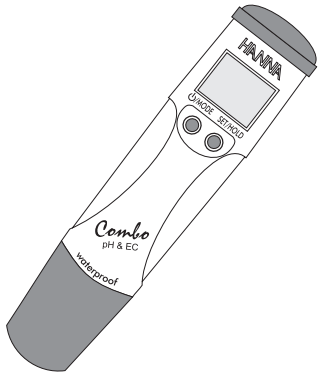
Instruction Manual

HI 98129 • HI 98130

pH/EC/TDS/Temperature with Only One Tester



HANNA instruments

www.hannainst.com

Dear Customer,
Thank you for choosing a Hanna product.
This manual will provide you with the necessary information for a correct operation. Please read it carefully before using the meter.
If you need additional technical information, do not hesitate to e-mail us at tech@hannainst.com.

These instruments are in compliance with the CE directives.

PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it carefully. If any damage has occurred during shipment, immediately notify your Dealer or the nearest Hanna Customer Service Center.

Each meter is supplied with:

- **HI 73127** pH electrode
- **HI 73128** electrode removal tool
- batteries (4 x 1.5V) and instructions

Note: Conserve all packing material until the instrument has been observed to function correctly. Any defective item must be returned in its original packing.

US DESIGN PATENT
D462,024

WARRANTY

HI 98129 and **HI 98130** are **warranted for 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.

Damages due to accident, misuse, tampering or lack of prescribed maintenance are not covered.

If service is required, contact the dealer from whom you purchased the instrument. If under warranty, report the model number, date of purchase, serial number and the nature of the failure. 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 Number from the Customer Service department and then send it with shipment costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

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

GENERAL DESCRIPTION

HI 98129 and **HI 98130** are waterproof pH/EC/TDS/temperature meters. The housing has been completely sealed against humidity and designed to float.

All pH and EC/TDS readings are automatically temperature compensated (ATC), and temperature values can be displayed in °C or °F units.

For EC/TDS readings, the EC/TDS conversion factor (CONV) is selectable by the user, as well as the temperature compensation coefficient β (BETA).

The meters can be calibrated at one or two points for pH (with auto-buffer recognition and against five memorized buffer values), and at one point for EC.

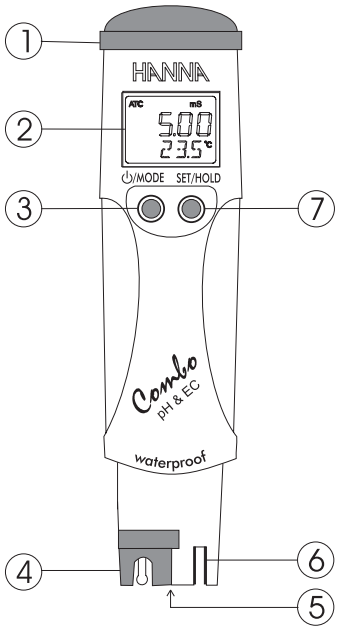
Measurements are highly accurate with a unique stability indicator right on the LCD.

These meters are also provided with battery level indication at start-up, and with a low battery symbol which warns the user when the batteries need to be replaced. In addition the Battery Error Prevention System (BEPS) avoids erroneous reading caused by low voltage level by turning the meter off.

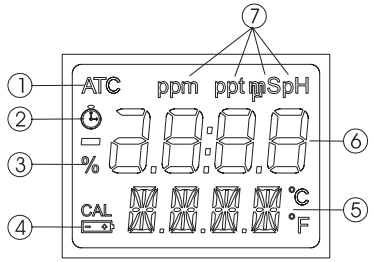
The **HI 73127** pH electrode, supplied with the meter, is interchangeable and can be easily replaced by the user.

The stainless steel encapsulated temperature sensor facilitates faster and more accurate temperature measurement and compensation.

