

Calibration Procedure for TDSTestr™ 3 and TDSTestr™ 4 with ATC

Tech Tip #2 ©1997

CAUTION

Even though the TDSTestr 3 and TDSTestr 4 are factory calibrated, it is still always necessary to check the calibration against an appropriate conductivity standard solution.

This is a precaution to insure accurate conductivity measurements after the TDSTestrs have been shipped because the physical handling, temperature changes and the time elapsed since the factory calibration make it impossible to guarantee the calibration still holds. It is also advisable to periodically calibrate them following the instructions outlined below. Choosing an appropriate conductivity standard solution is discussed at the end of the calibration instructions.

NOTE: before the first use of the TDSTestrs it is advisable to soak the electrode in alcohol for three (3) minutes to remove oily residues. **Do not immerse either unit into any liquid above the brown colored band.**

Calibration Instructions

1. Since the TDSTestrs are automatically temperature compensating, it is not necessary that the conductivity standard calibration solution be at the same temperature as the test solution. However, this is strongly recommended to minimize errors from the temperature effect.
2. Pour conductivity standard calibration solution into a clean, dry vessel so that there is at least one inch of liquid.
3. Remove the protective end cap from the TDSTestr to expose the electrodes.
4. Turn the TDSTestrs on with the ON-OFF switch located on the front of the tester.
5. Dip the TDSTestr electrodes 1/2 to one inch into the conductivity standard calibration solution. **Do not to trap any air at the electrodes as this causes errors in the readings.** Tap the tester gently on the bottom of the vessel to loosen trapped bubbles.
Caution: do not immerse either unit into any liquid above the brown colored level.
6. Allow the TDSTestr electrodes to remain in the conductivity standard calibration solution until the display reading stabilizes.
7. Adjust the calibration trimmer on the back of the TDSTestr so that the digital display reading indicates the same conductivity value as the value of the conductivity standard calibration solution at the standard temperature of 25°C.

8. Rinse the TDSTestr electrodes with a portion of the liquid to be tested, taking care not to use this rinse portion as a sample. This technique minimizes any carryover contamination from the calibration solution and eliminates the need to dry the TDSTestr electrodes. If this is not practical, rinse the electrodes with distilled water and air dry or blot dry with a clean absorbent wipe.
9. The TDSTestr is now calibrated and ready to measure the conductivity of your test liquids.
10. Repeat this procedure periodically to ensure calibration is maintained.

NOTE: Increases in temperature of the sample solution increase the conductivity and falsely increase the readings. The opposite effect is true for decreases in temperature. The ATC feature reduces this type of error so it is not as significant. The TDSTestrs will compensate for the difference in temperature between your calibration solution and the test solution with a coefficient of 2% per degree C (1.11% per degree F) and will adjust the displayed readings up or down accordingly.

Choosing a Conductivity Standard Calibration Solution

When choosing a conductivity standard calibration solution, it is possible to use any conductivity standard calibration solution no matter what salts are used to formulate it. This is because conductivity measurements are not dependent on chemical formulation. Thus, a conductivity calibration in one type of conductivity standard calibration solution is transferrable to any type of test solution, even if they contain very different chemicals.

When choosing a conductivity standard calibration solution, refer to the following rule:

1. Whenever possible, calibrate the instrument with a conductivity standard calibration solution that has a conductivity value close to the expected values of the test solution. This will result in the best accuracy. If this is not possible, or the conductivity values of the test solutions vary greatly, it is recommended that the instrument be calibrated to a standard that a conductivity value in the upper one-third of the instrument's measurement range.

The following is a list of conductivity standard calibration solutions that are offered for use with OAKTON® Instruments. The standardization values of the calibration solutions are based on conditions of 25°C.

Application	Calibrating standard solution part #	use with:	Adjust the display to:
General	WD-00606-10	TDSTestr 4	12.90 mS
General	WD-00653-18	TDSTestr 3	1410 uS

If this list does not contain a conductivity standard calibration solution required by application, it is possible to have "tailor made" conductivity calibration solutions produced at a local testing laboratory. Consult your OAKTON Distributor for alternatives.

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