

# INSTRUCTION MANUAL



## MARINE

### HI98319

## Waterproof Salinity Tester



## Certification

All Hanna Instruments products conform to CE European Directives.

**Disposal of Electrical & Electronic Equipment.** The product should not be treated as household waste. Instead hand it over to the appropriate collection point for the recycling of electrical and electronic equipment which will conserve natural resources.

**Disposal of waste batteries.** This product contains batteries, do not dispose of them with other household waste. Hand them over to the appropriate collection point for recycling.

Ensuring proper product and battery disposal prevents potential negative consequences for the environment and human health. For more information, contact your city, your local household waste disposal service, the place of purchase or go to [www.hannainst.com](http://www.hannainst.com).

## Warranty

This meter is warranted for a period of one year against defects in workmanship and materials when used for its intended purpose and maintained according to instructions. This warranty is limited to repair or replacement free of charge. Damage due to accidents, misuse, tampering or lack of prescribed maintenance is not covered. If service is required, contact your local Hanna Instruments Office. If under warranty, report the model number, date of purchase, serial number and the nature of the problem. If the repair is not covered by the warranty, you will be notified of the charges incurred. If the instrument is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization (RGA) number from the Technical Service department and then send it with shipping costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

## Recommendations for Users

Before using Hanna Instruments products, make sure that they are entirely suitable for your specific application and for the environment in which they are used. Any variation introduced by the user to the supplied equipment may degrade the meter's performance. For yours and the instrument safety do not use or store the instrument in hazardous environments.

## Accessories

### Solution

Code	Description
HI70024P	35.00 ppt calibration solution, 20 mL sachet (25 pcs.)

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[www.tools.in.th](http://www.tools.in.th)

## Select the temperature unit (°C/°F)

To select the temperature unit when SET is displayed press the CAL button to change between °C or °F.

## Select the Auto Off time (8/60/---)

To select the AUTO OFF when "AOFF" is displayed press the CAL button to change between 8 min, 60 min or --- (disabled).

## Return to measurement mode

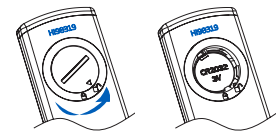
Press the ON/OFF button.

## Care and Maintenance

To obtain the highest accuracy for measurements it is important to follow these tips:

- Calibration is only as good as the solution being used. The calibration solution values change over time. Fresh solution should be used for each calibration.
- The probe should be rinsed with purified water each time before placing in calibration solution or sample to be tested.

## Battery Replacement



The meter features a low battery indicator. When the battery is running low (under 10 %), the battery indicator will blink on the LCD. When the battery is discharged "dEAd bAt" will be displayed on the LCD for 2 seconds and the meter will turn off.

To change the CR2032 Li-ion battery, turn the battery cover located on the back of the meter counterclockwise to unlock. Remove cover and replace with new battery "+" sign facing up.

**Note:** Batteries should only be replaced in a safe area using the battery type specified in this instruction manual. Old batteries should be disposed in accordance with local regulations.

Hanna Instruments reserves the right to modify the design, construction or appearance of its products without advance notice.

## Clear Calibration

Press the CAL button and the meter enters calibration mode. Press ON/OFF button and the "CLR" message is displayed. The meter will now be at default calibration.

## Error Messages

During user calibration, if the reading is out of the accepted range, the meter will display the "--- Err" message. During measurement mode if the reading is out of range, for example in ppt the "70.0" value will blink on the LCD.

In measurement mode if the measured temperature is higher than 50.0 °C or lower than 0.0 °C, the 50.0 °C or 0.0 °C temperature value will blink on the LCD.

## Operational Guide

### Turn the meter ON and check the battery status

Press the ON/OFF button to turn the meter on. At start-up, all the LCD segments are displayed for 1 second, then the percent indication of the remaining battery life is displayed for another second. The meter then enters the normal measuring mode using the last selected unit, that is displayed on the secondary LCD for 3 seconds.

**Note:** Keeping the ON/OFF button pressed while turning the meter on will display all LCD segments as long as the button is pressed.

### Enter calibration mode

Press the CAL button. "CAL" tag is displayed.

### Enter setup mode

Remove the battery cover and press the Setup button located on the side of the battery.

## Meter Setup

While in measurement mode, remove the battery cover. Press the Setup button located on the side of the battery, in the battery compartment. The meter will enter in setup mode. Press the ON/OFF button to move through setup parameters. Change option by pressing CAL button. The default settings are: Salinity measure unit - "PPT", Temperature unit - "°C", Auto OFF - 8 min.



### Select the salinity unit (PPT/PSU/S.G.)

To select the salinity unit when Unit is displayed press the CAL button to change between PPT, PSU, S.G.

## Thank You

Thank you for choosing a Hanna Instruments product. Please read this instruction manual carefully before using the meter.

For more information about Hanna Instruments and our products, visit [www.hannainst.com](http://www.hannainst.com) or e-mail us at [sales@hannainst.com](mailto:sales@hannainst.com).

For technical support, contact your local Hanna Instruments Office or e-mail us at [tech@hannainst.com](mailto:tech@hannainst.com)

Find your local Hanna Instruments Office on [www.hannainst.com](http://www.hannainst.com)

## Preliminary Examination

Remove the meter and accessories from the packaging and examine it carefully to make sure that no damage has occurred during shipping. Notify your nearest Hanna Customer Service Center if damage is observed.

