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

In-Situ®

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 MEMORY [1] MICRO SD CARD [2]	16 MB; 8+ GB micro SD card included, user replaceable	N/A
INTERNAL POWER BATTERY LIFE [3]	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 CURRENT [4]	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/ 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	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	±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	--
-Unionized Ammonia, Total Ammonia (derived from Ammonium & pH sensor)		0 to 10,000 mg/L as N	0.01 mg/L	--	mg/L, ppm	--
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	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, cmH20, 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
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: [1]For 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. [2]Log data recorded to SD card in comma delimited variable (CSV) file format. Greater than 32 GB not supported. [3]Logging all sensors at 15 min interval on 2 D Alkaline batteries. Battery life dependent on site conditions and wiping. [4]Dependent on display and wiping. [5] Typical system response with instrument, sensors and restrictor when changing approximately 15°C in moderate flow. [6]Response time at thermal equilibrium. [7]Accuracy from calibration standard @ 25C, response-at thermal equilibrium immediately following calibration measuring from air to +400 mV. [8]Accuracy at calibration points. [9]RDO sensor full range 0-60 mg/L, 0-600% sat. EPA-approved method under the Alternate Test Procedure Process. [10]User-defined reference. [11]Between 2 calibration points immediately following proper conditioning and calibration. Varies on site conditions and environmental interferents. See sensor summary sheet for potential interferences. [12]Average response; can be longer with increasing concentrations of ammonium. [13]Typical performance across full temperature and pressure calibrated range. [14]Extended warranty option for sonde only (1 to 3 year extension for up to 5 years total). Specifications are subject to change without notice.