

Conductivity Calibration Check Technical Note

Aqua TROLL 200 Conductivity Calibration Check

Factory calibration delivers better accuracy than user-performed calibration

March 2008

The conductivity cell of the In-Situ® Aqua TROLL® 200 does not require a user calibration to achieve the highest degree of instrument accuracy. A user calibration is only required if you must conform to a standard operating procedure or if the cell has undergone physical change (e.g., deposits on cell walls that cannot be removed; physical damage to cell walls).

The Aqua TROLL 200's factory calibration guarantees a high degree of linearity across the entire operating range of 5 to 100,000 $\mu\text{S}/\text{cm}$. This is described as a "flat" response. The Aqua TROLL 200 is capable of meeting its published specifications without requiring additional calibration by the user, as most commercially available standards can introduce a larger potential measurement error than the instrument's initial factory calibration.

Range of Operation	Actual Conductivity	Specific Conductivity*
5 – 80,000 $\mu\text{S}/\text{cm}$	$\pm 0.5\%$ of reading + 1 $\mu\text{S}/\text{cm}$	$\pm 0.55\%$ of reading + 1 $\mu\text{S}/\text{cm}$
80,000 – 100,000 $\mu\text{S}/\text{cm}$	$\pm 1\%$ of reading	$\pm 1\%$ of reading

* After thermal stabilization.

Conducting a calibration "check"

At the beginning and end of critical deployments, conduct a quick calibration check to ensure the instrument is performing to its specifications. A simple one-point or two-point check is performed by measuring a precision conductivity standard using the default factory

calibration. Calibration checks are often used after instrument cleaning to measure instrument drift. Use fresh standards when performing these checks. Readings should fall within the combined theoretical error of the calibration solution and the instrument.



Accuracy of commercial calibration standards

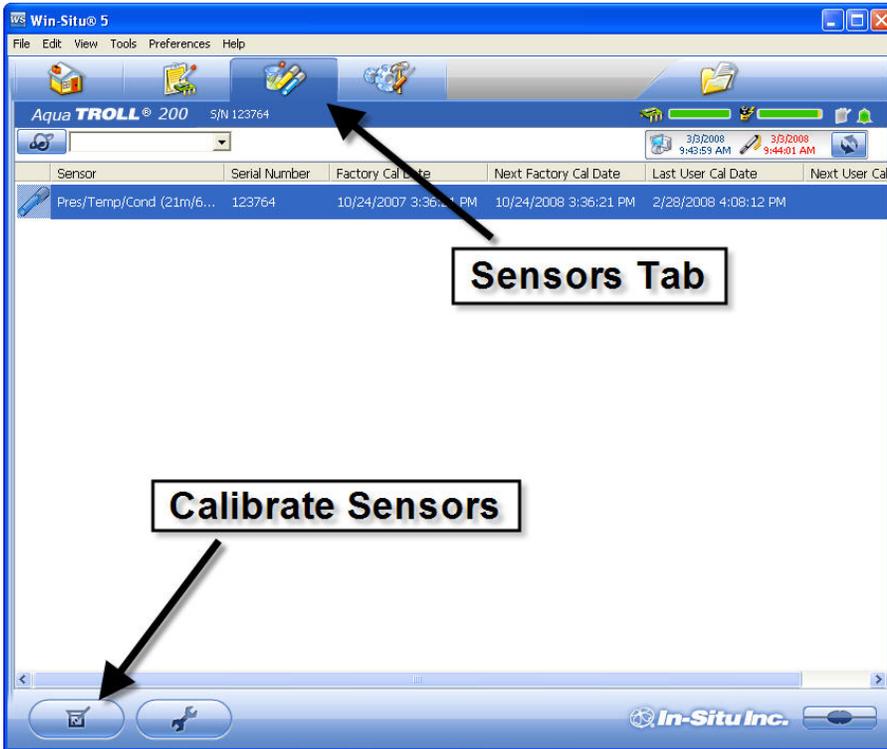
Most commercially available conductivity standards are less accurate than the Aqua TROLL 200's factory calibration. When conducting a calibration, be aware that you may not get the same level of accuracy as In-Situ's factory calibration.

