



Aqua TROLL Multiparameter Sensor Summary

Sensor Summary

Sensors	Expected Lifetime*	Recommended Calibration Frequency	Pressure Rating - PSI	Usable Depth m ft		Operational Temperature Range
pH/ORP	2 years or greater**	10 to 12 weeks**	350	250	820	- 5 to 50° C
RDO	2 years or greater	12 months**	350	250	820	- 5 to 50° C
Conductivity	2 years or greater	User calibration only if needed	350	250	820	- 5 to 50° C
Temperature	2 years or greater	NA	350	250	820	- 5 to 50° C
Turbidity	2 years or greater	User calibration only if needed	350	250	820	- 5 to 50° C
Pressure	2 years or greater	User calibration only if needed	12.8	9	30	- 5 to 50° C
			14.2	10	33	
			42.7	30	100	
			108	76	250	
			142	100	328	
			285	200	650	
			350	250	820	
Barometric Pressure	2 years or greater	User calibration only if needed	NA	NA	NA	- 5 to 50° C
Ammonium	6 to 12 months**	Monthly**	30	25	70	0 to 40° C
Chloride	1 year or greater**	Monthly**	350	250	820	0 to 50° C
Nitrate	6 to 12 months**	Monthly**	30	25	70	0 to 40° C
Chlorophyll a	2 years or greater	User calibration only if needed	350	250	820	- 5 to 50° C
BGA-PC	2 years or greater	User calibration only if needed	350	250	820	- 5 to 50° C
BGA-PE	2 years or greater	User calibration only if needed	350	250	820	- 5 to 50° C
Rhodamine	2 years or greater	User calibration only if needed	350	250	820	- 5 to 50° C
Fluorescein	2 years or greater	User calibration only if needed	350	250	820	- 5 to 50° C
FDOM	2 years or greater	User calibration only if needed	350	250	820	- 5 to 50° C
Crude Oil	2 years or greater	User calibration only if needed	350	250	820	- 5 to 50° C

* Expected lifetime includes total shelf life and deployment lifetime.

** Lifetime and calibration frequency depend on site and storage conditions.

This information is relevant to Aqua TROLL 500, 600, 700, and 800 Multiparameter Sondes

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Solutions

Solution	Shelf Life - Unopened	Shelf Life - Opened
Quick Cal	4 months. Store in a cool, dark place. Shake before use.	7 to 21 days (± 10 mV, ± 0.05 pH, ± 50 $\mu\text{S}/\text{cm}$)
ZoBell's	9 months. Store in a cool, dark place.	3 to 6 months
Low Conductivity (147 $\mu\text{S}/\text{cm}$)	12 months	Hours (± 1 $\mu\text{S}/\text{cm}$, check before use)
Other Conductivity	12 months	3 to 6 months
pH Calibration Buffers	24 months	3 to 6 months
Sensor Reference Filling Solution	24 months	12 months
pH Storage Solution	24 months	12 months
Sodium Sulfite	12 months	3 to 6 months
Turbidity	12 months	12 months from expiration date
Deionized Water	24 months	Hours, check before use for calibration
Ammonium	12 months	3 to 6 months
Chloride	12 months	3 to 6 months
Nitrate	12 months	3 to 6 months

Potential Interferents

pH

Sodium salts (at pH >12)

Dissolved Oxygen

Temperature, atmospheric pressure, salinity, chlorinity

Ammonium

Cesium, Potassium, Thallium, pH, Silver, Lithium, Sodium

Nitrate

Perchlorate, Iodide, Chlorate, Cyanide, Bromide, Nitrite, Hydrogen Sulfide (bisulfite), Hydrogen Carbonate (bicarbonate), Carbonate, Chloride, Dihydrogen Phosphate, Hydrogen Phosphate, Phosphate, Acetate, Fluoride, Sulfate

Conductivity

Temperature

ORP

Ions that are stronger reducing agents than hydrogen or platinum, e.g., chromium, vanadium, titanium, etc.

