

**Reproducibility of Specific Conductivity and Total Dissolved Solids
Measurements in Lake Water**

Short Term Reproducibility*

Number	Distilled Water uS/ppm	Reference Standard uS/ppm	Distilled Water uS/ppm	White Lake Water Sample uS/ppm
1	2/1	188/94	2/1	199/100
2	0/0	189/94	2/1	199/100
3	1/1	189/95	2/1	199/100
4	2/1	189/94	2/1	199/100
5	1/1	188/94	1/1	198/99
6	1/0	190/95	1/1	198/99
7	1/1	189/94	0/0	199/100
8	0/0	189/94	0/0	199/100
9	0/0	188/94	0/0	199/100
10	0/0	188/94	0/0	199/100

*All measurements made sequentially within the same time period.

Results:

Sample	Specific Conductivity ± SD (n=10)	Total Dissolved Solids ± SD (n=10)
Distilled Water	0.90 ± .85	0.55 ± .51
Reference Standard	188.0 ± .7	94.2 ± .4
White Lake Water	198.8 ± .4	99.8 ± .4

Three SD limit of detection - Conductivity: 3 μS ; Total Dissolved Solids: 1.5 ppm

Short Term Reproducibility - Expressed as (standard deviation/nominal value) x 100:

- Conductivity: 0.3 μS ; Total Dissolved Solids: 0.5 ppm

Accuracy- Conductivity: 99.5 %; Total Dissolved Solids: 99.2 %

Notes:

1. All measurements made with AZ8361 pen-type Conductivity/Total Dissolved Solids meter.
2. Experiment consisted of sequentially measuring conductivity/TDS of distilled water, reference standard, distilled water, White Lake water sample, then repeat to end of sequence. The values shown in the table above are for individual samples to avoid cross-contamination.
3. An equilibration time of 30 seconds was used between sample measurements.
4. The reference sample was made from NaCl dissolved in distilled water. Nominal values of 190 μ S and 95 ppm TDS were calculated.
5. The White Lake water sample was obtained at a 1m depth 5 m offshore of a property (1053 Wabalac Rd.) on the Western shore of the lake. Sample was filtered through 80 micron filter.
6. All measurements made at 20°C ambient temperature.

Medium Term Reproducibility

Day	Distilled Water uS/ppm	Reference Standard uS/ppm	Distilled Water uS/ppm	White Lake Water Sample uS/ppm
1	2/1	189/95	2/1	200/100
2	2/1	188/94	2/1	200/100
3	2/1	188/94	1/1	200/100
4	2/1	188/94	2/1	202/101
5	2/1	188/94	2/1	200/100
6	2/1	187/94	1/1	200/100
7	2/1	188/94	1/1	200/100
8	2/1	187/94	2/1	200/100
9	2/1	188/94	2/1	200/100
10	2/1	189/95	1/0	200/100

Results:

Sample	Specific Conductivity ± SD (n=10)	Total Dissolved Solids ± SD (n=10)
Distilled Water	1.8 ± .4	0.95 ± .23
Reference Standard	188.0 ± .7	94.2 ± .4
White Lake Water	200.2 ± .6	100.1 ± .3

Three SD limit of detection - Conductivity: 1.2 μ S; Total Dissolved Solids: 2.9 ppm

Short Term Reproducibility - Expressed as (standard deviation/nominal value) x 100:

- Conductivity: 0.4 μ S; Total Dissolved Solids: 0.5 ppm

Accuracy- Conductivity: 99.5 %; Total Dissolved Solids: 99.2 %

Long Term Reproducibility

Day	Distilled Water uS/ppm	Reference Standard uS/ppm	Distilled Water uS/ppm	White Lake Water Sample uS/ppm
1	2/1	188/94	2/1	199/100
5	2/1	189/95	2/1	200/100
15	2/1	187/94	1/1	200/100
20	2/1	189/95	1/0	200/100
25	2/1	189/95	1/0	200/100
30	2/1	189/94	1/0	199/100
35	2/1	189/95	2/1	200/100
40	2/1	188/94	2/1	200/100
45	2/1	188/94	1/0	200/100
50	2/1	188/94	2/1	200/100

Results:

Sample	Specific Conductivity ± SD (n=10)	Total Dissolved Solids ± SD (n=10)
Distilled Water	1.8 ± .4	0.8 ± .4
Reference Standard	188.4 ± .7	94.4 ± .5
White Lake Water	199.8 ± .4	100.0 ± .0

Three SD limit of detection - Conductivity: 1.2 μ S; Total Dissolved Solids: 1.2 ppm

Long Term Reproducibility - Expressed as (standard deviation/nominal value) x 100:

- Conductivity: 0.2 μ S; Total Dissolved Solids: 0.5 ppm

Accuracy- Conductivity: 99.2 %; Total Dissolved Solids: 99.5 %

RESULTS SUMMARY TABLE

Parameter	Short Term		Medium Term		Long Term	
	S. Cond., μ S	TDS, ppm	S. Cond., μ S	TDS, ppm	S. Cond., μ S	TDS, ppm
<i>L. of Detection</i>	3	1.5	1.2	2.9	1.2	1.2
<i>Reproducibility</i>	0.3	0.5	0.4	0.5	0.2	0.5
<i>Accuracy</i>	99.5	99.2	99.5	99.2	99.2	99.5

Comments:

1. Comparison of summary data indicate that: the AZ8361 pen-type Conductivity/ Total Dissolved Solids meter is an accurate and precise device. However, calibration is still recommended before each use to ensure that the device is working properly.

2. The AZ8361 pen-type Conductivity/Total Dissolved Solids meter performed within the specification of the manufacturer.
3. The drift observed in distilled water measurements taken during the short term reproducibility trial supports the manufacturers suggestion that the probe should be placed in distilled water and allowed to equilibrate from 15 to 20 minutes before use. Not doing so may introduce an error of about 1% in absolute values measured.

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November 29, 2017