

Laboratory Products Catalog  
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# The Laboratory Specialists

Hanna Instruments has been working in the lab performing elemental analyses for over twenty-five years. From research and analytical to environmental and educational laboratories, Hanna has been at the forefront of innovation that meets the needs of laboratory personnel at all levels.

Hanna has pioneered the use of versatile testers, rugged multiparameter portables and sophisticated GLP bench instrumentation. Hanna products offer not only ease of use for teaching, but also advanced features and ultra high accuracy over extended ranges.

## Customer support

It is our philosophy that the best way to support our customers is to be closer to them. Hanna Instruments has over 20 offices around the world to provide you with dedicated service that is "just around the corner".

## Technical department

It is our goal to provide each customer with easy access to one on one technical expertise for operational and application specific assistance.

## Extensive warranty

All Hanna products are covered by a parts and labor warranty, ranging from six months to three years.

## Reliable products

Over two decades of manufacturing instrumentation to ISO 9001 standards is reflected in every aspect of your Hanna instrument.

## Attractive pricing

By developing and manufacturing every product in-house, Hanna pricing is a major source of envy for our competitors. We are reputed to offer the best value on the market.

## Continuous innovation

By listening closely to our customers, we are able to provide laboratory instruments that offer innovative features and exceptional reliability.

## Ready-to-use instruments

Hanna meters are typically supplied with their electrodes so they can be used immediately. Several models also come with carrying cases, temperature probes, calibration solutions and electrode holders.

## Manufactured to your specs

Hanna designs and manufactures an extensive range of pH and conductivity meters. In addition, we provide a large assortment of application specific electrodes.

To view Hanna's complete line of products and applications, visit our web page at [www.hannainst.com](http://www.hannainst.com).

## Complete range

In addition to an extensive range of pH and conductivity meters, we also manufacture D.O. other analytical instrumentation for laboratories. For Hanna's wide variety of products, visit our web page at [www.hannainst.com](http://www.hannainst.com) or request our general catalog.

## Hanna Instruments

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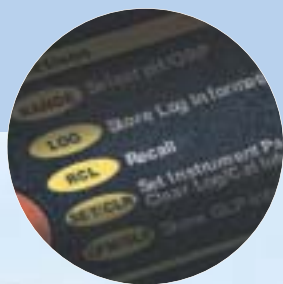
**GLP**

The instruments store calibration data. In addition, they can be programmed to give an alert when the instrument requires a new calibration.



**Log On Demand**

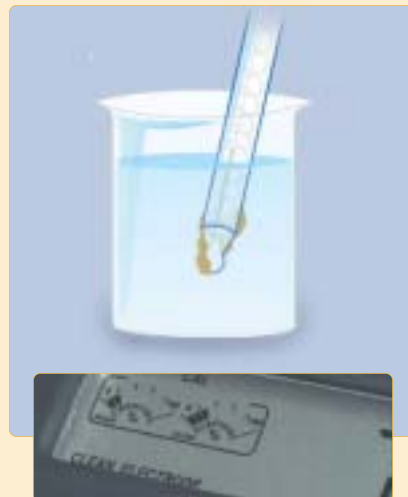
Both instruments have a "log on demand" function to record 100 (HI 221) or 500 (HI 223) readings.



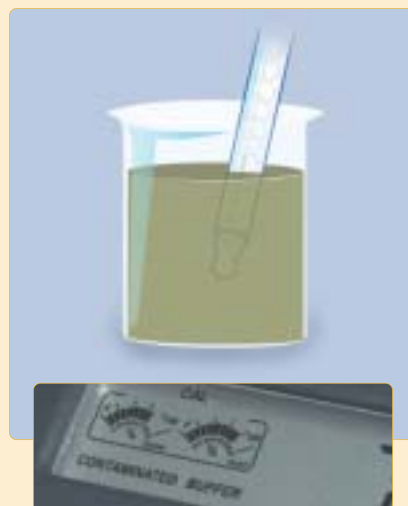
**Recall**

Measurements taken with the HI 221 and HI 223 can be stored and recalled at a later time.

**HOW CAL-CHECK WORKS**



When a pH electrode is dirty, it has a slow response time and unstable reading. HI 221 and HI 223 warn the user in the event a dirty electrode has been used.



HI 221 and HI 223 are able to detect if the calibration buffer solution is contaminated.

**CAL-CHECK FEATURES:**



- Electrode offset
- Electrode slope
- Electrode response time
- Calibration interval

During calibration, the user is warned if one or more parameters are not suitable to perform a correct calibration.

**SPECIFICATIONS**

	HI 221	HI 223
<b>pH Range</b>	-2.00 to 16.00	-2.00 to 16.00 or -2.000 to 16.000
<b>pH Accuracy</b>	±0.01	±0.01; ±0.002
<b>pH Resolution</b>	0.01	0.01; 0.001
<b>mV Range</b>	-699.9 to 699.9; -2000 to 2000	-999.9 to 999.9; -2000 to 2000
<b>mV Accuracy</b>	±0.2; ±1	±0.2 (±699.9); ±0.5 (±999.9); ±1 (±2000)
<b>mV Resolution</b>	0.1, 1	0.1; 1
<b>°C Range</b>	-20.0 to 120.0	-20.0 to 120.0
<b>°C Accuracy</b>	±0.4	±0.4
<b>°C Resolution</b>	0.1	0.1
<b>Temperature Comp.</b>	Manual (MTC) or Automatic (ATC) temperature compensation	
<b>pH electrode</b>	HI 1131P glass body, single junction refillable cell, BNC + pin (included)	
<b>Temperature probe</b>	HI 7669/2W stainless steel probe (included)	
<b>PC Interface</b>	Opto-isolated RS232	
<b>Logging</b>	100 points	500 points
<b>Input impedance</b>	10 <sup>12</sup> ohm	
<b>Power</b>	12VDC adapter (included)	
<b>Environment</b>	0 to 50°C (32 to 122°F) 95% RH	
<b>Dimensions</b>	240 x 182 x 74 mm (9.4 x 7.2 x 2.9")	
<b>Weight</b>	1.1 Kg (2.4 lb.)	

**ORDERING INFORMATION**

HI 221 and HI 223 are supplied complete with HI 1131P, interchangeable pH electrode, BNC Plug + PIN, 1 mt. cable, HI 7669/2W temperature probe, stainless steel, HI 76404 electrode holder, pH 4.01 and pH 7.01 calibration solutions, electrolyte solution, 12V DC adapter and instruction manual.

**ACCESSORIES**

- HI 7004L . . . . .pH 4.01 buffer solution, 500 ml
- HI 7007L . . . . .pH 7.01 buffer solution, 500 ml
- HI 7010L . . . . .pH 10.01 buffer solution, 500 ml
- HI 77400P Cal. Kit (pH 4 & 7, 20 ml., 5 pcs. each)
- HI 70300L . . . . .Electrode storage solution, 460 ml
- HI 7061L . . . . .General cleaning solutions, 460 ml
- HI 3131B . . . . .Glass body, refillable, Pt ORP electrode
- HI 92000 . . . . .Windows compatible software
- HI 920010 . . . . .9-pin PC connection cable

# Easy-to-operate, precision pH meters



**User-friendly LCD**  
0.001 pH resolution (pH 212 & pH 213 only) and simultaneous measurement of pH and temperature on a stretched LCD.



**Save time**  
With the optional HI 92000 software, data measured by pH 212 and pH 213 can be imported into the PC.



**Optimize space**  
The specially-made Hanna electrode holder can be attached to the meters at 4 different positions to best fit personal working environments.

We have developed 5 different and highly attractive pH meters for all analytical needs. Simplicity of operation, speed, a large and visible LCD with user-friendly symbols and an appealing outer casing were the key design concepts.

Every meter is powered by a custom microprocessor to simplify operations

and provide for automatic calibration, buffer recognition and temperature compensation. The exclusive Hanna chip also ensures correct and accurate calibration through a stability indicator and visual graphics.

To optimize the work area, the specially-made electrode arm can be attached to the meter in 4 different positions.

## SPECIFICATIONS

	pH 210	pH 211/pH 211R*	pH 212	pH 213
<b>pH Range</b>	0.00 to 14.00	0.00 to 14.00	-2.00 to 16.00 -2.000 to 16.000	-2.00 to 16.00 -2.000 to 16.000
<b>pH Accuracy</b>	±0.01	±0.01	±0.01; ±0.002	±0.01; ±0.002
<b>pH Resolution</b>	0.01	0.01	0.01; 0.001	0.01; 0.001
<b>mV Range</b>	-	±399.9 (ISE); ±1999 (ORP)	-	±999.9 (ISE & ORP)
<b>mV Accuracy</b>	-	±0.2 (ISE); ±1 (ORP)	-	±0.05% F.S. (ISE & ORP)
<b>mV Resolution</b>	-	0.1 (ISE); 1 (ORP)	-	0.1 (ISE & ORP)
<b>°C Range</b>	0.0 to 100.0	0.0 to 100.0	0.0 to 100.0	0.0 to 100.0
<b>°C Accuracy</b>	±0.5	±0.5	±0.5	±0.5
<b>°C Resolution</b>	0.1	0.1	0.1	0.1
<b>Auto Cal Buffers</b>	4.01/6.86/7.01/9.18/10.01	4.01/6.86/7.01/9.18/10.01	4.01/6.86/7.01/9.18/10.01	4.01/6.86/7.01/9.18/10.01
<b>pH calibration</b>	Automatic 1 or 2 points	Automatic 1 or 2 points	Automatic 1 or 2 points	Automatic 1 or 2 points
<b>Auto T.C.</b>	with HI 7669/2W probe	with HI 7669/2W probe	with HI 7669/2W probe	with HI 7669/2W probe
<b>Manual T.C.</b>	From 0 to 100°C	From 0 to 100°C	From 0 to 100°C	From 0 to 100°C
<b>pH electrode</b>	HI 1131B (included)	HI 1131B (included)	HI 1131B (included)	HI 1131B (included)
<b>°C probe</b>	HI 7669/2W (included)	HI 7669/2W (included)	HI 7669/2W (included)	HI 7669/2W (included)
<b>Input impedance</b>	10 <sup>12</sup> ohm	10 <sup>12</sup> ohm	10 <sup>12</sup> ohm	10 <sup>12</sup> ohm
<b>RS232 output</b>	-	-	Yes	Yes
<b>Power</b>	12VDC adapter (included)	12VDC adapter (included)	12VDC adapter (included)	12VDC adapter (included)
<b>Environment</b>	0 to 50 (32 to 122°F) max. 95% RH	0 to 50 (32 to 122°F) max. 95% RH	0 to 50 (32 to 122°F) max. 95% RH	0 to 50 (32 to 122°F) max. 95%
<b>Dimensions</b>	240 x 182 x 74 mm (9.4 x 7.2 x 2.9")			
<b>Weight</b>	1.1 Kg (2.4 lb)			

\*pH 211R offers analog output of 0 to 5 V that represents the full pH and mV range.

## ORDERING INFORMATION

pH 210, pH 211, pH 211R, pH 212 & pH 213 are supplied with HI 1131B pH electrode with BNC connector and 1 m cable, HI 7669/2W temperature probe, electrode holder, pH 4 and 7 calibration solution (20 mL each), electrolyte solution & 12VDC adapter.

## ACCESSORIES

HI 76404 ..... Electrode holder  
 HI 7004L ..... pH 4.01 buffer solution, 500 mL  
 HI 7007L ..... pH 7.01 buffer solution, 500 mL  
 HI 7010L ..... pH 10.01 buffer solution, 500 mL  
 HI 77400P ..... Cal. kit (pH 4 & 7, 20 mL, 5 pcs ea.)

HI 70300L ..... Storage solution, 460 mL  
 HI 92000 ..... Windows® compatible software  
 HI 920010 ..... 9-pin cable for PC  
 HI 8427 ..... pH and ORP electrode simulator  
 HI 931001 ..... pH and ORP electrode simulator

# Top-of-the-line pH measurement



**Accuracy guaranteed**  
The pH 300 series are the ideal tools at a busy lab, providing accurate and rapid measurements of pH, mV and temperature.



**0.001 pH resolution**  
The large and highly visible LCD of pH 301 shows pH with 0.001 resolution over a wide range from -1.999 to 19.999 pH.



**Stand-alone features**  
pH 302 prints pH, mV, temperature, sample #, date and time over a period of time, or up to a predetermined endpoint at a user-selectable interval.



The pH 300 series utilizes the latest electro-chemical technology to provide excellent specifications built around simplicity of use. All models measure pH, ORP and temperature accurately and over a full range. Choose from instruments with a built-in printer, extended range of -2 to 20 pH, 0.001 pH resolution, specific ion measurements in ppm, alarm at a given interval, stand-alone features and much

more. Every meter is supplied complete and ready to use.

The pH 300 series is equipped with automatic buffer recognition and calibration, automatic or manual temperature compensation and the latest in GLP (Good Laboratory Practice) capabilities. The large LCD accommodates step-by-step graphical guides and stored calibration data can be recalled at will.

The standard accessories include lab-grade glass pH electrode, stainless steel temperature probe and buffer solutions.

## SPECIFICATIONS

	pH 300	pH 301	pH 302
<b>pH Range</b>	0.00 to 14.00	-1.999 to 19.999	0.00 to 14.00
<b>pH Accuracy</b>	±0.01	±0.002	±0.01
<b>pH Resolution</b>	0.01	0.01; 0.001	0.01
<b>mV Range</b>	±399.9 (ISE); ±1999 (ORP)	±1999.9	±399.9 (ISE); ±1999 (ORP)
<b>mV Accuracy</b>	±0.2 (ISE); ±1 (ORP)	±0.1 (±799.9); ±0.2 (outside)	±0.3 (ISE); ±1 (ORP)
<b>mV Resolution</b>	0.1 (ISE); 1 (ORP)	0.1	0.1 (ISE); 1 (ORP)
<b>°C Range</b>	-9.9 to 120.0	-9.9 to 120.0	-9.9 to 120.0
<b>°C Accuracy</b>	±0.5	±0.5	±0.5
<b>°C Resolution</b>	0.1	0.1	0.1
<b>ppm Range</b>		0.001 to 19999	
<b>ppm Accuracy</b>		±0.5% F.S.	
<b>ppm Resolution</b>		0.001; 0.01; 0.1; 1	
<b>Auto Cal Buffers</b>	4.01/7.01/10.01	1.68/4.01/6.86/7.01/9.18/10.01	4.01/7.01/10.01
<b>pH Calibration</b>	Automatic 1 or 2 points	Automatic 1, 2 or 3 points	Automatic 1 or 2 points
<b>Last Cal Recall</b>	Yes	Yes	Yes
<b>Auto T.C.</b>	with HI 7669/2W probe from -9.9 to 120.0°C	with HI 7669/2W probe from -9.9 to 120.0°C	with HI 7669/2W probe from -9.9 to 120.0°C
<b>Manual T.C.</b>			
<b>pH Electrode</b>	HI 1131B (included)	HI 1131B (included)	HI 1131B (included)
<b>°C Probe</b>	HI 7669/2W (included)	HI 7669/2W (included)	HI 7669/2W (included)
<b>Printer</b>			•
<b>Input Impedance</b>	10 <sup>12</sup> ohm	10 <sup>12</sup> ohm	10 <sup>12</sup> ohm
<b>RS232 Output</b>	•	•	•
<b>Power</b>	12VDC adapter (included)	12VDC adapter (included)	12VDC adapter (included)
<b>Environment</b>	0 to 50 (32 to 122°F) max. 95% RH	0 to 50 (32 to 122°F) max. 95% RH	0 to 50 (32 to 122°F) max. 95% RH
<b>Dimensions</b>	280 x 200 x 75 mm (11 x 7.9 x 3")		
<b>Weight</b>	1.3 Kg (2.9 lb)		

## ORDERING INFORMATION

pH 300, pH 301 and pH 302 are supplied with HI 1131B pH electrode with BNC connector and 1 m cable, HI 7669/2W temperature probe, pH 4, 7 and 10 cal. solutions (20 mL each) & 12VDC adapter

In addition, pH 302 comes with 5 spare paper rolls

## ACCESSORIES

- HI 76405 ..... Electrode holder
- HI 7004L ..... pH 4.01 buffer solution, 500 mL
- HI 7007L ..... pH 7.01 buffer solution, 500 mL
- HI 7010L ..... pH 10.01 buffer solution, 500 mL
- HI 77400P ..... Cal. kit (pH 4 & 7, 20 mL, 5 pcs ea.)
- HI 70300L ..... Storage solution, 460 mL
- HI 92000 ..... Windows® compatible software
- HI 920010 ..... 9-pin cable for PC
- HI 8427 ..... pH and ORP electrode simulator
- HI 931001 ..... pH and ORP electrode simulator

All models communicate with the PC through a bi-directional opto-isolated RS232.

# Technology in the palm of your hand!

- Waterproof
- Ready function
- Rugged ABS casing
- Dual-level display with graphic symbols
- Automatic buffer recognition
- Automatic or manual temperature compensation
- Automatic shut-off

### Double-junction protection

The double-junction design of the HI 1230B electrode guarantees the delicate reference system inside the electrode is well protected against aggressive and unclean solutions.



HI 9024 & HI 9025 are microprocessor pH meters in waterproof casings. HI 9024 measures pH and °C, and HI 9025 also measures ion concentration and ORP in the mV range. pH calibration is automatic at one or two points with five stored buffers (pH 4.01, 6.86, 7.01, 9.18 and 10.01). Each meter will show "READY" when the electrode has stabilized.

The waterproof HI 98140 and HI 98150 feature GLP (Good Laboratory Practice) capabilities and use Hanna's new intelligent electrodes. They feature a backlit LCD and an extended pH range from -4 to 19.99 pH. Calibration is automatic at one or two points with five memorized buffers.

These meters have a selectable calibration interval and will alert the user when recalibration is necessary. HI 98140 and HI 98150 can store up to 500 measurements, complete with date and time.

The top-of-the-range HI 98230 and HI 98240 offer all the features of HI 98140 and HI 98150 with the advantage of a built-in printer. HI 98230 and HI 98240 will print an undisputable record of all data. The printing interval is user selectable from 1 to 180 minutes. When the logging mode is activated, the measurement data is stored and printed directly or at a later date.

### SPECIFICATIONS

	HI 9024C	HI 9025C
pH Range	0.00 to 14.00	0.00 to 14.00
pH Accuracy	±0.01	±0.01
pH Resolution	0.01	0.01
mV Range	-	±399.9 (ISE); ±1999 (ORP)
mV Accuracy	-	±0.2 (ISE); ±1 (ORP)
mV Resolution	-	0.1 (ISE); 1 (ORP)
°C Range	0.0 to 100.0	0.0 to 100.0
°C Accuracy	±0.5	±0.5
°C Resolution	0.1	0.1
Auto Cal Buffers	4.01/6.86/7.01/9.18/10.01	
pH Calibration	Automatic 1 or 2 points	
Auto T.C.	0 to 100°C (with HI 7669/2 probe)	
Manual T.C.	0 to 100°C	
pH electrode	HI 1230B (included)	
°C probe	HI 7669/2 (included)	
Input impedance	10 <sup>12</sup> ohm	
Power	4 x 1.5V AA batteries	
Environment	0 to 50°C (32 to 122°F) 100% RH	
Dimensions	196 x 80 x 60 mm (7.7 x 3.1 x 2.4")	
Weight	425 g (15 oz.)	

### ORDERING INFORMATION

HI 9024C and HI 9025C are supplied with double-junction HI 1230B pH electrode with BNC and 1 m (3.3') cable, HI 7669/2 temperature probe, pH 4.01 and 7.01 solutions (20 mL each) and batteries in a hard carrying case.

### ACCESSORIES

- HI 1230B .....Combination pH electrode
- HI 3230B .....Comb. platinum ORP electrode
- HI 7669/2 .....Temperature probe
- HI 7004L .....pH 4.01 buffer sol., 500 mL
- HI 7006L .....pH 6.86 buffer sol., 500 mL
- HI 7007L .....pH 7.01 buffer sol., 500 mL
- HI 7009L .....pH 9.18 buffer sol., 500 mL
- HI 7010L .....pH 10.01 buffer sol., 500 mL
- HI 77400P .....Cal. kit (pH 4 & 7, 20 mL, 5 pcs ea.)
- HI 70300L .....Storage sol., 460 mL



HI 98230  
HI 98240



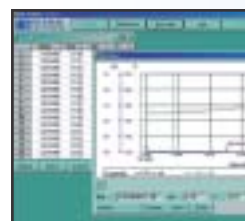
HI 98140  
HI 98150



**Backlit LCD**  
With the backlit LCD, take measurements even in poorly-lit locations.



**Log-on-demand**  
Log-on-demand feature: press a button and store the readings at will.



**Save time and money**  
With Hanna Windows® based software, import data in common programs to save time and money.

**SPECIFICATIONS**

	HI 98140	HI 98150	HI 98230	HI 98240
<b>pH Range</b>	-4.00 to 19.99	-4.00 to 19.99	-4.00 to 19.99	-4.00 to 19.99
<b>pH Accuracy</b>	±0.02	±0.02	±0.01	±0.01
<b>pH Resolution</b>	0.01	0.01	0.01	0.01
<b>mV Range</b>	-	±600.0 (ISE); ±2000 (ORP)	-	±400.0 (ISE); ±2000 (ORP)
<b>mV Accuracy</b>	-	±0.2 (-400 to +400); ±2 (outside)	-	±0.5 (-400 to +400); ±2 (outside)
<b>mV Resolution</b>	-	0.1 (-400 to +400); ±1 (outside)	-	±0.1 (-400 to +400); ±1 (outside)
<b>°C Range</b>	-20.0 to 120.0	-20.0 to 120.0	-10.0 to 120.0	-10.0 to 120.0
<b>°C Accuracy</b>	±0.4 (0 to 70); ±1 (outside)	±0.4 (0 to 70); ±1 (outside)	±0.5 (0 to 70); ±1 (outside)	±0.5 (0 to 70); ±1 (outside)
<b>°C Resolution</b>	0.1 (-10 to 120); 1 (<-10)	0.1 (-10 to 120); 1 (<-10)	0.1	0.1
<b>Auto Cal Buff.</b>	4.01/6.86/7.01/9.18/10.01	4.01/6.86/7.01/9.18/10.01	4.01/6.86/7.01/9.18/10.01	4.01/6.86/7.01/9.18/10.01
<b>pH Calibration</b>	Automatic 1 or 2 points	Automatic 1 or 2 points	Automatic 1 or 2 points	Automatic 1 or 2 points
<b>Last Cal Recall</b>	Yes	Yes	Yes	Yes
<b>Auto Cal Buff. mV Calibration</b>	-	Automatic 2 points at 0, 350 mV or 3 points at 0, 350, 1900 mV	-	Automatic 2 points at 0, 350 mV or 3 points at 0, 350, 1900 mV
<b>Auto T.C.</b>	from -20 to 120°C	from -20 to 120°C	from -10 to 120°C	from -10 to 120°C
<b>pH Electrode</b>	HI 1618D (included)	HI 1618D (included)	HI 1618D (included)	HI 1618D (included)
<b>Printer</b>	-	-	Yes	Yes
<b>Input Imped.</b>	10 <sup>12</sup> ohm	10 <sup>12</sup> ohm	10 <sup>12</sup> ohm	10 <sup>12</sup> ohm
<b>PC Interface</b>	RS232	RS232	HI 9200 (optional) to RS232	HI 9200 (optional) to RS232
<b>RS232 Port</b>	Yes	Yes	-	-
<b>IR transmitter</b>	-	-	HI 9200 (optional)	HI 9200 (optional)
<b>Power – Line</b>	12VDC adapter (included)	12VDC adapter (included)	12VDC adapter (included)	12VDC adapter (included)
<b>Power – Batt.</b>	4 x 1.5V AA (included)	4 x 1.5V AA (included)	4 x 1.5V AA (included)	4 x 1.5V AA (included)
<b>Environment</b>	0 to 50 (32 to 122°F) max. 100% RH	0 to 50 (32 to 122°F) max. 100% RH	0 to 50 (32 to 122°F) max. 95% RH	0 to 50 (32 to 122°F) max. 95% RH
<b>Dimensions</b>	196 x 80 x 60 mm (7.7 x 3.1 x 2.4")		220 x 82 x 66 mm (8.6 x 3.2 x 2.6")	
<b>Weight</b>	500 g (17.6 oz.)		500 g (17.6 oz.)	

