HANNA HI 9034 TDS METER OPERATING PROCEDURE

Theory of Operation

Total dissolved solids (TDS) are determined by measuring the conductivity of a solution. Conductivity is the ability of a solution to conduct an electric current. TDS measurement therefore, expresses the concentration of dissolved solids that conduct electricity such as inorganic dissolved solids (chloride, nitrate, phosphate, iron, aluminum, etc.). Organic materials such as oil etc. do not carry an electric current well and therefore, cannot be measured using conductivity.

The common form of measurement of TDS is parts per million (PPM) or its equivalent milligrams/litre (mg/l). This TDS meter reads 0 - 19.99 g/l (grams per litre). Therefore, a multiplying factor of 1,000 is necessary to convert to parts/million.

1. Measuring the TDS of a Solution
   a) Obtain a sample of solution to be tested.
   b) Immerse the probe in a sample beyond the vent holes and stir the probe to release any air trapped in the vent holes.
   c) Turn the meter on.
   d) Push the 1999 ml/l button which is the middle button closest to the bottom of the meter. If the LCD displays a 1 on the far left side with no other readings displayed on the right, the meter is out of range and a higher range will have to be selected.

Note: The probe has a temperature sensor built into it and will automatically compensate for any temperature difference. If the temperature of the probe is close to that of the solution the display will stabilize quickly and provide you with an ATC (Automatic Temperature Compensate) TDS measurements. However, allow 2 minutes if there is a temperature difference of 5°C (9° F) or more for the ATC (Automatic Temperature Compensator) circuitry to compensate completely.

   e) Once the reading has stabilized the measurement is completed. If further measurements are required, rinse the probe with deionized water and test the next sample.
   f) When all measurements are completed the meter should be turned off and cleaned with deionized water.

2. Probe Maintenance and Cleaning

After every measurement the probe should be rinsed using deionized water. If more thorough cleaning is required follow the following steps.

a) Remove the PVC sleeve and clean the sensors with a non-abrasive cloth.
b) When reinstalling the PVC sleeve onto the probe, be sure that the four vent holes are towards the top of the probe (the end with the cable).

After cleaning the probe, recalibrate the meter. If the meter will not calibrate with the clean probe you must replace the probe. Always recalibrate the meter when a new probe is used.

Note: The probe body and sleeve are made of PVC and are very vulnerable to damage due to temperature exceeding 50°C (122°F). If the probe is exposed to high temperature, the bond between the rings and the probe body may become damaged and the probe will not function properly, in which case it has to be replaced.

3. Calibration

The meter should be calibrated frequently, especially when used often or in samples with widely spread differing TDS values.

For best results choose a TDS Solution that is closest in value to the sample to be measured.

Items required to calibrate meter:

- Sodium chloride standard solution (491 ± 2.6 mls as NaC1)
- Trimmer Screwdriver

a) Pour enough TDS Solution into a beaker to achieve at least 3" of depth.
b) Turn the meter on.
c) Select the 1999 mg/L range.
d) Immerse the probe into the solution and stir to get rid of any air bubbles that may get trapped inside the vent holes.
e) When the reading stabilized, turn the trimmer on the top of the meter (refer to #8 in the function description on page 3 until the display reads 500.
f) The meter is now calibrated and the meter is ready for use. All following measurements will be compensated to 25°C (77°F).

If the temperature of the probe is close to that of the solution the display will stabilized quickly and provide you with an automatic temperature compensated (ATC) TDS measurement. However, allow 2 minutes if there is a temperature, difference of 50°C (9°F) or more for the ATC circuitry to compensate completely.

If the meter will not calibrate refer to the probe maintenance and cleaning section of this procedure.

4. Troubleshooting

a) Display reads 1 - sample solution is out of range. (i.e.: over 1999 mg/L)
b) Fluctuating reading - clean the probe
c) V present in the top left corner of screen - low battery
d) Meter or probe damaged - call Maintenance.

HI 9034

FUNCTIONAL DESCRIPTION

1. Watertight shielded cable.
2. Air-Releases holes.
3. PVC protective sleeve.
4. TDS and temperature sensors.
5. Battery housing cover.
6. Probe plug.
7. TDS calibration trimmer.
8. LCD display.
9. ON/OFF button.
10. g/L range selector
11. mg/L range selector
12. mg/L range selector
13. 'V' Low batter indicator