

# Digital Salt / TDS Meter

## 390a



**The Value Leader™**

[www.tpi-thevalueleader.com](http://www.tpi-thevalueleader.com)

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## **Before Use**

Please carefully read the Operators Manual before using this meter. Clean the sensor area with a neutral detergent using a soft cloth or sponge before and after use.

## **Description**

The 390a measures the concentration of dissolved salt in percent and Total Dissolved Solids (TDS) in ppm. Temperature in Celsius or Fahrenheit is also measured.

Simply immerse the tip into liquids to determine salt content, TDS level, and temperature.

## **Applications**

Water - Test TDS levels to determine purity.

Food - Test the amount of salt in food, seafood, or processed foods.

Health - Monitor the amount of salt intake.

Water Filtration - Test for TDS to determine performance level of filtration systems.

HVAC -

- Test condensate water in cooling tower and humidifier reservoirs to prevent bacterial growth and drain line corrosion.
- Reduce water and chemical consumption in boilers and cooling towers.
- Test TDS levels in make-up water to prevent scale formation, corrosion, and embrittlement.
- Determine when to perform blowdown and add make-up water.
- Prevent contamination and corrosion of control valves, heat exchangers, and steam traps.
- Verify automated TDS controllers are functioning properly.
- Prevent low quality wet steam generation in boilers due to foaming caused by high TDS levels.

## 1. Precautions

Before use please read this operation manual and observe the procedures and methods specified to ensure accurate, reliable measurements.

Only the sensor area is waterproof, please be careful to avoid getting water into the body from above the probe.

Use care when cleaning the instrument by using a wet cloth or tissue. Use of chemicals such as acetone or benzene may cause deterioration of the housing material (ABS) or cause the device to not work properly. Never attempt to disassemble or modify this product.

If the sensor is exposed to temperatures below 0°C (32°F) or above 100°C (212°F) for an extended period of time damage may occur.

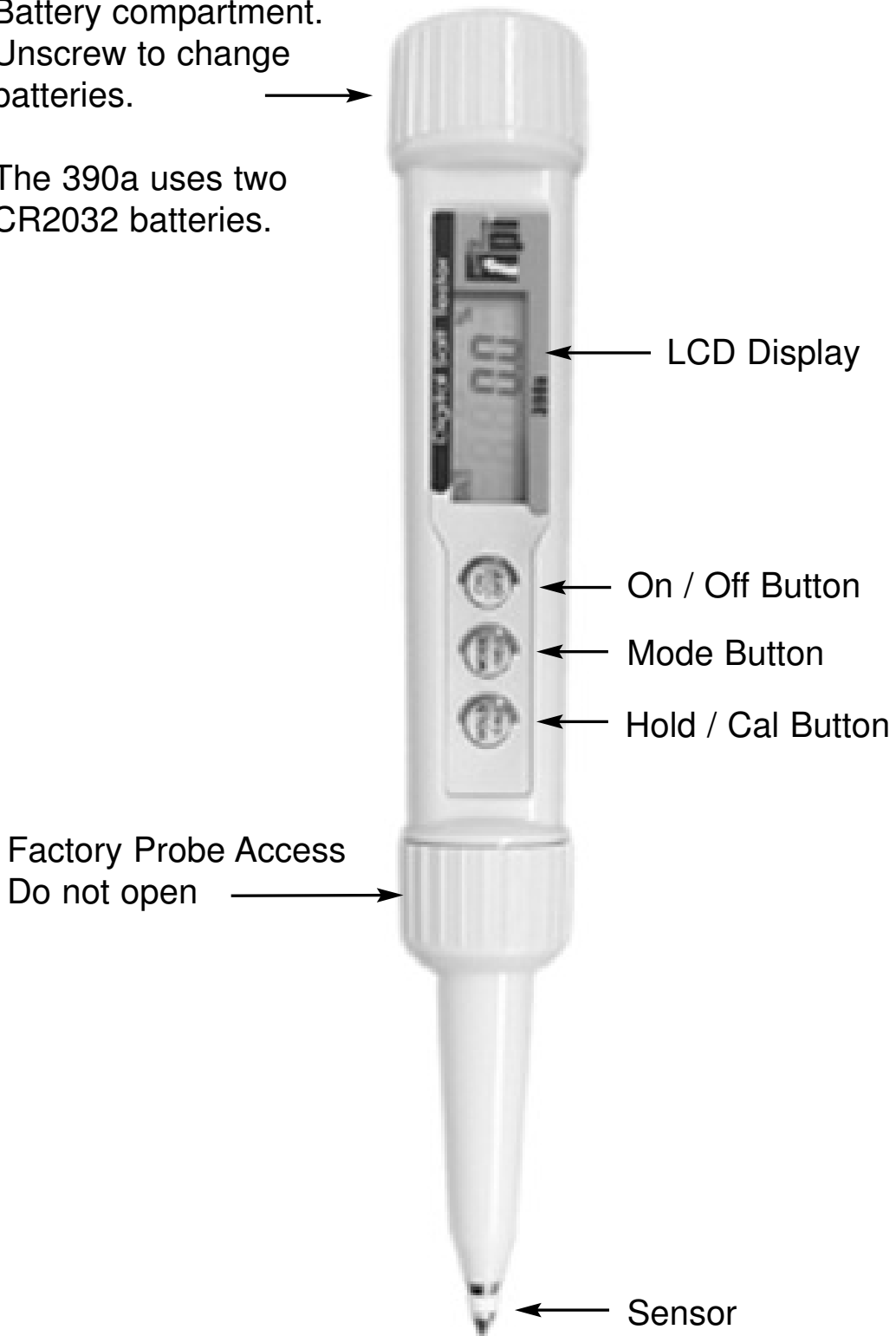
Please wash the sensor using a neutral detergent and soft cloth or sponge before and after use. After rinsing fully with water, wipe the sensor softly using dry cloth or tissue and always keep dry while not in use.