**ORDERING INFORMATION**

HI 98140, HI 98150, HI 98230 & HI 98240 are supplied with an HI 1618D intelligent electrode, DIN, 1 m (3.3') cable, 12VDC adapter, pH 4.01 and 7.01 solutions, cleaning solution (20 mL each), batteries & hard carrying case.

In addition, HI 98230 & HI 98240 come with 5 spare paper rolls

**ACCESSORIES**

- HI 1618D . . . . . Intelligent pH electrode
- HI 3619D . . . . . Intelligent ORP electrode (glass)
- HI 3620D . . . . . Intelligent ORP electrode (Utem®)
- HI 7004L . . . . . pH 4.01 buffer solution, 500 mL
- HI 7007L . . . . . pH 7.01 buffer solution, 500 mL
- HI 7010L . . . . . pH 10.01 buffer solution, 500 mL

- HI 77400P . . . . . Cal. kit (pH 4 & 7, 20 mL, 5 pcs ea.)
- HI 70300L . . . . . Storage solution, 460 mL
- HI 92000 . . . . . Windows® compatible software
- HI 920011 . . . . . 9-pin cable for PC
- HI 9200/9 . . . . . 9-pin infrared transmitter for PC (HI 98230 & HI 98240)

# Waterproof, pH & Temperature tester with a replaceable pH electrode!

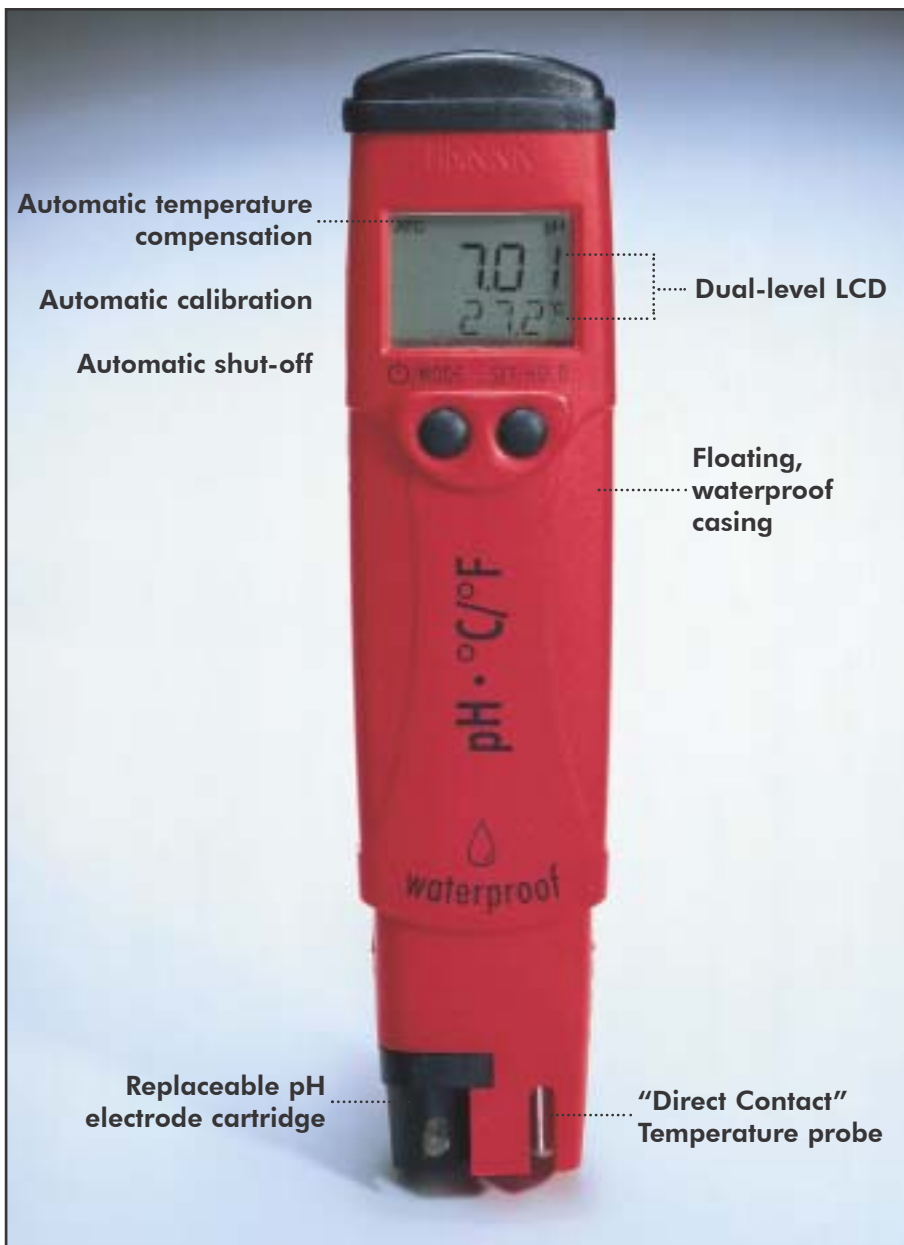


**Replaceable pH Electrode**  
Hanna's exclusive cartridge pH electrode. Electrode replacement with the stainless steel round connector means there are no pins to bend or break during replacement.



**Cloth renewable junction**  
When the cloth junction becomes dirty from routine testing, simply pull out 3 mm (1/8") to rejuvenate the electrode.

When Hanna Instruments introduced its first version of the **pHep® (pH Electronic Paper)** in 1986, it immediately revolutionized the measurement of pH. The **pHep®**'s ease of use in combination with its affordability made it possible for non-technical and technical personnel alike to measure pH on the spot accurately and inexpensively throughout a variety of industries. We at Hanna have always valued the comments and suggestions coming from our customers. For this new series, we have included all of the features users have asked for and more! The **pHep®4** and **pHep®5** include features such as a dual-level LCD, battery level indicator, replaceable pH electrode cartridge, stability indicator, automatic shut-off and automatic calibration all in a floating, waterproof casing.



## ORDERING INFORMATION

HI 98127 (pHep®4) & HI 98128 (pHep®5) are supplied with protective cap, electrode removal tool, batteries and instructions.

## ACCESSORIES

- HI 73127 . . . . . pH electrode
- HI 7004M . . . . . pH 4.01 buffer solution, 230 mL
- HI 7007M . . . . . pH 7.01 buffer solution, 230 mL
- HI 7010M . . . . . pH 10.01 buffer solution, 230 mL
- HI 70004P . . . . . Cal. kit (pH 4.01, 20 mL, 25 pcs.)
- HI 77400P . . . . . Cal. kit (pH 4 & 7, 20 mL, 5 pcs ea.)
- HI 70007P . . . . . Cal. kit (pH 7.01, 20 mL, 25 pcs.)
- HI 70010P . . . . . Cal. kit (pH 10.01, 20 mL, 25 pcs ea.)
- HI 70300L . . . . . Storage solution, 460 mL

## SPECIFICATIONS

	pHep®4	pHep®5
<b>pH Range</b>	0.0 to 14.0	0.00 to 14.00
<b>pH Accuracy</b>	±0.1	±0.05
<b>pH Resolution</b>	0.1	0.01
<b>Temp Range</b>	0.0 to 60.0°C or 32.0 to 140.0°F	0.0 to 60.0°C or 32.0 to 140.0°F
<b>Temp Accuracy</b>	±0.5°C or ±1°F	±0.5°C or ±1°F
<b>Temp Resolution</b>	0.1°C or 0.1°F	0.1°C or 0.1°F
<b>Auto Cal Buffers</b>	4.01/7.01/10.01 or 4.01/6.86/9.18	
<b>pH Calibration</b>	Automatic 1 or 2 points	
<b>Temp Comp</b>	Automatic	
<b>Battery Type</b>	4 x 1.5V with BEPS (Battery Error Prevention System)	
<b>Battery Life</b>	Approx. 350 hours of continuous use; auto shut-off after 8 minutes of non-use	
<b>Environment</b>	0 to 50°C (32 to 122°F); 100% RH	
<b>Dimensions</b>	163 x 40 x 26 mm (6.4 x 1.6 x 1")	
<b>Weight</b>	85 g (3.0 oz.)	

# Affordable, professional pH testing with high accuracy!



Checker® fast and affordable pH testers

Checker®1  
HI 1270 (included)  
electrode

Checker®2  
HI 1207 (included)  
electrode

Checker®3  
HI 1208 (included)  
electrode

- Easy-to-read LCD
- High accuracy with 0.01 pH resolution
- 2-point fast and accurate calibration
- Usable with virtually any electrodes that share the same connector
- 3000 hours of battery life
- Full pH range: 0.00 to 14.00 pH

## SPECIFICATIONS

	Checker®1 • Checker®2 • Checker®3
pH Range	0.00 to 14.00
pH Accuracy	±0.2
pH Resolution	0.01
pH calibration	Manual 2 points through trimmers
Battery Type	2 x 1.5V
Battery Life	Approx. 3000 hours of continuous use
Environment	0 to 50 (32 to 122°F) max. 95% RH
Weight	70 g (2.5 oz)

## ORDERING INFORMATION

HI 98103 (Checker®1) is supplied complete with HI 1270 combination pH electrode, 2 x 1.5V batteries and instructions.

HI 98104 (Checker®2) is supplied complete with HI 1207 combination full-size, screw-type, gel-filled pH electrode, 2 x 1.5V batteries and instructions.

HI 98105 (Checker®3) is supplied complete with HI 1208 combination full-size, BNC-type, gel-filled pH electrode, 2 x 1.5V batteries and instructions.

## ACCESSORIES

HI 1270	.....pH electrode, screw connector
HI 1207	.....pH electrode, screw connector
HI 1208	.....pH electrode, BNC connector
HI 7004M	.....pH 4.01 buffer solution, 230 mL
HI 7007M	.....pH 7.01 buffer solution, 230 mL
HI 7010M	.....pH 10.01 buffer solution, 230 mL
HI 70300L	.....Storage solution, 460 mL



HI 9214 compact, microprocessor pH tester

- Automatic Temperature Compensation (ATC)
- Automatic buffer recognition
- Built-in temperature sensor

## Easy-to-operate

The HI 9214 was designed with the user in mind. With only 3 keys on the front panel, it makes every operation easy and comprehensive.

## 3 memorized buffers

The meter automatically recognizes three buffer values (pH 4.01, 7.01 & 10.01) for a quick 1 or 2-point calibration.

## Dual capability

The built-in temperature sensor allows the HI 9214 to double as an accurate thermometer in the 0 to 70°C (32 to 158°F) range.

## SPECIFICATIONS

	HI 9214
pH Range	-2.00 to 16.00
pH Accuracy	±0.02
pH Resolution	0.01
Temp Range	-5.0 to 70.0°C
Temp Accuracy	±0.3°C
Temp Resolution	0.1°C
Auto Cal Buffers	4.01/7.01/10.01 or 4.01/6.86/9.18
pH Calibration	Automatic 1 or 2 points
Temp Comp	Automatic from 0 to 50°C (32 to 122°F)
Electrode	HI 1217S gel combination pH/°C screw-type (included)
Battery Type/Life	1 x 9V/Approx. 1000 hours of continuous use
Environment	0 to 50°C (32 to 122°F); 95% RH
Dimensions	185 x 42 x 26 mm (7.3 x 1.6 x 1.0")
Weight	350 g (12.3 oz.)

## ORDERING INFORMATION

HI 9214 is supplied with HI 1217S combination screw type pH electrode, 9V battery & instruction manual in a soft carrying case.

## ACCESSORIES

HI 1217S	.....Combination pH electrode
HI 710003	.....Soft carrying case
HI 7004L	.....pH 4.01 buffer solution, 500 mL
HI 7007L	.....pH 7.01 buffer solution, 500 mL
HI 7010L	.....pH 10.01 buffer solution, 500 mL
HI 70300L	.....Storage solution, 460 mL

# Electrodes made to measure

## Different electrode for each application

The right choice of electrode is of paramount importance for the correct determination of pH in different samples. Over that last two decades, Hanna has pioneered several new solutions for pH measurement, which have resulted in a vast assortment of application specific electrodes. Choose from membranes with different tolerances to the physical shape and construction of the electrode as well as a host of junctions from open to multiple. Operators do not need to be experts to choose the right electrode. The table on the opposite page is a quick reference and offers a selection of specially-made electrodes for an array of common applications. Should more information be required about your specific application, do not hesitate to contact us at [tech@hannainst.com](mailto:tech@hannainst.com).

## Four types of glass

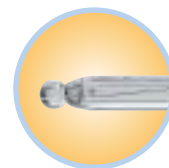
LR	Low impedance for low temperatures
SR	Standard glass for general purpose applications
HR	Low alkaline error for high temperatures
FR	Specially-made membrane for samples containing hydrofluoric acid

## Automatic Temperature Compensation

The temperature variance influences both the pH of the solution as well as the potential difference generated by the electrode. Whereas the former is an inert property of the solution, the latter should be compensated for. This error can be corrected by providing the meter with both temperature and pH values.

A considerable range of Hanna electrodes incorporate temperature sensors to ensure that temperature compensation is carried out automatically.

## Non-polluting reference system

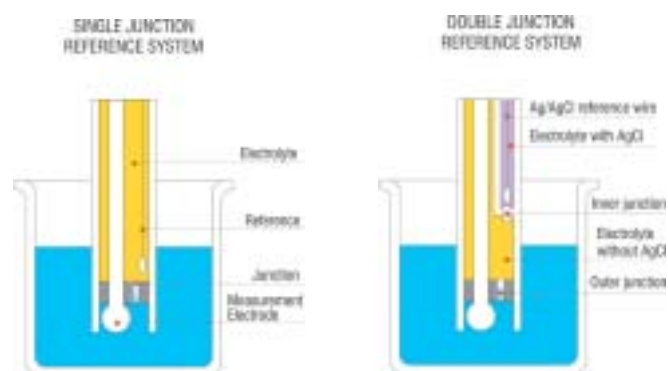


The Hanna double-junction electrodes with reference systems that contain no Silver Chloride (AgCl) are designed to prevent sample contamination and reduce clogging of the diaphragm.

## Multiple or open junctions

The single ceramic junction (diaphragm) allows a low rate of electrolyte leakage and is suitable for general use in aqueous solutions. The triple ceramic junction allows a higher leakage rate and makes the reference system less sensitive to electrode "poisoning" which is suitable for emulsion and protein enriched solutions.

The free diffusion layer allows the greatest degree of contact. Recommended for the dairy and food industry.



# Specific pH electrodes for specific applications

## Tip shape

**Sphere tip** is recommended for general use in aqueous or liquid solutions and provides a wide surface of contact with the sample.



**Conic tip** is recommended for the measurement of semisolid products, emulsion, cheese, meat and food in general.



**Flat tip** is recommended for direct surface measurement on skin, leather, paper, etc.



## An important breakthrough: Hanna "intelligent" electrode

We are proud to present an important innovation in electrode technology: the "intelligent" electrode. These revolutionary electrodes incorporate microchips that memorize the calibration data. The "intelligent" electrode is recognized the moment it is connected to the meter. Once calibrated, several electrodes can be used in series without requiring new calibration. The meter can provide timely prompts about the electrode status and even advise when to replace it. The "intelligent" electrodes also incorporate a temperature sensor for automatic temperature compensation.

The "intelligent" electrodes are to be used only in conjunction with **HI 98140**, **HI 98150**, **HI 98230** and **HI 98240** pH meters.

APPLICATION	RECOMMENDED ELECTRODES
Biotechnology	HI 1083
Cream, fat	HI 1053, HI 1413, HI 1617*
Dairy products	FC 200, FC 100, FC 201*, FC 911
Drinking water	HI 1053, HI 1617*
Emulsion	HI 1053, HI 1617*, HI 1413
Extreme pH values	HI 1043
Field measurements	HI 1230, HI 1618*
Flask	HI 1331
Fruit	FC 230, FC 200, FC 220, FC 231*, FC 201*
General laboratory use	HI 1131, HI 1332, HI 1043, HI 1615*, HI 1618*, FC 911
Meat	FC 230, FC 231*, FC 200, FC 201*, HI 2031
Milk, yogurt	FC 210, FC 200, FC 201*, FC 212*
Paint	HI 1053, HI 1617*, HI 1043
Petrol & hydrocarbon derivatives	HI 1043, HI 2110, HI 5311
Photographic chemicals	HI 1230, HI 1618*
Protein solutions	FC 210, FC 212*
Samples containing hydrofluoric acid	HI 1143
Sea water	HI 1043
Semi solid products	HI 1053, HI 1617*, HI 2031
Soil samples	HI 1053, HI 1617*, HI 1230
Solutions with high conductivity	HI 1043
Solutions with low conductivity	HI 1053, HI 1617*
Solvents	HI 1043, HI 2110, HI 5311
Surface measurements, skin, paper	HI 1413
Tris buffer	HI 1043, HI 1230, HI 1332, FC 210
Vial and test tube	HI 1330
Waste water	HI 1332, HI 1043
Wine processing	FC 220

Above electrodes are supplied with 1 m (3.3') cable. The "intelligent" electrodes, indicated with an asterisk (\*), are supplied with DIN connector. All other electrodes are normally supplied with a BNC connector, however, should you require DIN, US Standard or screw type, kindly mention it on your order.



**Application:** General laboratory use  
**HI 1131** Combination, refillable, single-junction, glass pH electrode

**Application:** General laboratory use  
**HI 1615\*** Combination, refillable, single-junction, glass "intelligent" pH electrode



**Application:** Lab use, petrol & hydrocarbon derivatives, paint, solvents, sea water, extreme pH values, high conductivity & tris buffer  
**HI 1043** Combination, refillable, double-junction, glass pH electrode

**Application:** Samples containing hydrofluoric acid  
**HI 1143** Combination, refillable, double-junction, glass pH electrode



**Application:** Biotechnology  
**HI 1083** Combination, viscolene, open-junction, micro, glass pH electrode



**Application:** Flask  
**HI 1331** Combination, refillable, single-junction, extended length, glass pH electrode



**Application:** Vials and test tubes  
**HI 1330** Combination, refillable, single-junction, reduced-diameter, glass pH electrode



**Application:** Surface measurements, skin, paper & emulsion  
**HI 1413** Combination, viscolene, single-junction, flat-tipped glass pH electrode



**Application:** Soil samples, cream/fat, drinking water, semi-solid products, solutions with low conductivity, paint & emulsions  
**HI 1053** Combination, refillable, triple-ceramic, conic-shaped, glass pH electrode

**Application:** Soil samples, cream/fat, drinking water, semi solid products, solutions with low conductivity, paint & emulsions  
**HI 1617\*** Combination, refillable, triple-ceramic, conic-shaped, glass "intelligent" pH electrode



**Application:** Photographic chemicals & field use  
**HI 1230** Combination, gel, double-junction, Ultem® pH electrode

**Application:** Waste water, tris buffer, lab use  
**HI 1332** Combination, refillable, double-junction, Ultem® pH electrode

**Application:** General laboratory use, photographic chemicals & field use  
**HI 1618\*** Combination, gel, Ultem®, "intelligent" pH electrode

\* "Intelligent" electrode to be used with HI 98140, HI 98150, HI 98230 & HI 98240

# Laboratory

	HI 1131	HI 1615*	HI 1043	HI 1330	HI 1053	HI 1617*	HI 1083	HI 1330	HI 1331	HI 1413	HI 1230	HI 1332	HI 1618*
pH Range	0-13	0-13	0-14	2-13	0-12	0-12	0-12	0-12	0-13	0-12	0-13	0-13	0-13
°C Range	-5/100	-5/100	-5/100	-5/70	-5/100	-5/100	0/50	-5/100	-5/100	-5/50	0/80	0/80	0/80
Resp. time**	<20"	<20"	<20"	<20"	<20"	<20"	<20"	<20"	<20"	<20"	<20"	<20"	<20"
Body	glass	glass	glass	glass	glass	glass	glass	glass	glass	glass	Ultem®	Ultem®	Ultem®
Type of glass	SR	SR	HR	FR	LR	LR	LR	SR	SR	LR	SR	SR	LR
NTC Sensor		•				•							•
Junction	1 ceramic	1 ceramic	1 ceramic	1 ceramic	3 ceramic	3 ceramic	open	1 ceramic	1 ceramic	open	1 ceramic	1 ceramic	1 ceramic
Ref. system													
Single	•	•			•	•	•	•	•	•			•
Double			•	•							•	•	
Ref. cell													
Refillable	•	•	•	•	•	•		•	•			•	
Viscolene							•			•			
Gel											•		•
Electrolyte													
3.5M KCl			•	•				•				•	
3.5M KCl/AgCl	•	•			•	•		•	•				
Connector													
BNC	•		•	•	•	•	•	•	•	•	•	•	
DIN		•				•							•
Diameter	12 mm	12 mm	12 mm	5 mm	12 mm	12 mm	3 mm	5 mm	7.5 mm	12 mm	12 mm	12 mm	12 mm
Length	120 mm	120 mm	120 mm	120 mm	120 mm	120 mm	120 mm	120 mm	210 mm	110 mm	120 mm	120 mm	120 mm



**Application:** General laboratory use  
**HI 3131** Combination, refillable, platinum, glass  
 ORP electrode

**Application:** General laboratory use  
**HI 3619\*** Combination, refillable, platinum, glass  
 "intelligent" ORP electrode



**Application:** General laboratory use  
**HI 3230** Combination, gel, platinum, Ultem®  
 ORP electrode

**Application:** General laboratory use  
**HI 3620\*** Combination, gel, platinum, Ultem®  
 "intelligent" ORP electrode

\* "Intelligent" electrode to be used with HI 98140, HI 98150, HI 98230 & HI 98240



**Application:** Dairy products  
**FC 100** Combination, refillable, double-junction, Kynar® pH electrode



**Application:** Dairy products  
**FC 100** Combination, conic-shaped, refillable, glass pH electrode



**Application:** Meat, dairy products, milk & yogurt  
**FC 200** Combination, conic-shaped, viscolene, single-junction, Kynar® pH electrode



**Application:** Protein solutions, milk & yogurt  
**FC 210** Combination, conic-shaped, viscolene, double-junction, glass pH electrode

**Application:** Meat, dairy products, milk & yogurt  
**FC 201\*** Combination, conic-shaped, viscolene, single-junction, Kynar®, "intelligent" pH electrode

**Application:** Protein solutions, milk & yogurt  
**FC 212\*** Combination, conic-shaped, viscolene, double-junction, glass "intelligent" pH electrode



**Application:** Meat, fruit & cheese  
**FC 230** Combination, conic-shaped, Kynar® pH electrode (to be used with FC 098 & FC 099 blades)



**Application:** Wine processing  
**FC 220** Combination, refillable, triple ceramic glass pH electrode

**Application:** Meat, fruit, cheese  
**FC 231\*** Combination, conic-shaped, Kynar® "intelligent" pH electrode (to be used with FC 098 & FC 099 blades)



**Application:** Dairy products  
**FC 300** Combination, refillable, glass sodium electrode



**FC 098** Stainless steel blade, 20 mm (0.8") long  
**FC 099** Stainless steel blade, 35 mm (1.4") long



**Application:** Food and general laboratory use  
**FC 911** Amphel®, refillable, double-junction, Kynar® pH electrode

\* "Intelligent" electrode to be used with HI 98140, HI 98150, HI 98230 & HI 98240



# Food

	FC 100	FC 200	FC 201*	FC 210	FC 212*	FC 220	FC 230	FC 231*	HI 2031	FC 300	FC 911
pH Range	0-13	0-13	0-12	0-12	0-12	0-12	0-13	0-13	0-12	Sodium	0-13
°C Range	0/80	0/50	0/50	0/50	0/50	0/100	0/50	0/50	-5/100	0/100	0/80
Resp. time**	<20''	<20''	<20''	<20''	<20''	<20''	<20''	<20''	<20''	<20''	<20''
Body	Kynar®	Kynar®	Kynar®	glass	glass	glass	Kynar®	Kynar®	glass	glass	Kynar®
Type of glass	SR	SR	LR	LR	LR	LR	SR	SR	LR	—	SR
NTC Sensor			•		•			•			
Junction	1 ceramic	1 ceramic	open	open	open	3 ceramic	open	open	1 ceramic	1 ceramic	1 ceramic
Ref. system											
Single		•	•			•	•	•	•	•	
Double	•			•	•						•
Ref. cell											
Refillable	•					•			•	•	•
Viscolene		•	•	•	•		•	•			
Electrolyte											
3.5M KCl	•	•	•	•	•	•	•	•	•	•	•
3.5M KCl/AgCl											
Diameter	12 mm	12 mm	6 mm	6 mm	12 mm	12 mm	12 mm	6 mm	6 mm	12 mm	12 mm
Length	120 mm	120 mm	75 mm	75 mm	120 mm	120 mm	140 mm	140 mm	75 mm	110 mm	120 mm

\* "Intelligent" electrode

\*\* Going from pH 7 buffer to pH 4 or 10 at 20°C/68°F

# High quality, affordable solutions

## Ready-made Vs. Capsules and Tablets

In many labs, buffer solutions are prepared from capsules, tablets and chemical powders, presuming that they are more accurate and less expensive when "freshly" made! This, however, does not correspond to reality, since the quality of the buffers depends on the quality and weight of the chemicals and distilled water as well as many other factors such as temperature control and the instrumentation used for their preparation. At Hanna, buffers are prepared with analytical grade chemicals in a clean laboratory environment and using high-tech reference materials. pH buffers are certified to  $\pm 0.01$  accuracy at 25°C and carry individual expiration dates. Some solutions are also supplied in FDA approved amber bottles which are impervious to direct light. Last but not least, it comes as a pleasant surprise to know that Hanna solutions often cost less than "freshly" prepared buffers! In the following pages, we'll introduce an array of solutions tailor-made in specifications, size, and configuration for particular applications.