FUNCTIONAL DESCRIPTION



1. Battery compartment
2. Liquid Crystal Display (LCD)
3. ON/OFF/MODE button
4. **HI 73127** pH electrode
5. Temperature sensor (behind)
6. EC/TDS probe
7. SET/HOLD button



1. Automatic temperature compensation indicator
2. Stability indicator
3. Battery life percentage indicator
4. Low battery indicator
5. Secondary display
6. Primary display
7. Measuring units for primary display

SPECIFICATIONS

Range	0.0 to 60.0°C / 32.0 to 140.0°F
	0.00 to 14.00 pH
	0 to 3999 µS/cm (**HI 98129**)
	0.00 to 20.00 mS/cm (**HI 98130**)
	0 to 2000 ppm (**HI 98129**)
	0.00 to 10.00 ppt (**HI 98130**)
Resolution	0.1°C / 0.1°F
	0.01 pH
	1 µS/cm ; 1 ppm (**HI 98129**)
	0.01 mS/cm ; 0.01 ppt (**HI 98130**)
Accuracy	±0.5°C / ±1°F
(@20°C/68°F)	±0.05 pH
	±2% f.s. (EC/TDS)
Typical EMC	±0.5°C / ±1°F
Deviation	±0.02 pH
	±2% f.s. (EC/TDS)
Temperature	automatic,
Compensation	with β=0.0 to 2.4%/°C (EC/TDS)
Environment	0 to 50°C (32 to 122°F); RH 100%
TDS Factor	0.45 to 1.00 (CONV)
Calibration	automatic, 1 or 2 point with 2 sets of memorized buffers (pH 4.01/7.01/10.01 or 4.01/6.86/9.18) for pH; automatic, at 1 point for EC/TDS
EC/TDS Cal.solutions	
HI 98129:	**HI7031** (1413 µS/cm)
	HI7032 (1382 ppm; CONV=0.5)
	HI70442 (1500 ppm; CONV=0.7)
HI 98130:	**HI7030** (12.88 mS/cm)
	HI70038 (6.44 ppt; CONV=0.5 or 9.02 ppt; CONV=0.7)
Electrode (included)	**HI 73127** pH electrode
Battery Type/Life	4 x 1.5V with BEPS/approx. 100 hours
Auto-off	after 8 minutes of non-use
Dimensions	163 x 40 x 26 mm (6.4 x 1.6 x 1.0")
Weight	100 g (3.5 oz.)

Recommendations for Users

Before using this product, make sure that it is entirely suitable for the environment in which it is used. Operation of this instrument in residential areas could cause unacceptable interferences to radio and TV equipment.

The glass bulb at the end of the electrode is sensitive to electrostatic discharges. Avoid touching this glass bulb at all times.

Any variation introduced by the user to the supplied equipment may degrade the instrument's EMC performance. To avoid electrical shock, do not use this instrument when voltages at the measurement surface exceed 24 Vac or 60 Vdc. To avoid damages or burns, do not perform any measurement in microwave ovens.

IST98129R4 07/05

OPERATIONAL GUIDE

To turn the meter on and to check battery status

Press and hold the ⏻/MODE button for 2-3 seconds. All the used segments on the LCD will be visible for a few seconds, followed by a percent indication of the remaining battery life (Eg. % 100 BATT).

To change the temperature unit

To change the temperature unit (from °C to °F), from measurement mode, press and hold the ⏻/MODE button until TEMP and the current temperature unit are displayed on the lower LCD (E.g. TEMP °C).
Use the SET/HOLD button to change the temperature unit, and then press the ⏻/MODE button twice to return to normal measuring mode.

To freeze the display

Press the SET/HOLD button for 2-3 seconds until HOLD appears on the secondary display.
Press either button to return to normal mode.

To turn the meter off

Press the ⏻/MODE button while in normal measurement mode. OFF will appear on the lower part of the display. Release the button.

