Message Codes

Clear calibration

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

Error messages

During user calibration, if the reading is out of the accepted range, the tester 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 tester ON and check the battery status

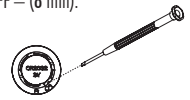
Press the **ON/OFF** button to turn the tester on. At start-up, all the LCD segments are displayed for 1 second, then the percent indication of the remaining battery life is displayed for another second. The tester then enters the normal measurement mode using the last selected unit, that is displayed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

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

Change settings

1. To enter setup mode, turn the tester on. While in measurement mode, remove the battery cover on the back of the tester.
2. Locate and press the small, black **Setup** button next to the battery, in the battery compartment.
3. The tester is now in setup mode. Press the **ON/OFF** button to move through the setup parameters.
4. Change parameter options by pressing **CAL** button.
5. The default settings are: Salinity measure unit – "**PPt**", Temperature unit – "**Set t°C**", Auto OFF – (**8** min).

Setup Button



Select the salinity unit (PPt/PSU/S.G.)

To select the salinity unit when **Unit** is displayed press the **CAL** button and change between **PPt**, **PSU**, **S.G.**

Select the temperature unit (°C/°F)

To select the temperature unit when **SET t** 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 ensure accuracy of measurements:

- Use fresh calibration standards for each calibration.
- Rinse the tester with purified water and dry off with a soft tissue before calibrating or taking measurements.
- Calibrate monthly with regular use or more often with frequent use.
- Inspect the tester to see if foreign material is detected in the openings housing the electrodes. A more thorough cleaning may be made using a non-abrasive detergent, and a soft material such as cardboard, to dislodge the material.
- Rinse thoroughly with a steam of running tap water and jetting the steam through the opening. Shake excess water and rinse in purified water. Dry off and recalibrate the tester before using.
- Store with the protective cap on.

Battery Replacement

The tester 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 bAtt**" will be displayed on the LCD for 2 seconds and the tester will turn off.

To change the CR2032 Li-ion battery, turn the battery cover located on the back of the tester 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.*

Certification

All Hanna Instruments products conform to **CE European Directives**. RoHS compliant

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.

Warranty

This tester 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 tester'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.)

IST98319 12/18

INSTRUCTION MANUAL

MARINE

HI98319

Waterproof Salinity Tester

HANNA® instruments

Thank You

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

For more information about Hanna Instruments and our products, visit www.hannainst.com or e-mail us at sales@hannainst.com.

For technical support, contact your local Hanna Instruments Office or e-mail us at tech@hannainst.com

Find your local Hanna Instruments Office on www.hannainst.com

Preliminary Examination

Remove the tester and accessories from the packaging and examine it carefully. Notify your nearest Hanna Customer Service Center if damage is observed.

Each HI98319 is delivered in a cardboard box and is supplied with:

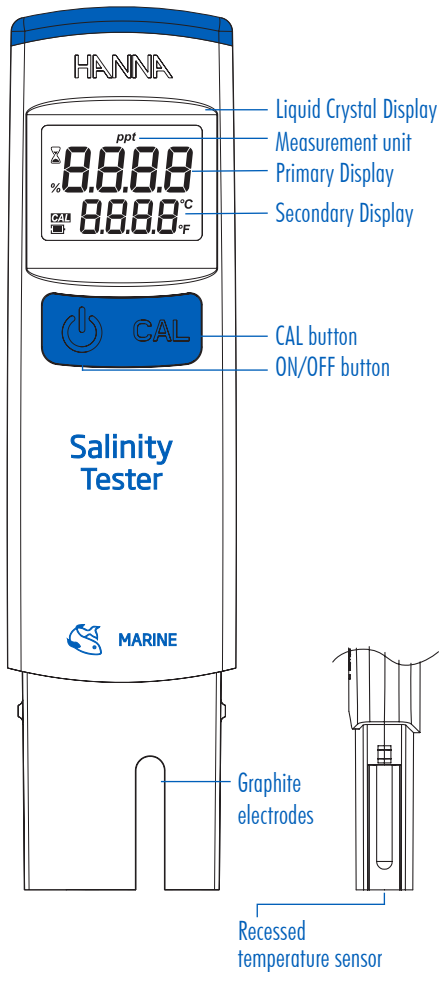
- 35.00 ppt calibration standard sachet (4 pcs.)
- CR2032 battery (inside the tester)
- Storage / Protection sleeve
- Instruction manual
- Quality certificate

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

Intended Use

The HI98319 digital, waterproof, pocket tester is designed for the measurement of salinity in salt water aquariums, aquaculture, brackish water or other salt water bodies.

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
	Temperature	0.0 to 50.0°C / 32.0 to 122.0°F
Resolution	ppt	0.1 ppt (g/L)
	PSU	0.1 PSU
	S.G.	0.001
	Temperature	0.1°C / 0.1°F
Accuracy	ppt	±1.0 ppt for 0.0 - 40.0 ppt ±2.0 ppt for 40.0 - 70.0 ppt
	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
Method	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 Solution		HI70024 (35.00 ppt)
Calibration		automatic, single point 35.00 ppt
Temperature Compensation		automatic from 5 to 50.0°C / 41 to 122°F
Battery Type		CR2032 3V Li-Ion (1 pc.)
Battery Life		approximately 100 hours of continuous use
Auto-Off		user selectable: after 8 min, 60 min or disabled
Environment		0 to 50 °C (32 °C to 122 °F); RH max 100%
Dimensions		160 x 40 x 17 mm (6.3 x 1.6 x 0.7")
Weight		68 g (2.4 oz.) without battery

Preparation

The tester is shipped dry. Before using, remove the protective cap. Rinse the electrodes (lower section) with purified water. Dry off. Press the **ON/OFF** button to turn the tester on. After going through a startup screen, the tester will enter the normal measurement mode using the last selected unit.

If this is the first time operating, it is advised the tester be calibrated.

Calibration and Measurement

To ensure accuracy of measurements:

- Use a fresh calibration standard sachet for each calibration.
- Rinse the tester with purified water before calibration and dry completely.
- Calibrate at least monthly with regular use.
- Recalibrate whenever high accuracy is required.

To clean:

- Rinse probe tip with purified water, that is distilled, deionized or reverse osmosis. Dry off.
- Store with the cap on.

Calibration Procedure

1. Press the **CAL** button to enter calibration mode.
2. The tester will enter the calibration mode, displaying "**35.00 ppt USE**" message, with **CAL** tag blinking.
3. Cut the sachet open at the top. Open up the top of the sachet and do not squeeze it or heat the solution by handling. It can be placed into a stable container.
4. Place the Salinity tester into the sachet. Some solution may overflow.
5. Tap the sachet gently to dislodge entrapped bubbles. The tester will automatically recognize the solution.
6. Once the standard calibration solution is recognized, the "**REC**" message is displayed until the reading is stable and the calibration is accepted.
7. After acceptance, the "**Stor**" message is displayed and the tester returns to measurement mode.
8. Rinse off the Salinity tester in purified water and dry off.

Measurement

- Immerse the tester 1.5" (38 mm) into the sample to be tested.
- Swirl the tester in sample to dislodge entrapped air bubbles and wait for the stability tag to disappear.
- The tester automatically compensates for temperature variations.
- The salinity reading will be displayed on the LCD with the last selected measurement unit displayed – ppt, PSU or S.G.
- The measured temperature will be displayed on the secondary LCD.
- After use, rinse the probe with purified water and dry off.
- Always replace the protective cap after each use.