## Excellent Quality

All Hanna solutions are produced against instruments calibrated by high purity NIST standard reference materials. Wherever appropriate, the NIST references are mentioned against the solutions in this 2003 laboratory catalog. Only analytical grade

## Solutions manufactured to the needs of a busy laboratory

It is difficult to exaggerate the importance of buffer and maintenance solutions. Expensive equipment is often utilized well below its full capabilities due to lack of proper maintenance of sensors. With Hanna solutions, this is no longer a problem. All solutions are prepared with carefully weighed chemicals of the highest grade following International Laboratory Practice guidelines. Due to the sheer volume of solutions produced, the quantity of chemicals used provides a much better resolution than if small volumes were prepared by a laboratory technician. The pH, ORP, Refill, Storage, Cleaning, Sodium and Sodium Chloride solutions give the user the advantage of being able to perform accurate calibration at a minimal cost even out in the field.



chemicals are used in such quantities as to guarantee accuracy.

## A Complete Range

The range of Hanna standardization and maintenance solutions is such to satisfy the varied needs of users from NIST and Standard pH buffers, to double-junction electrolytes and from soil preparation to ORP test solutions. The container sizes are just as varied with an extensive choice from 20 mL buffers for a one-off calibration to 1-gallon containers made for busy analytical labs.

## Expiration Date

Every Hanna buffer solution carries a label showing the lot # and expiration date to ensure maximum accuracy and safety.

## FDA Approved

To ensure optimum accuracy time after time, calibrate your instruments using Hanna buffers in exclusive FDA approved bottles. The buffer values in these leakproof, opaque bottles remain unchanged even under direct light.

## Certification

Certificates of Analysis are available for those whose monitoring programs require solutions that have been verified & certified with instrumentation calibrated against an NIST standard. By using Hanna's certified solutions, a factor of higher accuracy is added to your calibrated instrumentation.

Certificates of analysis show the date of manufacturing, lot #, accuracy and expiration date and are simply ordered by adding a "C" to the product code of solution.

## Temp. Reference Chart

All calibration solutions in the 20 mL to



1 gallon range are supplied with a color-coded label containing a pH versus temperature chart. This timesaving reference table prevents errors during calibration, especially in outdoor applications.



## Material Safety Data Sheets

MSDS's are available upon request for any of the Hanna solutions listed in this Catalog on our website: [www.hannainst.com](http://www.hannainst.com).

## Single use calibration and maintenance solutions

### Made-to-Measure Solutions!

Get the most out of your instruments with Hanna disposable maintenance and calibration solutions. There is an extensive choice for pH, Conductivity, TDS and cleaning in handy and cost-effective 20 mL sachets. Each pouch contains sufficient solution for just one calibration. The pouches are supplied in multiple and assorted packs. Buffer solutions are individually sealed inside each sachet and protected against ingress of light and air. Hence, when a meter is calibrated in a Hanna pouch, it is like adjusting the meter in factory fresh solutions.

### Convenient and Economical!

Hanna's popular sachet solutions are now also available in economical packages of 500 sachets. These new high-volume

packages of sachets maximize investment by lowering the price per sachet while also saving ordering & shipping time for these constantly used items. Ordering in large volume is no longer a problem as the last sachet in the case is as fresh as the first!

### Certified Solutions

Sachet solutions now also come with a Certificate of Analysis. Just as our bottled solutions, certificates report the date of

manufacturing, lot #, accuracy and expiration date and are simply ordered by replacing "P" with "C" in the product code of your sachet solution.

### Combination Kits

For maximum flexibility, Hanna's sachets are now available in combination kits suitable for dual-range meters and 2-point calibration. Combination pH/TDS and combination pH/Conductivity kits are also available.



# pH buffer solutions

## pH 4.01 Buffer Solution

### Excellent Choice

Hanna's buffer solutions are made from established formulas and are standardized with a pH meter that is calibrated to the NIST primary standard buffer solutions. The 20 mL sachets are ideal for infrequent calibrations while for heavy-duty applications, choose from the popular 230 mL, 500 mL, 1 liter or 1 gallon containers. The pH 4 buffers also carry lot #, expiry date as well as pH/°C chart on every bottle.

HI 70004C, HI 7004L/C and HI 8004L/C are also supplied with a certificate of analysis.



### NIST Traceability

The ingredients of Hanna pH 4 buffers are Potassium Hydrogen Phthalate. They are standardized using a pH meter calibrated by primary standard buffer solutions (NIST 186 Ie, NIST 186 Iie and NIST 185g S.R.M.).

The pH value is certified traceable to NIST 185g S.R.M.

Part No.	pH Value at 25°C	Size	Quantity Per Package	FDA Approved Bottle	Factory Analysis Certificate
HI 70004C	4.01	20 mL	25		•
HI 70004P	4.01	20 mL	25		
HI 7004P/5	4.01	20 mL	500		
HI 77400C	4.01 & 7.01	20 mL	10 (5 each)		•
HI 77400P	4.01 & 7.01	20 mL	10 (5 each)		
HI 7004M	4.01	230 mL	1		
HI 7004L	4.01	500 mL	1		
HI 7004L/C	4.01	500 mL	1		•
HI 8004L	4.01	500 mL	1	•	
HI 8004L/C	4.01	500 mL	1	•	•
HI 7004/1L	4.01	1 Liter	1		
HI 8004/1L	4.01	1 Liter	1	•	
HI 7004/1G	4.01	1 US Gallon	1		

## pH 6.86 Buffer Solution

### NIST Buffers

The use of pH 6 to calibrate offset of pH meters at 6.86 was commonplace not that long ago. This buffer provided better accuracy but was known to be less stable. The introduction of microprocessors into pH meters eliminated calibration trimmers and screwdrivers by automatically recognizing buffers. Yet this meant that in most cases, the microprocessor was not able to distinguish between pH 6.86 and 7.01. As a result, the former was dropped in favor of pH 7.01. Hanna has brought this important buffer back into modern pH meters by offering microprocessor portable and bench meters which can be calibrated at 6.86 as well as pH 7.01. The range of Hanna pH 6 buffers has been extended and the stability greatly enhanced to match that of pH 7.



### NIST Traceable

pH 6 buffer is standardized with a pH meter that is calibrated to NIST buffer solutions. The ingredients are Potassium Di-hydrogen Phosphate and Di-sodium Hydrogen Phosphate. The buffer is traceable to NIST 186Ie and 186Iie S.R.M.

Part No.	pH Value at 25°C	Size	Quantity Per Package	FDA Approved Bottle	Factory Analysis Certificate
HI 70006C	6.86	20 mL	25		•
HI 70006P	6.86	20 mL	25		
HI 7006M	6.86	230 mL	1		
HI 7006L	6.86	500 mL	1		
HI 7006L/C	6.86	500 mL	1		•
HI 8006L	6.86	500 mL	1	•	
HI 8006L/C	6.86	500 mL	1	•	•
HI 7006/1L	6.86	1 Liter	1		
HI 8006/1L	6.86	1 Liter	1	•	
HI 7006/1G	6.86	1 US Gallon	1		

# pH buffer solutions

## pH 7.01 Buffer Solution

### Wide Range

pH 7 is the most frequently used pH buffer. As a result, we have provided a wide range of solutions to suit every application. If the application insists to have the required buffer in small disposable 20 mL sachets or a much larger volume, look no further. Hanna solution bottles come with a pH vs. Temperature chart together with the production lot # and expiration date to guarantee maximum accuracy. HI 70007C, HI 77700C, HI 7007L/C and HI 8007L/C are supplied with an analysis certificate.

### Formulation

Hanna pH buffers are made of Potassium Di-hydrogen Phosphate and Di-sodium Hydrogen Phosphate and are standardized with a pH meter that is calibrated to NIST primary standard buffer solutions (NIST 186Ie & 186IIe and NIST 185g S.R.M.).



### FDA Approved Material

To ensure utmost reliability, use Hanna FDA approved amber bottles which stop light from interfering with the solutions' balanced value.

Part No.	pH Value at 25°C	Size	Quantity Per Package	FDA Approved Bottle	Factory Analysis Certificate
HI 70007C	7.01	20 mL	25		•
HI 70007P	7.01	20 mL	25		
HI 7007P/5	7.01	20 mL	500		
HI 77700C	7.01	20 mL	10		•
HI 77700P	7.01	20 mL	10		
HI 7007M	7.01	230 mL	1		
HI 7007L	7.01	500 mL	1		
HI 7007L/C	7.01	500 mL	1		•
HI 8007L	7.01	500 mL	1	•	
HI 8007L/C	7.01	500 mL	1	•	•
HI 7007/1L	7.01	1 Liter	1		
HI 8007/1L	7.01	1 Liter	1	•	
HI 7007/1G	7.01	1 US Gallon	1		

## pH 9.18 Buffer Solution

### NIST Buffers

When measuring alkaline samples, Hanna offers a wide range of pH 9 buffers as well as pH 10 solutions. This provides the user with greater versatility, especially with the microprocessor-based Hanna portable and bench meters which can both be calibrated at pH 9 or 10. The pH 9 buffers carry lot #, expiration dates as well as a pH/°C chart on every bottle. The HI 70009C, HI 7009L/C and HI 8009L/C are supplied with an analysis certificate.



### NIST Traceable

Hanna buffers are prepared using analytical grade chemicals in closely monitored laboratories with a pH meter that is calibrated to NIST primary standard buffer solutions (NIST 186Ie, 186IIe, 191a and 192a). The buffer values are certified traceable to NIST 187c S.R.M.

Part No.	pH Value at 25°C	Size	Quantity Per Package	FDA Approved Bottle	Factory Analysis Certificate
HI 70009C	9.18	20 mL	25		•
HI 70009P	9.18	20 mL	25		
HI 7009M	9.18	230 mL	1		
HI 7009L	9.18	500 mL	1		
HI 7009L/C	9.18	500 mL	1		•
HI 8009L	9.18	500 mL	1	•	
HI 8009L/C	9.18	500 mL	1	•	•
HI 7009/1L	9.18	1 Liter	1		
HI 8009/1L	9.18	1 Liter	1	•	
HI 7009/1G	9.18	1 US Gallon	1		

## pH buffer solutions

### pH 10.01 Buffer Solution

#### Ready-Made

Choose from a wide range of pH 10 buffers in different sizes, transparent or color-coded for easy recognition. The HI 70010C, HI 7010L/C and HI 8010L/C are now supplied with a certificate of analysis.

#### FDA Approved Material

FDA-approved opaque bottles of HI 8010 series of Hanna buffers stop light from interfering with the solutions' carefully balanced value.



#### NIST Traceability

Hanna pH 10 ingredients are carefully weighed with the highest quality Sodium Hydrogen Carbonate and Sodium Carbonate. They are standardized with a pH meter that is calibrated to NIST primary standard buffer solutions and the pH value is traceable to NIST 191a and NIST 192a S.R.M.

Part No.	pH Value at 25°C	Size	Quantity Per Package	FDA Approved Bottle	Factory Analysis Certificate
HI 70010C	10.01	20 mL	25		•
HI 70010P	10.01	20 mL	25		
HI 70010P/5	10.01	20 mL	500		
HI 770710C	10.01 & 7.01	20 mL	10 (5 each)		•
HI 770710P	10.01 & 7.01	20 mL	10 (5 each)		
HI 7010M	10.01	230 mL	1		
HI 7010L	10.01	500 mL	1		
HI 7010L/C	10.01	500 mL	1		•
HI 8010L	10.01	500 mL	1	•	
HI 8010L/C	10.01	500 mL	1	•	•
HI 7010/1L	10.01	1 Liter	1		
HI 8010/1L	10.01	1 Liter	1	•	
HI 7010/1G	10.01	1 US Gallon	1		

## Buffers and Solutions

### pH 1 Calibration Buffer

This solution is made up of Potassium Tetroxalate Dehydrate and is traceable to NIST 189a S.R.M

Part No.	Description	Size	Quantity Per Package
<b>Acid pH Calibration Solutions</b>			
HI 7001M	pH 1.68 at 25°C	230 mL	1
HI 7001L	pH 1.68 at 25°C	500 mL	1

### ORP Test Solutions

Check your ORP electrodes with Hanna test solutions. Platinum and gold electrodes may become passive and slow when not in use.

Part No.	Description	Size	Quantity Per Package
HI 7020M	Test solution 200-275 mV	230 mL	1
HI 7020L	Test solution 200-275 mV	500 mL	1
HI 7021M	Test solution 240 mV	230 mL	1
HI 7021L	Test solution 240 mV	500 mL	1
HI 7022M	Test solution 470 mV	230 mL	1
HI 7022L	Test solution 470 mV	500 mL	1

### Electrolyte Refill Solutions

The electrode level in refillable electrodes should be as high as possible and never too far below the fill hole. Hanna electrolytes are standardized by titration with NIST standardized Silver Nitrate solutions.

**NOTE: Use only HI 7071 and HI 8071 electrolytes containing Silver Chloride (AgCl) with Single Junction Electrodes.**

Part No.	Description	Size	Quantity Per Package	FDA Approved Bottle
HI 7071	3.5M KCl + AgCl electrolyte solution	30 mL	4	
HI 7072	1M KNO <sub>3</sub> electrolyte solution	30 mL	4	
HI 7082	3.5M KCl electrolyte solution	30 mL	4	
HI 8071	3.5M KCl + AgCl electrolyte solution	30 mL	4	•
HI 8072	1M KNO <sub>3</sub> electrolyte solution	30 mL	4	•
HI 8082	3.5M KCl electrolyte solution	30 mL	4	•
HI 8093	1M KCl + AgCl electrolyte solution	30 mL	4	•

## Sodium, Sodium Chloride and Fluoride Solutions

Hanna solutions span the full spectrum with the Sodium ranging from 230 mg/L to 23 g/L, the Sodium Chloride covering values between 300 mg/L to 146 g/L and Fluoride ranging from 10 mg/L to 1 g/L.

Part No.	Description	Size	Quantity Per Package	FDA Approved Bottle
<b>Sodium Solutions</b>				
HI 7080M	2.3 g/L Na	230 mL	1	
HI 8080M	2.3 g/L Na	230 mL	1	•
HI 7080L	2.3 g/L Na	460 mL	1	
HI 8080L	2.3 g/L Na	460 mL	1	•
HI 7086M	23 g/L Na	230 mL	1	
HI 8086M	23 g/L Na	230 mL	1	•
HI 7086L	23 g/L Na	460 mL	1	
HI 8086L	23 g/L Na	460 mL	1	•
HI 7087M	0.23 g/L Na	230 mL	1	
HI 8087M	0.23 g/L Na	230 mL	1	•
HI 7087L	0.23 g/L Na	460 mL	1	
HI 8087L	0.23 g/L Na	460 mL	1	•
<b>Salinity (Sodium Chloride) Solutions</b>				
HI 7081M	30 g/L NaCl	230 mL	1	
HI 7081L	30 g/L NaCl	460 mL	1	
HI 7083M	3.0 g/L NaCl	230 mL	1	
HI 7083L	3.0 g/L NaCl	460 mL	1	
HI 7084M	58.4 g/L NaCl	230 mL	1	
HI 8084M	58.4 g/L NaCl	230 mL	1	•
HI 7084L	58.4 g/L NaCl	460 mL	1	
HI 8084L	58.4 g/L NaCl	460 mL	1	•
HI 7085M	0.3 g/L NaCl	230 mL	1	
HI 7085L	0.3 g/L NaCl	460 mL	1	
HI 7088M	5.84 g/L NaCl	230 mL	1	
HI 8088M	5.84 g/L NaCl	230 mL	1	•
HI 7088L	5.84 g/L NaCl	460 mL	1	
HI 8088L	5.84 g/L NaCl	460 mL	1	•
HI 7089M	125 g/L NaCl	230 mL	1	
HI 8089M	125 g/L NaCl	230 mL	1	•
HI 7089L	125 g/L NaCl	460 mL	1	
HI 8089L	125 g/L NaCl	460 mL	1	•
HI 7090M	ISA solution	230 mL	1	
HI 7090L	ISA solution	460 mL	1	
HI 8095M	146 g/L NaCl	230 mL	1	•
HI 8095L	146 g/L NaCl	460 mL	1	•
<b>Fluoride Solutions</b>				
HI 7023/1L	TISAB solution	1 L	1	
HI 7023L	TISAB solution	500 mL	1	
HI 70701/1L	1 g/L F <sup>-</sup>	1 L	1	
HI 70701L	1 g/L F <sup>-</sup>	500 mL	1	
HI 70701M	1 g/L F <sup>-</sup>	230 mL	1	
HI 70702/1L	10 mg/L F <sup>-</sup>	1 L	1	
HI 70702L	10 mg/L F <sup>-</sup>	500 mL	1	
HI 70702M	10 mg/L F <sup>-</sup>	230 mL	1	
HI 70703/1L	100 mg/L F <sup>-</sup>	1 L	1	
HI 70703L	100 mg/L F <sup>-</sup>	500 mL	1	
HI 70703M	100 mg/L F <sup>-</sup>	230 mL	1	

## Cleaning and Storage Solutions

### Electrode Cleaning Solutions

Clean the liquid junction of the electrodes once a day or at least once a week to prevent clogging and to maintain accuracy.

Part No.	Description	Size	Quantity Per Package	FDA Approved Bottle
HI 70000P	Deionized rinse solution	20 mL	25	
HI 7061M	General purpose solution	460 mL	1	
HI 8061M	General purpose solution	230 mL	1	•
HI 7061L	General purpose solution	460 mL	1	
HI 8061L	General purpose solution	460 mL	1	•
HI 7073M	Protein cleaning solution	230 mL	1	
HI 8073M	Protein cleaning solution	230 mL	1	•
HI 7073L	Protein cleaning solution	460 mL	1	
HI 8073L	Protein cleaning solution	460 mL	1	•
HI 7074M	Inorganic cleaning solution	230 mL	1	
HI 7074L	Inorganic cleaning solution	460 mL	1	
HI 7077M	Oil and fat cleaning solution	230 mL	1	
HI 8077M	Oil and fat cleaning solution	230 mL	1	•
HI 7077L	Oil and fat cleaning solution	460 mL	1	
HI 8077L	Oil and fat cleaning solution	460 mL	1	•

### Storage and ORP Pretreatment Solutions

Hanna storage solutions are prepared with high grade Potassium Chloride and Potassium Hydrogen Phthalate by titration with NIST 2201 standardized Sodium Hydroxide Solution, respectively.

By conditioning ORP electrodes in a Hanna pretreatment solution, measurements can be sped up.

Part No.	Description	Size	Quantity Per Package	FDA Approved Bottle
HI 70300M	Storage solution	230 mL	1	
HI 80300M	Storage solution	230 mL	1	•
HI 70300L	Storage solution	460 mL	1	
HI 80300L	Storage solution	460 mL	1	•
HI 7091M	Pretreatment reducing solution	230 mL	1	
HI 7091L	Pretreatment reducing solution	460 mL	1	
HI 7092M	Pretreatment oxidizing solution	230 mL	1	
HI 7092L	Pretreatment oxidizing solution	460 mL	1	

### Soil Test Solutions

Part No.	Description	Size	Quantity Per Package	FDA Approved Bottle
HI 7051M	Soil preparation solution	230 mL	1	
HI 7051L	Soil preparation solution	460 mL	1	

# Extensive Conductivity range with just one probe!



**Temp. coefficient**  
For greater accuracy, the temperature coefficient can be selected from 0 to 2.5% per degree Celsius.



**Wide range**  
The four ranges enable the operator to measure conductivity of any kind of sample from deionized water to brine.

## Platinum probe



The innovative **HI 76303** probe is made of platinum to make it easy to clean and withstands corrosion and high temperatures. The 4-ring method provides a wide range without needing to change the cell constant or recalibrate the meter.



Hanna Instruments offers a choice of three benchtop conductivity meters for the laboratory. The **EC 215** presents 4 selectable ranges and provides the highest resolution and precision for measuring requirements. Each measurement is automatically compensated for temperature differences. In addition, when working with highly acidic, alkaline or saline samples, the user can adjust the temperature coefficient from 0 to 2.5% per degree Celsius. Included with the

**EC 215** is a rugged, platinum 4-ring sensor that responds faster than conventional stainless steel models. For added versatility, the **EC 215R** offers analog output of 0 to 5V that represents the full conductivity scale across all 4 ranges.

The **EC 214** offers all the features of the **EC 215** models, but temperature compensation is manual in case ATC is not required. All models have large, easy-to-read liquid crystal displays.

## ORDERING INFORMATION

**EC 214** is supplied with HI 76300 conductivity probe with 1 m (3.3') cable, 12 VDC power adapter & instruction manual.

**EC 215 & EC 215R** are supplied with HI 76303 conductivity probe with temperature sensor and 1 m (3.3') cable, 12 VDC power adapter & instruction manual.