While measuring, make sure the sensor does not contact the bottom or sides of the container or any solid material within the measured sample. If contact is made with the container or solid material the displayed reading might be lower than the actual value.

## 2. Overview

Battery compartment.  
Unscrew to change  
batteries.

The 390a uses two  
CR2032 batteries.



Factory Probe Access  
Do not open

## **3 Function**

### **Sensor**

Used to measure Salt concentration, TDS level, and Temperature. This area is waterproof.

### **(ON/OFF) Key**

Used to turn the power on and off. After use, the power turns off automatically within one minute.

### **(MODE) Key**

#### **Measurement Mode Selection:**

Use the Mode button to select the measurement mode: Salt concentration in percent (%), Total Dissolved Solids (TDS) in ppm or Temperature in °C or °F. When the power is turned on, the default mode is the Salt %. Repeatedly press the Mode button to switch between each display.

#### **Salt % Resolution Selection:**

Press and hold the Mode button to switch between 0.1% and 0.01% resolution when Salt % mode is selected.

#### **Switching Between Celsius and Fahrenheit:**


The Mode key is also used to switch between degrees C and F. When the temperature is displayed, press and hold the Mode button until the display changes to °C or °F depending on which is currently displayed.

### **Hold / CAL Key**

Used to freeze the measured value during a test or perform calibration. Please refer to section (5) and (6) for calibration instructions.

While measuring press the Hold/Cal button to freeze the display. Press the button again to return the 390a to normal operation.

## 4. LCD display Symbols

<u>Display</u>	<u>Description</u>
°C / °F	Indicates the temperature of the measurement sample.
%	Indicates the salt concentration of the sample.
TDS	Indicates the level of Total Dissolved Solids in ppm**
HOLD	Indicates the hold function is activated
	Indicates the batteries need replacement.
Error	Indicates the measurement range has been exceeded.

## 5. Specifications

**Salt measurement range:** 0 to 5.0%

**Resolution:** 0.1% / 0.01% (Controlled by Mode button)

**Accuracy:** 0.1% to 2% = +/-0.2%

2% to 5% = +/-0.3%

**Temperature measurement range:** 32°F to 212°F (0°C to 100°C)

**Accuracy:** 50°F to 86°F (10°C to 30°C) = +/-2°F (+/-1°C)

<50°F & >86°F (<10°C & >30°C) = +/-4°F (+/=2°C)

**TDS Range:** 0ppm to 2000ppm

**Accuracy:** +/-20ppm

**Power Supply:** CR2032 battery (2 pcs)

**Battery life:** Approximately 6 months based on 3 uses per day

**Size:** 215 (L) × 26 (W) × 30 (D) mm (0.7"× 1.3"× 10.0")

**Weight:** 57g (2oz) (including batteries)

**Measurement method:** Electric Conductivity measurement system

\*\* See Appendix A for an explanation of TDS.

