



HI98594

## Multiparameter Bluetooth® Portable pH/EC/Turbidity/OPDO® Meter

pH, ORP, EC, TDS, Turbidity, Resistivity, Salinity, Seawater  $\sigma$ ,  
Dissolved Oxygen, Atmospheric Pressure and Temperature



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HI98594 is a portable logging multiparameter system (meter and probe) that monitors up to 14 different water quality parameters (7 measured and 7 calculated) such as pH, ORP, turbidity, conductivity, dissolved oxygen and temperature. The HI98594 features a graphic, backlit display that automatically sizes the digits to fit the screen with on-screen graphing capability. Each parameter is fully configurable.

The HI98594 was designed to withstand harsh environmental conditions and is ideal for field measurements. The meter meets IP67 standard (30 minute immersion at a depth of 1 m) and the multi-sensor probe is totally sealed against water and dust, and meets IP68 standard (continuous immersion in water). The meter incorporates a dual charging system, utilizing a rechargeable Li battery and backup alkaline batteries to extend field use.

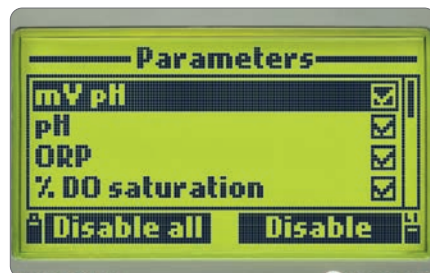
The meter can log data that can be easily downloaded as a CSV file or graph using Bluetooth® wireless technology to Hanna Lab on iOS and Android devices or to a PC using a USB type A to C cable.

- Rugged, water-resistant meter and waterproof probe
- Monitors up to 14 different water quality parameters
- Instantaneous conductivity and turbidity measurements
- Shipped with sensors installed
- Built-in barometer for percent saturation and DO concentration compensation
- Dual battery system for extended field use
- Good Laboratory Practice feature, the last 5 calibrations are automatically stored
- Graphical display of logged data on backlit LCD screen
- Log-on-demand and automatic logging on meter for all parameters
- Download log files
  - To Hanna Lab using Bluetooth wireless technology
  - To a type-C, USB flash drive, or PC
- USB-C interface for PC communication
- Remote firmware update
- Protective rubber boot included

## Feature Overview

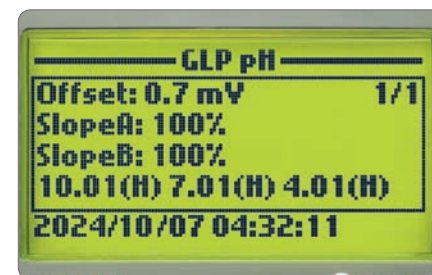
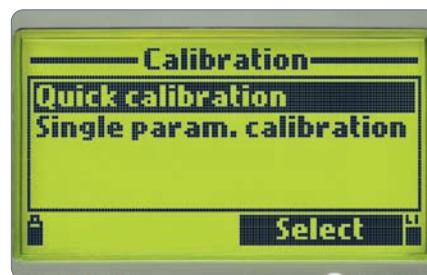
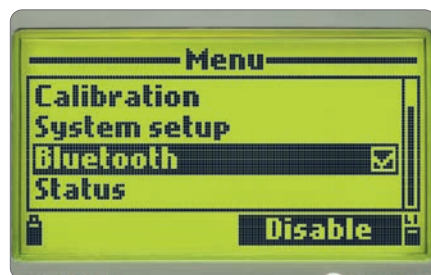
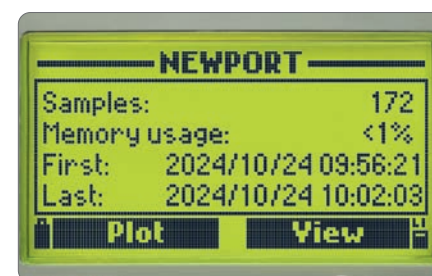
### Measurements

HI98594 can display from 1 to 14 parameters on the high contrast backlit LCD. The pH, EC and DO measurements are automatically compensated for temperature variations. Dissolved oxygen concentration measurements are automatically compensated for barometric pressure and salinity.



