HI99300 • HI99301

Waterproof
EC, TDS & Temperature Meter
with Advanced Features

INSTRUCTION MANUAL

HANNA instruments

Dear Customer,

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

This manual will provide you with the necessary information for correct use of this meter, as well as a precise idea of its versatility.

If you need additional technical information, do not hesitate to e-mail us at tech@hannainst.com or view our worldwide contact list at www.hannainst.com.

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PRELIMINARY EXAMINATION

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

Each HI99300 is delivered in a rugged carrying case and is supplied with:

- HI763063 Conductivity probe with integrated temperature sensor, DIN connector and 1m (3.3') cable
- HI70031 1413 µS/cm conductivity standard (1 sachet)
- HI70032 1382 mg/L (ppm) TDS calibration solution (1 sachet)
- 100 mL beaker (1 pc.)
- 1.5V AAA alkaline batteries
- Instrument quality certificate
- Electrode quality certificate
- Instruction manual

Each HI99301 is delivered in a rugged carrying case and is supplied with:

- HI763063 Conductivity probe with integrated temperature sensor, DIN connector and 1m (3.3') cable
- HI70030 12880 µS/cm conductivity standard (1 sachet)
- HI70038 6.44 g/L (ppt) TDS calibration solution (1 sachet)
- 100 mL beaker (1 pc.)
- 1.5V AAA alkaline batteries
- Instrument quality certificate
- Electrode quality certificate
- Instruction manual

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

GENERAL DESCRIPTION AND INTENDED USE

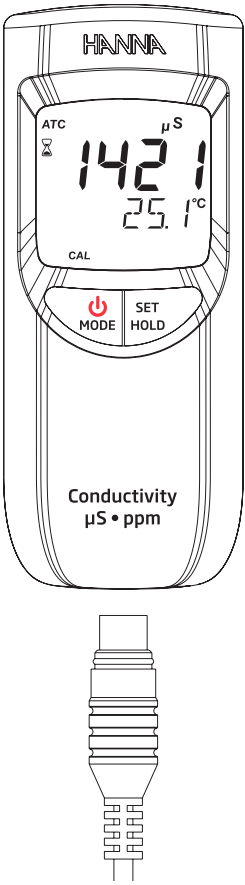
The HI99300 and HI99301 portable conductivity meters together with a HI763063 conductivity probe are designed to measure conductivity or total dissolved solids in a variety of samples.

The HI99300 and HI99301 feature a two-button operation system and are simple to use. They have a waterproof and compact casing, large dual-line display and automatic calibration at one point.

The HI763063 has a build-in temperature sensor for temperature compensated EC or TDS measurements.

MAIN FEATURES

- Simultaneous EC or TDS and temperature measurements on a large dual-line LCD display
- Selectable temperature unit (°C or °F)
- HI763063 dedicated conductivity probe with integrated temperature sensor
- Probe quick connect system
- Battery life indication and low battery detection
- Auto-off function
- Keystroke confirmation tone
- Waterproof casing IP67



SPECIFICATIONS

HI99300	
Range	0 to 3999 µS/cm* 0 to 2000 ppm -5.0 to 105.0 °C
Resolution	1 µS/cm 1 ppm (mg/L) 0.1 °C / 0.1 °F
Accuracy @ 25 °C/77 °F	±2% F.S. (EC/TDS) ±0.5 °C / ±1.0 °F (Temperature)
Temperature compensation	Automatic, with β selectable from 0.0 to 2.4 %/ °C (0.1 increments)
EC/TDS calibration	Automatic, one-point at 1413 µS/cm or 1382 ppm (CONV=0.5) or 1500 ppm (CONV=0.7)
TDS conversion factor	Selectable from 0.45 to 1.00 (0.01 increments)
Probe (included)	HI763063 EC/TDS/temperature sensor, DIN connector and 1 m (3.3') cable
Battery type/life	1.5V AAA (3 pcs.) approx. 500 hours of continuous use
Auto-off	User selectable: after 8 min, 60 min or disabled
Environment	0 to 50 °C (32 to 122 °F) RH max. 100%
Meter dimensions	154 x 63 x 30 mm (6.1 x 2.5 x 1.2")
Weight (with batteries)	196 g (6.91 oz.)
Casing ingress protection rating	IP67