## ACCESSORIES

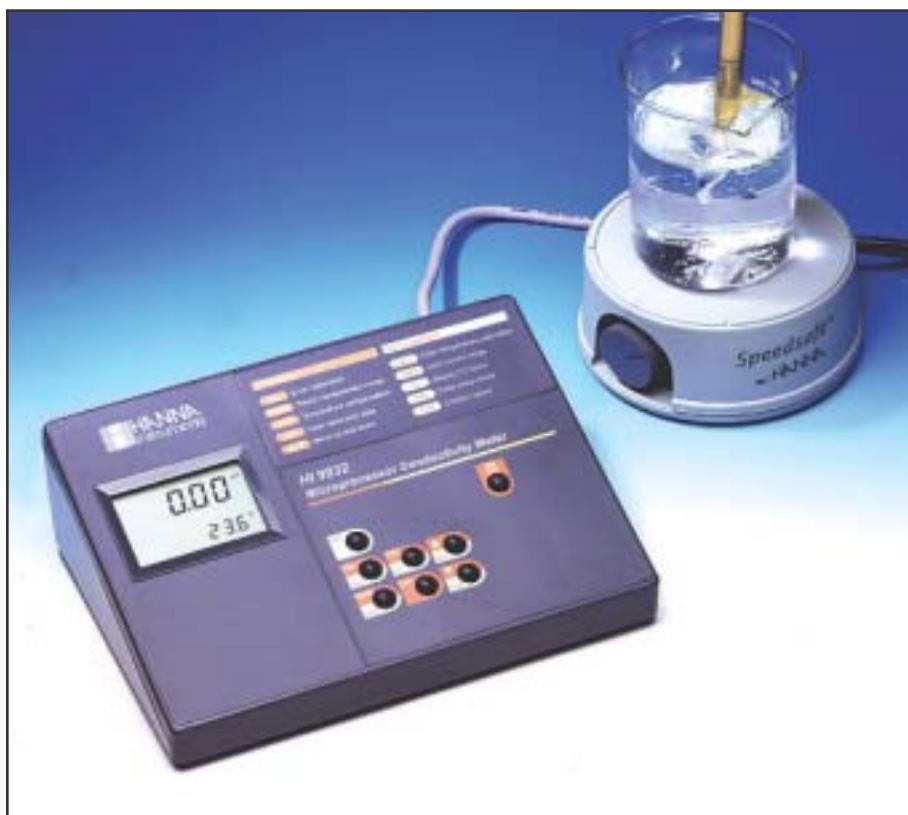
- HI 76300 .....Conductivity probe for EC 214
- HI 76303 .....Conductivity probe for EC 215
- HI 76404 .....Probe holder
- HI 7030L .....12880 µS/cm cal. solution (460 mL)
- HI 7031L .....1413 µS/cm cal. solution (460 mL)
- HI 7033L .....84 µS/cm cal. solution (460 mL)
- HI 7034L .....80000 µS/cm cal. solution (460 mL)
- HI 7035L .....11800 µS/cm cal. solution (460 mL)

## SPECIFICATIONS

	EC 214	EC 215/EC 215R*
<b>µS/cm Range</b>		0.0 to 199.9; 0 to 1999
<b>µS/cm Accuracy</b>		±1% F.S. (excluding probe error)
<b>µS/cm Resolution</b>		0.1; 1
<b>mS/cm Range</b>		0.00 to 19.99; 0.0 to 199.9
<b>mS/cm Accuracy</b>		±1% F.S. (excluding probe error)
<b>mS/cm Resolution</b>		0.01; 0.1
<b>EC Calibration</b>	Manual 1 point with knob	
<b>Temp. Compensation</b>	Manual from 0 to 50°C with an adjustable β from 0 to 2% per °C	Automatic from 0 to 50°C with an adjustable β from 0 to 2.5% per °C
<b>Probe</b>	HI 76300 conductivity probe with platinum 4-ring, 1 m cable (included)	HI 76303 conductivity probe with platinum 4-ring, temperature sensor, 1 m cable (included)
<b>Power</b>	12 VDC power adapter (included)	
<b>Environment</b>	0 to 50 (32 to 122°F) max. 95% RH	
<b>Dimensions</b>	240 x 182 x 74 mm (9.4 x 7 x 2.9")	
<b>Weight</b>	1 Kg (36 oz)	

\*EC 215R offers analog output of 0 to 5 V that represents the full conductivity scale across all 4 ranges.

# Conductivity, TDS, NaCl and °C all in one bench meter!



- Easy to use
- Platinum probe
- 6 conductivity ranges
- A wide range of calibration solutions are available to get the most from this meter
- Supplied complete

If knowing more than just the conductivity of your sample is needed, Hanna offers 4 parameters in one instrument. The **HI 9932** automatically adjusts to one of 6 different conductivity ranges.

To meet the requirements of water quality laboratories, The **HI 9932** can measure TDS (total dissolved solids) and will automatically search among 6 different ranges and select the one that offers the optimum resolution and precision.

**HI 9932** also offers a real-time computer interface to allow logging of data. This multi-functional meter is not limited to just the lab. The **HI 9932** can operate in the field on 4 AA alkaline batteries and has auto-off to conserve battery life.

## SPECIFICATIONS

HI 9932	
<b>EC Range</b>	0.00 to 29.99 $\mu\text{S}/\text{cm}$ ; 30.0 to 299.9 $\mu\text{S}/\text{cm}$ ; 300 to 2999 $\mu\text{S}/\text{cm}$ ; 3.00 to 29.99 $\text{mS}/\text{cm}$ ; 30.0 to 200.0 $\text{mS}/\text{cm}$ (autoranging); up to 500.0 $\text{mS}/\text{cm}$ actual conductivity (without ATC)
<b>EC Accuracy</b>	$\pm 1\%$ of reading $\pm (0.05 \mu\text{S}/\text{cm}$ or 1 digit, whichever greater)
<b>EC Resolution</b>	0.01 $\mu\text{S}/\text{cm}$ ; 0.1 $\mu\text{S}/\text{cm}$ ; 1 $\mu\text{S}/\text{cm}$ ; 0.01 $\text{mS}/\text{cm}$ ; 0.1 $\text{mS}/\text{cm}$
<b>TDS Range</b>	0.00 to 14.99 ppm (mg/L); 15.0 to 149.9 ppm (mg/L); 150 to 1499 ppm (mg/L); 1.50 to 14.99 ppt (g/L); 15.0 to 100.0 ppt (g/L) (autoranging); up to 400.0 g/L actual TDS (without ATC, with 0.80 factor)
<b>TDS Accuracy</b>	$\pm 1\%$ of reading $\pm (0.03 \text{ ppm}$ or 1 digit, whichever greater)
<b>TDS Resolution</b>	0.01 ppm; 0.1 ppm; 1 ppm; 0.01 ppt; 0.1 ppt
<b>NaCl Range</b>	0.0 to 400.0%
<b>NaCl Accuracy</b>	$\pm 1\%$ of reading
<b>NaCl Resolution</b>	0.1%
<b>°C Range</b>	0.0 to 60.0°C
<b>°C Accuracy</b>	$\pm 0.4^\circ\text{C}$
<b>°C Resolution</b>	0.1°C
<b>Auto Cal Buffers</b>	84, 1413, 5000, 12880, 80000 & 111800 $\mu\text{S}/\text{cm}$
<b>EC calibration</b>	Automatic at 1 point with 6 memorized buffers
<b>Temperature Comp.</b>	Automatic or manual from 0 to 60°C with selectable $\beta$ from 0.00 to 6.00% per °C
<b>EC probe</b>	HI 76310 4-ring probe with ATC (included)
<b>EC/TDS factor</b>	Selectable from 0.40 to 0.80 (default value is 0.50)
<b>Power</b>	4 x 1.5V AA batteries (incl.) with auto-off after 5 min. of non-use; or 12VDC adapter
<b>Environment</b>	0 to 50°C (32 to 122°F); RH 95%
<b>Dim./Weight</b>	230 x 170 x 70 mm (9.1 x 6.7 x 2.7")/1 Kg (2.2 lb.)

## ORDERING INFORMATION

HI 9932 is supplied with HI 76310 4-ring conductivity probe with 1 m (3.3') screened cable, 12VDC power adapter and instruction manual.

## ACCESSORIES

HI 76310 . . . . . 4-ring Conductivity probe  
 HI 76404 . . . . . Probe holder  
 HI 7030L 12880  $\mu\text{S}/\text{cm}$  cal. solution (460 mL)  
 HI 7031L .1413  $\mu\text{S}/\text{cm}$  cal. solution (460 mL)

HI 7033L . . . .84  $\mu\text{S}/\text{cm}$  cal. solution (460 mL)  
 HI 7034L .80000  $\mu\text{S}/\text{cm}$  cal. solution (460 mL)  
 HI 7037L . . . . .NaCl cal. solution (460 mL)

# Portable, Conductivity meters with a built-in printer and ATC!

## Plain paper printer

The dot matrix printer uses regular non fading paper. Inexpensive paper rolls are readily available.

## Maximum precision

The HI 76302W 4-ring probe combines ATC and an adjustable  $\beta$  to offer the best in performance.

- Automatic calibration
- Automatic temperature compensation
- PC compatible through Hanna's infrared data transmitter and software

HI 933300 and HI 933301 are powerful and versatile conductivity meters designed to bring lab-grade performance and accuracy anywhere in the plant and in the field. HI 933300 and HI 933301 allow the user to print a permanent indisputable record of the measurement data at any time for record keeping, trouble shooting or compliance purposes.

The printing interval is user selectable from 1 to 180 minutes. When the logging mode is activated, HI 933300 records the conductivity and the temperature measurements and can be printed directly or at a later date. The stored data (up to 16,000 measurements) can also be downloaded to a PC through the standard RS232 serial connection and Hanna's infrared adapter & Windows® compatible software.

Thanks to the HI 76302W conductivity probe with 4-ring technology and built-in temperature sensor, HI 933300 and HI 933301 are able to perform advanced measurements with automatic temperature compensation.



## SPECIFICATIONS

HI 933300 & HI 933301	
<b><math>\mu</math>S/cm Range</b>	0.0 to 150.0; 15.0 to 1500
<b><math>\mu</math>S/cm Accuracy</b>	$\pm 1\%$ F.S.
<b><math>\mu</math>S/cm Resolution</b>	0.1; 1
<b>mS/cm Range</b>	1.50 to 15.00; 15.0 to 199.9
<b>mS/cm Accuracy</b>	$\pm 1\%$ F.S.;
<b>mS/cm Resolution</b>	0.01; 0.1
<b><math>^{\circ}</math>C Range</b>	0.0 to 60.0 $^{\circ}$ C
<b><math>^{\circ}</math>C Accuracy</b>	$\pm 0.5^{\circ}$ C (excluding probe error)
<b><math>^{\circ}</math>C Resolution</b>	0.1 $^{\circ}$ C
<b>Typical EMC Dev.</b>	$\pm 1\%$ F.S.; $\pm 0.5^{\circ}$ C
<b>EC calibration</b>	Automatic 1,2,3,4 or 5 points at 0, 84, 1413, 12880, 80000 $\mu$ S/cm
<b>Temperature Comp.</b>	Automatic from 0 to 60 $^{\circ}$ C (32 to 140 $^{\circ}$ F) with adjustable $\beta$ from 0.0 to 3.0%/ $^{\circ}$ C
<b>EC probe</b>	HI 76302W with ATC 1 m (3.3') screened cable (included)
<b>Printer</b>	Low-power impact type-belt, 14 characters per line using 38 mm plain paper (HI 710034)
<b>Printing Intervals</b>	Selectable from 1, 2, 5, 10, 15, 30, 60, 120 and 180 minutes
<b>Logging Intervals</b>	Selectable between 1, 2, 5, 10, 15, 30, 60, 120, and 180 minutes (HI 933300 only)
<b>Interface</b>	RS232, with HI 9200 transmitter (HI 933300 only)
<b>Power</b>	4x1.5V AA batteries, power socket for 12 VDC
<b>Environment</b>	0 to 50 $^{\circ}$ C (32 to 122 $^{\circ}$ F); RH 95%
<b>Dimensions</b>	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")
<b>Weight</b>	500 g (18 oz.)

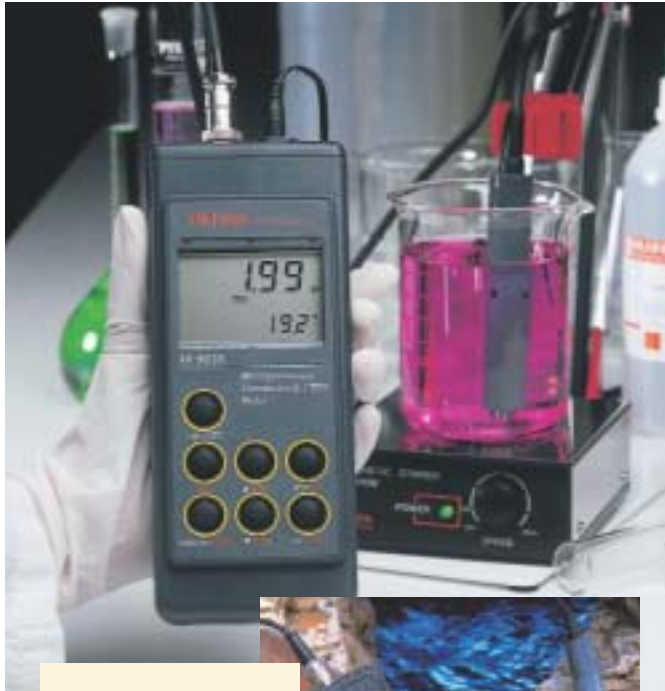
## ORDERING INFORMATION

HI 933301 is supplied with HI 76302W conductivity probe with 1 m (3.3') screened cable, 5 paper rolls, batteries, carrying case and instruction manual.

## ACCESSORIES

HI 76302W	.....	Conductivity probe
HI 7030L	.....	12880 $\mu$ S/cm cal. sol. (460 mL)
HI 7031L	.....	1413 $\mu$ S/cm cal. sol. (460 mL)
HI 7033L	.....	.84 $\mu$ S/cm cal. sol. (460 mL)
HI 7034L	.....	.80000 $\mu$ S/cm cal. sol. (460 mL)
HI 9200/9	.....	Infrared transmitter (9-pin)
HI 92000	.....	Windows® compatible software
HI 710034	.....	Paper roll (10 pcs)
HI 710035	.....	Ink cartridge (1 pc)

# Professional Conductivity/TDS meters



Easy-to-use meters that measure across 4 to 8 EC/TDS ranges



### Latest technology

The **HI 9835** provides high-accuracy EC and TDS measurements over a wide range with automatic selection of resolution, user-selectable temperature coefficient, and TDS factor.

### Waterproof

The **HI 9033** & **HI 9835** will resist the ingress of water & dust to protect its advanced circuitry in industrial and field applications.

Two professional conductivity meters to choose from: **HI 9033** with manual calibration and **HI 9835** with automatic calibration measuring TDS, % NaCl and °C too. Both meters cover an extensive range of conductivity from 0.1 µS/cm to 200.0 mS/cm. The supplied probe houses a temperature sensor and the meters compensate for the temperature effect automatically. **HI 9033** and **HI 9835** come in a rugged, waterproof casing and are supplied with a PVC, 4-ring probe, batteries and even a field carrying case.

**HI 9033** is a very simple meter to operate. There is basically just an ON/OFF switch. The other four buttons serve to select the appropriate conductivity range. Calibration is through a trimmer protected behind a waterproof cap on top of the meter. **HI 9033** compensates for the temperature effect automatically.

**HI 9835** is a sophisticated meter driven by a custom microchip allowing the measurement of 4 important parameters in a single unit. It comes in a rugged, waterproof housing incorporating a dual-level display that shows conductivity /TDS/% NaCl and temperature at the same time. **HI 9835** covers eight measurement ranges of conductivity and Total Dissolved Solids (TDS) with high accuracy and auto-range switch. Calibration and temperature compensation are also automatic. The temperature coefficient as well as the TDS/conductivity conversion rate are user-selectable. The meter also performs real conductivity measurements up to 500.0 mS/cm by disabling automatic temperature compensation, and NaCl readings from 0.0 to 400.0%, using the same probe.

### SPECIFICATIONS

	HI 9033	HI 9835
<b>EC Range</b>	0.0 to 199.9; 0 to 1999 µS/cm; 0.00 to 19.99; 0.0 to 199.9 mS/cm	0.00 to 29.99; 30.0 to 299.9; 300 to 2999 µS/cm; 3.00 to 29.99; 30.0 to 200.0 mS/cm (autoranging); up to 500.0 mS/cm actual conductivity (without ATC)
<b>EC Accuracy</b>	±1% FS. (excluding probe error)	±1% of reading ±(0.05 µS/cm or 1 digit, whichever greater)
<b>EC Resolution</b>	0.1; 1 µS/cm; 0.01; 0.1 mS/cm	0.01; 0.1; 1 µS/cm; 0.01; 0.1 mS/cm
<b>TDS Range</b>	-	0.00 to 14.99; 15.0 to 149.9; 150 to 1499 ppm (mg/L) 1.50 to 14.99; 15.0 to 100.0 ppt (g/L) (autoranging); up to 400.0 g/L actual TDS (without ATC, with 0.80 factor)
<b>TDS Accuracy</b>	-	±1% of reading ±(0.03 ppm or 1 digit, whichever greater)
<b>TDS Resolution</b>	-	0.01; 0.1; 1 ppm; 0.01; 0.1 ppt
<b>°C Range</b>	-	0.0 to 60.0°C
<b>°C Accuracy</b>	-	±0.4°C
<b>°C Resolution</b>	-	0.1°C
<b>NaCl Range</b>	-	0.0 to 400.0%
<b>NaCl Accuracy</b>	-	±1% of reading
<b>NaCl Resolution</b>	-	0.1%
<b>Auto cal Buffers</b>	-	84, 1413, 5000, 12880, 80000, 111800 µS/cm
<b>EC calibration</b>	Manual 1 point with trimmer	Automatic or manual at 1 point with 6 memorized buffers
<b>Automatic T.C.</b>	From 10 to 50°C with β of 2% per °C	From 0 to 60°C with selectable β from 0.00 to 6.00% per °C
<b>EC probe</b>	HI 76302W 4-ring probe with ATC (incl.)	HI 76309 4-ring probe with ATC (included)
<b>EC/TDS factor</b>	-	Selectable from 0.40 to 0.80
<b>Power</b>	9V battery (included)	4x1.5V AA batteries (incl.) with auto-off after 5 min. of non-use; or 12VDC adapter
<b>Environment</b>	0 to 50°C (32 to 122°F); RH 100%	0 to 50°C (32 to 122°F); RH 100%
<b>Dimensions</b>	196 x 80 x 60 mm (7.7x3.1x2.4")	196 x 80 x 60 mm (7.7x3.1x2.4")
<b>Weight</b>	425 g (15 oz.)	500 g (18 oz.)

### ORDERING INFORMATION

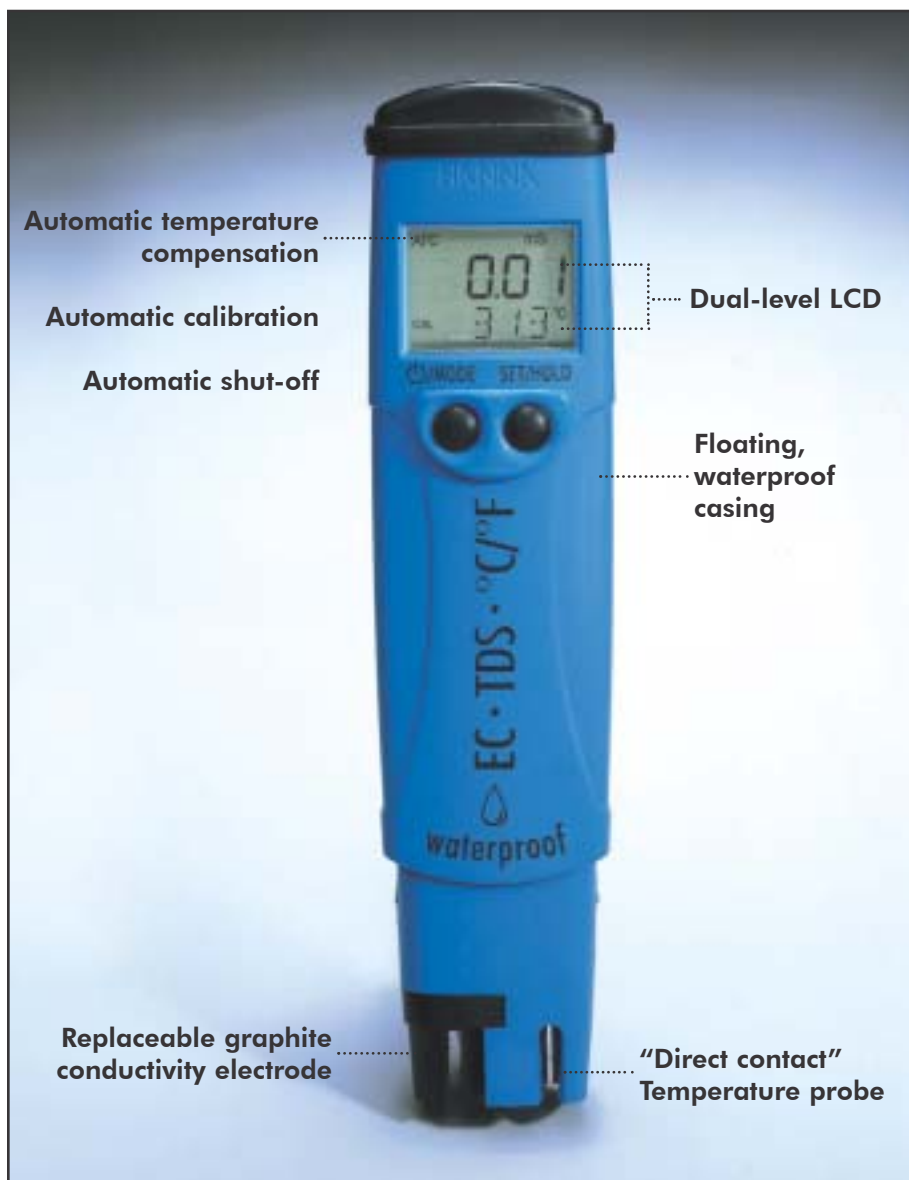
**HI 9033** is supplied with **HI 76302W** interchangeable probe with 1 m (3.3') screened cable, calibration screwdriver, 9V battery and instruction manual in a rugged carrying case.

**HI 9835** is supplied with **HI 76309** 4-ring conductivity probe with 1 m (3.3') screened cable, 4 x 1.5V AA batteries and instruction manual in a rugged case.

### ACCESSORIES

- HI 76302W . . . . .Conductivity probe for HI 9033
- HI 76309 . . . . .Conductivity probe for HI 9835
- HI 721317 . . . . .Hard carrying case
- HI 7030L . . .12880 µS/cm cal. solution (460 mL)
- HI 7031L . . .1413 µS/cm cal. solution (460 mL)
- HI 7033L . . . . .84 µS/cm cal. solution (460 mL)
- HI 7034L . . .80000 µS/cm cal. solution (460 mL)
- HI 7035L . .111800 µS/cm cal. solution (460 mL)
- HI 7037L . . . . .NaCl cal. solution (460 mL)

# Waterproof, EC/TDS/Temperature tester with a replaceable graphite electrode!



**Replaceable graphite electrode**  
An easy-to-replace graphite electrode with a sturdy, snap-in connector means there are no pins to bend or break.

**High accuracy**

The graphite conductivity electrode provides greater accuracy because it cannot be contaminated by salt deposits in the solution.

The original DiST® (Dissolved Solids Tester) was first introduced in 1986 by Hanna Instruments. The DiST®'s ease of use in combination with its affordability made it the standard in EC and TDS measurement. Hanna Instruments continues the tradition of innovation with the new DiST®5 and DiST®6. For this new series, we have included all the features you have asked for and more! The DiST®5 and DiST®6 include features such as a replaceable graphite electrode, adjustable TDS ratio, temperature in °C or °F, automatic temperature compensation with adjustable β, battery-level indicator, stability indicator, automatic shut-off, and automatic calibration all in a floating, waterproof casing. This 3-in-1 tester is unmatched in EC/TDS/Temperature measurement!

**SPECIFICATIONS**

	DiST®5 (HI 98311)	DiST®6 (HI 98312)
<b>EC Range</b>	0 to 3999 μS/cm	0.00 to 20.00 mS/cm
<b>EC Accuracy</b>	±2% F.S.	±2% F.S.
<b>EC Resolution</b>	1 μS/cm	0.01 mS/cm
<b>TDS Range</b>	0 to 2000 ppm	0.00 to 10.00 ppt
<b>TDS Accuracy</b>	±2% F.S.	±2% F.S.
<b>TDS Resolution</b>	1 ppm	0.01 ppt
<b>Temp Range</b>	0.0 to 60.0°C or 32.0 to 140.0°F	0.0 to 60.0°C or 32.0 to 140.0°F
<b>Temp Accuracy</b>	±0.5°C or ±1°F	±0.5°C or ±1°F
<b>Temp Resolution</b>	0.1°C or 0.1°F	0.1°C or 0.1°F
<b>Typical EMC Dev.</b>	EC/TDS: ±2% F.S.; Temp.: ±0.5°C or ±1°F	
<b>EC/TDS Calibration</b>	Automatic 1 point	
<b>EC/TDS Conv. Factor</b>	Adjustable from 0.45 to 1.00	
<b>Temp Comp</b>	Automatic, BETA (β) is adjustable from 0.0 to 2.4%/°C	
<b>Battery Type</b>	4 x 1.5V with BEPS (Battery Error Prevention System)	
<b>Battery Life</b>	Approx. 100 hours of continuous use; auto shut-off after 8 minutes of non-use	
<b>Environment</b>	0 to 50°C (32 to 122°F); 100% RH	
<b>Dimensions</b>	163 x 40 x 26 mm (6.4 x 1.6 x 1")	
<b>Weight</b>	85 g (3.0 oz.)	