### Data Logging

HI98594 can be used to log one data point or continuously log at selected time intervals. All logs have the option to store data into a named lot and the ability to add remarks. Both help to provide for meaningful data including notes on local environmental conditions.



### Bluetooth® 5.0 Connectivity

HI98594 offers the ability to connect wirelessly to a smart device running the Hanna Lap App. Using the app, log lots can be e-mailed or downloaded for review.

### Dual Power Source

The meter operates on a built-in lithium-ion battery. When the rechargeable battery is low the meter will automatically switch to the 1.5 AA alkaline batteries.

### Quick-Calibration

Quick Calibration provides a speedy, single point calibration for pH, conductivity, and dissolved oxygen. Standard calibration options are available including pH up to three points, conductivity at one point, turbidity with 3 provided standards and dissolved oxygen up to two points.

### GLP Data

Calibration information is captured along with time and date stamp. Information includes calibration values along with other values that have an impact on the measurement. GLP data is stored with logged data.

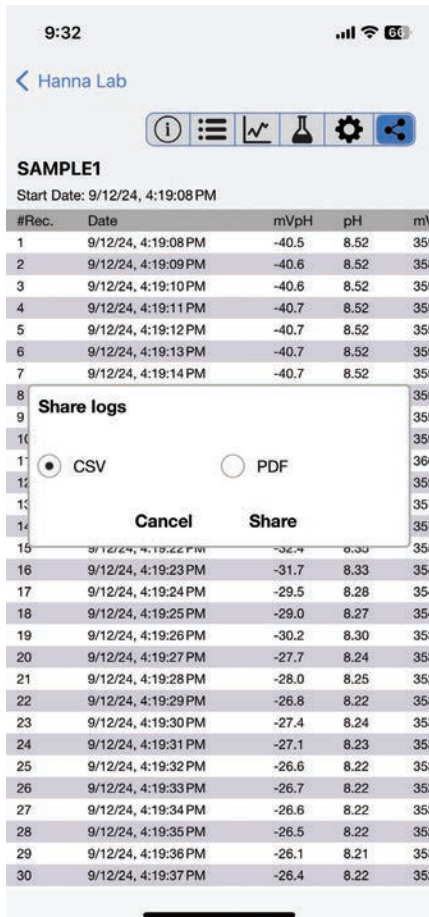


## Bluetooth® 5.0 Connectivity and Hanna Lab App Compatibility

Using the Bluetooth connection the data can be transferred to a smart device for review or shared as an e-mail.

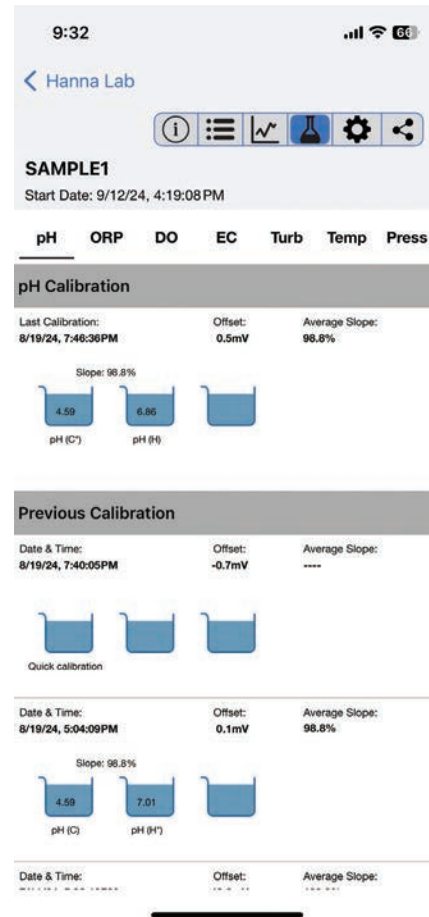


The Hanna Lab App now features Hanna Cloud compatibility.



