

Marine Salt Testa

**Digital Meter for the measurement of salinity,
specific gravity and Temperature
in saltwater aquariums.**

Operation Manual

Contents

| | |
|--|----|
| 1. CAUTION | 3 |
| 1.1 Precaution before use..... | 3 |
| 1.2 Cautions on safety..... | 3 |
| 1.3 Cautions on measuring..... | 4 |
| 1.4 Cautions on ownership..... | 4 |
| 2. Product Diagram & Functions | 5 |
| 2.1 Functions..... | 7 |
| 3. Product specification | 8 |
| 4. Measurement of Temp, Salinity & Specific Gravity | 9 |
| 4.1 Principle of salinity measurement..... | 9 |
| 4.2 Testing Temperature, Salinity & Specific Gravity..... | 9 |
| 5. Calibration (Salinity) | 10 |
| 6. Temperature Display Selection (°C/°F) | 11 |
| 7. Replacement of the Battery | 11 |
| 7.1 When to replace the batteries..... | 11 |
| 7.2 How to replace the batteries..... | 11 |
| 8. Troubleshooting | 11 |

1. CAUTION

The **Marine Salt testa** has been developed for the purpose of measuring the Temperature, Salinity and Specific Gravity of natural seawater and / or synthetic seawater. This meter has been factory calibrated and performance tested to ensure accurate readings.

1.1 Precaution before use

Please read the entire operation manual before using this **Marine Salt testa**. Failure to read this manual prior to usage may result in equipment damage and will void warranty.



Caution: Please observe the procedures and methods specified in the operation manual to ensure precision, accuracy and reliable measurements and user safety.

Warning: When the procedures and methods are not observed, accuracy and reliability of the measurements cannot be guaranteed. This may lead to issues of safety and equipment failure.

1.2 Cautions on safety



Please keep this product away from children. Ingestion of small parts may lead to choking and serious injury. If the sensor protection cap or battery is swallowed, please consult a physician immediately.

The sensors and 8 cm above it are waterproof. Please do not submerge beyond the “Water Line” labeled on the digital tester. Avoid water contact above this line to prevent permanent damage.

Please avoid damage to the sensors during cleaning. Be very careful not to scratch the surface of the gold plated sensors.

Use a damp cloth or tissue to clean the main body of the tester. Use of chemicals such as acetone or benzene may cause deterioration of the ABS housing.

Never attempt to disassemble or modify this product, this will void warranty.

1.3 Cautions on measuring



Please wash the sensors with a neutral detergent using a soft cloth or sponge before and after use for the most reliable test results. Dry off sensors with a clean cloth and always keep dry while not in use.

Make sure sensors do not contact any of the walls of the aquarium or sump while in measurement mode. Contact of any solid material can give false lower readings.

Keep sensors at least 1cm from the side and bottom of the measuring container.

