 700 and 800 are seven-port multiparameter sondes, including six sensor ports and a wiper port. There is an option to have an automatic antifouling wiper to ensure data accuracy.

All four sondes are available in vented and non-vented options and are compatible with the complete range of Aqua TROLL sensors.



AVAILABLE SENSORS:

- Rugged Dissolved Oxygen (RDO®)
- Temperature
- Conductivity
- pH/ORP
- Turbidity
- Chlorophyll a
- Phycocyanin (BGA-PC)
- Phycoerythrin (BGA-PE)
- FDOM
- Crude Oil
- Rhodamine WT
- Fluorescein WT
- Ammonium (ISE)
- Chloride (ISE)
- Nitrate (ISE)

**SIMPLIFY DATA COLLECTION WITH
EQUIPMENT DESIGNED TO BE RELIABLE,
COST EFFECTIVE AND EASY TO USE.**



in-situ.com

APPLICATIONS

- LAKE, STREAM AND WETLAND MONITORING
- COASTAL DEPLOYMENTS
- STORMWATER MANAGEMENT
- DAM MONITORING
- LOW-FLOW GROUNDWATER SAMPLING
- REMEDIATION AND MINE WATER MONITORING
- SURFACE WATER SPOT SAMPLING AND PROFILING
- AQUACULTURE

RUGGED IN GROUNDWATER AND CORROSION RESISTANT IN SURFACE WATER AND MARINE ENVIRONMENTS, THE AQUA TROLL PORTFOLIO IS DESIGNED TO ADDRESS COMMON PROBLEMS WITH MULTIPARAMETER MONITORING INSTRUMENTATION. IT OFFERS

A SHARED ECOSYSTEM

Reduce complexity and cost with equipment that works together. All Aqua TROLL products use the same ecosystem—from handheld to cable to communication.

3D FACTORY CALIBRATION

In-Situ performs a multi-point factory calibration on every sensor, to ensure that the sensor is linear across its full range and simplify calibration for the user.

LOW-MAINTENANCE DEPLOYMENT

Keep labor and equipment costs down with advanced passive and active antifouling on all sensors and 6+ month battery life.

ENHANCED RELIABILITY

In-Situ equipment is designed to withstand use in the harshest environments. Features designed to prevent breakage or failure include:

- Interlocking sensors for greater stability
- Titanium restrictor
- Fully potted sensors
- Redundant SD card storage
- Multi-chamber design

BUILT-IN ERROR PREVENTION

Prevent the most common damage or loss with:

- Spring-loaded screws that keep screws in place
- Slip-clutch wiper to prevent motor damage
- Smart sensors that fit in any port
- Wet-mate connectors that prevent water damage
- Anti-roll bumpers to keep equipment stationary

MINI CALIBRATION CUP

These sondes use only 50 ml (Aqua TROLL 500/600) and 100 ml (Aqua TROLL 700/800) of solution for calibration, reducing calibration cost by 5x over traditional methods and saving thousands of dollars in calibration solution per year.

FAST-RESPONSE SENSORS

Aqua TROLL sensors were designed to support spot-checking and profiling applications where sensor response time is critical. The temperature sensor uses an extended thermistor and insulated barriers; RDO® has optional fast-response formulation; and a round bulb increases surface area and improves response time on the pH sensor.

UPGRADE FROM A 500 TO A 600 AND FROM A 700 TO AN 800 IF YOU NEED...

INTERNAL BATTERY POWER

Two Alkaline D-cell batteries provide internal power to the instrument for continuous deployment (6+ months depending on logging rates and wiper) without external power

- **INTERNAL LOGGING** Record data logs to internal memory of the sonde
- **MICRO SD CARD FOR BACKUP LOGGING** Record backup logs to the micro SD card for a second data source in case something happens to the onboard memory (flooded instrument, etc.)
- **HIGHER MAXIMUM DEPLOYMENT DEPTH RATING** Up to 100M with the Aqua TROLL 500, 200M with the Aqua TROLL 600 and 250M with the Aqua TROLL 700/800