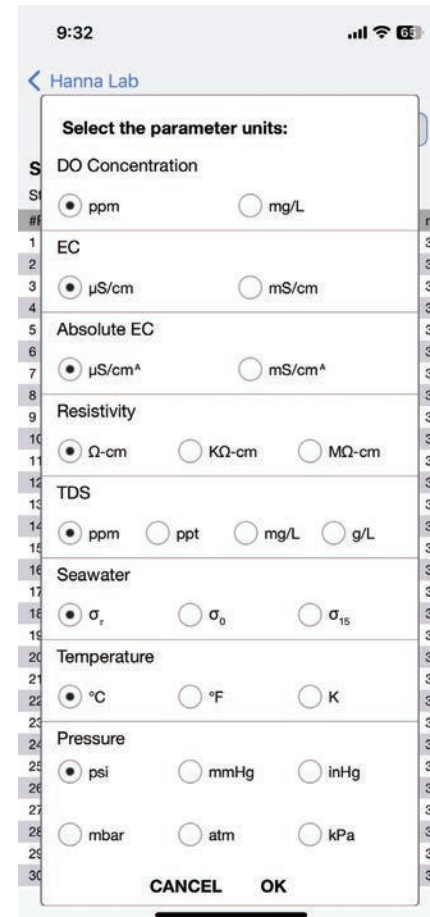
### Share

Logs can be shared as a .CSV or PDF file.



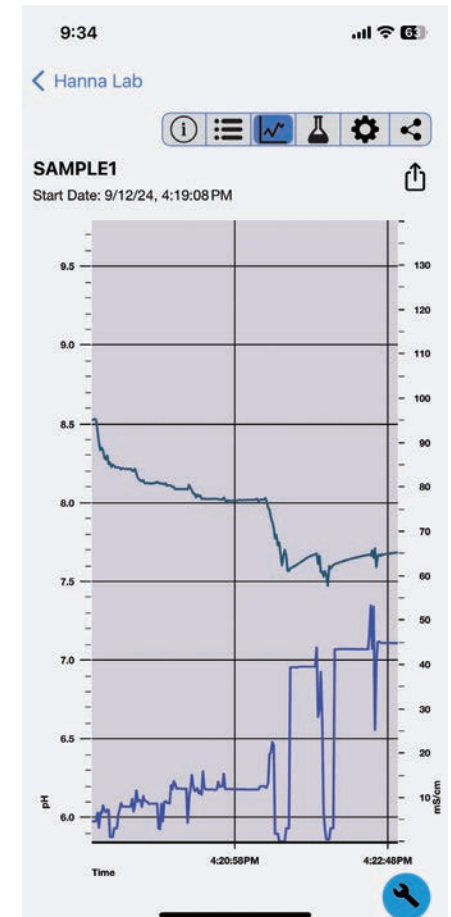
### GLP

Comprehensive GLP data can be reviewed for all parameters when the logged data is downloaded to a smart device.



### Unit Selection

When reviewing data on a smart device there is an option to select the measurement units to be displayed independently of the meter settings.



### Data Graphing

For trend analysis the Hanna Lab App offers the option to graph logged data.

## Waterproof Probe Connection and USB Type-C

### Waterproof Quick Connect DIN Connector

The meter connects to the multiparameter probe through a single waterproof connector and makes attaching and removing the probe quick and easy. The meter automatically detects the probe when connected.

### Data Transfer & Charging

The USB Type-C port provides for easy data transfer to memory stick, PC, or other compatible devices and is used to charge internal lithium-ion battery.