1.4 Cautions on ownership

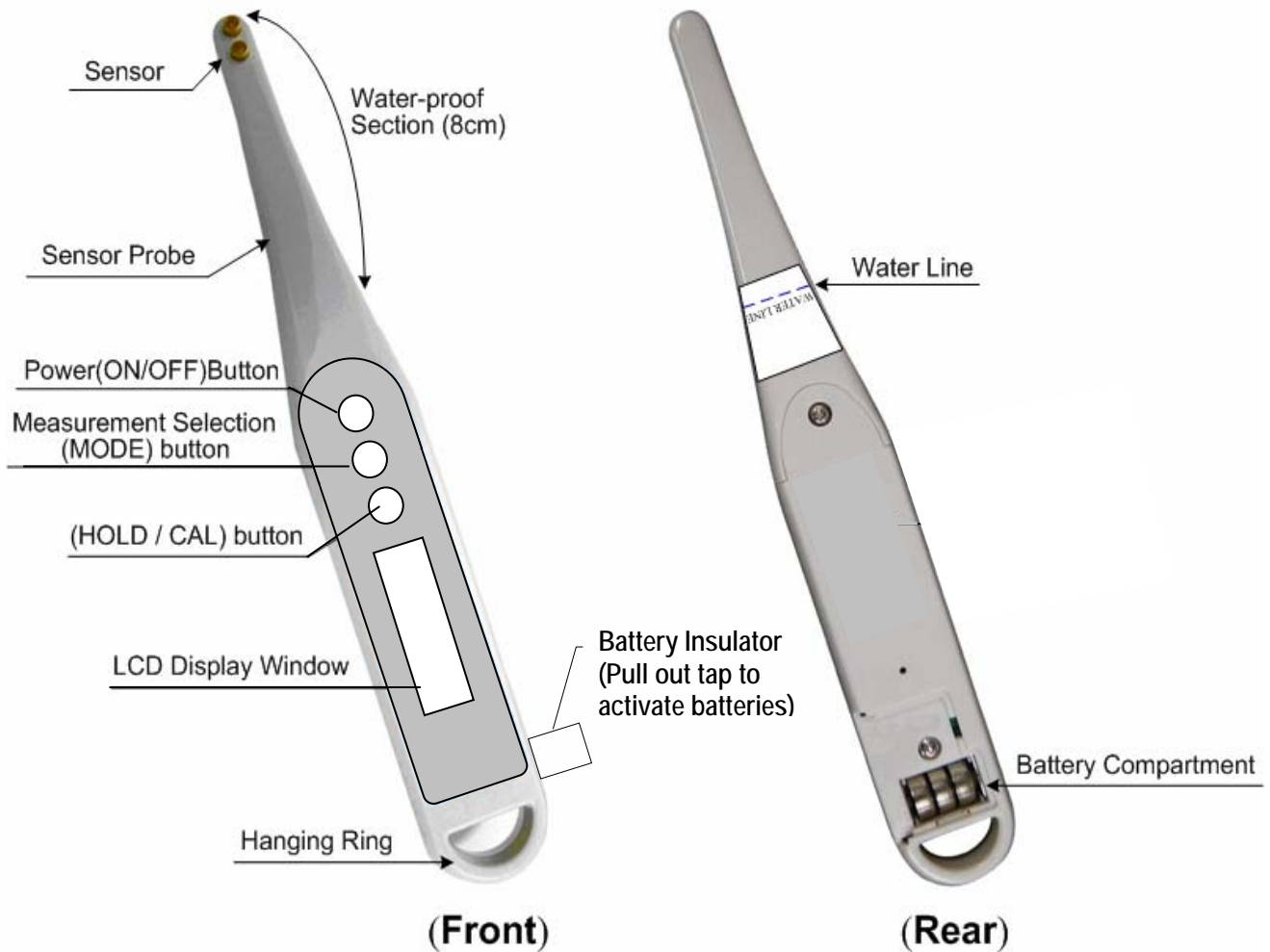


Avoid keeping **Marine Salt testa** in high humidity environments, direct exposure to sunlight, high temperatures, dust and moisture to prevent damage.

Please keep sensor cap inserted to protect the sensors when not in use.

Always remove the batteries if tester will not be used for long periods (over 1 month).

2. Product Diagram and Functions



Buttons Definition:



The **ON-OFF** button is used to turn the power on and off. Once turned on, **Temperature** measurement is displayed in the LCD Display window.



The **MODE** button is used to select display of temperature, Salinity or Specific Gravity measurement. Press the button once will switch it to **Salinity** measurement (ppt), pressing again will switch to **Specific Gravity** measurement and a third time back to **Temperature** measurement.



The **HOLD** button is used to “lock” the measurement value during a test. After viewing measurement, press again to clear LCD screen and start another test. This button is also used to perform Calibration or change the display units of temperature ($^{\circ}\text{C}/^{\circ}\text{F}$)

Display Definition:

| | |
|----------------|---|
| °C/°F | Indicates the Temperature of sample. |
| ppt | Indicates the Salinity contained within the sample. |
| (0.000) | Indicates the Specific Gravity within the sample. |
| HOLD | Is displayed in the LCD display window when the measured value is held. is used to Auto Calibration or Temp.Exchange (°C/°F) |
| ERROR | Appears when the measurement is not within the normal testing range. Temp. range (0°C ~ 100°C) Salinity Range (5 ~ 40 ppt) Specific Gravity (1.000 ~ 1.032) |
| B | Is displayed when replacement of battery is needed. |

2.1 Functions

Sensors

The sensors measure the temperature, salinity and specific gravity. Sensor surface is plated with gold in protecting the sensors contained inside. The sensors are waterproof.

ON/OFF button

This button turns the unit On or Off. The battery saving feature will automatically turn the unit off if not used within one minute. *(Upon opening this package, **Battery Insulator** must be pulled out to activate the batteries)*

MODE button

The first display mode begin with **Temperature** measurement. Pressing this button once will switch display to **Salinity** measurement (ppt) and pressing again will switch to **Specific Gravity** measurement in a cyclical mode.

HOLD/CAL button

This button is used to freeze the display during a test. It is also used for calibration(see section 5) and changing the temperature measuring unit(see section 6).

Note: All Marine Salt testa have been factory tested and calibrated for accuracy.

3. Product Specification

| | Salinity | Specific Gravity | Temperature |
|-----------------------|---|--------------------|--------------------|
| Measurement Range | 5-40ppt | 1.000-1.032sg | 0-70°C 32-158°F |
| Resolution | 0.1ppt (5-9ppt) 1ppt (10-40ppt) | 0.001sg | 0.1°C / 0.2°F |
| Accuracy | ±2ppt | ±0.002sg | ±1°C / ±2°F |
| Operating Temperature | 0-70°C 32-158°F | 0-40°C 32-104°F | 0-70°C 32-158°F |
| Battery type | 3 x 1.4Volt Button Cell (LR44 or equivalent) | | |
| Battery life | Approx. 3 months based on 3 tests use per day | | |
| Size (LxWxH) | 255 x 32 x 16.4 mm | | |
| Weight | Approximately 59grams (including batteries) | | |

4. Measurement of Salinity, Temperature and Specific Gravity

4.1 Principle of salinity measurement

The salinity measurement principle of this product is based on the electric conductivity measurement method. Salt exists as sodium ion and chloride ion within aqueous solution. As the quantity of sodium ion and chloride ion increases, the solution conductivity also increases proportionately to the increased salt concentration. Using this principle, salinity is determined by calculating the conductivity of a given sample.