GENERAL	AQUA TROLL 500 MULTIPARAMETER SONDE	AQUA TROLL 600 MULTIPARAMETER SONDE	AQUA TROLL 700 MULTIPARAMETER SONDE	AQUA TROLL 800 MULTIPARAMETER SONDE
OPERATING TEMPERATURE (NON-FREEZING)	-5 to 50° C (23 to 122° F) ISE: Ammonium & Nitrate 0 to 40° C (32 to 104° F); Chloride 0 to 50° C (32 to 122° F)			
STORAGE TEMPERATURE	Components w/o fluid: -40° C to 65° C (-40° to 149° F) (non-freezing water); pH/ORP: -5° C to 65° C (-23° to 149° F); Ammonium/Nitrate: 0 to 40° C (32° to 104° F); Chloride: 0 to 50° C (32° to 122° F)			
DIMENSIONS	Diameter: 4.7 cm (1.860 in) OD Length: 46 cm (18.145 in) (inc. connector) Length With Bail: 59 cm (23.25 in)	Diameter: 4.7 cm (1.85 in) OD Length: 60.2 cm (23.7 in) (inc. connector) Length With bail: 72.9 cm (28.7 in)	Diameter: 7.2 cm (2.84 in) OD Length: 48.7 cm (19.16 in) Length With Bail: 61.67 cm (24.28 in)	Diameter: 7.2 cm (2.84 in) OD Length: 63.7 cm (25.08 in) Length With Bail: 74.7 cm (29.42 in)
WETTED MATERIALS	Polyphenylsulfone, Polycarbonate, Acetal, EPDM/Polypropylene TPV, FKM Fluoroelastomer, Titanium, Fluorocarbon Coating, Ceramic, Inconel, Acrylic Adhesive Film, Nylon, Polyurethane Adhesive, Graphite, PC/PMMA Blend, Acrylic, Sapphire, PVC, Platinum, Glass, Proprietary RDO Sensing Formulation	Polyphenylsulfone, Polycarbonate, Acetal, EPDM/Polypropylene TPV, FKM Fluoroelastomer, Titanium, Fluorocarbon Coating, Ceramic, Inconel, Acrylic Adhesive Film, Nylon, Polyurethane Adhesive, Graphite, PC/PMMA Blend, Acrylic, Sapphire, PVC, Platinum, Glass, Proprietary RDO Sensing Formulation	Buna-N, Noryl, Nylon, Polyphenylsulfone, Polycarbonate, Acetal, EPDM/Polypropylene TPV, FKM Fluoroelastomer, Titanium, Fluorocarbon Coating, Ceramic, Acrylic Adhesive Film, Polyurethane Adhesive, Graphite, PC/PMMA Blend, Acrylic, Sapphire, PVC, Platinum, Glass, Proprietary RDO Sensing Formulation	Buna-N, Noryl, Nylon, Polyphenylsulfone, Polycarbonate, Acetal, EPDM/Polypropylene TPV, FKM Fluoroelastomer, Titanium, Fluorocarbon Coating, Ceramic, Acrylic Adhesive Film, Polyurethane Adhesive, Graphite, PC/PMMA Blend, Acrylic, Sapphire, PVC, Platinum, Glass, Proprietary RDO Sensing Formulation
WEIGHT *	0.978 kg / 2.15 lbs (includes instrument, sensors, restrictor and bumpers)	1.45 kg / 3.2 lbs (includes all sensors, batteries, and bail)	2.25 kg / 4.96 lbs (includes sensors and bail)	3.23 kg / 7.12 lbs (includes sensors, batteries and bail)
MAX PRESSURE RATING	Up to 150 PSI	Up to 350 PSI	Up to 350 PSI	Up to 350 PSI
OUTPUT OPTIONS	RS-485/MODBUS, SDI-12, Bluetooth®			
READING RATES	1 reading every 2 seconds			
DATA LOGGING	Use external datalogger or telemetry	50 logs (defined, scheduled to run, or stored)	Use external datalogger or telemetry	50 logs (defined, scheduled to run, or stored)
LOGGING RATE	N/A	1 minute to 99 hours	N/A	1 minute to 99 hours
ENVIRONMENTAL RATING	IP68 with all sensors and cable attached IP67 without the sensors or cable attached			
INTERNAL MEMORY †	N/A	16 MB	N/A	16 MB
MICRO SD CARD ‡	N/A	8+ GB micro SD card included, user replaceable	N/A	8+ GB micro SD card included, user replaceable
INTERNAL POWER	N/A	2 internal user-replaceable Alkaline D batteries	N/A	2 internal user-replaceable Alkaline D Batteries
BATTERY LIFE *	N/A	> 6 months typical with wiping > 9 months typical with no wiping	N/A	> 6 months typical with wiping > 9 months typical with no wiping
EXTERNAL POWER VOLTAGE EXTERNAL POWER CURRENT	8-36 VDC; 0.1 mA typical Measurement: 16 mA typical; 45 mA max	8-36 VDC (not required for normal operation); 0.1 mA typical Measurement: 16 mA typical; 45 mA max	8-36 VDC; Sleep: <0.2 mA typical Measurement: 40 mA typical; 75 mA max	8-36 VDC (not required for normal operation); Sleep: <0.2 mA typical Measurement: 40 mA typical; 75 mA max
HEX SCREW DRIVER	1.3 mm, 0.050 in			
COMMUNICATION DEVICE	TROLL Com or Wireless TROLL Com			
CABLE OPTIONS	Vented or non-vented polyurethane or vented Tefzel®			
LCD DISPLAY	Integrated display shows status of sonde, sensor ports, connectivity, power information, battery capacity and data log status (battery capacity and data log status only apply to the AT600 and AT800).			
SOFTWARE	Android™: VuSitu through Google Play and Amazon® App Store iOS: VuSitu through Apple® App Store, HydroVu			
CERTIFICATIONS	CE, FCC, WEEE, RoHS Compliant			