Easy sensor removal with hex key

Probe Specifications	HI7698594	
Sensor inputs	3 (pH or pH/ORP, EC or EC/Turbidity, DO)	
Sample environment	Fresh, brackish, seawater	
Waterproof protection	IP68	
Operating temperature	-5.0 to 50.0 °C 23.0 to 122.0 °F	
Storage temperature	-20.0 to 70.0 °C -4.0 to 158.0 °F	
Maximum depth	20 m (66')	
Dimensions (without cable)	Length	342 mm (13.5")
	Diameter	46 mm (1.8")
Weight (without sensors)	570 g (20.1 oz.)	
Cable specification	Multistrand-multiconductor shielded cable with internal strength member rated for 90 kg (200 lbs) intermittent use	
Wetted materials	Body	ABS
	Threads	Nylon
	Shield	ABS and 316 stainless steel
	Temperature probe	316 stainless steel
	O-rings	EPDM (ethylene propylene diene monomer rubber)

# Multiparameter Probe and Sensors

## Multi-function Sensor

- **Pre-installed sensors**
  - The HI7698594 is supplied with pre-installed pH/ORP, EC/Turbidity and optical DO sensors
- **Quick sensor replacement**
  - Sensor replacement is quick and easy with field replaceable, screw type connectors and are color coded for easy identification. These meters automatically recognize sensors.

RFID tag



## Optical Dissolved Oxygen Smart Caps

The optical dissolved oxygen sensor uses a smart cap that has an RFID tag that stores calibration coefficients unique to each cap. The RFID keeps track of the age of the cap and alerts the user when it should be replaced.



Sensor Specifications	HI7698194-0	HI7698194-1	HI7698594-4	HI7698594-3	HI7698594-5
Description	pH sensor	pH/ORP sensor	EC/Turbidity	EC sensor	Optical; luminescence quenching DO sensor
Measurement unit	pH, mV (pH)	pH mV (pH) mV (ORP)	µS/cm, mS/cm FNU	EC	% saturation mg/L
Measurement range	0.00 to 12.00 pH ±600.0 mV (pH)	0.00 to 12.00 pH ±600.0 mV (pH) ±2000.0 mV (ORP)	0 to 200.0 mS/cm 0.0 to 400 mS/cm (absolute) 0.0 to 1000 FNU	0 to 200.0 mS/cm 0.0 to 400 mS/cm	0.0 to 500.0 % saturation 0.00 to 50.00 mg/L
Color code	Red	Red	–	Blue	Green
Operational temperature	-5.0 to 50.0 °C 23.0 to 122.0 °F	-5.0 to 50.0 °C 23.0 to 122.0 °F	-5.0 to 50.0 °C 23.0 to 122.0 °F	-5 to 55 °C	-5.0 to 50.0 °C 23.0 to 122.0 °F
Materials	Tip	Glass	Glass (pH) and ORP (platinum)	–	–
	Junction	Wick	Wick	–	–
	Body	PEI	PEI	Electrodes: Stainless steel (AISI 316) Body: ABS and Epoxy	–
	Electrolyte	Gel	Gel	–	–
Maintenance solution	HI70300 Storage solution	HI70300 Storage solution	–	–	–
Reference	Double junction	Double junction			
Immersion depth	20 m (66')	20 m (66')	20 m (66')	20 m (66')	20 m (66')
Dimensions	Length 118 mm (4.6") Diameter 15 mm (0.6")	Length 118 mm (4.6") Diameter 15 mm (0.6")	135 x 35 mm	111 x 17 mm	Length 99 mm (3.9") Diameter 17 mm (0.7")

