



Aqua TROLL® Multiparameter Sondes

THE AQUA TROLL 500 AND 600 ARE FULLY CUSTOMIZABLE MULTIPARAMETER SONDES WITH INTERCHANGEABLE SENSORS AND A SMARTPHONE INTERFACE THAT DELIVERS ACCURATE DATA AND ENABLES SIMPLIFIED CALIBRATION, PANORAMIC DATA VIEW AND REPORT CREATION.

These flexible instruments are ideal for spot-checking and profiling applications when paired with a Wireless TROLL Com, or for long-term monitoring when used with VuLink telemetry and HydroVu data services. Rugged in groundwater and corrosion resistant in surface water, they each feature four smart-sensor ports, a convenient, onboard LCD screen that indicates sensor status, and a sub-2-inch antifouling wiper to ensure data accuracy.

Our sensor portfolio for both instruments includes RDO® dissolved oxygen, pH/ORP, turbidity, conductivity, temperature and pressure. Available in vented and non-vented options.

COLLECT DATA YOU CAN TRUST WITH EQUIPMENT DESIGNED TO BE RELIABLE, COST EFFECTIVE AND EASY TO USE.



AVAILABLE PARAMETERS (MEASURED WITH INTERCHANGEABLE SENSORS)

- RDO® Optical Dissolved Oxygen
- Actual and specific conductivity
- pH/ORP
- Salinity
- Total dissolved solids (TDS)
- Resistivity
- Density
- Turbidity
- Temperature and pressure
- Ion Selective Electrodes
- Fluorometers

APPLICATIONS

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

www.in-situ.com

CALL OR CLICK to purchase or rent

1-800-446-7488 (toll-free in U.S.A. and Canada)

1-970-498-1500 (U.S.A. and international)

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THE AQUA TROLL 500 AND 600 ARE DESIGNED TO ADDRESS COMMON PROBLEMS WITH MULTIPARAMETER MONITORING INSTRUMENTATION. BOTH OFFER

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 sub-2-inch passive and active antifouling on all sensors and 9+ 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 of calibration solution for both rinsing and calibration, reducing the 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 AQUA TROLL 500 TO 600 IF YOU NEED...

- **INTERNAL BATTERY POWER**
2 Alkaline D-cell batteries to provide internal power to the instrument for continuous deployment (9-12 months depending on logging rates and wiper) without external power
- **INTERNAL LOGGING**
Ability to record data logs to internal memory of the sonde
- **MICRO SD CARD FOR BACKUP LOGGING**
Record backup logs to the micro SD card to have a second data source in case something happens to the onboard memory (flooded instrument, etc.)
- **HIGHER MAXIMUM DEPLOYMENT DEPTH RATING**
Up to 200M with the Aqua TROLL 600 (up to 100M with the Aqua TROLL 500)





| GENERAL | AQUA TROLL 600 MULTIPARAMETER SONDE | AQUA TROLL 500 MULTIPARAMETER SONDE |
|--|--|--|
| OPERATING TEMPERATURE (NON-FREEZING) | -5 to 50° C (23 to 122° F) ISE: Ammonium & Nitrate 0 to 40° C ; Chloride 0 to 50° C | |
| STORAGE TEMPERATURE | Components w/o fluid: -40° C to 65° C (non-freezing water); pH/ORP: -5° C to 65° C; Ammonium/Nitrate: 0 to 40° C; Chloride: 0 to 50° C | |
| DIMENSIONS | 4.7 cm (1.85 in.) OD x 60.2 cm (23.7 in.) (includes connector) With bail: 72.9 cm (28.7 in.) | Length: 46 cm (18.145") (includes connector). With bail: 59 cm (23.25") Diameter: 4.7 cm (1.860") |
| WETTED MATERIALS | PC, PC alloy, Delrin™, Santoprene™, Inconel™, Viton™, Titanium, Platinum, Ceramic, Nylon | PC, PC alloy, Delrin, Santoprene, Inconel, Viton, Titanium, Platinum, Ceramic, Nylon, PVC, Graphite |
| WEIGHT | 1.45 kg / 3.2 lbs (includes all sensors, batteries, and bail) | 0.978 kg / 2.15 lbs. (includes instrument, sensors, restrictor and bumpers) |
| MAX PRESSURE RATING | Up to 350 PSI | Up to 150 PSI |
| OUTPUT OPTIONS | RS-485/MODBUS, SDI-12, Bluetooth® | |
| READING RATES | 1 reading every 2 seconds | |
| DATA LOGGING | 50 logs (defined, scheduled to run, or stored) | Use external datalogger or telemetry |
| LOGGING MODES | Linear, Linear Average, Event | N/A |
| LOGGING RATE | 1 minute to 99 hours | N/A |
| ENVIRONMENTAL RATING | IP68 with all sensors and cable attached IP67 without the sensors or cable attached | |
| INTERNAL MEMORY¹ MICRO SD CARD² | 16 MB; 8+ GB micro SD card included, user replaceable | N/A |
| INTERNAL POWER BATTERY LIFE³ | 2 internal user-replaceable Alkaline D batteries >6 months typical with wiping; >9 months typical with no wiping | N/A |
| EXTERNAL POWER VOLTAGE EXTERNAL POWER CURRENT⁴ | 8-36 VDC (not required for normal operation); Sleep: 0.10 mA typical Measurement: 16 mA typical, 45 mA max | |
| HEX SCREW DRIVER | 0.050", 1.3 mm | |
| 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, data log, battery and connectivity. | Integrated display shows status of sonde, sensor ports, power voltage and connectivity, enable/disable BT. |
| SOFTWARE | Android™: VuSitu through Google Play and Amazon® App Store iOS: VuSitu through Apple® App Store, Windows: Win-Situ 5 Data Services: HydroVu | |
| INTERFACE | Android 4.4, requires Bluetooth 2.0; Win-Situ 5 Software | |
| CERTIFICATIONS | CE, FCC, WEEE, RoHS Compliant | |