* LCD displays µS for µS/cm

SPECIFICATIONS

HI99301	
Range	0.00 to 20.00 mS/cm* 0.00 to 10.00 ppt -5.0 to 105.0 °C / 23.0 to 221.0 °F
Resolution	0.01 mS/cm 0.01 ppt (g/L) 0.1 °C / 0.1 °F
Accuracy @ 25 °C/77 °F	±2% F.S. (EC/TDS) ±0.5 °C / ±1.0 °F (Temperature)
Temperature compensation	Automatic, with β selectable from 0.0 to 2.4 %/ °C (0.1 increments)
EC/TDS calibration	Automatic, one-point at 12.88 mS/cm or 6.44 ppt (CONV=0.5) or 9.02 ppt (CONV=0.7)
TDS conversion factor	Selectable from 0.45 to 1.00 (0.01 increments)
Probe (included)	HI763063 EC/TDS/temperature sensor, DIN connector and 1 m (3.3') cable
Battery type/life	1.5V AAA (3 pcs.) approx. 500 hours of continuous use
Auto-off	User selectable: after 8 min, 60 min or disabled
Environment	0 to 50 °C (32 to 122 °F) RH max. 100%
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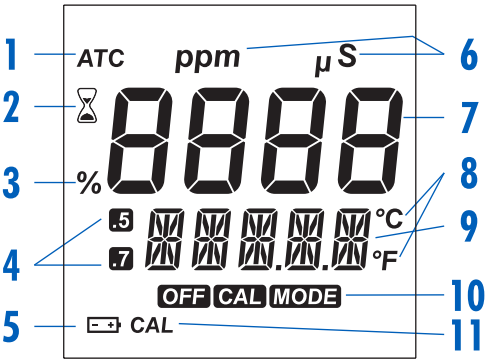
* LCD displays mS for mS/cm

DISPLAY DESCRIPTION

1 Automatic Temperature Compensation indicator
2 Stability indicator
3 Battery percentage
4 TDS conversion factor
5 Low battery indicator
6 Measurement unit
7 Primary LCD
8 Temperature unit
9 Secondary LCD
10 Meter modes indicator
11 EC calibration tag



OPERATIONAL GUIDE

Each meter is supplied with batteries. Before using the meter for the first time, open the battery compartment and insert batteries, observing the polarity (see "Battery Replacement").

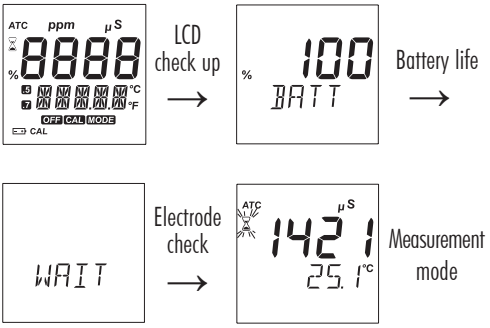
CONNECTING THE ELECTRODE

With the meter turned off, connect the HI763063 probe to the DIN socket on the bottom of the meter by aligning the pins and pushing in the plug firmly. Remove the protective cap from the probe before taking any measurements.

TURNING THE METER ON

To turn the meter ON, press the ⏻ button on the front of the meter. If it does not turn on, make sure that the batteries are properly installed in their place.
The meter is provided with an active acoustic signal when a key is pressed.

At start-up the meter displays all LCD segments for a few seconds, followed by the percentage indication of the remaining battery life, displaying "**WAIT**" until electrode check is in process then the meter enters the normal measurement mode.



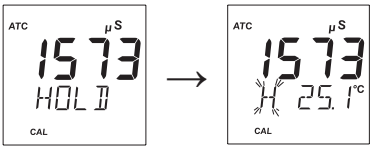
Note: The meter detects the presence and the type of the probe at its input.
*- If the probe is not connected the message "**NO**" "**PROBE**" appears alternatively on the secondary LCD with "---" blinking on the first LCD line.*
*- If the probe is not compatible "**WRONG**" "**PROBE**" message appears alternatively on the secondary LCD line with "---" blinking on the first LCD line.*
- If the readings are out of range, the nearest range limits are displayed blinking (e.g. 3999 µS -5.0 °C).

SELECTING MEASUREMENT RANGE

While in measurement mode, press the **SET** button to select EC or TDS measurement on the first LCD line.