SENSOR	ACCURACY	RANGE	RESOLUTION/ PRECISION	RESPONSE TIME	UNITS OF MEASURE	METHODOLOGY
PRESSURE (OPTIONAL)††	±0.1% FS from -5 to 50°C	AQUA TROLL 500 Non-Vented or Vented 0-9 m (0-30 ft) 0-30 m (0-98 ft) 0-76 m (0-250 ft) 0-100 m (0-328 ft)	0.01% full scale	T63<1s, T90<1s, T95<1s	Pressure: psi, kPa, bar, mbar, inHg, mmHg Level: in, ft, mm, cm, m, cmH2O, inH2O	Piezoresistive; Ceramic
		AQUA TROLL 600 Non-Vented or Vented 0-9 m (0-30 ft) 0-30 m (0-98 ft) 0-76 m (0-250 ft) 0-200 m (0-650 ft)				
		AQUA TROLL 700/800 Non-Vented or Vented 0-10 m (0-33 ft) 0-30 m (0-98 ft) 0-100 m (0-328 ft) 0-250 m (0-820 ft)				



SENSOR	ACCURACY	RANGE	RESOLUTION/ PRECISION	RESPONSE TIME	UNITS OF MEASURE	METHODOLOGY
TEMPERATURE ¹	± 0.1° C	-5 to 50° C (23 to 122° F)	0.01° C	T63<2s, T90<15s, T95<30s	Celsius or Fahrenheit	EPA 170.1
BAROMETRIC PRESSURE	± 1.0 mbars	300 to 1,100 mbar	0.1 mbar	T63<1s, T90<1s, T95<1s	Pressure: psi, kPa, bar, mbar, inHg, mmHg	Silicon strain gauge
pH ²	±0.1 pH unit or better	0 to 14 pH units	0.01 pH	T63<3s, T90<15s, T95<30s	pH, mV	Std. Methods 4500- H+/EPA 150.2
ORP ³	±5 mV	±1,400 mV	0.1 mV	T63<3s, T90<15s, T95<30s	mV	Std. Methods 2580
CONDUCTIVITY ⁴	±0.5% of reading plus 1 µS/cm from 0 to 100,000 µS/cm; ±1.0% of reading from 100,000 to 200,000 µS/cm; ±2.0% of reading from 200,000 to 350,000 µS/cm	0 to 350,000 µS/cm	0.1 µS/cm	T63<1s, T90<3s, T95<5s	Actual conductivity (µS/cm, mS/cm); Specific conductivity (µS/cm, mS/cm); Salinity (PSU); Total dissolved solids (ppt, ppm); Resistivity (Ohm-cm); Density (g/ cm3)	Std. Methods 2510/ EPA 120.1 ±1,400 mV
TDS (DERIVED FROM CONDUCTIVITY AND TEMP)	-	0 to 350 ppt	0.1 ppt	-	ppt, ppm	-
SALINITY (DERIVED FROM CONDUCTIVITY AND TEMP)	-	0 to 350 PSU	0.1 PSU	-	PSU, ppt	Derived from Std. Methods 2520B PSS-7B available as an alternative method option
RUGGED DISSOLVED OXYGEN (RDO) WITH RDO-X ¹⁶ OR RDO FAST CAP	±0.1 mg/L ±5% of reading	0 to 20 mg/L 20 to 60 mg/L	0.01 mg/L	RDO-X: T63<15s, T90<45s, T95<60s Fast Cap: T63<3s, T90<30s, T95<45s	mg/L, % saturation, ppm	EPA-approved In-Situ Methods: 1002-8- 2009, 1003-8-2009, 1004-8-2009 Compliant with ASTM D888-18 Method C and ISO 17289 methods
TURBIDITY	±2% of reading or ±0.5 NTU, FNU, whichever is greater	0 - 4,000 NTU 0 - 1,500 mg/L	0.01 NTU (0 - 1,000); 0.1 NTU (1,000 - 4,000) 0.1 mg/L	T63<1s, T90<1s, T95<1s	NTU, FNU ppt, mg/L	ISO 7027
TSS (DERIVED FROM TURBIDITY) ¹¹	-	0 to 1,500 mg/L	0.1 mg/L	-	ppt, mg/L	-
AMMONIUM (NH4 + -N) ^{12, 13} RATED TO 25 m DEPTH -Unionized Ammonia, Total Ammonia (derived from Ammonium & pH sensor)	±10% or ±2 mg/L w.i.g. (specs valid for freshwater)	0 to 10,000 mg/L as N	0.01 mg/L	T63<1s, T90<10s, T95<30s	mg/L, ppm, mV	-
NITRATE (NO3 - - N) ¹⁴ RATED TO 25 m DEPTH	±10% or ±2 mg/L w.i.g. (specs valid for freshwater)	0 to 40,000 mg/L as N	0.01 mg/L	T63<1s, T90<1s, T95<1s	mg/L, ppm, mV	Std. Methods 4500 NO3-D
CHLORIDE (CL -) ¹⁵	±10% or ±2 mg/L w.i.g. (specs valid for freshwater)	0 to 150,000 mg/L as Cl	0.01 mg/L	T63<1s, T90<1s, T95<1s	mg/L, ppm, mV	Std. Methods 4500 Cl-D