WARRANTY: 2 year – Sonde, RDO and Sensor Cap, Temperature/Conductivity, Temperature Only, Turbidity, Chlorophyll a, Phycocyanin (BGA-PC), Phycoerythrin (BGA-PE), Rhodamine WT, Wiper; 1 year – pH/ORP, Chloride ISE, Accessories; 90 Days – Nitrate and Ammonium ISE Sensors; See warranty policy (www.in-situ.com/warranty) for full details.



| SENSOR | ACCURACY | RANGE | RESOLUTION/ PRECISION | RESPONSE TIME | UNITS OF MEASURE | METHODOLOGY |
|---|--|---|--|--|---|---|
| TEMPERATURE ⁵ | ± 0.1° C | -5 to 50° C (23 to 122° F) | 0.01° C | T63<2s, T90<15s, 95<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 ⁶ | ±0.1 pH unit or better | 0 to 14 pH units | 0.01 pH | T63<3s, T90<15s, 95<30s | pH, mV | Std. Methods 4500-H+/ EPA 150.2 |
| ORP ⁷ | ±5 mV | ±1,400 mV | 0.1 mV | T63<3s, T90<15s, 95<30s | mV | Std. Methods 2580 |
| CONDUCTIVITY ⁸ | ±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 (Ohms-cm); Density (g/ cm ³) | 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 | Std. Methods 2520A |
| RUGGED DISSOLVED OXYGEN (RDO) WITH RDO-X ⁹ OR RDO FAST CAP | ±0.1 mg/L ±2% 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 |
| 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) ¹⁰ | -- | 0 to 1,500 mg/L | 0.1 mg/L | -- | ppt, mg/L | -- |
| AMMONIUM (NH4 + -N) ^{11, 12} RATED TO 25 m DEPTH -Unionized Ammonia, Total Ammonia (derived from Ammonium & pH sensor) | ±10% or ±2 mg/L w.i.g. | 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) ⁸ RATED TO 25 m DEPTH | ±10% or ±2 mg/L w.i.g. (freshwater only) | 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 Cl- D |
| CHLORIDE (CL- -) ⁸ | ±10% or ±2 mg/L w.i.g. (freshwater only) | 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 |
| PRESSURE (OPTIONAL) ¹⁰ | ±0.1% FS from -5 to 50°C | AQUA TROLL 500 Non-Vented or Vented 9.0 m (30ft) (Burst: 27 m; 90 ft) 30 m (100 ft) (Burst: 40 m; 130 ft) 76 m (250 ft) (Burst: 107 m; 350 ft) 100 m (325 ft) - Burst: 200 m (650 ft) AQUA TROLL 600 Non-Vented or Vented 9.0 m (30ft) (Burst: 27 m; 90 ft) 30 m (100 ft) (Burst: 40 m; 130 ft) 76 m (250 ft) (Burst: 107 m; 350 ft) 200 m (650 ft) (Burst: 229 m; 750 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 |

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