FREEZING MEASUREMENT VALUES

While in measurement mode, press and hold the **SET** button until "**HOLD**" appears on the secondary LCD. The "**HOLD**" remains for 1 second and reading of EC/TDS and temperature will be frozen on the LCD with "**H**" blinking.



Press any button to resume active measurements.

ENTERING CALIBRATION MODE

Press and hold the ⏻ button until "**POWER**" and **OFF** tag is replaced by "**STD**" and **CAL** tag. Release the button.

ENTERING SETUP MODE

Press and hold ⏻ button until "**STD**" and **CAL** tag is replaced by "**SETUP**" and **MODE** tag. Release the button.

TURNING THE METER OFF

While in measurement mode, press the ⏻ button. "**POWER**" and **OFF** tag will appear. Release the button.

EC MEASUREMENT & CALIBRATION

Rinse the electrode off well with distilled or deionized water. Shake off excess droplets. PLace the probe in the sample to be tested. Use plastic beakers or containers to minimize any electromagnetic interference. Tap the probe lightly on the bottom of the beaker or container to remove air bubbles that may be trapped inside the tip. Wait for a few minutes for the temperature sensor to reach thermal equilibrium, when the ⌛ tag disappears. The LCD displays the EC or TDS value (automatically compensated for temperature) on the primary LCD, while the secondary LCD displays the sample temperature. If measurements are taken in different samples successively, rinse the probe tip thoroughly in distilled or deionized water to eliminate cross-contamination.

EC calibration

Before calibration, rinse the sensor tip with a heavy stream of distilled or deionized water. Shake off excess droplets.

Select calibration "**STD**" **CAL**. The meter enters the calibration mode and "**µS 1.41 USE**" (HI99300) or "**mS 12.88 USE**" (HI99301) is displayed with **CAL** tag blinking. Place the sensor in calibration solution. If the standard value is recognized first "**REC**" then "**WAIT**" is displayed until the calibration is accepted. The LCD will display "**SAVE**" for 1 second and return to normal measurement mode. If the standard is not recognized or the reading is out of accepted range "**--- WRONG**" is displayed. After the calibration procedure has been completed, the "**CAL**" is displayed.

Note: - β should be set to 1.9 during calibration.

- There is a known relationship between the EC and TDS readings, it is not necessary to calibrate the meter in TDS. The meter will allow a calibration in TDS using HI70032 or HI70038 TDS calibration solution.

Exiting calibration and resetting default values

After entering the calibration mode and before the point is accepted, it is possible to quit the procedure and return to the last calibration data by pressing the ⏻ button. The LCD displays "**ESC**" for 1 second and the meter returns to normal mode.

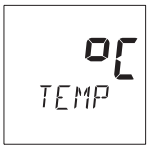
To reset the default values and clear a previous calibration, press the **SET** button after entering the calibration mode and before the point is accepted.

The LCD displays "**CLEAR**" for 1 second, the meter resets to the default calibration and the "**CAL**" on the LCD disappears.

METER SETUP

Setup mode allows the selection of the Temperature unit, Auto-off, Beep confirmation tone, temperature compensation factor for EC and TDS conversion factor. To enter Setup mode press and hold ⏻ button until "**STD**" and **CAL** tag is replaced by "**SETUP**" and **MODE** tag. Release the button.

- "**TEMP**" is displayed on the secondary LCD line with the current temperature unit (e.g. "**TEMP** °C"), for °C/°F selection, use the **SET** button. After the temperature unit has been selected, press ⏻ to confirm and to enter the "**A-OFF**" selection.



- Use the **SET** button, to navigate through the auto-off choices: 8 minutes ("**8**", default value), 60 minutes ("**60**") or disabled ("**---**"). Press ⏻ to confirm and to enter the "**BEEP**" selection.

- To switch the beep tone ON or OFF, press the **SET** button; press ⏻ to confirm and to enter the EC temperature compensation factor selection "**BETA**".

- The meter will show the current factor "**1.9**" on the primary LCD and "**BETA**" on the secondary LCD. Change the set factor with the **SET** button. Press ⏻ to confirm and to enter TDS conversion factor "**CONV**".

- The meter will show the set conversion factor "**0.50**" on the primary LCD and "**CONV**" on the secondary LCD. Change the set conversion factor with the **SET** button. Press ⏻ to confirm and to return to normal mode.

