Dear Customer,

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.

Preliminary Examination

Remove the tester and accessories from the packing material and examine it carefully. If you require any further information, please contact Hanna Instruments technical support team at tech@hannainst.com.

Each HI98311 is delivered in a cardboard box and is supplied with:
- HI70031 1413 µS/cm conductivity standard, 20 mL sachet (3 pcs.)
- HI70032 1382 ppm TDS standard, 20 mL sachet (3 pcs.)
- HI73311 EC/TDS probe
- HI73128 Probe removal tool
- 1.5V batteries
- Instrument quality certificate
- Instruction manual

Each HI98312 is delivered in a cardboard box and is supplied with:
- HI70030 12880 µS/cm conductivity standard, 20 mL sachet (3 pcs.)
- HI70038 6.44 ppt TDS standard, 20 mL sachet (3 pcs.)
- HI73311 EC/TDS probe
- HI73128 Probe removal tool
- 1.5V batteries
- Instrument quality certificate
- Instruction manual

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

General Description & Intended Use

HI98311 (DIST®5) and HI98312 (DIST®6) are compact EC/TDS and temperature testers. They feature a two-buttons operation system and are easy to use. The compact and waterproof casing is designed to float if accidentally dropped in water. The testers measure temperature in °C and °F and all EC /TDS readings are temperature compensated automatically (ATC).
EC/TDS measurements have user-selectable conversion factor (CONV) and temperature compensation coefficient ß (beta).
The testers display a stability tag (⏱) that will disappear once the reading has stabilized.
Battery level and low-battery indicator are clearly displayed on the LCD to alert the user in the event that low battery power could adversely affect readings.

BEPS (Battery Error Prevention System)
The testers will automatically shut off if there is not enough power to get an accurate measurement.

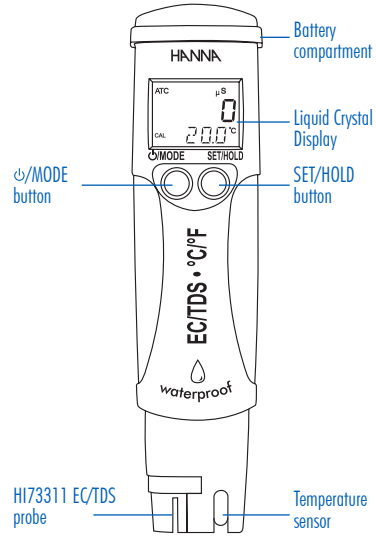
EC/TDS Probe
HI98311 & HI98312 are supplied together with HI73311 EC/TDS graphite electrode.

Temperature Sensor
The stainless steel temperature sensor facilitates faster and more accurate temperature measurements.

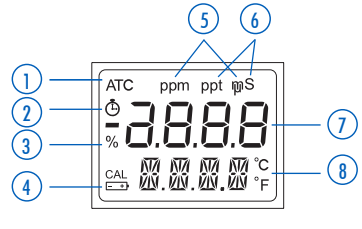
Specifications

Range	0.0 to 60.0 °C (32.0 to 140.0 °F) 0 to 3999 µS/cm (HI98311) 0.00 to 20.00 mS/cm (HI98312) 0 to 2000 ppm (HI98311) 0.00 to 10.00 ppt (HI98312)
Resolution	0.1 °C (0.1 °F) 1 µS/cm ; 1 ppm (HI98311) 0.01 mS/cm ; 0.01 ppt (HI98312)
Accuracy (@25 °C / 77 °F)	±0.5 °C (±1.0 °F) ±2% f.s. (EC/TDS)
Temperature compensation	Automatic ß=0.0 to 2.4% / °C
Environment	0 to 50 °C (32 to 122 °F); RH 100%
TDS Factor	0.45 to 1.00 (CONV)
Calibration	Automatic, one-point
Calibration solutions HI98311 HI98312	 HI70031 (1413 µS/cm) HI70032 (1382 ppm; CONV=0.5) HI70442 (1500 ppm; CONV=0.7) HI70030 (12880 µS/cm) HI70038 (6.44 ppt; CONV=0.5 or 9.02 ppt; CONV=0.7)
Electrode	HI73311 EC/TDS electrode (included)
Battery type	1.5V (4 pcs.)
Battery life	Approx. 100 hours
Auto-off	After 8 minutes of non-use
Dimensions	171 x 41 x 26 mm (6.7 x 1.6 x 1.0")
Weight	85 g (3.1 oz.)

Functional Description



LCD Display



1. Automatic Temperature Compensation (ATC) indicator
2. Stability tag
3. Battery life percentage indicator
4. Low battery indicator
5. Measurement units (HI98311)
6. Measurement units (HI98312)
7. First LCD line
8. Second LCD line

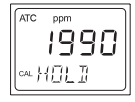
Operational Guide

Turning the Tester ON / OFF

Press and hold ⏻/MODE. All LCD segments will be displayed for a few seconds followed by battery life percentage indicator. To turn the tester off, from measurement mode, press ⏻/MODE. "OFF" will be displayed on the second LCD line and then the tester will turn off.

HOLD Mode

From measurement mode, press and hold SET/HOLD until "HOLD" is displayed. EC/TDS readings will be frozen on the LCD. Press either buttons to resume measurement mode.



Setup

Setup mode allows the selection of temperature unit. To enter the setup mode, press ⏻/MODE until "TEMP" and the current temperature unit are displayed (e.g. "TEMP °C"). Use SET/HOLD to change the temperature unit. To return to measurement mode, press ⏻/MODE twice.

