SENSOR SUMMARY

SENSORS

Sensor	Recommended Calibration Frequency	Pressure Rating (PSI)	Usable Depth Meters	Usable Depth Feet	Temperature Range
pH	1-2 months	300	210	692	0°C to 50°C
pH/ORP	1-2 months	300	210	692	0°C to 50°C
D.O. (polarographic)	2-4 weeks	350	246	807	0°C to 50°C
D .O. (Optical, RDO®)	12 months (2-point cal)	meets or exceeds highest pressure sensor rating			0°C to 40°C
Conductivity	2-3 months	meets or exceeds highest pressure sensor rating			-5°C to 50°C
Temperature	NA	meets or exceeds highest pressure sensor rating			-5°C to 50°C
Pressure	12 months	15 30 100 300	11 21 70 210	35 69 231 692	-5°C to 50°C
Barometric Pressure[1]	NA	meets or exceeds highest pressure sensor rating			-5°C to 50°C
Turbidity	Field cal only if needed	350	246	807	-5°C to 50°C
Turbidity Wiper	NA	350	246	807	
Nitrate (NO_3^-)	4-6 hours	20	14	46	0°C to 40°C
Ammonium (NH_4^+)[2]	4-6 hours	20	14	46	0°C to 40°C
Chloride (Cl^-)	4-6 hours	100	70	231	0°C to 50°C

[1] Vented cable required
[2] Do not use into the basic pH range (8.5 or higher); benign ammonium becomes harmful ammonia (NH_3) at high pH

CALIBRATION SOLUTIONS

Solution	Shelf Life after opening
Quick Cal	7-21 days (± 10 mV, ± 0.05 pH, ± 50 µS)—store cool and dark, shake before use
ZoBell's	7-21 days (± 10 mV)—store cool and dark
Low Conductivity	hours (± 1 µS, check before use)
Other Conductivity	3-6 months
pH Buffers	3-6 months
Sodium Sulfite	3-6 months
Turbidity	12 months
Low Chloride	1 month
Low Nitrate	1 month
Low Ammonium	1 month
Other ISE Solutions	2 months

ESTIMATED ACCURACIES

Sensor	Accuracy	Accuracy Range	Response Time (T90)	Methodology
Barometric Pressure	± 0.3% FS	0 – 16.5 psia	< 30 sec per 100 ft cable	
Temperature	± 0.1°C	-5°C – 50°C	< 30 sec	EPA 170.1
Pressure (30 psig)	± 0.05% FS	0 – 30 psi (21 m, 69 ft)	In thermal equilibrium: Instantaneous In thermal change: Instantaneous to ± 2% FS, 30 – 60 min to ± 0.1% FS, 1.5 – 2 hr to ± 0.05% FS	
Turbidity	± 5% or 2 NTU	0 – 2000 NTU	Instantaneous (5 sec for first reading)	ISO 7027
pH	± 0.1 pH unit	0 – 12 pH units	< 15 sec, pH 7 to pH 4	Std.Mthds. 4500-H+, EPA 150.2
ORP	± 5.0 mV	± 1400 mV	< 15 sec	Std.Mthds. 2580
DO (polarographic)	± 0.2 mg/L	0 – 20 mg/L, 0 – 200% saturation	1-mil membrane: 1 – 2 min @ 25°C 2-mil membrane: 90 sec – 3 min	Std.Mthds. 4500-O G, EPA 360.1
DO (optical, RDO®)	± 0.1 mg/L ± 1% of reading	0 – 10 mg/L 10 – 20 mg/L	12 sec	ASTM D888-05
Low Conductivity	± 0.5% or 2 µS/cm	5 – 20,000 µS/cm	Instantaneous	Std.Mthds. 2510, EPA 120.1
High Conductivity	± 0.5% + 2 µS/cm	150 – 112,000 µS/cm[1]	Instantaneous	Std.Mthds. 2510, EPA 120.1
Nitrate (NO_3^-)	± 10%[2]	0.14 – 14000 ppm N[3]	< 60 sec (T98), 1.4 to 14 ppm N	Std.Mthds. 4500-NO3 D[4]
Ammonium (NH_4^+)	± 10%[2]	0.14 – 14000 ppm N[3]	< 60 sec (T98), 1.4 to 14 ppm N	
Chloride (Cl^-)	± 15%[2]	0.35 – 35500 ppm Cl[3]	< 60 sec (T98), 3.54 to 35.45 ppm Cl	

[1] Full operating range 70 µS/cm – 200,000 µS/cm; typical accuracy from 70 to 150 µS/cm & from 112,000 to 200,000 µS/cm: ± 2% + 4 µS/cm
[2] When calibrated at ionic strength and temperature matching the sample, and in the absence of interferences; field use may deliver qualitative performance
[3] Response range
[4] Laboratory method requiring adjustment of pH and total ionic strength of water sample

POTENTIAL INTERFERENCES

pH

Sodium salts

Dissolved Oxygen

Temperature
Atmospheric pressure
Salinity
Chlorinity

Conductivity

Temperature

ORP

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

Nitrate NO_3^-

HCO_3^-	**hydrogen carbonate***
CO_3^{2-}	carbonate
ClO_4^-	perchlorate
I^-	iodide
ClO_3^-	chlorate
CN^-	cyanide
Br^-	bromide
NO_2^-	nitrite
HS^-	hydrogen sulfide
Cl^-	chloride
$H_2PO_4^-$	hypophosphate
AcO^-	acetate
F^-	fluoride
SO_4^{2-}	sulfate

**Significant interference in most waters above pH3*

Ammonium NH_4^+

Cs^+	cesium
K^+	potassium
Tl^+	thallium
Na^+	sodium
Li^+	lithium
H^+	pH
Ag^+	silver

Chloride Cl^-

Complexes with

Bi^{3+}	bismuth
Cd^{2+}	cadmium
Mn^{2+}	manganese
Pb^{2+}	lead
Sn^{2+}	tin
Tl^{3+}	thallium

Reducing agents

OH^-	hydroxide
NH_3	ammonia
$S_2O_3^{2-}$	thiosulfate
Br^-	bromide
S^{2-}	sulfide
I^-	iodide
CN^-	cyanide

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