Calibration Standard Accuracy	Accuracy when measuring below 80,000 $\mu\text{S}/\text{cm}$	Accuracy when measuring above 80,000 $\mu\text{S}/\text{cm}$
0.50% (commercial)	$\pm 0.7\%$ of reading + 1 $\mu\text{S}/\text{cm}$	$\pm 1.2\%$ of reading
0.25% (commercial)	$\pm 0.5\%$ of reading + 1 $\mu\text{S}/\text{cm}$	$\pm 1\%$ of reading
0.05% (NIST)	$\pm 0.4\%$ of reading + 1 $\mu\text{S}/\text{cm}$	$\pm 0.9\%$ of reading

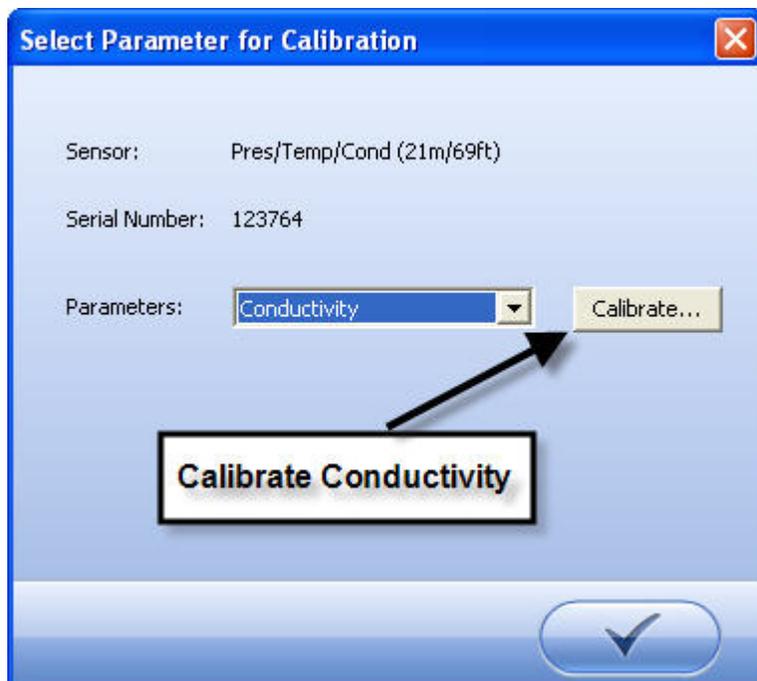
Resetting the Aqua TROLL 200 to factory calibration

If the instrument is recalibrated with commercial standards, and you wish to reset the factory calibration, follow these steps:

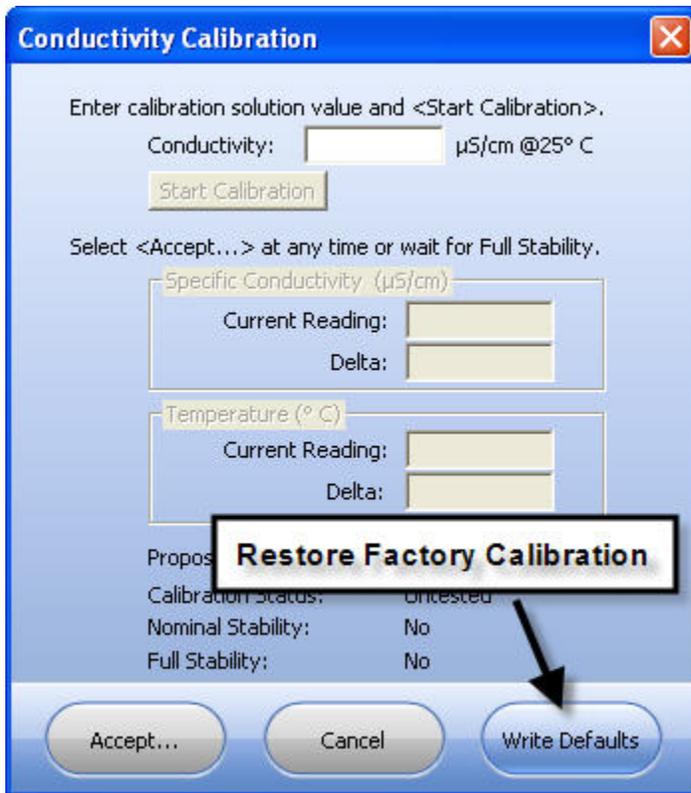
1. Access the Sensors Tab and click on the “Calibrate Sensors” icon.



2. Select Conductivity as the parameter for calibration and click “Calibrate.”



3. Step through the calibration wizard to reach the Conductivity Calibration screen and click “Write Defaults.”



4. Click OK and exit the calibration wizard.

Also see Technical Notes, *Aqua TROLL 200 Conductivity Accuracy* and *Aqua TROLL 200 Measurement Methodology*, in the Downloads section of www.in-situ.com

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