



Series TDS and EC Conductivity Testers

Specifications - Operating Instructions



SPECIFICATIONS

Range: TDS2: 0 to 1990 ppm; TDS3: 0 to 10.00 ppt; EC1: 0 to 1990 μ S; EC2: 0 to 19.90 ms.

Accuracy: $\pm 2\%$ FS.

Resolution: TDS2: 10 ppm; TDS3: 0.10 ppt; EC1: 10 μ S; EC2: 0.10 ms.

Calibration: 1-point push button.

Calibration Standard Range: TDS2: 300 to 1990 ppm; TDS3: 3 to 10.00 ppt; EC1: 300 to 1990 μ S; EC2: 3 to 19.90 ms.

Operating Temperature: 32 to 122°F (0 to 50°C).

Temperature Compensation: 32 to 122°F (0 to 50°C).

ATC Coefficient: Beta=2% per °C, 1.11% per °F, 25°C Reference Temperature.

Display: 3-1/2 digit LCD.

Power: Four 1.5V Alkaline batteries.

Battery Life: 140 hrs continuous use.

Wetted Materials: 316 Stainless Steel and glass reinforce thermoplastic polyester.

Weight: 4.5 oz (125 g).

Before You Begin:

Remove plastic strips between batteries and contacts if present. Soak electrodes for three (3) minutes in alcohol to remove oily residues.

Calibration:

Even though these testers are factory calibrated, it is still necessary to check the calibration against an appropriate standard solution and recalibrate.

Selecting Standard Calibration Solutions:

EC Conductivity Tester

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 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 has a conductivity value in the upper one-third of the instruments measurement range.

TDS Total Dissolved Solids Tester

A total dissolved solids (TDS) standard calibration solution should contain the same types of dissolved solids known to be in the test solution. Failure to do so will result in significant discrepancies between the ppm or ppt readings and the actual ppm or ppt of TDS in the test solution.

The easiest way to obtain a total dissolved solids standard calibration solution is to use a ready-made standard solution that has the same types of dissolved solids as the solution to be tested. These ready-made solutions offer convenience and accuracy. They are commonly formulated with either KCl, NaCl, CaCO_3 , or 442 natural water formulation (40% sodium bicarbonate and 20% sodium chloride) to meet the majority of applications.

Choose a ready-made calibration solution according to the following guidelines:

1. Choose a TDS standard calibration solution that contains the same types of dissolved solids to be tested.
2. Choose a TDS standard calibration solution that has a ppm or ppt value as close as possible to the value of the solution to be tested. If this is not reasonable because of the variations in the test solutions, it is best to calibrate the TDS indicator with a TDS standard that has a ppm or ppt value

in the upper one-third of the TDS indicator's measurement range.

3. If you cannot find a ready-made calibration solution, one solution is to have "tailor-made" ppm TDS standard calibration solutions. This is done by formulating a mixture of salts in relative proportions that simulate the solution to be tested, then dissolving this mixture into distilled water. This should be performed according to the formula:

1 mg salt mixture/liter of distilled water = 1 ppm TDS

or, in other words

X ppm TDS = X mg of salts + 1 liter of distilled water

Remember that "X" mg of salts in the number of milligrams of a mixture of salts that's proportions simulate your test solution, NOT "X" milligrams of each salt in the mixture.

Calibration Instructions:

1. Since the testers are automatically temperature compensating, it is not necessary that the 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 standard calibration solution into a clean, dry vessel so that there is at least one inch (25.4 mm) of liquid.
3. Remove the protective end cap from the tester to expose the electrodes.
4. Turn the tester on with the ON-OFF switch located on the front of the tester.
5. Dip the electrodes 1/2 to one inch (12.7 to 25.4 mm) into the calibration solution. **Make sure not to trap any air at the electrodes or this causes errors in the readings. Tap the tester gently on the bottom of the vessel to loosen trapped bubbles.**
6. Allow the electrodes to remain in the standard calibration solution until the display reading stabilizes.
7. Adjust the calibration trimmer on the back of the tester so that the digital display reading indicates the same value as the value of the standard calibration solution at the standard temperature of 25°C.
8. Rinse the 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 carry over contamination from the calibration solution and eliminates the need to dry the 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 tester is now calibrated and ready to measure the conductivity or the TDS of your test solution.
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 testers will compensate for the difference in temperature between your calibration solution and the test solution with a coefficient of 2% per degree C (1.1% per degree F) and will adjust the displayed readings up or down accordingly.

TDS or Conductivity Testing

1. Remove cap.
2. Press ON/OFF button to turn on, let reading show zero.
3. Dip the electrode and into the test solution.
4. Allow time for the Automatic Temperature Compensation to correct the readings for solution temperature changes.
5. Note the full readings once the display stabilizes.
6. Press the ON/OFF button to shut off. Rinse the electrode and replace cap.

Maintenance:

To improve performance, clean the stainless steel electrodes by periodically rinsing them in alcohol for 10-15 minutes. Replace all four (4) batteries if the display becomes faint or disappears, or if the readings are unstable or constant.

Changing the Batteries:

Flip up the battery compartment lid. Remove old batteries and replace with fresh ones noting polarity as shown in the battery compartment.