Each meter is supplied with:

- CR2032 battery (inside the meter)
- Storage / Protection sleeve
- Instruction manual
- Quality certificate
- 35.00 ppt calibration standard sachet (4 pcs.)

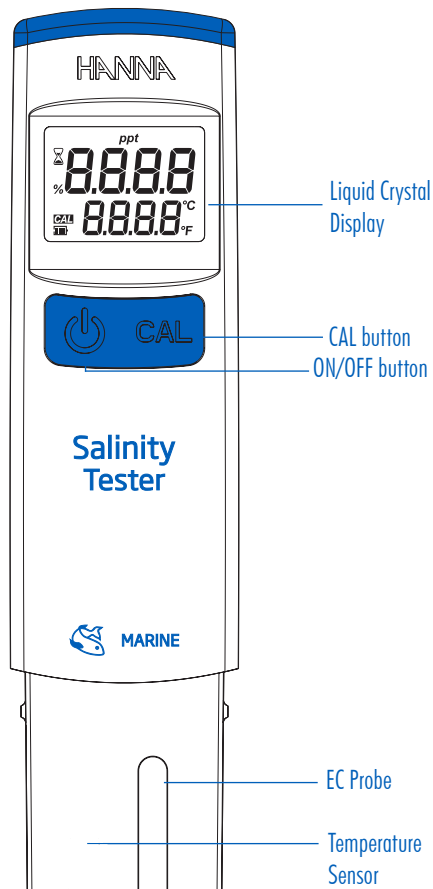
**Note:** Save all packing material until you are sure that the meter works correctly. Any damaged or defective items must be returned in their original packing material together with the supplied accessories.

## Intended Use

The meter is waterproof and is designed for the measurement of industrial, domestic, field or aquariums salinity.

Salinity should be checked regularly in the aquariums. Oceans are very stable environments, where there is not a lot of day to day change in the water parameters. Fish can respond negatively to even small changes in salinity.

## Operation



## Specifications

Range	ppt	0.0 to 70.0 ppt (g/L)
	PSU	0.0 to 70.0 PSU
	S.G.	1.000-1.041
Resolution	Temperature	0.0 to 50.0 °C / 32.0 to 122.0 °F
	ppt	0.1 ppt (g/L)
	PSU	0.1 PSU
Accuracy	S.G.	0.001
	Temperature	0.1 °C / 1°F
	ppt	±1.0 ppt for 0.0 - 40.0 ppt ±2.0 ppt for 40.0 - 70.0 ppt
Method	PSU	±1.0 PSU for 0.0 - 40.0 PSU ±2.0 PSU for 40.0 - 70.0 PSU
	S.G.	±0.001
	Temperature	±0.5 °C (±1.0 °F)
Calibration Solution	ppt	International Oceanographic Tables, 1966
	PSU	Standard Methods for the Examination of Water and Wastewater, 2520 B, Electrical Conductivity Method
	S.G.	Standard Methods for the Examination of Water and Wastewater, 2520 C, Density Method
Calibration		H170024 (35.00 ppt)
Calibration		automatic, single point 35.00 ppt
Temperature Compensation		automatic from 5 to 50.0 °C
Environment		0 to 50 °C (32 °C to 122 °F); RH max 100%
Battery Type		CR2032 3V Li-Ion (1 pc.)
Battery Life		approximately 100 hours of continuous use
Weight		68 g (2.4 oz.) without battery

## Preparation

The probe is shipped dry. Before using the electrode, remove the protective cap. Then follow the calibration procedure.

- Turn the tester on by pressing **ON/OFF** button.
- Remove the protective cap and immerse the tip of the probe in the sample to be tested.
- Stir gently and wait for the stability tag to disappear.
- The electrode automatically compensates for temperature variations.
- The reading on display is directly expressed in: ppt, PSU or S.G. depending on the last selected unit.
- For best results, recalibrate periodically.
- After use rinse the probe with water.
- Always replace the protective cap after each use.

## Measurement and Calibration

For better accuracy calibration of the meter is recommended at least once a month. In addition, the meter must be recalibrated whenever high accuracy is required.

### Measurement

Press the **ON/OFF** button to turn the meter ON. Place the probe in the desired solution. The salinity value, automatically compensated for temperature variations, will be displayed on the LCD.

The measured temperature will be displayed on the secondary LCD.

**Note:** Before taking any measurements make sure the meter has been calibrated.

### Calibration Procedure

- Press the **CAL** button to enter calibration mode from measurement mode.
- The meter will enter the calibration mode, displaying “35.00 ppt USE” message, with **CAL** tag blinking.
  1. Pour 2” (5 cm) of standard calibration solution into a beaker.
  2. Place the probe in standard calibration solution. The probe tip should be centered in the beaker and submersed 1.18” (3 cm). The meter will automatically recognize the solution.
  3. If the standard calibration solution is not recognized or is out of the accepted range the “--- Err” message is displayed.
  4. If the standard calibration solution is recognized the “REC” message is displayed until the reading is stable and the calibration is accepted.
- After acceptance, the “Stor” message is displayed and the meter returns to measurement mode.