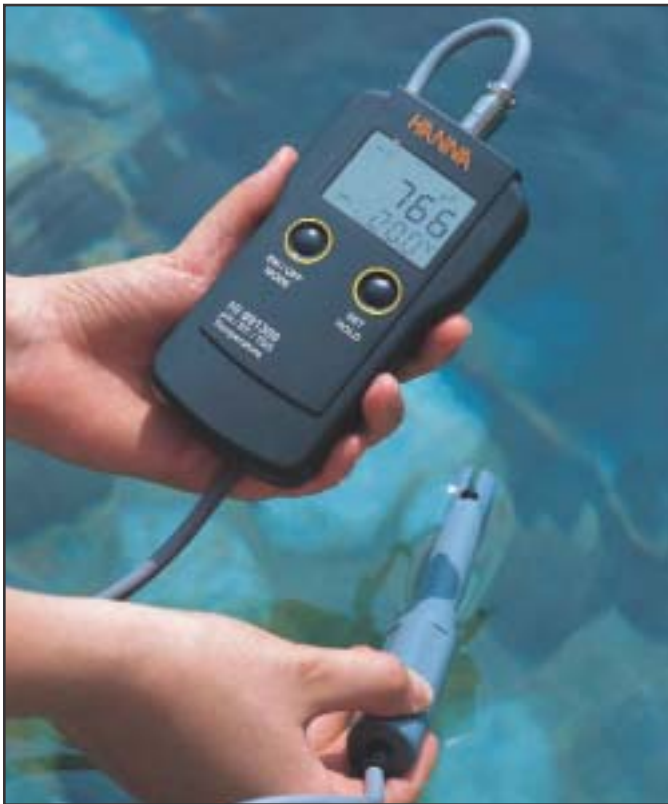
**ORDERING INFORMATION**

HI 98311 (DiST®5) & HI 98312 (DiST®6) are supplied with protective cap, electrode removal tool, batteries and instruction manual.

**ACCESSORIES**

- HI 73311 . . . . . Electrode for HI 98311 & HI 98312
- HI 70031P . . . 1413 μS/cm @ 25°C cal. kit (25 x 20 mL)
- HI 70032P . . . 1382 ppm @ 25°C cal. kit (25 x 20 mL)
- HI 70038P . . . . 6.44 ppt @ 25°C cal. kit (25 x 20 mL)
- HI 70030P . 12880 mS/cm @ 25°C cal. kit (25 x 20 mL)
- HI 70442P . . . 1500 ppm @ 25°C cal. kit (25 x 20 mL)

# Waterproof, pH/Conductivity/TDS & Temperature meter!



- Waterproof
- 4-in-1 probe
- Automatic calibration
- Automatic temperature compensation

Hanna offers a choice of two instruments to meet most water testing requirements. The **HI 991300** and **HI 991301** offer the combination of pH, conductivity, TDS, and temperature measurements in °C or °F. Select the instrument that works best with the needed range of measurement.

With only two buttons, the user can select testing parameters, calibrate the sensor, and change the TDS factor and temperature coefficient (BETA). The housing is waterproof and rated for IP 67 conditions. The multifunctional, industrial probe houses the pH and conductivity sensor along with an integrated solid state amplifier to eliminate noise and interference.

## SPECIFICATIONS

	HI 991300	HI 991301
<b>pH Range</b>	0.00 to 14.00	0.00 to 14.00
<b>pH Accuracy</b>	±0.01	±0.01
<b>pH Resolution</b>	0.01	0.01
<b>EC Range</b>	0 to 3999 µS/cm	0.00 to 19.99 mS/cm
<b>EC Accuracy</b>	±2% F.S.	±2% F.S.
<b>EC Resolution</b>	1 µS/cm	0.01 mS/cm
<b>TDS Range</b>	0 to 2000 ppm	0.00 to 10.00 ppt
<b>TDS Accuracy</b>	±2% F.S.	±2% F.S.
<b>TDS Resolution</b>	1 ppm	0.01 ppt
<b>Temperature Range</b>	0.0 to 60.0°C or 32 to 140°F	
<b>Temperature Accuracy</b>	±0.5°C or ±1.0°F	
<b>Temperature Resolution</b>	0.1°C or 0.1°F	
<b>Typical EMC Deviation</b>	pH: ±0.3; EC/TDS: ±2% F.S.; Temp.: ±0.5°C or 1.0°F	
<b>EC/TDS Ratios</b>	Selectable from 0.45, 0.50 (default), 0.55, 0.60, 0.65, 0.68, 0.70, 0.75, 1.00 ppm = 1 µS	
<b>pH Calibration</b>	Automatic 1 or 2 points with 2 sets of memorized standard buffers (pH 4.01, 7.01, 10.01 or 4.01, 6.86, 9.18)	
<b>EC/TDS Calibration</b>	Automatic 1 point at 1382 ppm (conv.=0.5); 1500 ppm (conv.=0.7); 1413 µS/cm (others)	Automatic 1 point at 6.44 ppt (conv.=0.5); 9.02 ppt (conv.=0.7); 12880 µS/cm (others)
<b>Temp. Compensation</b>	pH: Automatic from 0 to 60°C; EC/TDS: Automatic from 0 to 60°C with a selectable β of 0.0, 1.8, 1.9 (default), 2.0, 2.1, 2.2, 2.3, 2.4%/°C	
<b>Probe</b>	HI 1288 pH/EC/TDS probe with built-in temperature sensor, DIN connector and 1 m (3.3') cable (included)	
<b>Battery Type/Life</b>	4 x 1.5V AA/Approximately 500 hours of continuous use	
<b>Environment</b>	0 to 50 (32 to 122°F); 100% RH	
<b>Dimensions/Weight</b>	143 x 80 x 38 mm (5.6 x 3.1 x 1.5")/320 Kg (11.3 oz)	

## ORDERING INFORMATION

HI 991300 and HI 991301 are supplied with HI 1288 pH/EC/TDS/°C probe, batteries, & instruction manual in a hard carrying case.

## ACCESSORIES

HI 1288	pH/EC/TDS/°C probe
HI 710004	Soft carrying case
HI 710007	Blue shockproof rubber boot
HI 70030P	12880 mS/cm @ 25°C cal. kit (25 x 20 mL)
HI 70038P	6.44 ppt @ 25°C cal. kit (25 x 20 mL)
HI 77100P	1413 µS/cm & pH 7 sol. 20 mL, 10 pcs ea.
HI 77200P	1500 ppm & pH 7 sol. 20 mL, 10 pcs ea.
HI 77300P	1382 ppm & pH 7 sol. 20 mL, 10 pcs ea.
HI 77400P	pH 4 & pH 7 sol. 20 mL, 5 pcs ea.

# Waterproof, pH/Conductivity/TDS/ Temperature tester



**Replaceable pH electrode**  
The Combo features an easy-to-replace pH electrode has an extendable cloth junction. The sturdy, snap-in connector means there are no pins to bend or break.



**High accuracy**  
The graphite conductivity electrode provides greater accuracy because it cannot be contaminated by salt deposits in the solution. The exposed temperature sensor provides fast response times, and guarantees accurate temperature compensated readings.

The NEW HI 98129 and HI 98130 Combo waterproof testers offer high accuracy pH, EC/TDS and temperature measurements with a large easy-to-read, dual-level LCD and automatic shut-off. pH and EC/TDS readings are automatically compensated for the effects of temperature (ATC). The EC/TDS conversion factor is user selectable as well as the temperature compensation coefficient ( $\beta$ ). Fast, efficient, accurate and portable, the **Combo** incorporates all the features asked for and more!



## SPECIFICATIONS

	Combo (HI 98129)	Combo (HI 98130)
<b>pH Range</b>	0.00 to 14.00	0.00 to 14.00
<b>pH Accuracy</b>	±0.05	±0.05
<b>pH Resolution</b>	0.01	0.01
<b>EC Range</b>	0 to 3999 $\mu\text{S}/\text{cm}$	0.00 to 20.00 $\text{mS}/\text{cm}$
<b>EC Accuracy</b>	±2% F.S.	±2% F.S.
<b>EC Resolution</b>	1 $\mu\text{S}/\text{cm}$	0.01 $\text{mS}/\text{cm}$
<b>TDS Range</b>	0 to 2000 ppm	0.00 to 10.00 ppt
<b>TDS Accuracy</b>	±2% F.S.	±2% F.S.
<b>TDS Resolution</b>	1 ppm	0.01 ppt
<b>Temp Range</b>	0.0 to 60.0°C or 32.0 to 140.0°F	0.0 to 60.0°C or 32.0 to 140.0°F
<b>Temp Accuracy</b>	±0.5°C or ±1°F	±0.5°C or ±1°F
<b>Temp Resolution</b>	0.1°C or 0.1°F	0.1°C or 0.1°F
<b>Typical EMC Dev.</b>	pH: ±0.02; EC/TDS: ±2% F.S.; Temp.: ±0.5°C or ±1°F	
<b>pH Calibration</b>	1 or 2 points with 2 sets of memorized buffers	
<b>EC/TDS Calibration</b>	Automatic 1 point	
<b>EC/TDS Conv. Factor</b>	Adjustable from 0.45 to 1.00	
<b>Temp Comp</b>	pH: automatic; EC/TDS: automatic, BETA ( $\beta$ ) is adjustable from 0.0 to 2.4%/°C	
<b>Battery Type</b>	4 x 1.5V with BEPS (Battery Error Prevention System)	
<b>Battery Life</b>	Approx. 100 hrs of continuous use; auto shut-off after 8 minutes of non-use	
<b>Environment</b>	0 to 50°C (32 to 122°F); 100% RH	
<b>Dimensions/Weight</b>	163 x 40 x 26 mm (6.4 x 1.6 x 1")/85 g (3.0 oz.)	

## ORDERING INFORMATION

HI 98129 (Combo) & HI 98130 (Combo) are supplied with protective cap, electrode removal tool, batteries and instructions.

## ACCESSORIES

- HI 73127 .....Replaceable pH electrode
- HI 7004M .....pH 4.01 buffer sol., 230 mL
- HI 7007M .....pH 7.01 buffer sol., 230 mL
- HI 7010M .....pH 10.01 buffer sol., 230 mL
- HI 70004P .....Cal. kit (pH 4.01, 20 mL, 25 pcs.)
- HI 77400P .....Cal. kit (pH 4 & 7, 20 mL, 5 pcs ea.)
- HI 70007P .....Cal. kit (pH 7.01, 20 mL, 25 pcs.)
- HI 70010P .....Cal. kit (pH 10.01, 20 mL, 25 pcs ea.)
- HI 70031P .....1413  $\mu\text{S}/\text{cm}$  @ 25°C cal. kit (25 x 20 mL)
- HI 70032P .....1382 ppm @ 25°C cal. kit (25 x 20 mL)
- HI 70038P .....6.44 ppt @ 25°C cal. kit (25 x 20 mL)
- HI 70030P .....12880  $\text{mS}/\text{cm}$  @ 25°C cal. kit (25 x 20 mL)
- HI 70442P .....1500 ppm @ 25°C cal. kit (25 x 20 mL)
- HI 70300M .....Storage solution, 230 mL
- HI 7061M .....Electrode cleaning solution, 230 mL

# Conductivity/TDS solutions

## Solutions Manufactured to Specific Needs

It is difficult to exaggerate the importance of calibration and maintenance solutions. Expensive equipment is often utilized well below its full capabilities due to lack of proper maintenance of sensors. Hanna provides a complete range of solutions for all applications. All solutions are prepared with carefully weighed chemicals of the highest grade following Good Laboratory Practice guidelines. Due to the sheer volume of solutions produced, the quantity of chemicals used provides a

much better consistency than if small volumes were prepared by a laboratory technician. Hanna's conductivity and TDS solutions provide the advantage of being able to perform accurate calibration at a minimal cost even out in the field.

## Accuracy Guaranteed

Unlike some parameters such as temperature, where expensive baths and electrical current are a must before calibration, conductivity allows the user to easily calibrate the meter in the lab or in the field in seconds. Hanna offers a wide range of conductivity

solutions in different configurations. Each label contains a handy conductivity vs. temperature chart.

## FDA Approved

Our more discerning customers will be pleased to know that Hanna has introduced a new series of conductivity solutions in opaque FDA approved bottles which prevent light from interfering with the value of the solutions.

## Material Safety Data Sheets

MSDS's are available upon request for any of the Hanna solutions listed in this catalog.

## NIST Traceability

The conductivity solutions are made of high quality Potassium Chloride with different strengths. The solutions are standardized with a conductivity meter, calibrated by high purity NIST 999 Potassium Chloride in deionized water. The concentration is also confirmed by NIST 2201 Standardized Silver Nitrate solution.

## Expiration Date

Every Hanna calibration solution is supplied with a label affixed to the bottle showing the lot # and expiration date to ensure maximum accuracy and safety.

## Conductivity Solutions

Part No.	Conductivity Value at 25°C	Size	Quantity Per Package	FDA Approved Bottle	Factory Analysis Certificate
HI 70030C	12880 $\mu$ S/cm ( $\mu$ mho/cm)	20 mL	25		•
HI 70030P	12880 $\mu$ S/cm ( $\mu$ mho/cm)	20 mL	25		
HI 7030M	12880 $\mu$ S/cm ( $\mu$ mho/cm)	230 mL	1		
HI 7030L	12880 $\mu$ S/cm ( $\mu$ mho/cm)	460 mL	1		
HI 8030L	12880 $\mu$ S/cm ( $\mu$ mho/cm)	460 mL	1	•	
HI 70031C	1413 $\mu$ S/cm ( $\mu$ mho/cm)	20 mL	25		•
HI 70031P	1413 $\mu$ S/cm ( $\mu$ mho/cm)	20 mL	25		
HI 77100C	1413 $\mu$ S/cm & pH 7.01	20 mL	20 (10 each)		•
HI 77100P	1413 $\mu$ S/cm & pH 7.01	20 mL	20 (10 each)		
HI 7031M	1413 $\mu$ S/cm ( $\mu$ mho/cm)	230 mL	1		
HI 7031L	1413 $\mu$ S/cm ( $\mu$ mho/cm)	460 mL	1		
HI 8031L	1413 $\mu$ S/cm ( $\mu$ mho/cm)	460 mL	1	•	
HI 70033C	84 $\mu$ S/cm ( $\mu$ mho/cm)	20 mL	25		•
HI 70033P	84 $\mu$ S/cm ( $\mu$ mho/cm)	20 mL	25		
HI 7033M	84 $\mu$ S/cm ( $\mu$ mho/cm)	230 mL	1		
HI 7033L	84 $\mu$ S/cm ( $\mu$ mho/cm)	460 mL	1		
HI 8033L	84 $\mu$ S/cm ( $\mu$ mho/cm)	460 mL	1	•	
HI 7034M	80000 $\mu$ S/cm ( $\mu$ mho/cm)	230 mL	1		
HI 7034L	80000 $\mu$ S/cm ( $\mu$ mho/cm)	460 mL	1		
HI 8034L	80000 $\mu$ S/cm ( $\mu$ mho/cm)	460 mL	1	•	
HI 7035M	111800 $\mu$ S/cm ( $\mu$ mho/cm)	230 mL	1		
HI 7035L	111800 $\mu$ S/cm ( $\mu$ mho/cm)	460 mL	1		
HI 8035L	111800 $\mu$ S/cm ( $\mu$ mho/cm)	460 mL	1	•	
HI 70039C	5000 $\mu$ S/cm ( $\mu$ mho/cm)	20 mL	25		•
HI 70039P	5000 $\mu$ S/cm ( $\mu$ mho/cm)	20 mL	25		
HI 7039M	5000 $\mu$ S/cm ( $\mu$ mho/cm)	230 mL	1		
HI 7039L	5000 $\mu$ S/cm ( $\mu$ mho/cm)	460 mL	1		
HI 8039L	5000 $\mu$ S/cm ( $\mu$ mho/cm)	460 mL	1	•	

## Total Dissolved Solids Solutions

Hanna is one of the few manufacturers offering preformulated Total Dissolved Solids solutions for lab and field calibration from 20 mL sachets to 500 mL bottles. The FDA approved opaque bottles will also guarantee that solutions stay away from light. Each solution is prepared using high grade Potassium Chloride standardized with a meter pre-calibrated with NIST 999 KCl and conforming to NIST 2201 Silver Nitrate solution.

Part No.	Conductivity Value at 25°C	Size	Quantity Per Package	FDA Approved Bottle	Factory Analysis Certificate
HI 70080C	800 ppm (mg/L)	20 mL	25		•
HI 70080P	800 ppm (mg/L)	20 mL	25		
HI 70032C	1382 ppm (mg/L)	20 mL	25		•
HI 70032P	1382 ppm (mg/L)	20 mL	25		
HI 77300C	1382 ppm (mg/L) & pH 7.01	20 mL	20 (10 each)		•
HI 77300P	1382 ppm (mg/L) & pH 7.01	20 mL	20 (10 each)		
HI 7032M	1382 ppm (mg/L)	230 mL	1		
HI 7032L	1382 ppm (mg/L)	460 mL	1		
HI 70442C*	1500 ppm (mg/L)	20 mL	25		•
HI 70442P*	1500 ppm (mg/L)	20 mL	25		
HI 70442M*	1500 ppm (mg/L)	230 mL	1		•
HI 70442L*	1500 ppm (mg/L)	460 mL	1		
HI 77200C*	1500 ppm (mg/L) & pH 7.01	20 mL	20 (10 each)		•
HI 77200P*	1500 ppm (mg/L) & pH 7.01	20 mL	20 (10 each)		
HI 70038C	6.44 ppt (g/L)	20 mL	25		•
HI 70038P	6.44 ppt (g/L)	20 mL	25		
HI 7036M	12.41 ppt (g/L)	230 mL	1		
HI 7036L	12.41 ppt (g/L)	460 mL	1		

\*4-4-2 solution with approx. 0.65 ppm=1  $\mu$ S/cm conversion rate

# NTC Temperature data loggers

- 1 or 2 channels with internal or external sensor
- 16,000 samples/channel (for 1-channel models) or 8,000 samples/channel (for 2-channel models)
- Logging interval from 1 second to 24 hours
- Logging delay start up to 199 hours and magnetic start
- Programmable high and low alarms
- Non-volatile storage of logging parameters and data in EEPROM
- IP67 waterproof casing

The NEW HI 141 series is a family of temperature data loggers with either one or two channels, internal or external temperature sensors and an optional LCD. External temperature sensor models feature one or two stainless steel sensors on a 1 meter (3.3') cable for direct insertion. HI 141 can store up to 16,000 temperature samples in a protected, non-volatile EEPROM memory. The logging interval can be set from once per second up to every 24 hours and logging delay start can be set anywhere up to 199 hours. The MIN or MAX temperature between logging intervals can also be stored. All of the collected data is tamperproof and stored into serial numbered lots. The user interacts with the logger setting data acquisition parameters or downloading logged data through an RS232 serial port on a Windows® PC. The HI 141000 Windows® software supports communication between the logger and the PC through the HI 141001 infrared transmitter. The housing is waterproof to IP 67 standards and can include a convenient hanging loop (simply add an "H" to



the end of the code). A long-life AA lithium battery provides power. For a typical 1 minute logging interval, the battery will last about 4 years. Hanna's unique Battery Error Prevention System (BEPS), signals when it is time to change the battery. The housing is designed for on the spot battery changes.

## SPECIFICATIONS

Model	LCD	Sensor(s)	Range
HI 141A (H)		1 internal	-40.0 to 80.0°C/-40.0 to 175.0°F
HI 141B (H)		1 external	-40.0 to 125.0°C/-40.0 to 257.0°F
HI 141C (H)	•	1 internal	-20.0 to 70.0°C/-4.0 to 158.0°F
HI 141D (H)	•	1 external	-40.0 to 125.0°C/-40.0 to 257.0°F
HI 141E (H)		1 internal 1 external	-40.0 to 80.0°C/-40.0 to 175.0°F -40.0 to 125.0°C/-40.0 to 257.0°F
HI 141F (H)		2 external	-40.0 to 125.0°C/-40.0 to 257.0°F
HI 141G (H)	•	1 internal 1 external	-20.0 to 70.0°C/-4.0 to 158.0°F -40.0 to 125.0°C/-40.0 to 257.0°F
HI 141J (H)	•	2 external	-40.0 to 125.0°C/-40.0 to 257.0°F

## Specifications for all models

Resolution	0.1°C (-40.0 to 100.0°C); 0.2°C (temp. > 100.0°C) 0.1°F (-40.0 to 190.0°F); 0.3°F (temp. > 190.0°F)
Accuracy	±0.5°C (-40.0 to 0.0 and 70.0 to 100.0°C) ±0.4°C (0.0 to 70.0°C) ±1.0°C (temperature > 100.0°C) ±1.0°F (-40.0 to 32.0 and 158.0 to 212.0°F) ±0.8°F (32.0 to 158.0°F) ±2.0°F (temperature > 212.0°F)
Diameter	86.5 mm (3.4")
Height	35 mm (1.4")
Weight	150 g (5.54 oz.)

## ORDERING INFORMATION

Each HI 141 series thermologger is supplied with one 3.6V lithium AA battery & instructions.

## ACCESSORIES

HI 141000 . . . . . Windows® application software  
HI 141001 . . . . . Infrared transmitter

# Professional printing and logging thermometers with log-on-demand

## Computer compatible

Cordless infrared transmission through the HI 9200 cradle causes no wear and tear, prolonging the life of the instrument.

## Flexibility

A full range of interchangeable probes are available to satisfy your specific needs and applications.

- High accuracy
- Backlit display
- Printing and logging capabilities
- Infrared computer transfer system
- 1 or 4-channel models
- Dual-level display



**HI 98810** and **HI 98840** combine the high accuracy and fast response time with an extensive logging feature and an infrared computer transfer system. In addition to supplying the user with an instant printout of date, time and temperature, they can log the data without supervision at a predetermined interval or simply through the log-on-demand feature. The stored information can later be displayed, downloaded and/or printed. The meters also incorporate GLP (Good Laboratory Practice) features which enable users to retrieve the date and details of the last calibration. Default parameters such as prompts for recalibration or the auto-off settings are also operator adjustable. With the backlight feature, measurements in dimly lit and even unlit areas become a reality.

**HI 98810** accepts one temperature probe while **HI 98840** can take up to 4 different measurements from 4 separate probes. Sophisticated software allocates up to 14,000 temperature readings to maximize available space, regardless of the number of channels in use. The LCD shows temperature in large, easy-to-read figures with a secondary level of readout displaying logging interval, channel, time and date.

Upon request **HI 98810/C** and **HI 98840/C** models are available supplied with a Factory Calibration Certificate against NIST Standard. Recalibration service is available at your nearest Hanna service center.

## SPECIFICATIONS

	HI 98810	HI 98840
<b>Range</b>	-50.0 to 150.0°C; -55.0 to 300.0°F	
<b>Resolution</b>	0.1°C (-30 to 130°C); 0.2°C (outside); 0.1°F (-18 to 225°F); 0.2°F (225 to 260°F); 0.3°F (outside)	
<b>Accuracy</b>	±0.4°C (-20 to 120°C); ±0.7°C (outside); ±0.8°F (-4 to 248°F); ±1.3°F (outside) for one year, excluding probe error	
<b>Typical EMC Deviation</b>	±0.4°C; ±0.8°F	
<b>Channels</b>	1 Channel	4 Channels
<b>Probe</b>	HI 762BL (included)	HI 762 series (optional)
<b>Printer</b>	Low-power impact type-belt, 14 characters per line using 38 mm plain paper (HI 710034)	
<b>Printing/Logging Intervals</b>	Selectable from 1, 2, 5, 10, 15, 30, 60, 120 and 180 minutes	
<b>Computer Interface</b>	HI 9200 infrared transmitter through RS232 serial port	
<b>Power Supply</b>	4 x 1.5V AA batteries / approx. 350 hours of continuous use (without printing and backlight). Auto-off selectable after 5, 10, 15, 30, 45 or 60 minutes of non-use. Socket for 12VDC.	
<b>Environment</b>	0 to 50°C (32 to 122°F); RH 95%	
<b>Dimensions</b>	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")	
<b>Weight</b>	500 g (18 oz.)	