Notes:

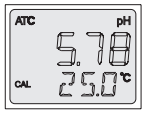
- Before taking any measurement make sure the meter has been calibrated.
- To clear a previous calibration, press the ⏻/MODE button after entering the calibration mode. The lower LCD will display ESC for 1 second and the meter will return to normal measurement mode. The CAL symbol on the LCD will disappear. The meter will be reset to the default calibration.
- If measurements are taken in different samples successively, rinse the probe thoroughly to eliminate cross-contamination; and after cleaning, rinse the probe with some of the sample to be measured.

pH MEASUREMENTS & CALIBRATION

Taking measurements

Select the pH mode with the SET/HOLD button.
Submerge the electrode in the solution to be tested.
The measurements should be taken when the stability symbol ▯ on the top left of the LCD disappears.

The pH value automatically compensated for temperature is shown on the primary LCD while the secondary LCD shows the temperature of the sample.



Calibration buffer set

- From measurement mode, press and hold ⏻/MODE until TEMP and the current temperature unit are displayed on the lower LCD (E.g. TEMP °C).
- Press the ⏻/MODE button again to show the current buffer set: pH 7.01 BUFF (for pH 4.01/7.01/10.01) or pH 6.86 BUFF (for NIST set, pH 4.01/6.86/9.18).
- Press the SET/HOLD button to change the buffer value.
- Press the ⏻/MODE button to return to the normal measuring mode.

Calibration procedure

From measurement mode, press and hold the ⏻/MODE button until CAL is displayed on the lower LCD. Release the button. The LCD will display pH 7.01 USE or pH 6.86 USE (if you have selected the NIST buffer set). The CAL tag blinks on the LCD.

For a single-point pH calibration, place the electrode in any buffer from the selected buffer set (eg. pH 7.01 or pH 4.01 or pH 10.01). The meter will recognize the buffer value automatically.
If using pH 4.01 or pH 10.01, the meter will display OK for 1 second and then return to the normal measuring mode.
If using pH 7.01, after recognition of the buffer the meter will ask for pH 4.01 as second calibration point. Press the ⏻/MODE button to return to measurement mode or, if desired, proceed with the 2-point calibration as explained below.

Note: It is always recommended to carry out a two-point calibration for better accuracy.

For a two-point pH calibration, place the electrode in pH 7.01 (or 6.86 if you have selected the NIST buffer set). The meter will recognize the buffer value and then display pH 4.01 USE.
Rinse the electrode thoroughly to eliminate cross-contamination.
Place the electrode in the second buffer value (pH 4.01 or 10.01, or, if using NIST, pH 4.01 or 9.18). When the second buffer is recognized, the LCD will display OK for 1 second and the meter will return to the normal measuring mode.

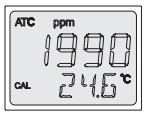
The CAL symbol on the LCD means that the meter is calibrated.

EC/TDS MEASUREMENTS & CALIBRATION

Taking measurements

Select either EC or TDS mode with the SET/HOLD button.
Submerge the probe in the solution to be tested. Use plastic beakers to minimize any electromagnetic interferences.
The measurements should be taken when the stability symbol ▯ on the top left of the LCD disappears.

The EC (or TDS) value automatically compensated for temperature is shown on the primary LCD while the secondary LCD shows the temperature of the sample.



To change the EC/TDS conversion factor (CONV) and the temperature compensation coefficient β (BETA)

- From measurement mode, press and hold the ⏻/MODE button until TEMP and the current temperature unit are displayed on the lower LCD. Eg. TEMP °C.
- Press the ⏻/MODE button again to show the current conversion factor. Eg. 0.50 CONV.
- Press the SET/HOLD button to change the conversion factor.
- Press the ⏻/MODE button to show the current temperature compensation coefficient β. Eg. 2.1 BETA.
- Press the SET/HOLD button to change the temperature compensation coefficient β.
- Press the ⏻/MODE button to return to the normal measuring mode.