Specifications		HI98594
pH / mV	Range	0.00 to 14.00 pH* / ±600.0 mV
	Resolution	0.01 pH / 0.1 mV
	Accuracy	±0.02 pH / ±1.2 mV
	Calibration	<ul style="list-style-type: none"> <li>One point using HI9828-20 Quick calibration solution</li> <li>Up to three points using pH 4.01, pH 6.86, pH 7.01, pH 9.18, pH 10.01 standard buffers and one custom buffer</li> </ul>
ORP	Range	±2000.0 mV
	Resolution	0.1 mV
	Accuracy	±1.0 mV
	Calibration	Automatic at one custom point (relative mV)
Dissolved Oxygen	Range	0.0 to 500.0 % saturation; 0.00 to 50.00 ppm (mg/L)
	Resolution	0.1 % saturation 0.01 ppm (mg/L)
	Accuracy	<ul style="list-style-type: none"> <li>±1.5 % of reading from 0.0 to 200.0 % saturation</li> <li>±5 % of reading from 200.0 to 500.0 % saturation</li> <li>±1.5 % of reading from 0.00 to 20.00 mg/L</li> <li>±5 % of reading from 20.00 to 50.00 mg/L</li> </ul>
	Calibration	<ul style="list-style-type: none"> <li>One point, quick calibration in water-saturated air</li> <li>One or two points, at 100 % and 0 %</li> <li>One point, using a custom solution (% saturation or mg/L )</li> </ul>
Pressure compensation		Automatic 450 to 850 mmHg
EC	Range	0 to 200 mS/cm 0 to 400 mS/cm (absolute)
	Resolution	<ul style="list-style-type: none"> <li>Manual: 1 µS/cm; 0.001 mS/cm; 0.01 mS/cm; 0.1 mS/cm; 1 mS/cm</li> <li>Automatic: 1 µS/cm from 0 to 9999 µS/cm; 0.01 mS/cm from 10.00 to 99.99 mS/cm; 0.1 mS/cm from 100.0 to 400.0 mS/cm</li> <li>Automatic (mS/cm): 0.001 mS/cm from 0.000 to 9.999 mS/cm; 0.01 mS/cm from 10.00 to 99.99 mS/cm; 0.1 mS/cm from 100.0 to 400.0 mS/cm</li> </ul>
	Accuracy	±1 % of reading or ±1 µS/cm, whichever is greater
	Calibration	<ul style="list-style-type: none"> <li>One point using HI9828-20 Quick calibration solution</li> <li>One point using 84 µS/cm, 1413 µS/cm, 5.00 mS/cm, 12.88 mS/cm, 80.0 mS/cm, 111.8 mS/cm standard solutions or custom point</li> </ul>
Resistivity	Range	0 to 999999 Ω·cm 0 to 1000.0 kΩ·cm depending on resistivity reading 0 to 1.0000 MΩ·cm
	Resolution	1 Ω·cm; 0.1 kΩ·cm; 0.0001 MΩ·cm
	Calibration	Based on conductivity calibration
TDS	Range	0 to 400000 ppm (mg/L) (the maximum value depends on the TDS factor)
	Resolution	<ul style="list-style-type: none"> <li>Manual: 1 ppm (mg/L); 0.001 ppt (g/L); 0.01 ppt (g/L); 0.1 ppt (g/L); 1 ppt (g/L)</li> <li>Automatic: 1 ppm (mg/L) from 0 to 9999 ppm (mg/L); 0.01 ppt (g/L) from 10.00 to 99.99 ppt (g/L); 0.1 ppt (g/L) from 100.0 to 400.0 ppt (g/L)</li> <li>Automatic: ppt (g/L): 0.001 ppt (g/L) from 0.000 to 9.999 ppt (g/L); 0.01 ppt (g/L) from 10.00 to 99.99 ppt (g/L); 0.1 ppt (g/L) from 100.0 to 400.0 ppt (g/L)</li> </ul>
	Accuracy	±1 % of reading or ±1 ppm (mg/L), whichever is greater
	Calibration	Based on conductivity or salinity calibration
Salinity	Range	0.00 to 70.00 PSU
	Resolution	0.01 PSU
	Accuracy	±2% of reading or ±0.01 PSU, whichever is greater
	Calibration	One point, using a custom solution
Seawater Sigma	Range	0.0 to 50.0 σ <sub>t</sub> , σ <sub>0</sub> , σ <sub>15</sub>
	Resolution	0.1 σ <sub>t</sub> , σ <sub>0</sub> , σ <sub>15</sub>
	Accuracy	±1.0 σ <sub>t</sub> , σ <sub>0</sub> , σ <sub>15</sub>
	Calibration	Based on conductivity or salinity calibration

\*The range may be limited by the sensor's limits.