## ORDERING INFORMATION

**HI 98810** is supplied with HI 762BL temperature probe with 1 m cable, 5 paper rolls, 4 x 1.5V AA batteries and instruction manual in a rugged carrying case.

**HI 98810/C** is supplied with Factory Calibration Certificate, HI 762BL temperature probe with 1 m cable, 5 paper rolls, 4 x 1.5V AA batteries and instruction manual in a rugged carrying case.

**HI 98840** is supplied with 5 paper rolls, 4 x 1.5V AA batteries and instruction manual in a rugged carrying case.

**HI 98840/C** is supplied with Factory Calibration Certificate, 5 paper rolls, 4 x 1.5V AA batteries and instruction manual in a rugged carrying case.

## ACCESSORIES

HI 710005	.....110V to 12VDC adapter
HI 710006	.....220V to 12VDC adapter
HI 762-18C	.....Calibration key -18.0°C ±0.4°C
HI 762000C	.....Calibration key 0.0°C ±0.4°C
HI 762070C	.....Calibration key 70.0°C ±0.4°C
HI 762BL	.....Temperature probe with black handle
HI 762L/10	.....Temp. probe with 10 m (33') cable
HI 710034	.....Paper roll (10 rolls)
HI 710035	.....Ink cartridge (1 pcs)
HI 9200/9	.....Infrared transmitter (9-pin)
HI 92000	.....Windows® compatible software
HI 721317	.....Rugged carrying case

# Waterproof and rugged thermistor thermometer

## High Accuracy

The high level of accuracy offered by this meter is consistent across the entire range of the instrument.

## Large Display

The dual-level LCD simultaneously shows current temperature along with high and low extremes recorded during the measurement cycles.

## Long Battery Life

A battery life of 3000 hours, low battery warning and error prevention ensures long periods of trouble-free operation.



The waterproof **HI 9060** is ideal for use in wet and humid environments. This popular instrument incorporates a dual-level LCD that shows current temperature simultaneously with high and low session extremes. A HOLD button allows easy recording of the current information on display. **HI 9060** will measure in degrees celsius as well as degrees fahrenheit.

Simply push the °C/°F button. This rugged instrument offers a new level of portability with an increase in battery life up to 3000 hours! That means the instrument will work up to 8 hours a day, seven days a week for over a year. At startup, the thermometer performs a self test and displays the remaining battery power.

The waterproof **HI 9060** series uses a thermistor sensor for measuring the temperature in a range from -50.0 to 150.0°C and -58.0 to 302.0°F. Hanna makes a complete range of interchangeable **HI 765** probes to meet all specific application needs.

## SPECIFICATIONS

	HI 9060
<b>Range</b>	-50.0 to 150.0°C/-58.0 to 302.0°F
<b>Accuracy</b>	±0.4°C/±0.8°F for one year, excluding probe error
<b>Resolution</b>	0.1°C/0.1°F
<b>Typical EMC Deviation</b>	±1°C/±2°F
<b>Probe</b>	HI 765BL precalibrated and interchangeable stainless steel probe with 1 m (3.3' cable) (included)
<b>Battery Type</b>	4 x 1.5V AA
<b>Battery Life</b>	Approximately 3000 hours of continuous use
<b>Environment</b>	-10 to 50°C (14 to 122°F); RH 100%
<b>Dimensions</b>	196 x 80 x 60 mm (7.7 x 3.1 x 2.4")
<b>Weight</b>	425 g (15 oz.)

## ORDERING INFORMATION

**HI 9060** is supplied complete with HI 765BL temperature probe with 1 m (3.3') cable and 4 x 1.5V AA batteries.

## ACCESSORIES

- HI 710002 . . . . .Soft carrying case
- HI 721317 . . . . .Rugged carrying case
- HI 765-18C . . .Calibration test plug -18.0°C ±0.4°C
- HI 765000C . . .Calibration test plug 0.0°C ±0.4°C
- HI 765070C . . .Calibration test plug 70.0°C ±0.4°C
- HI 765-004F . . .Calibration test plug -0.4°F ±0.8°F
- HI 765032F . . .Calibration test plug 32.0°F ±0.8°F
- HI 765158F . . .Calibration test plug 158.0°F ±0.8°F
- HI 765BL . . . . .Temperature probe with black handle
- HI 765L/10 . . . . .Temperature probe w/10 m (33') cable

# Heavy-duty, waterproof K-Type thermocouple thermometer



**High Accuracy and Resolution**  
The HI 9063 measures within  $\pm 0.2\%$  Full Scale and has a resolution of 0.1°C or °F up to 199.9°C or 399.9°F.

**Large Display**  
The dual-level LCD simultaneously shows current temperature along with the high and low extremes recorded during the measurement cycle.

**Auto-ranging**  
This meter will automatically switch resolution from 0.1 to 1 at 200°C (400°F) above.

Instrumentation used in the field or industry is subjected to environmental extremes. Due to this problem, Hanna Instruments has developed the HI 9063 to satisfy heavy-duty application needs. This new version of the HI 9063 benefits from Hanna's extensive experience in producing instruments that perform to specific requirements. The measurement ceiling has been raised, auto-ranging added and accuracy enhanced.

Because it is often necessary to be aware of the highest and lowest temperatures measured during a certain process, Hanna has incorporated a dual-level LCD that shows the current, minimum and maximum achieved temperatures. Temperature readings are linearized for increased accuracy. Resolution is automatically switched from 0.1° to 1° at 200°C (400°F) and above.

The HI 9063 also has a low battery warning and battery error prevention system (BEPS) to assure long periods of trouble-free operation.

## SPECIFICATIONS

	HI 9063
<b>Range</b>	-50.0 to 199.9°C/-58.0 to 399.9°F 200 to 1350°C/400 to 2462°F
<b>Accuracy</b>	$\pm 0.2\%$ Full Scale for one year, excluding probe error
<b>Resolution</b>	0.1°C (up to 199.9°C, 1°C (outside) 0.1°F (up to 399.9°F), 1°F (outside)
<b>Typical EMC Deviation</b>	$\pm 3^\circ\text{C}/\pm 6^\circ\text{F}$ with HI 766 K-type thermocouple probe
<b>Probe</b>	K-type thermocouple (optional)
<b>Battery Type</b>	4 x 1.5V AA
<b>Battery Life</b>	Approximately 2000 hours of continuous use
<b>Environment</b>	-10 to 50°C (14 to 122°F); RH 100%
<b>Dimensions</b>	196 x 80 x 60 mm (7.7 x 3.1 x 2.4")
<b>Weight</b>	425 g (15 oz.)

## ORDERING INFORMATION

HI 9063 is supplied with 4 x 1.5V AA batteries and instruction manual.

## ACCESSORIES

- HI 710002 .....Soft carrying case
- HI 721317 .....Rugged carrying case
- HI 766C .....Penetration probe w/1 m (3.3') cable
- HI 766E1 .....General use probe w/1 m (3.3') cable

# Stainless steel solution to glass thermometer problems

## Cal-Check

**Checktemp**® has the world's first cal-check feature. There is a switch under the battery cover which sends a 0.0°C ±0.3°C (32.0°F ±0.5°F) signal to the display. This way there is no doubt about the accuracy of readings. The new **Checktemp**® L is now available featuring a rounded probe tip ideal for measurements in liquid.

## Factory calibration certificates

If the application requires a thermometer that is traceable to a NIST standard, select a factory certified Hanna thermometer.

- Stainless steel probe
- Rugged ABS housing
- Easy to read LCD
- 3000 hours of battery life

The **Checktemp**® gives you the temperature read-out from -50 to 150°C or -58 to 302°F in seconds on a large Liquid Crystal Display with ±0.3°C or ±0.5°F accuracy. NO breakage, NO waste, NO injuries, NO difficulty in reading. Not even a parallax error by taking a wrong measurement due to the angle of view!



## SPECIFICATIONS

	Checktemp®C/Checktemp®F	Checktemp®LC/Checktemp®LF
Range	-50.0 to 150.0°C	-58.0 to 302°F
Accuracy (@20°C/68°F)	±0.3°C (-20 to 90°C)/±0.5°C (outside)	±0.5°F (-4 to 194°F)/±1°F (outside)
Resolution	0.1°C	0.1°F (-58.0 to 199.9°F) 1°F (200 to 302°F)
Typical EMC Dev.	±0.3°C	±0.5°F
Probe	Stainless steel, 105 mm (4.13") x 3 mm diameter (0.12")	
Battery Type	1 x 1.5V	
Battery Life	Approx. 3000 hours of continuous use	
Environment	0 to 50°C (32 to 122°F); 95% RH	
Dimensions	66 x 50 x 25 mm (2.6 x 2.0 x 1")	
Weight	50 g (1.8 oz.)	

## ORDERING INFORMATION

HI 98501(Checktemp®C), HI 98505 (Checktemp®LC), HI 98502 (Checktemp®F), & HI 98506 (Checktemp®LF) are supplied with 1.5V battery, protective cap & instructions.

HI 98503(Checktemp®C), HI 98507 (Checktemp®LC), HI 98504 (Checktemp®F), & HI 98508 (Checktemp®LF) are supplied with 1.5V battery, protective cap, factory calibration certificate and instructions.

# Monitor internal temperatures



- Magnetic backing provides an easy way to attach to metal refrigerators and freezers.
- Large, easy-to-read LCD.
- User can easily verify the status of the meter with our cal-check feature.
- Thermistor probe with 1m cable designed to reach into refrigerators and freezers.
- Fast responding food grade stainless steel thermistor probe and silicon cable are easy to keep clean.
- Low battery warning “err” message displays when battery must be changed.

Few manufacturers have given any thought to providing the user a convenient means to monitor internal temperature conditions from the outside. When the contents of freezer and refrigeration units must be monitored to ensure their safety and preservation, users need a thermometer that is reliable and efficient. The **HI 147** is the ideal choice when accurate temperature monitoring is needed.

How can someone know when the reading on any thermometer is correct? An ice point or slurry could be made. Even then there could be several degrees difference in the real and the theoretical, or perceived, temperatures. With **HI 147**, there is no need to waste time preparing for and making these tests. Its unique Cal-Check feature can automatically internally calibrate. Conveniently located on the face of the thermometer is a TEST switch. Engage the switch and the **HI 147** performs an internal calibration check. In only a few seconds, users can see the results on the large liquid crystal display. Return the switch to the READ position and the **HI 147** returns to its normal measuring function.

## SPECIFICATIONS

	HI 147-00 (Checkfridge °C)	HI 147-01 (Checkfridge °F)
<b>Range</b>	-50.0 to 150.0°C	-58.0 to 302.0°F
<b>Accuracy (@20°C/68°F)</b>	±0.3°C (-20 to 90°C)/±0.5°C (outside)	±0.5°F (-4 to 194°F)/±1°F (outside)
<b>Resolution</b>	0.1°C	0.1°F (-58.0 to 199.9°F) 1°F (200 to 302°F)
<b>Typical EMC Dev.</b>	±0.5°C	±1°F
<b>Probe</b>	Stainless steel, general purpose 40 x 5 mm (1.5 x .187") and 1 m silicon cable	
<b>Battery Type</b>	1 x 1.5V AAA	
<b>Battery Life</b>	Approx. 3 years	
<b>Environment</b>	0 to 50°C (32 to 122°F); 95% RH	
<b>Dimensions</b>	92 x 36 x 28 mm (3.625 x 1.25 x 1")	
<b>Weight</b>	60 g (2.4 oz.)	

## ORDERING INFORMATION

HI 147-00 (°C) and HI 147-01 (°F) are supplied with 1.5V AAA battery & instruction manual.

# Magnetic mini-stirrers with Speedsafe technology

## Compact Size

The HI 180, HI 190M, HI 190MB, and HI 200M are housed in compact casings that require little bench space.

## Chemical Resistance

The ABS housings of the HI 180, HI 190M, and HI 190MB resist most harmful chemicals in the lab. With this kind of protection, accidental spills will not destroy the equipment.

## Safety

An internal, electronic speed control device will limit the maximum speed to 1000 rpm, even if the load is suddenly removed.

Common stirrers are manufactured with steel and aluminum components. These units are often large and heavy, taking up a lot of space in the laboratory. The **HI 180**, **HI 190M**, **HI 190MB** and **HI 200M** are compact and lightweight, so that lack of laboratory bench space is no longer a concern. These stirrers incorporate electronic controls that allow the user to regulate the speed with greater precision. Often in the lab, a sample is removed from the stirrer before reducing the speed. This would cause the motor of conventional equipment to accelerate until it is destroyed. This does not pose a problem with the Hanna mini-stirrers. In fact, the internal Speedsafe mechanism will ensure the maximum speed is never exceeded.

**HI 180**, **HI 190M**, and **HI 190MB** come with an ABS cover that will resist the harmful effects of chemicals that are accidentally spilled. **HI 200M** is supplied with an AISI 316 stainless steel cover. This model is ideal for applications that create exothermic reactions. The ABS-covered mini-stirrer is available in several versions: The **HI 180** and **HI 190M** operating at 110 or 220VAC and **HI 190MB** at 12VDC. This provides the flexibility to choose between field and lab models, as well as being able to use the **HI 190MB** for applications where a low input voltage is a must.



## SPECIFICATIONS

	HI 180	HI 190M	HI 190MB	HI 200M
<b>Max. Stirring Capacity</b>	1 liter (0.26 gallons)	1 liter (0.26 gallons)	1 liter (0.26 gallons)	1 liter (0.26 gallons)
<b>Max. Speed Range</b>	1000 rpm	1000 rpm	1000 rpm	1000 rpm
<b>Min. Speed Range</b>	100 rpm	100 rpm	100 rpm	100 rpm
<b>Power Supply</b>	HI 180/D:220/240V, 50/60Hz HI 180/U:110/115V, 50/60Hz	HI 190M/D:220/240V, 50/60Hz HI 190M/U:110/115V, 50/60Hz	12VDC	HI 200M/D:220/240V, 50/60Hz HI 200M/U:110/115V, 50/60Hz
<b>Installation Category</b>	II	II	II	II
<b>Cover Material</b>	ABS plastic	ABS plastic	ABS plastic	AISI 316 Stainless Steel
<b>Environment</b>	0 to 50°C (32 to 122°F); RH 95% non condensing	0 to 50°C (32 to 122°F); RH 95% non condensing	0 to 50°C (32 to 122°F); RH 95% non-condensing	0 to 50°C (32 to 122°F); RH 95% non condensing
<b>Dimensions</b>	137(DIA) x 51(h) mm 5.4 (DIA) x 2 (h)"	120 x 120 x 45 mm (4.8 x 4.8 x 1.8")	120 x 120 x 45 mm (4.8 x 4.8 x 1.8")	120 x 120 x 45 mm (4.8 x 4.8 x 1.8")
<b>Weight</b>	640 g (1.4 lb.)	640 g (1.4 lb.)	610 g (1.3 lb.)	710 g (1.6 lb.)

## ORDERING INFORMATION

HI 180, HI 190M, HI 190MB, and HI 200M are supplied with a 25 mm (1") long (dia. 7 mm/0.3") Teflon® coated magnetic stir bar and instruction manual.

HI 180 A/D Light Yellow 220/240V  
HI 180 A/U Light Yellow 110/115V  
HI 180 B/D Light sea-green 220/240V  
HI 180 B/U Light sea-green 110/115V  
HI 180 C/D Light blue 220/240V  
HI 180 C/U Light blue 110/115V  
HI 180 D/D Yellow 220/240V  
HI 180 D/U Yellow 110/115V  
HI 180 E/D Green 220/240V

HI 180 E/U Green 110/115V  
HI 180 F/D Dark Blue 220/240V  
HI 180 F/U Dark Blue 110/115V  
HI 180 G/D Red 220/240V  
HI 180 G/U Red 110/115V  
HI 180 H/D Grey 220/240V  
HI 180 H/U Grey 110/115V  
HI 180 I/D Ivory 220/240V  
HI 180 I/U Ivory 110/115V

HI 190M/D ABS cover, 220/240V  
HI 190M/U ABS cover, 110/115V  
HI 190MB ABS cover, 12VDC  
HI 200M/D Stainless steel cover, 220/240V  
HI 200M/U Stainless steel cover, 110/115V

## ACCESSORIES

HI 731319 . . . . .Micro stir bar (10) pcs

# Hi-tech printing and logging hygrometers



**HI 9161** and **HI 91610** are hi-tech portable, printing thermohygrometers. These unique, lightweight meters give instant printouts of sample #, date and time of recording, printing interval, relative humidity and temperature at user-selectable intervals. RH and temperature measurements are with 0.1 resolution.

**HI 91610** combines the high accuracy and portability of **HI 9161** with extensive printing and logging features and an infrared RS232 data transfer system. In addition to supplying the user with RH and temperature at the touch of a button, it also provides datalogging facilities that store information for transfer to a PC or for retrieval and/or printing at a later date. Sophisticated software allocates up to 8000 readings to maximize available space regardless of what the logging interval is. **HI 9200** infrared transmitter is also available as an optional accessory. **HI 70604/5**, the RH probe with a 5 meter (16.5') cable is also available for special applications.

## SPECIFICATIONS

	HI 9161C	HI 9161F	HI 91610C	HI 91610F
<b>RH Range</b>	5.0 to 95.0%	5.0 to 95.0%	5.0 to 95.0%	5.0 to 95.0%
<b>RH Accuracy (@25°C)</b>	±2% F.S.	±2% F.S.	±2% F.S.	±2% F.S.
<b>RH Resolution</b>	0.1%	0.1%	0.1%	0.1%
<b>Temp. Range</b>	-20.0 to 60.0°C	-4.0 to 140.0°F	-20.0 to 60.0°C	-4.0 to 140.0°F
<b>Temp. Accuracy</b>	±0.4°C	±1°F	±0.4°C	±1°F
<b>Temp. Resolution</b>	0.1°C	0.1°F	0.1°C	0.1°F
<b>RH Probe</b>	<b>HI 70604/2</b> TFPC RH probe with 2 m (6.6') cable			
<b>°C probe</b>	<b>HI 762L/2</b> temperature probe with 2 m (6.6') cable			
<b>Printer</b>	Low-power impact type-belt, 14 characters per line using 38 mm plain paper ( <b>HI 710034</b> )			
<b>Printing Intervals</b>	Selectable from 1, 2, 5, 10, 15, 30, 60, 120, and 180 minutes			
<b>Logging Intervals</b>	-		Selectable from 1, 2, 5, 10, 15, 30, 60, 120, and 180 minutes	
<b>Computer Interface</b>	-		<b>HI 9200</b> IR transmitter through RS232 serial port	
<b>Battery Type</b>	4 x 1.5V AA batteries; power socket for 12VDC supply			
<b>Battery Life</b>	Approx. 500 hours of continuous use with 60 minute intervals. Auto shut off after 5 minutes of non-use.			
<b>Environment</b>	0 to 50°C (32 to 122°F); RH 98% non-condensing			
<b>Dimensions/Weight</b>	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")/500 g (18 oz.)			

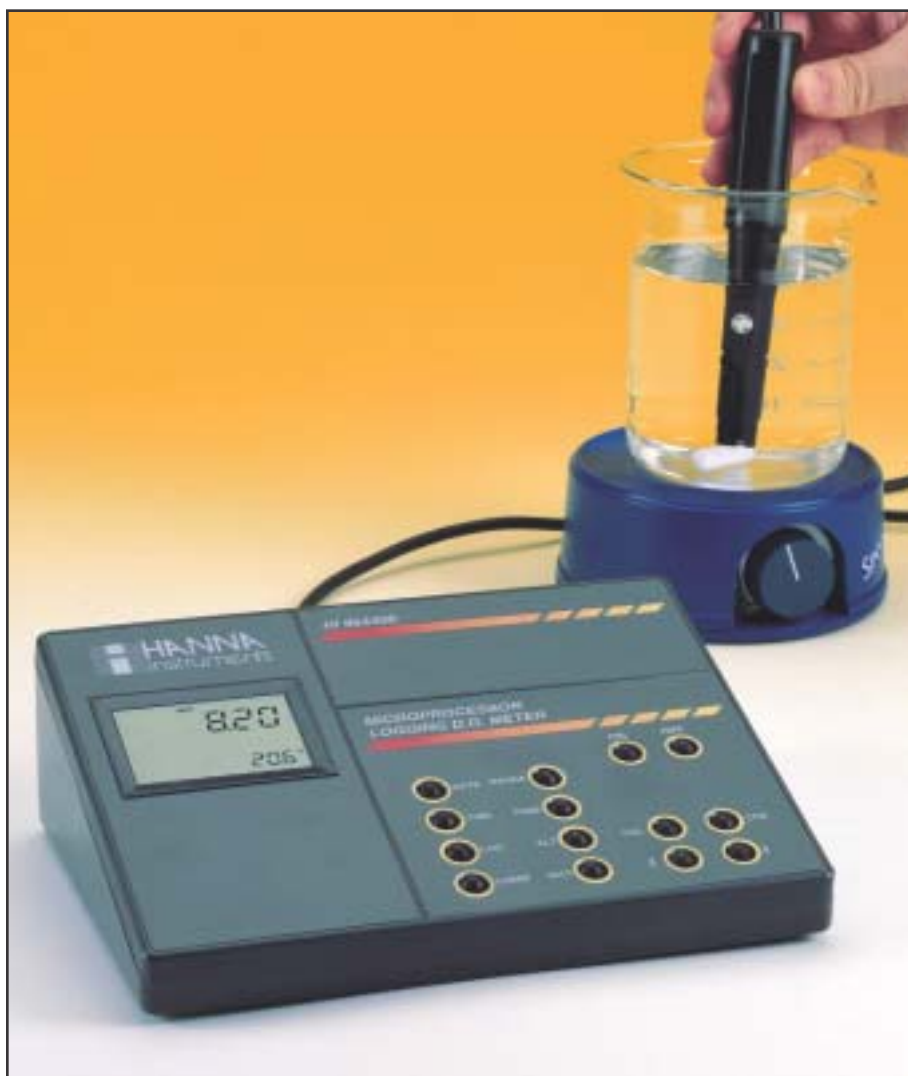
## ORDERING INFORMATION

HI 9161C, HI 9161F, HI 91610C and HI 91610F are supplied with HI 70604/2 RH probe with 2 m (7') cable, HI 762L/2 temperature probe with 2 m (7') cable, 4 x 1.5V AA batteries, 5 paper rolls and instruction manual in a rugged carrying case.

## ACCESSORIES

HI 70604/2	.....RH probe with 2 m (6.6') cable
HI 70604/5	.....RH probe with 5 m (16.5') cable
HI 70606/2	.....RH probe with sintered cap and 2 m (6.6') cable
HI 70606/5	.....RH probe with sintered cap and 5 m (16.5') cable
HI 7101	.....Mini calibration chamber
HI 7111/P	.....Spare saturation LiCl salts (6 x 15 g) for low humidity cal.
HI 7121/P	.....Spare saturation NaCl salts (6 x 33 g) for high humidity cal.
HI 762L/2	.....Temperature probe with 2 m (6.6') cable
HI 9200/9	.....Infrared transmitter (9-pin)
HI 92000	.....Windows® compatible software
HI 710034	.....Paper rolls (10 rolls)
HI 710035	.....Ink cartridge (1 cartridge)
HI 721317	.....Rugged carrying case

# Extended range Dissolved Oxygen bench meter



- Direct dissolved oxygen measurements in mg/L or in %.
- Large, easy-to-read LCD display.
- Automatic calibration for D.O. and temperature in seconds with automatic value recognition.
- Automatic compensation for temperature, altitude and salinity variations.
- Logging of up to 8000 samples divided into 99 lots.
- PC communication with RS232C serial interface.

Accurate measurements and data collection nowadays play an important role in laboratories. Hanna Instruments' solution to this need is the **HI 964400**, a microprocessor-based, benchtop logging meter with RS232C.

**HI 964400** is in compliance with **CE** directives. This ensures maximum safety for the operator and the highest accuracy of the measurements taken.