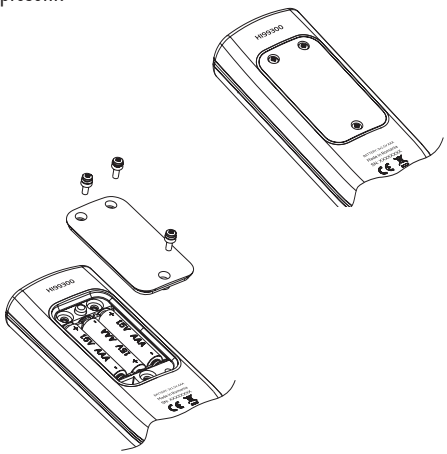
BATTERY REPLACEMENT

When the remaining battery life is less than 10% the battery tag blinks on the display to warn the user.

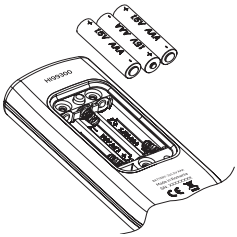
Battery Error Prevention System (BEPS)

If the battery is too weak (“**0%**”) the display shows “**bAtt**“, “**DEAD**“ for a few seconds then the meter powers off. Immediately replace the batteries with new ones.

The batteries are accessed by opening the battery cover on the back of the instrument. Remove protective boot if present.



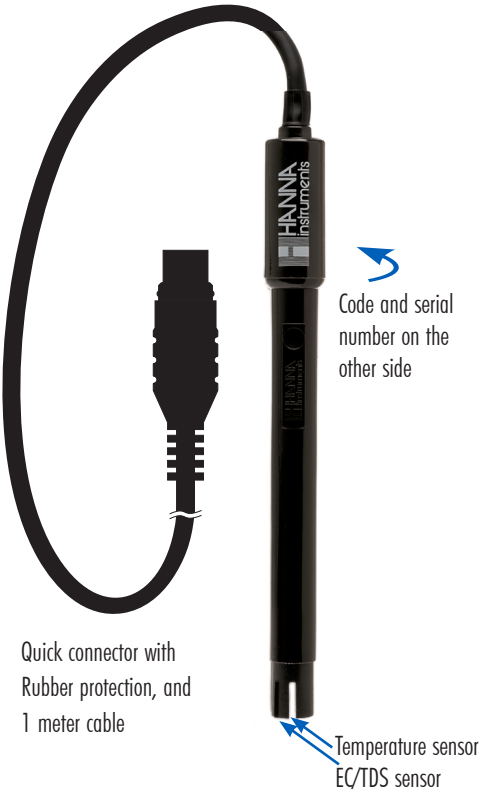
Replace the three 1.5V AAA alkaline batteries located in the battery compartment, observing the indicated polarity.



Replace the battery cover making sure that the gasket is in place.

ACCESSORIES

HI763063	Conductivity probe (EC & TDS) with integrated temperature sensor, DIN connector and 1m (3.3') cable
HI7030M	12880 µS/cm conductivity standard, 230 mL
HI7031M	1413 µS/cm conductivity standard, 230 mL
HI7032M	1382 mg/L (ppm) TDS calibration solution, 250 mL
HI70038P	6.44 g/L (ppt) TDS calibration solution, 20 mL sachets (25 pcs.)
HI7061L	General purpose pH electrode cleaning solution, 500 mL
HI710028	Orange silicon rubber boot
HI710142	Black carrying case for HI991XX portable instruments
HI76405	Electrode holder with steel base



ELECTRODE MAINTENANCE

PREPARATION

- Remove the protective cap. Rinse with water.

STORAGE

- Replace the protective cap.

Note: Never store the electrode in distilled water.

CLEANING PROCEDURE

- Soak in Hanna HI7061 electrode cleaning solution for 20 minutes. Rinse well and calibrate before using.
- The two pins can be cleaned by rubbing with abrasive paper.

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.

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Recommendations for users

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

Warranty

HI99300 and HI99301 are warranted for two years against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. Electrodes and probes are 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 (see engraved on the back of the meter) 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 meter is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization number from the Technical Service department and then send it with shipping costs prepaid. When shipping any meter, make sure it is properly packed for complete protection.

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

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