\*\* Estimated time given without backlight and Bluetooth®

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Turbidity	Range	0.0 to 99.9 FNU; 100 to 1000 FNU		
	Resolution	0.1 FNU from 0.0 to 99.9 FNU; 1 FNU from 100 to 1000 FNU		
	Accuracy	±0.3 FNU or ±2 % of reading, whichever is greater		
	Calibration	Automatic Up to three points using 0 FNU, 20 FNU, 200 FNU, and a custom		
Atmospheric pressure	Range	450.0 to 850.0 mmHg 17.72 to 33.46 inHg	600.0 to 1133.2 mbar 8.702 to 16.436 psi	0.5921 to 1.1184 atm 60.00 to 113.32 kPa
	Resolution	0.1 mmHg 0.01 inHg	0.1 mbar 0.001 psi	0.0001 atm 0.01 kPa
	Accuracy	±3.0 mmHg within ±15 °C from calibration temperature		
	Calibration	Automatic at one custom point		
Temperature	Range	-5.00 to 50.00 °C; 23.00 to 122.00 °F; 268.15 to 323.15 K		
	Resolution	0.01 °C; 0.01 °F; 0.01 K		
	Accuracy	±0.15 °C; ±0.27 °F; ±0.15 K		
	Calibration	Automatic at one custom point		
Additional specifications	Temperature compensation	Automatic	-5 to 50°C; 23 to 122 °F; 268.15 to 323.15 K	
	Logging memory	• Interval logging 50000 records • Log-on-demand (all parameters) 20000 records		
	Logging interval	1 second to 3 hours		
	USB-C (Host) functions	Mass-storage host		
	USB-C (Device) functions	Mass-storage device		
	Protection rating	IP67		
	Environment	0 to 50 °C (32 to 122 °F); RH 100 %		
	Battery type	4 x 1.5 V AA alkaline batteries; 1 x internal, Li-ion rechargeable battery		
	Battery life	≈ 126 hours 90 hours using alkaline AA batteries; 36 hours using Li-ion battery**		
	Dimensions	185 x 93 x 35.2 mm (7.3 x 3.6 x 1.4")		
Weight	435 g (13.3 oz)			
Ordering information	All HI98594 models are supplied with: HI7698594 multisensor probe; HI7698296 protective probe shield; HI76984942 probe maintenance kit; HI7698194-1 pH/ORP sensor; HI7698594-4 EC/Turbidity sensor; HI7698594-5 optical DO sensor; HI764113-1 DO Smart Cap with o-ring; HI7698293 long calibration beaker; HI9828-25 quick calibration standard solution (500 mL); HI7040 zero oxygen solution set (120 mL); HI9829-16 0 FNU calibration solution (230 mL); HI9829-17 20 FNU calibration solution (230 mL); HI9829-18 200 FNU calibration solution (230 mL); HI710034 protective rubber boot; HI920016 USB cable; 1.5V AA alkaline batteries (4 pieces); quality certificates (instrument, probe, DO Smart Cap); and quick reference guide.  <b>HI98594</b> is supplied with multisensor probe with 4m (13.1') cable <b>HI98594/10</b> is supplied with multisensor probe with 10m (33.0') cable <b>HI98594/20</b> is supplied with multisensor probe with 20m (65.6') cable <b>HI98594/30</b> is supplied with multisensor probe with 30m (98.4') cable <b>HI98594/40</b> is supplied with multisensor probe with 40m (131.2') cable <b>HI98594/50</b> is supplied with multisensor probe with 50m (164') cable			
Accessories	<b>HI710034</b> Orange protective rubber boot <b>HI710036</b> Black protective rubber boot			