## SPECIFICATIONS

	HI 964400
mg/L O <sub>2</sub> Range	0.00 to 45.00
mg/L O <sub>2</sub> Accuracy	±1.5 of full scale
mg/L O <sub>2</sub> Resolution	0.01
% Saturation O <sub>2</sub> Range	0.0 to 50.0
% Saturation O <sub>2</sub> Resolution	0.1
°C Range	0.0 to 750.0
°C Accuracy	±0.5
°C Resolution	0.1
mg/L O <sub>2</sub> Calibration	Automatic 1 or 2 points at 0% and 100% (in air)
°C calibration	Automatic 1 or 2 points at 0.0°C and 50.0°C
Altitude Compensation	0 to 1900 m (6230') with 100 m resolution
Salinity Compensation	0 to 40 g/L with 1 g/L resolution
Temp Compensation	Automatic from 0 to 50°C (32 to 122°F)
Probe	HI 76407/2 with 2 m (6.6') cable
Logging Interval	1, 15, 30 seconds or 1, 2, 5, 15, 30, 60, 120, 180 minutes
Computer Interface	RS232C (opto-isolated)
Power Supply	12VDC (CSA, UL & CE approved)
Environment	0 to 50°C (32 to 122°F); 95% RH
Dimensions	230 x 170 x 70 mm (9.1 x 6.7 x 2.7")
Weight	1 kg (2.2 lb.)

## ORDERING INFORMATION

HI 964400 is supplied with HI 76407/2 D.O. probe with 2 m (6.6') cable, 2 spare membranes, HI 7041S oxygen solution (30 mL), 12VDC adapter, dust cover & instruction manual.

## ACCESSORIES

HI 7040L . . . . .Zero oxygen solution, 500 mL  
 HI 76407/10 . . . . .D.O. probe w/10 m (33') cable  
 HI 76407/20 . . . . .D.O. probe w/20 m (67') cable  
 HI 76407A/P . . . . .Pack of 5 replacement membranes  
 HI 92000 . . . . .Windows® compatible software  
 HI 920010 . . . . .PC connection cable

# Printing & logging Dissolved Oxygen meters

**HI 9141** and **HI 91410** are portable, printing D.O. meters designed for continuous monitoring and recording at selectable time intervals. They are the ideal replacement for complicated and expensive equipment. The low-power printer uses regular paper that is easily sourced and will not fade over time.

**HI 91410** combines all of the comprehensive printing functions of the **HI 9141** with the capability to log measurements. In addition to supplying the user with instant printouts of D.O., **HI 91410** also provides datalogging facilities that will store up to 8000 readings. These measurements can be scrolled through at any time, printed or even transferred to a computer system for elaboration or permanent storage. An optional **HI 9200** infrared transmitter can be used to take the data from **HI 91410** and send it to a computer without any cords between them. Simply place the meter on the cradle, at the touch of a button, the recorded lots are transferred in seconds. This infrared connection is important in humid environments where a standard RS232 plug on a meter could become damaged. In addition to the automatic calibration feature, both meters automatically compensate for two very important parameters: altitude from 0 to 1900 meters (6230') and salinity from 0 to 40 g/L.



## SPECIFICATIONS

	HI 9141/HI 91410
<b>O<sub>2</sub> Range</b>	0.00 to 19.99 mg/L
<b>O<sub>2</sub> Accuracy (@20°C/68°F)</b>	±1.5 F.S.
<b>O<sub>2</sub> Resolution</b>	0.01 mg/L
<b>°C Range</b>	0.0 to 50.0
<b>°C Accuracy (@20°C/68°F)</b>	±0.5
<b>°C Resolution</b>	0.1
<b>O<sub>2</sub> Typical EMC Dev.</b>	±0.6 mg/L
<b>°C Typical EMC Dev.</b>	±3
<b>Calibration</b>	Automatic in air at 100%
<b>Temp Compensation</b>	Automatic from 0 to 30°C (32 to 86°F)
<b>Altitude Compensation</b>	0 to 1900 m (0 to 6230')/100 m resolution
<b>Salinity Compensation</b>	0 to 40 g/L; 1 g/L resolution
<b>Probe</b>	<b>HI 76407/4</b> polarographic D.O. probe with 4 m (13') cable (included)
<b>Printer</b>	Low-impact type belt, 14 characters per line using 38 mm plain paper ( <b>HI 710034</b> )
<b>Printing Intervals</b>	Selectable from 1, 2, 5, 10, 15, 30, 60, 120, and 180 minutes
<b>Logging Intervals (HI 91410)</b>	Selectable from 1, 2, 5, 10, 15, 30, 60, 120, and 180 minutes
<b>Computer Interface (HI 91410)</b>	<b>HI 9200</b> infrared transmitter through RS232 serial port
<b>Battery Type</b>	4 x 1.5V AA batteries; Power plug for 12VDC supply
<b>Battery Life</b>	Approx. 70 hours of continuous use with rapid printing interval. Auto-off after 4 hours.
<b>Environment</b>	0 to 50°C (32 to 122°F); 95% RH
<b>Dimensions</b>	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")
<b>Weight</b>	500 g (18 oz.)

## ORDERING INFORMATION

**HI 9141** and **HI 91410** are supplied with **HI 76407/4** D.O. probe with 4 m (13') cable, 2 spare membranes, **HI 7041S** electrolyte solution, 5 paper rolls, 4 x 1.5V AA batteries and instruction manual in a rugged carrying case.

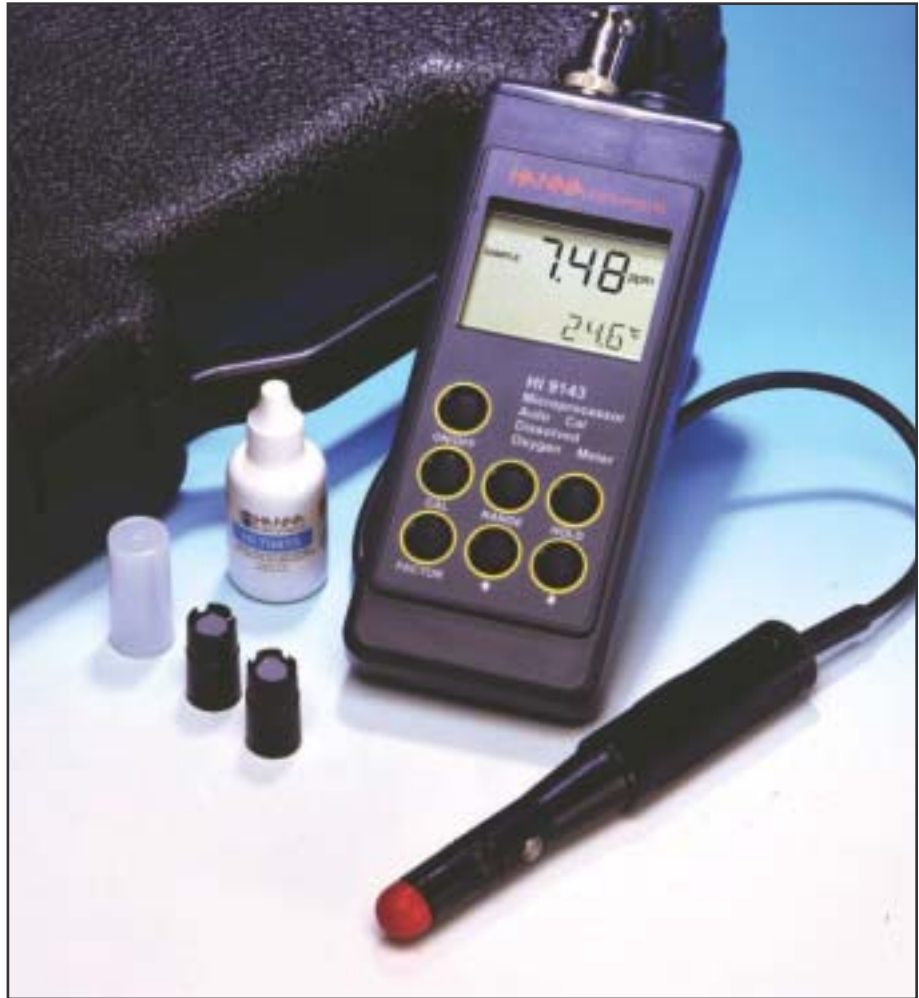

## ACCESSORIES

**HI 7041S** . . . . .Electrolyte solution, 30 mL  
**HI 76407/4** . . . . .D.O. probe w/4 m (13') cable  
**HI 76407/10** . . . . .D.O. probe w/10 m (33') cable  
**HI 76407/20** . . . . .D.O. probe w/20 m (67') cable  
**HI 76407A/P** . . . . .5 replacement membranes  
**HI 9200/9** . . . . .Infrared transmitter (9-pin)

**HI 92000** . . . . .Windows® compatible software  
**HI 920010** . . . . .Cable for PC (9-pin)  
**HI 710034** . . . . .Paper rolls (10 rolls)  
**HI 710035** . . . . .Ink cartridge (1 cartridge)  
**HI 721317** . . . . .Rugged carrying case

# Waterproof, extended range Dissolved Oxygen meter

Measurements in the field can subject instrumentation to harsh weather conditions. For this reason, **HI 9143** and **HI 9145** have been designed for reliable performance in outdoor applications. Simple on-site calibration requires no chemical solutions. Just expose the probe to air and press the CAL button. In a few minutes, the meter is calibrated and ready to use. Auto-calibration eliminates the need to use a screwdriver or other devices to adjust the reading. The new and improved **HI 9143** and **HI 9145** measure and display O<sub>2</sub> from 0 to 300%, 0 to 45 mg/L and temperature from 0 to 50 °C. In addition to the features of **HI 9145**, **HI 9143** also supplies the user with compensation of salinity and altitude factors. Both meters compensate for the temperature effect.

**Oxygen Electrolyte Solution**

It is crucial to the performance of the D.O. probe to keep the sensor active with regular maintenance. For this purpose, Hanna has developed **HI 7041S** electrolyte solution to refill the membrane cap.

**SPECIFICATIONS**

		<b>HI 9143</b>
<b>Range</b>	<b>Mg/L O<sub>2</sub></b>	0.00 to 45.00
	<b>% Saturation O<sub>2</sub></b>	0.0 to 300.0
	<b>°C</b>	0.0 to 50.0
<b>Accuracy</b>	<b>Mg/L O<sub>2</sub></b>	±1.5% F.S
	<b>% Saturation O<sub>2</sub></b>	±1.5% F.S
	<b>°C</b>	±0.5
<b>Resolution</b>	<b>Mg/L O<sub>2</sub></b>	0.01
	<b>% Saturation O<sub>2</sub></b>	0.1
	<b>°C</b>	0.1
<b>Typical EMC Dev.</b>	<b>Mg/L O<sub>2</sub></b>	±0.3
	<b>% Saturation O<sub>2</sub></b>	±3.5%
	<b>°C</b>	±0.5
<b>Calibration</b>		Automatic in air 100%
<b>Temperature Comp.</b>		Automatic from 0 to 50°C (32 to 122°F)
<b>Altitude Comp.</b>		0 to 1900 m (0 to 6230'), 100 m (328') resolution
<b>Salinity Comp.</b>		0 to 40 g/L, 1 g/L resolution
<b>Probe</b>		HI 76407/4 polarographic D.O. probe with 4 m (13') cable (incl.)
<b>Battery Type</b>		4 x 1.5V AA
<b>Battery Life</b>		Approximately 200 hours of continuous use, Auto-off after 4 hours. Power plug for 12VDC supply.
<b>Environment</b>		0 to 50°C (32 to 122°F); RH 100%
<b>Dimensions</b>		196 x 80 x 60 mm (7.7 x 3.1 x 2.4")
<b>Weight</b>		425 g (15 oz.)

**ORDERING INFORMATION**

**HI 9143** is supplied with HI 76407/4 D.O. probe with 4 m (13') cable, 2 spare membranes, HI 7041S electrolyte solution, 4 x 1.5V AA batteries & instruction manual in a rugged carrying case.

**ACCESSORIES**

- HI 7041S . . . . .Oxygen electrolyte solution, 30 mL
- HI 76407/4 . . . . .D.O. probe w/4 m (13') cable
- HI 76407/10 . . . . .D.O. probe w/10 m (33') cable
- HI 76407/20 . . . . .D.O. probe w/20 m (67') cable
- HI 76407A/P . . . . .5 replacement membranes
- HI 721317 . . . . .Rugged carrying case
- HI 710005 . . . . .110V to 12VDC adapter
- HI 710006 . . . . .220V to 12VDC adapter

# Waterproof and simple-to-use Dissolved Oxygen meter

## One-Point Calibration

The HI 9142 can be calibrated in saturated air without the need for chemical solutions.

## ATC Circuitry

The meters built-in Automatic Temperature Compensation circuitry will adjust all readings to provide the utmost accuracy.

## Rugged, Waterproof Casing

The rugged, waterproof casing makes the HI 9142 indispensable in the biological water treatment industry.

## Low Battery Indicator

The low battery indicator gives the user advanced notice to avoid taking erroneous readings due to low power.

HI 9142 is a rugged, waterproof meter that solves the common problems of field use. The ever increasing demand for instant results of on-site analysis has created a need for waterproof, portable meters. The cold, rain, snow and dust associated with use in the field, are not a problem for the HI 9142.

Calibration is performed with HI 7040 zero oxygen solution while calibration at 100% is done in air. There is no need to use chemical solutions or go through time consuming calibration procedures. The polarographic probe (HI 76407/4) will take measurements accurate to 0.3 ppm in minutes and is supplied with a 4 m (13') cable that allows measurements to be taken in even hard to reach places. For applications that require longer probe cables, the HI 76407/10 and HI 76407/20 probes with a 10 m (33') or 20 m (67') cable are available.



## Dissolved Oxygen Probe

The HI 76407 dissolved oxygen probe is extremely rugged making the meter and probe perfect for laboratory as well as field applications. Calibration is fast and simple and all D.O. measurements are temperature compensated. The pretensioned and ready-made Teflon® membrane can be changed in a few seconds without the need to stretch and cut the replacement. The HI 76407 is offered with several cable lengths to meet your specific needs.

## SPECIFICATIONS

	HI 9142
<b>Range</b>	0.0 to 19.9 mg/L
<b>Accuracy</b>	±1.5% F.S.
<b>Resolution</b>	0.1 mg/L
<b>Typical EMC Deviation</b>	±0.8 mg/L with HI 76407/4 probe
<b>Calibration</b>	Manual 1 or 2 points (zero & slope)
<b>Temperature Comp.</b>	Automatic from 0 to 30°C (32 to 86°F)
<b>Probe</b>	HI 76407/4 polarographic D.O. probe with 4 m (13') cable (included)
<b>Battery Type</b>	4 x 1.5V AA
<b>Battery Life</b>	Approximately 500 hours of continuous use
<b>Environment</b>	0 to 50°C (32 to 122°F); RH 100%
<b>Dimensions</b>	196 x 80 x 60 mm (7.7 x 3.1 x 2.4")
<b>Weight</b>	425 g (1.5 oz.)

## ORDERING INFORMATION

HI 9142 is supplied with HI 76407/4 D.O. probe with 4 m (13') cable, 2 spare membranes, HI 7041S electrolyte solution, 4 x 1.5V AA batteries & instruction manual in a rugged carrying case.

## ACCESSORIES

HI 7040L . . . . . Zero oxygen solution, 500 mL  
 HI 7041S . . . . . Oxygen electrolyte solution, 30 mL  
 HI 76407/4 . . . . . D.O. probe w/4 m (13') cable  
 HI 76407/10 . . . . . D.O. probe w/10 m (33') cable  
 HI 76407/20 . . . . . D.O. probe w/20 m (67') cable  
 HI 76407A/P . . . . . .5 replacement membranes  
 HI 721317 . . . . . Rugged carrying case

# Sophisticated, yet simple-to-use, bench turbidity meter



### Extended Range

Both models guarantee accurate measurements with low and high turbidity levels.

### Good Laboratory Practice

With the press of a button, the last calibration information is retrieved from memory and displayed to assure accurate measurements.

### Logging Capability

This powerful feature allows the user to store information from up to 500 samples including the time and date of each measurement (LP 2000-11 only).

**LP 2000** is the lab operators dream instrument! It measures turbidity from 0 to 50 FTU\* with 0.01 sensitivity and then reads all the way from 50 to 1000 FTU with a 1 FTU resolution. Calibration is automatic, quick and simple. Two calibration standards with fixed values of 0 and 10 FTU are automatically recognized by the microprocessor. The **LP 2000-11** can also be calibrated at 500 FTU.

The upgraded **LP 2000-11** can memorize up to 500 measurements. This means tests can be performed one after another and the results stored for retrieval at a later time. It also incorporates a real-time clock. **LP 2000-11** can be hooked up to a PC's serial port. Download the results with the optional Windows® compatible **HI 92000** software to get the most from the instrument.

## SPECIFICATIONS

	LP 2000	LP 2000-11
<b>Range</b>	0.00 to 50.00 FTU/50 to 1000 FTU*	
<b>Accuracy</b>	±0.5FTU or ±5% of reading (whichever is greater)	
<b>Resolution</b>	0.01/1 FTU*	
<b>Typical EMC Dev.</b>	±0.2 F.S.	
<b>Calibration</b>	2 points (0 FTU & 10 FTU)	3 points (0 FTU, 10 FTU & 500 FTU)
<b>Light Source</b>	High emission infrared LED	
<b>Light Life</b>	Life of the instrument	
<b>Light Detector</b>	Silicon Photocell	
<b>Logging Capabilities</b>	-	500 measurements
<b>Computer Interface</b>	-	RS232, w/optional <b>HI 92000</b> software
<b>Real Time Clock</b>	-	Yes
<b>Power Supply</b>	12VDC adapter (included)	
<b>Environment</b>	0 to 50°C (32 to 122°F); 95% RH	
<b>Dimensions</b>	230 x 170 x 70 mm (9.1 x 6.7 x 2.7")	
<b>Weight</b>	600 g (1.3 lb)	

\*1 FTU (Formazine Turbidity Unit) = 1 NTU (Nephelometric Turbidity Unit)

## ORDERING INFORMATION

**LP 2000** is supplied with measurement cuvet and cap, 12VDC adapter, HI 93703-0 and HI 93703-10 calibration solutions and instruction manual.

**LP 2000-11** is supplied with RS232, measurement cuvet and cap, 12VDC adapter, HI 93703-0, HI 93703-10, and HI 93703-05 calibration solutions & instruction manual.

## ACCESSORIES

<b>HI 731321</b> .....	Measurement cuvetts (4 pcs)
<b>HI 731318</b> .....	Tissue for wiping cuvetts (4 pcs)
<b>HI 93703-0</b> .....	AMCO-EPA-1 cal. sol. @ 0 FTU (30 mL)
<b>HI 93703-05</b> .....	AMCO-EPA-1 cal. sol. @ 500 FTU (30 mL) for LP 2000-11 only
<b>HI 93703-10</b> .....	AMCO-EPA-1 cal. sol. @ 10 FTU (30 mL)
<b>HI 93703-50</b> .....	Cleaning solution for cuvetts
<b>HI 92000</b> .....	Windows® compatible software
<b>HI 920010</b> .....	Cable for PC (9-pin)

# Portable turbidity meter with RS232 and log-on-demand

## Good Laboratory Practice

With the press of a button, the last calibration information is retrieved from memory and displayed to assure accurate measurements.

## Logging Capability

This powerful feature allows the storing of information from up to 200 samples including the time and date of each measurement (HI 93703-11 only).

- Auto shut-off
- Easy to use
- Computer capability (HI 93703 only)

The HI 93703 microprocessor-based turbidity meters provide lab-grade accuracy even in the field. With a few keys, the HI 93703 series measure turbidity from 0 to 1000 FTU (NTU)\*. For best field accuracy, HI 93703 measures from 0 to 50 FTU in steps of 1/100th of FTU. This is 10 times better than comparable models on the market that measure 10 to 50 FTU only in decimal points! This meter also meets strict ISO 7027 requirements.

In addition to the outstanding features listed above, the upgraded HI 93703-11 can store up to 200 measurements at any time. These can be later recalled on the LCD or downloaded to a PC.

HI 93703-11 has a real-time clock and can be also calibrated at 500 FTU. Use the optional Windows® compatible HI 92000 software to get the most from your instrumentation.



## SPECIFICATIONS

	HI 93703	HI 93703-11
<b>Range</b>	0.00 to 50.00 FTU/50 to 1000 FTU*	
<b>Accuracy</b>	±0.5FTU or ±5% of reading (whichever is greater)	
<b>Resolution</b>	0.01/1 FTU	
<b>Typical EMC Dev.</b>	±0.2 F.S.	
<b>Calibration</b>	2 points (0 FTU & 10 FTU)	3 (0 FTU, 10 FTU & 500 FTU)
<b>Light Source</b>	High emission infrared LED	
<b>Light Life</b>	Life of the instrument	
<b>Light Detector</b>	Silicon Photocell	
<b>Logging Capabilities</b>	-	200 measurements
<b>Computer Interface</b>	-	RS232, w/optional HI 92000 software
<b>Real Time Clock</b>	-	Yes
<b>Battery Type</b>	4 x 1.5V AA batteries	
<b>Battery Life</b>	60 hours of continuous use or 900 measurements. Auto-off after 5 min.	
<b>Environment</b>	0 to 50°C (32 to 122°F); 95% RH	
<b>Dimensions</b>	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")	
<b>Weight</b>	510 g (18 oz.)	

\*1 FTU (Formazine Turbidity Unit) = 1 NTU (Nephelometric Turbidity Unit)

## ORDERING INFORMATION

HI 93703 is supplied with measurement cuvet and cap, 4 x 1.5V AA batteries and instruction manual.

HI 93703-11 is supplied with RS232, measurement cuvet and cap, 4 x 1.5V AA batteries and instruction manual in a hard carrying case.

HI 93703C is comprised of HI 93703 complete with HI 731313 maintenance kit.

## ACCESSORIES

- HI 731321 ..... Measurement cuvetts (4 pcs)
- HI 731318 ..... Tissue for wiping cuvetts (4 pcs)
- HI 731313 ..... Rugged carrying case with calibrated solutions HI 93703-0 and HI 93703-10, HI 93703-50 cleaning solution, HI 731318 tissue for wiping cuvetts and 2 measurement cuvetts
- HI 93703-0 ..... AMCO-EPA-1 cal. sol. @ 0 FTU (30 mL)
- HI 93703-05 ..... AMCO-EPA-1 cal. sol. @ 500 FTU (30 mL) for HI 93703-11 only
- HI 93703-10 ..... AMCO-EPA-1 cal. sol. @ 10 FTU (30 mL)
- HI 93703-50 ..... Cleaning solution for cuvetts
- HI 92000 ..... Windows® compatible software
- HI 920010 ..... Cable for PC (9-pin)

# A complete laboratory with the C 200 multiparameter colorimeter!

## Measure up to 36 parameters with the C 200 series.

- The C 200 series of bench meters can also run with batteries (2 x 9V) for more than 2000 readings - useful for those areas where power outlets are not readily available.
- With a built-in RS232 interface, all the data can be downloaded to a PC
- The Hanna series of bench meters literally run forever on 12-20 VDC to satisfy UL and CSA requirements.
- Simply press "Read Direct" and the measurement is shown in seconds.



The C 200 is one of the most versatile colorimeters on the market. Just one meter measures up to 36 of the most important water quality parameters.

C 200, like other instruments in this series, runs for hours on common inexpensive 9V batteries. In addition, it can operate continuously with input voltage of 12-20VDC. C 200 is also extremely simple to use. The front mask lists all the parameters in a numerical order. The display shows the same numbers for a quick reference during testing.

The meter can be zeroed in seconds and the reagents cost much less than one might expect to pay. All this and much more at a fraction of the cost of expensive and complex spectrophotometers!

A built-in RS232 port ensures that data can be downloaded to the PC for further elaboration. Use the optional Hanna HI 92000 Windows® compatible software program to get the most out of the meter.