Chloride

Hydroxide, Ammonia, Thiosulfate, Bromide, Sulfide, Iodide, Cyanide

BGA-PC, BGA-PE, Chlorophyll a, Rhodamine WT
Turbidity

RDO Cap Chemical Incompatibility



The following chemicals will damage the RDO sensing element.

- Alcohols > 5%
- Hydrogen peroxide > 3%
- Sodium hypochlorite (commercial bleach) > 3%
- Gaseous sulfur dioxide
- Gaseous chlorine
- Do not use in organic solvents (e.g., acetone, chloroform, methylene chloride, etc.), which may destroy the sensing element

Conductivity/Temperature Sensor



Soaking the Conductivity/Temperature sensor in vinegar for longer than one hour can cause serious damage.

Ammonium, Chloride, and Nitrate Interferent Concentrations

Ammonium

The table below lists concentrations of possible interfering ions that cause 10% error at various levels (in ppm) of NH_4^+ .

Ion	100 ppm NH_4^+	10 ppm NH_4^+	1 ppm NH_4^+
Cesium (Cs^+)	100	10	1
Potassium (K^+)	270	27	2.7
Thallium (Tl^+)	3100	310	31
pH (H^+)	pH 1.6	pH 2.6	pH 3.6
Silver (Ag^+)	270,000	27,000	2,700
Lithium (Li^+)	35,000	3,500	350
Sodium (Na^+)	11,100	1,100	110

Chloride

The table below lists concentrations of possible interfering ions that cause 10% error at various levels (in ppm) of Cl^- .

Ion	100 ppm Cl^-	10 ppm Cl^-	1 ppm Cl^-
Hydroxide (OH^-)	3,840	384	38.4
Ammonia (NH_3)	6	0.6	0.06
Thiosulfate ($\text{S}_2\text{O}_3^{2-}$)	3	0.3	0.03
Bromide (Br^-)	0.68	0.068	6.8×10^{-3}
Sulfide (S^{2-})	9×10^{-5}	9×10^{-6}	9×10^{-7}
Iodide (I^-)	1.8×10^{-4}	1.8×10^{-5}	1.8×10^{-6}
Cyanide (CN^-)	1.5×10^{-5}	1.5×10^{-6}	1.5×10^{-7}

Nitrate

The table below lists concentrations of possible interfering ions that cause 10% error at various levels (in ppm) of NO_3^- .

Ion	100 ppm NO_3^-	10 ppm NO_3^-	1 ppm NO_3^-
Perchlorate (ClO_4^-)	7×10^{-2}	7×10^{-3}	7×10^{-4}
Iodide (I^-)	4	0.4	0.04
Chlorate (ClO_3^-)	30	3	0.3
Cyanide (CN^-)	20	2	0.2
Bromide (Br^-)	400	40	4
Nitrite (NO_2^-)	230	23	2
Hydrogen Sulfide (HS^-)	230	23	2

Bicarbonate (HCO ₃ ⁻)	440	440	44
Carbonate (CO ₃ ²⁻)	8,600	860	86
Chloride (Cl ⁻)	7,600	760	76
Dihydrogen Phosphate (H ₂ PO ₄ ⁻)	34,640	3,464	346
Hydrogen Phosphate (HPO ₄ ²⁻)	34,300	3,430	343
Phosphate (PO ₄ ³⁻)	33,900	3,390	339
Acetate (OAc ⁻)	104,200	10,420	1,042
Fluoride (F ⁻)	81,400	8,140	814
Sulfate (SO ₄ ²⁻)	685,700	68,570	6,857

Fluorometer Wavelengths

Sensor	Excitation Wavelength (nominal)	Detection Wavelength
Chlorophyll a	430 nm	675 nm to 750 nm
BGA-PC	590 nm	640 nm to 690 nm
BGA-PE	498 nm	575 nm to 625 nm
Rhodamine	530 nm	580 nm to 660 nm
Fluorescein	462 nm	525 nm to 570 nm
FDOM	375 nm	455 nm to 530 nm
Crude Oil	365 nm	430 nm to 505 nm

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