EC / TDS Calibration & Measurement

It is recommended to calibrate the tester frequently, especially if high accuracy is required. More frequent calibrations may be required depending on the type of sample being tested. The tester should be recalibrated:
- whenever the EC/TDS electrode is replaced
- at least once a month
- after testing aggressive samples

Calibration procedure

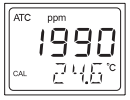
- From measurement mode, press and hold ⏻/MODE until "CAL" is displayed on the second LCD line.
- Place the probe in calibration solution: HI70031 (1413 µS/cm) for HI98311 and HI70030 (12.88 mS/cm) for HI98312.
- The LCD displays "OK" for 1 second and the tester returns to measurement mode.
- When using the calibrations solutions listed in the Specifications table, if the EC / TDS conversion factor is either 0.50 or 0.70, the tester allows a direct calibration in ppm.

Note: *The "CAL" tag on the LCD indicates that the tester is calibrated.*

Exiting Calibration & Resetting Default Values

- When in calibration mode, it is possible to exit calibration procedure by pressing ⏻/MODE, before first-point calibration has been accepted. The tester displays "ESC" and returns to measurement mode and last calibrated data.
- When in calibration mode, it is possible to clear a previous calibration and return to default values by pressing SET/HOLD, before the first calibration point has been accepted. The tester displays "CLR" on the second LCD line, "CAL" tag dissappears and tester returns to default calibration.

Measurement



Use SET/HOLD to select EC/TDS mode. Place the electrode in the solution to be tested while stirring gently. The measurement should be taken after the stability tag ⏱ has disappeared. The EC/TDS value is displayed on the first LCD line and the temperature on the second LCD line.

Note: *Before taking any measurement make sure the tester has been calibrated.*

Changing EC/TDS Conversion Factor (CONV) & Temperature Compensation Coefficient ß (BETA)

- From measurement mode, press and hold ⏻/MODE until "TEMP" and the current temperature unit are displayed on the second LCD line (e.g. "TEMP °C").
- Press ⏻/MODE again to show the current conversion factor (e.g. "0.50 CONV") and SET/HOLD to change the conversion factor.
- Press ⏻/MODE to show the current temperature compensation coefficient ß (e.g. "% 2.1 BETA") and SET/HOLD to change the temperature compensation coefficient ß.
- Press ⏻/MODE to return to measurement mode.

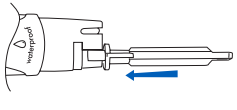
Maintenance

Please read the information below to ensure the highest possible accuracy.

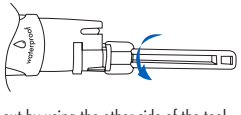
- If measurements are taken successively, rinse the probe thoroughly in distilled or deionized water to eliminate cross-contamination.
- Clean the electrode monthly with a lint-free cloth.
- Never store the probe in distilled or deionized water.

Electrode Replacement

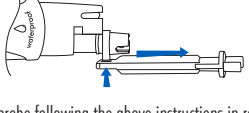
Use supplied removal tool (HI73128) to replace the EC/TDS electrode. Insert the tool into the probe cavity.



Rotate the tool counterclockwise.



Pull the probe out by using the other side of the tool.

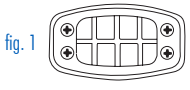


Insert a new probe following the above instructions in reverse order.

Battery Replacement

Battery life percentage indicator is displayed at power on. If the battery level drops below 5%, the ▭ symbol lights up indicating that the batteries should be replaced soon.
If the battery level is not adequate to guarantee an accurate reading, the tester automatically turns off.
To replace the batteries, follow the next steps:

1. Turn OFF the tester.
2. Remove the four screws on the top of the tester to open the battery compartment (figure 1).


fig. 1

3. Remove the old batteries.
4. Insert four new 1.5V AA batteries in the battery compartment while paying attention to the correct polarity (figure 2).
5. Close the battery compartment using the four screws.

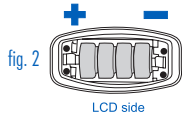


fig. 2

Note: *Only use the battery type specified in the manual. Old batteries should be disposed in accordance with local regulations.*

Accessories

Electrodes	
HI73311	Replaceable EC/TDS probe
HI73128	Electrode removal tool
Solutions	
HI70030P	12880 µS/cm solution, 20 mL sachet (25 pcs.)
HI70031P	1413 µS/cm solution, 20 mL sachet (25 pcs.)
HI70032P	1382 ppm solution, 20 mL sachet (25 pcs.)
HI70038P	6.44 ppt solution, 20 mL sachet (25 pcs.)
HI70442P	1500 ppm solution, 20 mL sachet (25 pcs.)
Other Accessories	
HI740026P	Replacement 1.5 V batteries (12 pcs.)

Certification

All Hanna Instruments conform to the **CE European Directives.**

CE
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.

Recommendations for Users

Before using this tester, make sure that it is entirely suitable for your specific application and for the environment in which it is used. Avoid touching the probe at all times. Any variation introduced by the user to the supplied equipment may degrade the tester's performance. For yours and the tester's safety do not use or store the tester in hazardous environments.

Warranty

HI98311 and HI98312 are warranted for a period of one year against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. The electrode is warranted for a period of six months. 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 Office, 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.

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

All rights are reserved. Reproduction in whole or in part is prohibited without the written consent of the copyright owner, Hanna Instruments Inc., Woonsocket, Rhode Island, 02895, USA.

IST98311 09/19

US DESIGN PATENT D462,024

INSTRUCTION MANUAL

HI98311 • HI98312
Waterproof EC/TDS & Temperature Testers



HANNA® instruments