**SPECIFICATIONS**

Test	Range	Method	Reagent Code
Aluminum	0.00 to 1.00 mg/L	Aluminon	HI 93712-01
Ammonia MR	0.00 to 9.99 mg/L	Nessler	HI 93715-01
Ammonia LR	0.00 to 3.00 mg/L	Nessler	HI 93700-01
Bromine	0.00 to 8.00 mg/L	DPD	HI 93716-01
Free Chlorine *	0.00 to 2.50 mg/L	DPD	HI 93701-01
Total Chlorine *	0.00 to 3.50 mg/L	DPD	HI 93711-01
Chlorine Dioxide	0.00 to 2.00 mg/L	Chlorophenol Red	HI 93738-01
Chromium VI HR	0 to 1000 µg/L	Diphenylcarbohydrazide	HI 93723-01
Chromium VI LR	0 to 300 µg/L	Diphenylcarbohydrazide	HI 93749-01
Color	0 to 500 PCU	Chloroplatinate	—
Copper HR	0.00 to 5.00 mg/L	Bicinchoninate	HI 93702-01
Copper LR	0 to 990 µg/L	Bicinchoninate	HI 93747-01
Cyanide	0.000 to 0.200 mg/L	Pyridine-Pyrazalone	HI 93714-01
Cyanuric Acid	0 to 80 mg/L	Turbidimetric	HI 93722-01
Fluoride	0.00 to 2.00 mg/L	SPADNS	HI 93729-01
Ca Hardness	0.00 to 2.70 mg/L	Calmagite	HI 93720-01
Mg Hardness	0.00 to 2.00 mg/L	EDTA	HI 93719-01
Hydrazine	0 to 400 µg/L	p-Dimethylaminobenzaldehyde	HI 93704-01
Iodine	0.0 to 12.5 mg/L	DPD	HI 93718-01
Iron HR	0.00 to 5.00 mg/L	Phenantroline	HI 93721-01
Iron LR	0 to 400 µg/L	TPTZ	HI 93746-01
Manganese HR	0.0 to 20.0 mg/L	Periodate Oxidation	HI 93709-01
Manganese LR	0 to 300 µg/L	PAN	HI 93748-01
Molybdenum	0.0 to 40.0 mg/L	Mercaptoacetic Acid	HI 93730-01
Nickel HR	0.00 to 7.00 g/L	Photometric	HI 93726-01
Nitrate	0.0 to 30.0 mg/L	Cadmium Reduction	HI 93728-01
Nitrite HR	0 to 150 mg/L	Ferrous Sulfate	HI 93708-01
Nitrite LR	0.00 to 0.35 mg/L	Diazotization	HI 93707-01
Dissolved Oxygen	0.0 to 10.0 mg/L	Winkler	HI 93732-01
pH	6.5 to 8.5 pH	Phenol Red	HI 93710-01
Phosphate HR	0.0 to 30.0 mg/L	Amino Acid	HI 93717-01
Phosphate LR	0.00 to 2.50 mg/L	Ascorbic Acid	HI 93713-01
Phosphorus	0.0 to 15.0 mg/L	Amino Acid	HI 93706-01
Silica	0.00 to 2.00 mg/L	Heteropoly blue	HI 93705-01
Silver	0.000 to 1.000 mg/L	PAN	HI 93737-01
Zinc	0.00 to 3.00 mg/L	Zincon	HI 93731-01

\* For chlorine measurements, liquid reagents are also available.

**ORDERING INFORMATION**

C 200 is supplied with 3 cuvetts, caps, 2 x 9V batteries, 12 VDC power adapter and instruction manual.

**ACCESSORIES**

HI 731321 . . . . . Measurement cuvetts (4 pcs)  
 HI 731318 . . . . . Tissue for wiping cuvetts (4 pcs)  
 HI 93703-50 . . . . . Cleaning solution for cuvetts

# Multiparameter colorimeters

<b>Description</b>	<b>Code</b>
Calcium and Magnesium, High range	<b>HI 93752</b>
Chlorine and pH	<b>HI 93710</b>
Cyanuric Acid and pH	<b>HI 93724</b>
Total Hardness and pH	<b>HI 93725</b>
Total Hardness and Iron	<b>HI 93741</b>
Iron and Manganese	<b>HI 93742</b>
Iron and pH	<b>HI 93743</b>
Iron, Total Hardness and pH	<b>HI 93744</b>
Free and Total Chlorine, Cyanuric Acid and pH	<b>C 104</b>
Free and Total Chlorine, Total Hardness, Iron and pH	<b>HI 93745</b>
Bromine, Free and Total Chlorine, Iron, Iodine, Cyanuric Acid and pH	<b>C 101</b>
Ammonia, Free and Total Chlorine, Copper, Nitrate, Nitrite, Dissolved Oxygen, pH and Phosphate	<b>C 203</b>
Aluminum, Ammonia, Bromine, Free and Total Chlorine, Chlorine Dioxide, Chromium VI, Copper, Hydrazine, Iron, Molybdenum, Nitrate, Nitrite, Dissolved Oxygen, pH, Phosphate, Silica and Zinc	<b>C 205</b>
Aluminum, Ammonia, Chromium VI, Copper, Cyanuric Acid, Iodine, Iron, Molybdenum, Nickel, pH, Phosphate, Phosphorus, Silica, Silver and Zinc	<b>C 211</b>
Ammonia, Free and Total Chlorine, Chromium VI, Color, Copper, Nitrate, Nitrite, Dissolved Oxygen, pH, Phosphate, Phosphorus, Silica, Silver and Zinc	<b>C 209</b>
Ammonia, Free and Total Chlorine, Chromium VI, Color, Copper, Cyanuric Acid, Molybdenum, Nickel, Nitrate, Nitrite, Dissolved Oxygen, pH, Phosphate, Phosphorus, Silica, Silver and Zinc	<b>C 206</b>
Aluminum, Free and Total Chlorine, Color, Copper, Fluoride, Manganese, Molybdenum, Nickel, Nitrate, Dissolved Oxygen, pH, Phosphate, Phosphorus, Silver and Zinc	<b>C 207</b>
Aluminum, Ammonia, Bromine, Free and Total Chlorine, Chromium VI, Color, Copper, Iodine, Nickel, Nitrate, Nitrite, Dissolved Oxygen, pH, Phosphate, Phosphorus, Silver and Zinc	<b>C 213</b>
Ammonia, Free and Total Chlorine, Copper, Hydrazine, Molybdenum, Phosphate Phosphorus, Silica and Silver	<b>C 212</b>
Aluminum, Free and Total Chlorine, Chlorine Dioxide, Color, Dissolved Oxygen, pH, Phosphate, Silica, Silver and Zinc	<b>C 210</b>
Ammonia, Free and Total Chlorine, Chromium VI, Fluoride, Iron, Manganese, Molybdenum, Nickel, Nitrate, Dissolved Oxygen, pH, Phosphate, Phosphorus, Silica, Silver and Zinc	<b>C 208</b>
Ammonia, Nitrate, Phosphorus and Potassium	<b>C 215</b>
Bromine, Free and Total Chlorine, Cyanuric Acid, Total Hardness and pH	<b>C 216</b>
Ammonia, Chromium VI, Cyanide, Nitrate, Nitrite and Phosphorus	<b>C 218</b>
Aluminum, Ammonia, Bromine, Free and Total Chlorine, Chlorine Dioxide, Chromium VI, Color, Copper, Cyanide, Cyanuric Acid, Fluoride, Hardness Ca, Hardness Mg, Hydrazine, Iodine, Iron, Manganese, Molybdenum, Nickel, Nitrate, Nitrite, Dissolved Oxygen, pH, Phosphate, Phosphorus, Silica, Silver and Zinc	<b>C 200</b>

# Reagents

Test	Reagent Kit Part No.	No. of Tests	Test	Reagent Kit Part No.	No. of Tests
Aluminum	HI 93712-01	100	Hydrazine	HI 93704-01	100
	HI 93712-03	300		HI 93704-03	300
Ammonia, high range	HI 93733-01	100	Iodine	HI 93718-01	100
	HI 93733-03	300		HI 93718-03	300
Ammonia, medium range	HI 93715-01	100	Iron, high range	HI 93721-01	100
	HI 93715-03	300		HI 93721-03	300
Ammonia, low range	HI 93700-01	100	Iron, low range	HI 93746-01	50
	HI 93700-03	300		HI 93746-03	150
Bromine	HI 93716-01	100	Manganese, high range	HI 93709-01	100
	HI 93716-03	300		HI 93709-03	300
Ca and Mg, high range	HI 93752-01	100	Manganese, low range	HI 93748-01	50
Chloride	HI 93753-01	100		HI 93748-03	150
	HI 93753-03	300	Molybdenum	HI 93730-01	100
Chlorine, Free & Total, high range	HI 93734-01**	100		HI 93730-03	300
	HI 93734-03**	300	Nickel, high range	HI 93726-01	100
Chlorine, Free, low range	HI 93701-01*	100		HI 93726-03	300
	HI 93701-03*	300	Nickel, low range	HI 93740-01	50
	HI 93701-F**	300		HI 93740-03	150
Chlorine, Total, low range	HI 93711-01*	100	Nitrate	HI 93728-01	100
	HI 93711-03*	300		HI 93728-03	300
	HI 93701-T**	300	Nitrite, high range	HI 93708-01	100
	HI 93711-D3	600		HI 93708-03	300
Chlorine Dioxide	HI 93738-01	100	Nitrite, low range	HI 93707-01	100
	HI 93738-03	300		HI 93707-03	300
Chromium VI, high range	HI 93723-01	100	Oxygen, dissolved	HI 93732-01	100
	HI 93723-03	300		HI 93732-03	300
Chromium VI, low range	HI 93749-01	100	pH	HI 93710-01	100
	HI 93749-03	300		HI 93710-03	300
Copper, high range	HI 93702-01	100	Phosphate, high range	HI 93717-01	100
	HI 93702-03	300		HI 93717-03	300
Copper, low range	HI 93747-01	100	Phosphate, low range	HI 93713-01	100
	HI 93747-03	300		HI 93713-03	300
Cyanide	HI 93714-01	100	Phosphorus	HI 93706-01	100
	HI 93714-03	300		HI 93706-03	300
Cyanuric Acid	HI 93722-01	100	Potassium	HI 93750-01	100
	HI 93722-03	300	Silica	HI 93705-01	100
Fluoride, low range	HI 93729-01	100		HI 93705-03	300
	HI 93729-03	300	Silver	HI 93737-01	50
Fluoride, high range	HI 93739-01	100		HI 93737-03	150
Hardness, Calcium	HI 93720-01	100	Sulfate	HI 93751-01	100
	HI 93720-03	300	Zinc	HI 93731-01	100
Hardness, Magnesium and Total	HI 93719-01	100		HI 93731-03	300
	HI 93719-03	300			
Hardness, Total, LR, medium range, high range & full range	HI 93735-00	100			
	HI 93735-01	100			
	HI 93735-02	100			
	HI 93735-0	100			

\* Powder reagents

\*\* Liquid reagents

# Lab grade accuracy in portable, lightweight single parameter colorimeters

## Lightweight & Portable

Weighing less than 300 grams or 11 ounces, these portable meters are ideal for spot-checks at landfills, streambeds, water sources or inside the lab!

## Long Battery Life

These meters have a battery life lasting a minimum of 300 tests and an auto shut-off feature, guaranteeing long periods of trouble-free operation. No surprises with these meters! The display will give a low battery warning and a few extra measurements before new batteries are necessary.

## Quick & Simple-to-Use

Just zero your sample, dissolve a readily soluble powder or add a few drops of a reagent in the cuvet and take a reading.

## Tests Made Inexpensive

Each Hanna meter comes supplied complete with cuvetts. A wide selection of inexpensive reagents for 100 or 300 tests further reduces the cost-per-test. The meters will in fact cost less than the several test kits needed to cover the same range!



Hanna colorimeters are dedicated to a specific ion and unlike conventional spectrophotometers and Ion Selective Electrodes, are fast and simple to use. There aren't any problems associated with Ion Selective Electrodes such as preparation time, expensive additives, temperature compensation or slow response time! Hanna

Colorimeters use a state-of-the-art custom microprocessor with a diode photocell to detect a single parameter. The readings are shown in large digits on a clear LCD. No need to worry about matching up colors or guessing where one color zone starts and the other finishes as with chemical test kits or test strips.

# Single parameter colorimeters

## SPECIFICATIONS

Description	Code	Range	Increment	Method
Aluminum	HI 93712	0.00 to 1.00 mg/L	0.01 mg/L	Aluminon
Ammonia, High Range	HI 93733	0.0 to 50.0 mg/L	0.1 mg/L	Nessler
Ammonia, Medium Range	HI 93715	0.00 to 9.99 mg/L	0.01 mg/L	Nessler
Ammonia, Low Range	HI 93700	0.00 to 3.00 mg/L	0.01 mg/L	Nessler
Bromine	HI 93716	0.00 to 8.00 mg/L	0.01 mg/L	DPD
Chloride	HI 93753	0.0 to 20.0 mg/L	0.01 mg/L	Mercury (II) thiocyanate
Chlorine, Free	HI 93701	0.00 to 2.50 mg/L	0.01 mg/L	DPD
Chlorine, Free and Total	HI 93734	0.0 to 10.0 mg/L	0.1 mg/L	DPD
Chlorine, Free and Total	HI 93711	0.00 to 2.50(f)/3.50(t)mg/L	0.01 mg/L	DPD
Chlorine Dioxide	HI 93738	0.00 to 2.00 mg/L	0.01 mg/L	Chlorophenol Red
Chromium VI, High Range	HI 93723	0 to 1000 µg/L	1 µg/L	Diphenylcarbohydrazide
Chromium VI, Low Range	HI 93749	0 to 300 µg/L	1 µg/L	Diphenylcarbohydrazide
Color	HI 93727	0 to 500 PCU	10 PCU	Chloroplatinate
Copper, High Range	HI 93702	0.00 to 5.00 mg/L	0.01 mg/L	Bicinchoninate
Copper, Low Range	HI 93747	0 to 990 µg/L	1 µg/L	Bicinchoninate
Cyanide	HI 93714	0.000 to 0.200 mg/L	0.001 mg/L	Pyridine-Pyrazalone
Cyanuric Acid	HI 93722	0 to 80 mg/L	1 mg/L	Turbidimetric
Fluoride, High Range	HI 93739	0.0 to 20.0 mg/L	0.1 mg/L	SPADNS
Fluoride, Low Range	HI 93729	0.00 to 2.00 mg/L	0.01 mg/L	SPADNS
Hardness, Ca	HI 93720	0.00 to 2.70 mg/L	0.01 mg/L	Calmagite
Hardness, Mg	HI 93719	0.00 to 2.00 mg/L	0.01 mg/L	Colorimetric
Hardness, Total	HI 93735	0 to 750 mg/L	1 / 5 mg/L	EPA 130.1
Hydrazine	HI 93704	0 to 400 µg/L	1 µg/L	p-Dimethylaminobenzaldehyde
Iodine	HI 93718	0.0 to 12.5 mg/L	0.1 mg/L	DPD
Iron, High Range	HI 93721	0.00 to 5.00 mg/L	0.01 mg/L	Phenantroline
Iron, Low Range	HI 93746	0 to 400 µg/L	1 µg/L	TPTZ
Manganese, High Range	HI 93709	0.0 to 20.0 mg/L	0.1 mg/L	Periodate Oxidation
Manganese, Low Range	HI 93748	0 to 300 µg/L	1 µg/L	PAN
Molybdenum	HI 93730	0.0 to 40.0 mg/L	0.1 mg/L	Mercaptoacetic Acid
Nickel HR	HI 93726	0.00 to 7.00 g/L	0.01 g/L	Photometric
Nickel LR	HI 93740	0.000 to 1.000 mg/L	0.001 mg/L	PAN
Nitrate	HI 93728	0.0 to 30.0 mg/L	0.1 mg/L	Cadmium Reduction
Nitrite, High Range	HI 93708	0 to 150 mg/L	1 mg/L	Ferrous Sulfate
Nitrite, Low Range	HI 93707	0.00 to 0.35 mg/L	0.01 mg/L	Diazotation
Oxygen, Dissolved	HI 93732N	0.0 to 10.0 mg/L	0.1 mg/L	Modified Winkler
Phosphate, High Range	HI 93717	0.0 to 30.0 mg/L	0.1 mg/L	Amino Acid
Phosphate, Low Range	HI 93713	0.00 to 2.50 mg/L	0.01 mg/L	Ascorbic Acid
Phosphorus	HI 93706	0.0 to 15.0 mg/L	0.1 mg/L	Amino Acid
Potassium	HI 93750	0.00 to 50.0 mg/L	0.05/0.1 mg/L	Turbidimetric
Silica	HI 93705	0.00 to 2.00 mg/L	0.01 mg/L	Heteropoly Blue
Silver	HI 93737	0.000 to 1.000 mg/L	0.001 mg/L	PAN
Sulfate	HI 93751	0 to 150 mg/L	1 mg/L	Turbidimetric
Zinc	HI 93731	0.00 to 3.00 mg/L	0.01 mg/L	Zincon

## ORDERING INFORMATION

HI 731321 . . . . .Measurement cuvetts (4 pcs)  
 HI 731318 . . . . .Tissue for wiping cuvetts (4 pcs)  
 HI 93703-50 . . . . .Cleaning solution for cuvetts

# Accessories

## Blades for special pH applications

Stainless steel blades are to be used in conjunction with the **FC 230** and **FC 231D** pH electrodes for hard-to-penetrate samples such as meat.

- FC 098** Stainless steel blade, 20 mm (0.8") long
- FC 099** Stainless steel blade, 35 mm (1.4") long



## Electrode holders

These stable and rugged cantilever electrode holders can hold up to 2 electrodes and a temperature probe.

- HI 76404** Electrode holder for pH 210-213 & EC 215 bench meters
- HI 76405** Electrode holder with enamel coated base



## Connection cable to PC

Serial connection cables for Hanna equipment are available for both bench and portable meters.

- HI 920010** 9 to 9-pin connection cable for bench meters
- HI 920011** 5 to 9-pin connection cable for portable meters



## Infrared Transmitter

Simply place the portable meter on the cradle and data will be transferred to your PC. **HI 9200** is supplied with a one-meter cable and is available with a 9 or a 25-pin RS232 connector.

- HI 9200/25** 25-pin infrared transmitter
- HI 9200/9** 9-pin infrared transmitter



## Windows® Compatible Software

The Hanna Windows® based **HI 92000** software can help import the data in a host of common programs to save time and money.

- HI 92000** Windows® compatible software



## 12 VDC power adapter

For all bench and portable meters that operate with 12 VDC power supply.

- HI 710005** 115VAC to 12VDC with US plug
- HI 710006** 230VAC to 12VDC with EU plug
- HI 710012** 230VAC to 12VDC with UK plug
- HI 710013** 230VAC to 12VDC with SA plug
- HI 710014** 230VAC to 12VDC with AU plug



# Accessories

## Accessories for printing meters

Choose from a pack of 10 plain paper rolls, as well as replacement ink cartridge for printing bench and portable meters.

- HI 710032 10 paper rolls for bench meters  
 HI 710034 10 paper rolls for portable meters  
 HI 710033 Ink cartridge for bench meters  
 HI 710035 Ink cartridge for portable meters



## Hard carrying case

Hard carrying case made for waterproof and printing meters. The specially-designed case protects the instrument and keeps the accessories in order, particularly when out on site visits.

- HI 721317 Hard carrying case



## 4-ring potentiometric EC probes

The 4-ring potentiometric technology to measure EC with portable meters was pioneered by Hanna in 1980. This method still offers the most linear measurement over an extensive range. Hanna probes also contain a temperature sensor for ATC.

- HI 76302W Stainless steel probe with PVC sleeve (for HI 9033)  
 HI 76309 Stainless steel probe with PVC body (for HI 9835)  
 HI 76303 Glass body platinum probe (for EC 215)



## Electrode cables

Hanna pH meters are normally supplied with an electrode ending in a BNC connector with 1 meter of cable. The pH meters can also be used with stick electrodes ending in a screw-type connector together with a connecting lead.

- HI 7855/1 Screw to BNC with 1 m cable  
 HI 7855/3 Screw to BNC with 3 m cable



## Soft carrying case

Soft carrying cases protect instruments from the elements.

- HI 710001 Soft carrying case measuring 9.1" x 5.1" x 2"  
 HI 710002 Soft carrying case measuring 11" x 4.7" x 2" for portable thermistor thermometers  
 HI 710003 Soft carrying case measuring 9.1" x 3.9" x 2" for HI 9214 pH stick meter or any pocket meters such as the piccolo  
 HI 710004 Soft carrying case measuring 5.9" x 3.5" x 1.2"



## Protective rubber boots

These rubber boots are specially made to prolong the life of the instrument and prevent damage due to accidental falls or shocks. These boots fit all meters with HI 93510 and HI 93501 casing.

- HI 710007 Blue shockproof rubber boot  
 HI 710008 Orange shockproof rubber boot

Rugged boots for all portable meters with HI 8424 and ion specific meter casings.

- HI 710009 Blue rubber boot  
 HI 710010 Orange rubber boot



# Hanna has got you covered.

## LIMITED WARRANTY

Hanna Instruments products are manufactured in our ISO 9001 facilities, meeting the highest quality standards in the industry. Hanna's high standards also apply should a product be returned due to defects in material or workmanship. Our extensive warranty extends up to three years on some products.

**Limitations: Warranted products may be returned for repair or replacement only at the discretion of Hanna Instruments. In some circumstances, remedy may constitute refund for the price paid for the product.**

The warranty period commences from the original date of sale to the user or a maximum of 18 months from factory ship date. Warranty is valid only when the product is used under normal conditions and in accordance with operating limitations and prescribed maintenance procedures. The express warranty stated previously is the only express warranty given by Hanna to the end-user buyer. Hanna expressly disclaims any warranties implied by law, including but not limited to warranty of merchantability of fitness for a particular purpose. Hanna shall not be liable for any individual or consequential damages of any kind for breach of any warranty, negligence, on the basis of strict liability or otherwise. Hanna's warranty periods are:

3 years	pH 300 Bench Top Meters
2 years	Portable Meters
2 years	Bench Meters
2 years	Printing Meters
2 years	Stirrers & Industrial Meters
1 year	Dosing Pumps
1 year	Waterproof Testers
6 months	Testers & Pocket-size Thermometers
6 months	Electrodes & Probes

### Instrument Service:

Warranty and non-warranty service, replacement, recalibration and repairs are performed by factory trained service technicians at Hanna's Woonsocket, RI Technical Service Center. All items must have a **Return Goods Authorization (RGA) number** that can be obtained by contacting the Hanna Technical Service Department. The RGA number should be clearly marked on the outside of the box and the unit shipped prepaid and insured. Any product not bearing an RGA number will be refused. All products returned for warranty repair or replacement **MUST** be preceded or accompanied with proof of purchase, such as the original invoice or packing slip. Under special circumstances it may be deemed necessary by Hanna Instruments to issue a Return In Advance (RIA). In such cases, the defective materials must be returned to Hanna within 30 days. Materials not returned within 30 days become chargeable. Materials must be packed properly to avoid damage during transport, which would render the warranty null and void. The sender is responsible for expediting any damage claims placed against the carrier.

A flat minimum service charge of \$60.00 (per hour) applies to non-warranty repairs or recalibration. Any materials returned for repair which are considered non-warranty may be serviced at the previously stated hourly cost (excluding parts) following subsequent notification and approval of such.

### Product Return and Exchange

#### Returning Merchandise:

Should an instance occur when a product may need to be returned for exchange or credit, or should a discrepancy occur in a packing slip, Hanna Instruments must be contacted to obtain a **Return Goods Authorization Number (RGA)**. Please follow these steps:

1. Within 30 days of receipt of merchandise call Hanna's Technical Service Department to obtain a **Return Goods Authorization Number**.
2. Hanna will issue a **Return Goods Authorization Number**.
3. The number must be clearly marked on the outside of the package being returned. Shipments not bearing a **Return Goods Authorization Number** will be refused.
4. Credit returns may be subject to a 25% restocking fee.

### Terms and Conditions

Return shipments must meet the following requirements to be accepted for credit:

1. Products must be returned in the original packaging with labeling not defaced. All items returned will be inspected for credit worthiness. Credit will only be issued for product returned in like-new condition. No credit will be issued for product, which is not received in like-new condition.
2. All freight charges are the responsibility of the customer.
3. All chemicals and reagents being returned must be packaged in accordance with U.S. Department of Transportation regulation. Only unopened chemicals and reagents may be returned.

# Contact a Hanna from anywhere across the globe.

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## Sydney Branch

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E-mail: hannasydney@hannainst.com.au

## Belgium

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## Canada

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## Chile

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## Korea

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