4.2 Testing Temperature, Salinity and Specific Gravity

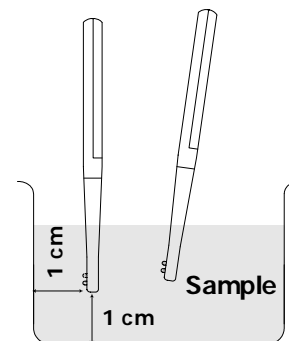
1. Wipe the sensor gently with a wet cloth or tissue each time prior to use. **Perform a calibration as in section 5.**

Note: Do not touch the sensors after cleaning as it may be contaminated with invisible oil from finger print or any foreign materials that may give false reading.

2. Press **ON/OFF** button once to switch on,

temperature reading is displayed in the LCD display window.

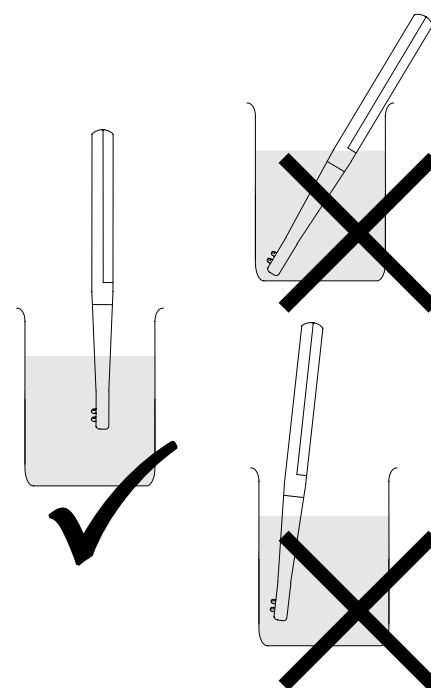
3. Insert the probe into the aquarium, be careful not to submerge beyond the “Water Line” mark that is labeled on the back of the tester. Shake the tip to remove bubbles on probe.
4. Wait for the temperature reading till it stops changing, a stabilized temperature is established. Now you can press the **MODE** button to switch to **Salinity** measurement.
5. Wait 10 seconds and confirm the **Salinity** (ppt) measurement. Press **MODE** button once again to cycle to **Specific Gravity** measurement.
6. Wait 10 seconds for the Specific Gravity to stabilize and read results.
7. You may press the **HOLD/CAL** button at anytime to “lock” the measurement so you do not have to keep the probe submerged in the water to read the measurement value. Press again to “unlock” and test again.
8. Press **ON/OFF** when you are finished. Your Battery Saving Function will automatically shut off your tester if no activity is detected within 1 minute.
9. Wash the sensors with neutral detergent using a soft cloth or sponge each time after use. Rinse completely with water and store in a dry place.
10. Protect sensors by inserting the Sensor Protection Cap while not in use.



For more accurate measurement

5. Calibration

1. Calibration should be performed each time before a series of tests.
2. Calibration can only be performed with the 30ppt standard solution.
3. Switch on unit and press **MODE** button once.
4. Dip the sensor into 30ppt solution centrally, make sure the sensor does not contact the bottom or sides of the bottle.
5. While the sensor is in the solution, press and hold down **HOLD/CAL** button until **CAL** is displayed with a beep sound.
6. Wait for 5~10 Sec. without pressing any keys.
7. When 30ppt value is displayed. Calibration is completed



Ensure correct position in calibration.

8. If 31, 32 or any other value is displayed, repeat calibration.

Note: Never perform calibration if unit is not dipped in 30ppt solution as this will cause malfunction to the unit. If reading is wrong after calibration, repeat this procedure several times.

6. Temperature display Selection (°C / °F)

1. Switch on the unit, ensure display is in the temperature mode.
2. Press and hold-down **HOLD/CAL** button until you hear a beep.
3. Release the button, °F temperature reading will be displayed.
4. To switch to °C temperature display, repeat step 1 to 3.

7. Replacement of the Battery

7.1 When to replace the batteries

When the **B** sign appears on the LCD display, the batteries will need replacement. The unit will automatically shut-off when battery life is out.

7.2 How to replace the batteries

1. Slide to open the battery cover at the back of the unit. Take a note at the directions of each battery placed and remove all of them.
2. Replace with 3 new battery (LR44 or equivalent) ensuring each battery's polarity (positive '+' at the spring side and negative '-' at the opposite) are placed in the correct directions.
3. Close the cover and turn on power to confirm whether the batteries were placed correctly.

8. Troubleshooting

| Status | Cause | Remedy |
|---|--|--|
| LCD display becomes dim or stop working | Low battery life / battery failure | Replace batteries |
| Unstable measured value | Contamination of sensors | Wash sensors with neutral detergent and rinse w/ water. Dry w/ cloth or tissue |
| | Salinity or temperature is not homogeneous | Please refer to 4.2 (salinity measurement) and 1.3 (cautions on measuring) |