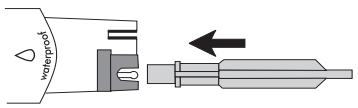
Calibration procedure

- From measurement mode, press and hold the ⏻/MODE button until CAL is displayed on the lower LCD.
- Release the button and immerse the probe in the proper calibration solution: **HI7031** (1413 µS/cm) for **HI98129** and **HI7030** (12.88 mS/cm) for **HI98130**.
- Once the calibration has been automatically performed, the LCD will display OK for 1 second and the meter will return to normal measurement mode.
- Since there is a known relathionship between EC and TDS readings, it is not necessary to calibrate the meter in TDS

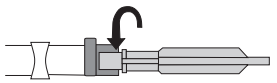
The CAL symbol on the LCD means that the meter is calibrated.

pH ELECTRODE MAINTENANCE

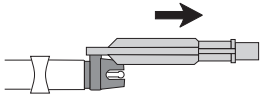
- When not in use, rinse the electrode with water to minimize contamination and store it with a few drops of storage (**HI 70300**) solution in the protective cap after use. DO NOT USE DISTILLED OR DEIONIZED WATER FOR STORAGE PURPOSES.
- If the electrode has been left dry, soak in storage solution for at least one hour to reactivate it.
- To prolong the life of the pH electrode, it is recommended to clean it monthly by immersing it in the **HI 7061** cleaning solution for half an hour. Afterwards, rinse it thoroughly with tap water and recalibrate the meter.
- The pH electrode can be easily replaced by using the supplied tool (**HI 73128**). Insert the tool into the electrode cavity as shown below.



- Rotate the electrode counterclockwise.



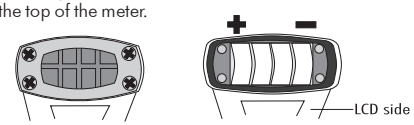
- Pull the electrode out by using the other side of the tool.



- Insert a new pH electrode following the above instructions in reverse order.

BATTERY REPLACEMENT

The meter displays the remaining battery percentage every time it is switched on. When the battery level is below 5%, the ▭ symbol on the bottom left of the LCD lights up to indicate a low battery condition. The batteries should be replaced soon. If the battery level is low enough to cause erroneous readings, the meter shows "0%" and the Battery Error Prevention System (BEPS) will automatically turn the meter off.
To change the batteries, remove the 4 screws located on the top of the meter.



Once the top has been removed, carefully replace the 4 batteries located in the compartment while paying attention to their polarity.
Replace the top, making sure that the gasket is properly seated in place, and tighten the screws to ensure a watertight seal.

ACCESSORIES

HI 73127	Replaceable pH electrode
HI 73128	Electrode removal tool
HI 70004P	pH 4.01 solution, 20 mL sachet (25 pcs)
HI 70006P	pH 6.86 solution, 20 mL sachet (25 pcs)
HI 70007P	pH 7.01 solution, 20 mL sachet (25 pcs)
HI 70009P	pH 9.18 solution, 20 mL sachet (25 pcs)
HI 70010P	pH 10.01 solution, 20 mL sachet (25 pcs)
HI 77400P	pH 4 & 7 solutions, 20 mL sachet (5 each)
HI 7004M	pH 4.01 solution, 230 mL bottle
HI 7006M	pH 6.86 solution, 230 mL bottle
HI 7007M	pH 7.01 solution, 230 mL bottle
HI 7009M	pH 9.18 solution, 230 mL bottle
HI 7010M	pH 10.01 solution, 230 mL bottle
HI 70030P	12.88 mS/cm solution, 20 mL (25 pcs)
HI 70031P	1413 µS/cm solution, 20 mL (25 pcs)
HI 70032P	1382 ppm solution, 20 mL (25 pcs)
HI 70038P	6.44 ppt solution, 20 mL (25 pcs)
HI 70442P	1500 ppm solution, 20 mL (25 pcs)
HI 7061M	Electrode cleaning solution, 230 mL bottle
HI 70300M	Electrode storage solution, 230 mL bottle