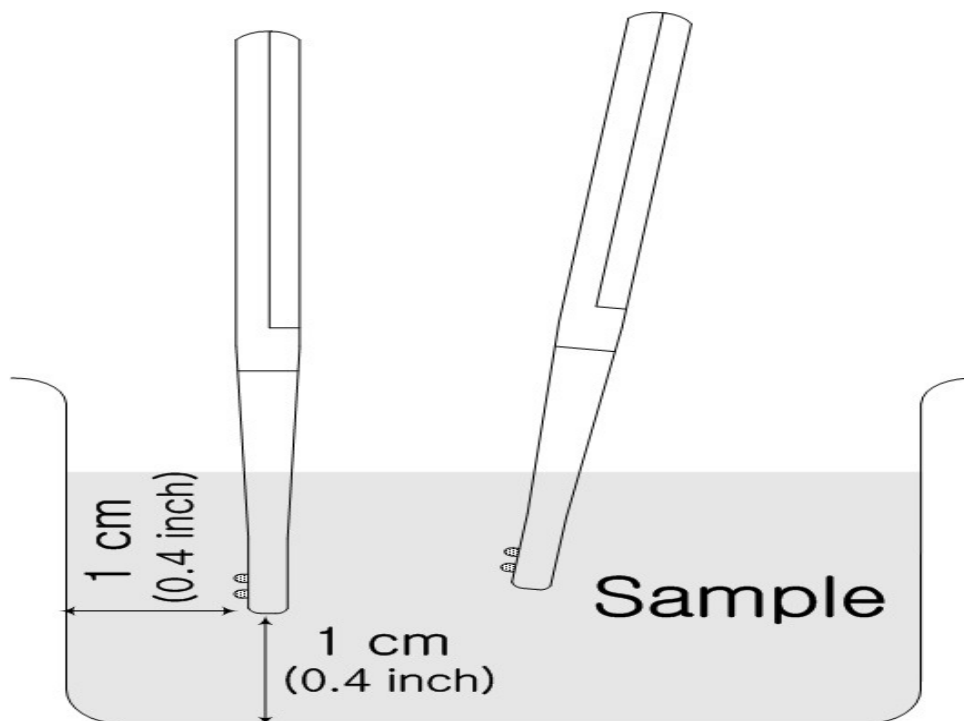
## 6. Measuring Salt, TDS, and Temperature

(1) Remove the protective cap. Turn the 390a on and the salt concentration is displayed. To increase the displayed resolution from 0.1% to 0.01%, press and hold the 'MODE' button. Fully immerse the sensor into the liquid to be measured. If a solid food is being measured, break it into pieces and dilute it with water. Allow approximately 10 seconds for the reading to stabilize. After the reading stabilizes, push the Mode button to select the TDS level and temperature measurement modes. (To switch between °C/°F units, when temperature is displayed press and hold the 'MODE' key until the display changes.)

(2) Pushing the 'HOLD /GAL' switch will freeze the display and 'HOLD' appears on the display. Remove the salt meter from the sample and after confirming the measured value, press the 'HOLD/GAL' switch to deactivate display hold.

(3) Wash the sensor with a neutral detergent using a soft cloth or sponge each after use and rinse with water. Dry the sensor and store with the sensor cover installed.


Note: Use the included spoon attachment as needed to test samples.



**Sample Location for Accurate Measurement**



## 7. Battery Replacement & Troubleshooting

Replace the battery when the battery symbol appears on the display. 

(1) Unscrew the cover at the top of the main body. Pull out the used batteries. Observing polarity insert two new batteries (CR2032 type). The negative side of the batteries face the spring.

(2) Screw the cover on and turn on power to confirm the batteries were replaced correctly.

<b><u>Problem</u></b>	<b><u>Cause</u></b>	<b><u>Corrective Action</u></b>
LCD display dim or not working.	Exceeded service life of batteries	Replace batteries.
Unstable readings	Contamination of sensor	Clean the sensor area

## 8. Calibration

Perform calibration if readings begin to drift.

1. Press the Power button (ON/OFF).
2. If necessary, press the Mode button to set the 390a to % Salt mode.
3. Put the sensor into 0.9% saline solution.  
(Make sure the sensor does not contact bottom or sides of the calibration sample)
4. While the sensor is in the solution, press and hold down the HOLD/CAL button until the display blinks. Release the HOLD/CAL button and wait.
5. When the display stops blinking calibration is complete.

## **Appendix A**

### **Definition of TDS (Total Dissolved Solids)**

TDS is the sum of all inorganic particulate material. Water contains a variety of minerals and salts, such as calcium, magnesium, carbonate, chloride and nitrate etc. TDS is the parameter used when measuring the total sum of all these compounds in water.

TDS is an indicator used for wastewater analysis and measuring mineral content of water.

**Notes:**

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