SENSOR	LINEARITY	INSTRUMENT DETECTION LIMIT	RANGE	DISPLAY RESOLUTION	RESPONSE TIME	DEFAULT UNIT(S)	DERIVED PARAMETERS
Chlorophyll a	R2>0.999 for serial dilutions of Chl a in MeOH across full range	0.1 µg/L Chl a in MeOH	0-100 RFU 0-1000 µg/L	0.001 RFU	T63<1s, T90<1s, T95<1s	RFU	Chlorophyll a concentration Chlorophyll a cell count
Phycocyanin (BGA-PC)	R2>0.999 for serial dilutions of PC standard across full range	1.0 µg/L PC standard	0-100 RFU 0-1000 µg/L	0.001 RFU	T63<1s, T90<1s, T95<1s	RFU	Phycocyanin Concentration
Phycoerythrin (BGA-PE)	R2>0.999 for serial dilutions of PE standard across full range	0.5 µg/L PE standard	0-100 RFU 0-1000 µg/L	0.001 RFU	T63<1s, T90<1s, T95<1s	RFU	Phycoerythrin Concentration
FDOM	R2>0.999 for serial dilutions of Quinine Sulfate across full range	0.5 µg/L Quinine Sulfate	0-100 RFU 0-3000 µg/L	0.001 RFU	T63<1s, T90<1s, T95<1s	RFU	FDOM Concentration CDOM Concentration
Crude Oil	R2>0.999 for serial dilutions of PTSA across full range	1.0 µg/L PTSA	0-100 RFU 0-3000 µg/L	0.001 RFU	T63<1s, T90<1s, T95<1s	RFU	Crude Oil Concentration
Rhodamine WT	R2>0.999 for serial dilutions of RWT across full range	0.5 µg/L Rhodamine WT	0-100 RFU 0-1000 µg/L	0.001 RFU	T63<1s, T90<1s, T95<1s	RFU, µg/L	
Fluorescein WT	R2>0.999 for serial dilutions of FWT across full range	0.2 µg/L Fluorescein WT	0-100 RFU 0-500 µg/L	0.001 RFU	T63<1s, T90<1s, T95<1s	RFU, µg/L	

NOTES: ¹Weight includes sonde, sensors, wiper, batteries (600 and 800 only), and bail. ²For 30 parameters >100,000 data records, > 3 years at 15 min. interval. A single data record includes timestamp, temperature, RDO, pH, ORP, turbidity and conductivity logged in Linear or Linear Average mode. ³Log data recorded to SD card in comma delimited variable (CSV) file format. Greater than 32 GB not supported. ⁴Logging all sensors at 15 min interval on 2 D Alkaline batteries. Battery life dependent on site conditions and wiping. ⁵Dependent on display and wiping. ⁶Typical system response with instrument, sensors and restrictor when changing approximately 15°C in moderate flow. ⁷Response time at thermal equilibrium. ⁸Accuracy from calibration standard @ 25C, response at thermal equilibrium immediately following calibration measuring from air to +400 mV. ⁹Accuracy at calibration points. ¹⁰RDO sensor full range 0-60 mg/L, 0-600% sat. EPA-approved method under the Alternate Test Procedure Process. ¹¹User-defined reference. ¹²Between 2 calibration points immediately following proper conditioning and calibration. Varies on site conditions and environmental interferences. See sensor summary sheet for potential interferences. ¹³Average response; can be longer with increasing concentrations of ammonium. ¹⁴Typical performance across full temperature and pressure calibrated range. ¹⁵Extended warranty option for sonde only (1 to 3 year extension for up to 5 years total). Specifications are subject to change without notice.