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Testers and Monitors

Introduction

In the past, the measurement and monitoring of many important parameters was limited to the laboratory. Now, these parameters are being tested right in the field in various applications, including environmental study, agriculture, the food industry, horticulture, wastewater management, fish farming, water quality maintenance and anywhere quality and accuracy is important. HANNA has developed a large variety of testers and monitors designed to fulfill the requirements of virtually any application.

HANNA offers a vast selection of single and multiparameter testers which cover a multitude of the most important parameters: pH, ORP, conductivity, TDS, temperature, sodium, salt and relative humidity.

Testers can perform on the spot measurement quickly, accurately and inexpensively. They allow users with different backgrounds and technical training to make readings without the need of a laboratory, and without having to purchase much more expensive and complicated analytical equipment.

HANNA provides high accuracy in a single parameter tester for pH, TDS, conductivity, temperature and more. Multiparameter testers are also available, eliminating the hassle of carrying multiple testers.

These testers have easy to read LCD's and durable outer casings. They are able to measure in places with a high percentage of humidity, and low power demand allows a long battery life—no worrying about frequent battery replacement.

pH Testers

All HANNA pH testers come with a replaceable pH probe, a huge advantage over most pH testers on the market today. Clogged electrode junctions are a problem of the past with extendable cloth junctions. When the cloth is dirty from routine testing, readings become slow and instable. This is quickly fixed by simply pulling out 3 mm of cloth, and cutting off the dirty cloth.

Testers feature Automatic Temperature Compensation (ATC) and calibration at one or two points. Being pocket sized, with a narrow tip, they are ideal for measurements in small samples or test tubes.

Conductivity Testers

Conductivity testers are widely used for monitoring EC/TDS in water conditioning, reverse osmosis, cooling towers, drinking water, wastewater, laboratories, agriculture, aquaculture and aquariums, hydroponics and printing industry.

With EC/TDS selectable or fixed conversion factors, readings are made easy. HANNA conductivity testers feature an amperometric graphite conductivity probe that provides greater accuracy and repeatability in measurements because it cannot be contaminated by salt deposits in solutions. Calibration of conductivity testers is simple and it can be manually or automatically in a single point.

Measurements are automatically temperature compensated to ensure correct readings.



Salt and Water Purity Testers

The Salintest can help you monitor the concentration of sodium chloride in live fish storage tanks, tropical fish aquariums and oceanographic investigations. Measurements are performed conductivimetrically, with one point check in a standard salt solution.

Water purity testers enable users to check the purity of your distilled or demineralized water in environments such as printed circuit board washing, laundry, steam cleaning, and all areas where pure water is used. Measurement is conductivimetric.

RH Measuring Tester

Relative humidity testers from HANNA use the thin film polymer capacitance sensing method, assuring a quick and accurate reading. Readings are converted directly in RH units, meaning there is no need for estimating, charts, thermometers and no complicated calculations.

Thermometers

HANNA's thermometers are provided with a unique CAL CHECK™ function for accurate measurements every time. HANNA temperature tester sensors allow users to take measurements with extremely high accuracy in a very short amount of time. The sharp tip of the probes can easily penetrate semisolid products, making routine controls simple and quick. These testers are ideal meters for measuring temperature according to HACCP requirements.



HANNA Monitors

HANNA monitors and indicators are an ideal economical solution in applications where constant monitoring of a stationary sample is required. HANNA offers a large selection of wall-mountable monitors that cover a multitude of parameters allowing the user to choose the meter and probe that best fits their application. The multiparameter models allow the user to monitor up to three different parameters with one indicator.

Each monitor has been designed to meet specific application requirements such as in hydroponics, greenhouses, horticultural, water treatment, food preparation and processing.

At startup, indicators perform a self check to assure proper working condition. Stability indicators and HOLD functions let the user know when to take readings and freeze the readings on display for easy and accurate recording. Selected instruments in this line provide a visual alarm so the user can easily recognize if the monitored solution is out of specification for the application.

HANNA offers indicators with large backlit LCDs to give users instantaneous readings of both pH and temperature or EC and temperature with utmost clarity. Monitors are provided with automatic calibration, automatic buffer selection and automatic temperature compensation features.

HANNA's wall mounted indicators are very easy to install and work with a 12 V power supply. Many models feature interchangeable probes, so that if an application requires a particular probe it can be plugged in to the meter. All monitors have durable outer casings protecting them from high humidity environments and rain.

pH Monitors

Ideal for growers, pH monitors are supplied with advanced, non-clogging double junction pH electrodes that will withstand the most aggressive environments. Measurements are highly accurate and can be verified with manual or automatic calibration, which can be performed in one or two points.

Should the pH exceed a user selected limit, an incorporated LED will alert the user with a flashing light. This feature allows even inexperienced users to successfully monitor parameters. The LED alarm, and pH value can be set through trimmers on the instrument.

Conductivity Monitors

Conductivity indicators with different measurement ranges are available with a host of features suited for aggressive environments.

Calibration and temperature compensation can be automatic or manual, while the EC/TDS conversion factor and temperature coefficient factor (β) are user adjustable. If desired, the most common TDS constant conversion factor of 0.7 (4-4-2) can be used depending on application specific measurements. Temperature can be easily switched between Celsius and Fahrenheit. Both the direct two pin probes or graphite probes assure great accuracy and little maintenance.

ORP Monitors



HANNA has developed oxidation reduction monitors especially for swimming pool and spa facilities where specific monitoring is needed. Casings incorporate a large, bright led indicator that will flash if measurements fall below the user selected value, enhancing the control and maintenance of water.

Temperature Monitors

Few manufacturers have given any thought to providing users with a convenient way of monitoring temperature conditions in catering, refrigerators and other places that need quick monitoring. HANNA's precision thermometers can be mounted right over the samples to be measured or in refrigerators.

Temperature monitors come with HANNA's exclusive CAL CHECK™ feature. With CAL CHECK™, users can ensure the accuracy of the meter without the need for external equipment.

Food grade stainless steel probes and quick response times assure the safety and preservation of the goods monitored.

Product Spotlights

HI 98129 • HI 98130

pH/Conductivity/TDS Testers

2.8

HI 98129 and HI 98130 are waterproof testers that offer high accuracy pH, EC/TDS and temperature measurements in a single tester! No more switching between meters for your routine measurements. These floating, waterproof testers have a large easy to read, dual-level LCD and automatic shut-off. pH and EC/TDS readings are automatically temperature compensated.

Fast, efficient, accurate and portable, the Combo pH, EC/TDS and temperature tester brings you all the features you've asked for and more!

HI 98130 (Combo)



HI 98127 • HI 98128

pH/Temperature Testers

2.11

The pHep®4 and pHep®5 testers are the most advanced testers in the market today. These testers are for users that require the greatest accuracy without breaking the budget. The pHep®4 has a 0.1 pH resolution and pHep®5 reads up to 0.01 pH. Both models have BEPS as well as user selectable automatic shut-off, replaceable pH electrode cartridge, stability indicator and automatic calibration.

HI 98128 (pHep 5)



HI 98120 • HI 98121

pH/ORP and ORP Testers

2.19

HI 98120 is a waterproof ORP and temperature meter while HI 98121 measures pH, ORP and temperature. The housing of these testers have been completely sealed against humidity and are designed to float.

The exposed stainless steel temperature sensor on these models facilitates faster and more accurate temperature measurement.





HI 991404 • HI 991405

pH/EC/TDS/Temperature Monitors

2.39

These microprocessor indicators continuously monitor the three most important nutrient parameters in hydroponics, greenhouses and horticultural applications.

At startup, these indicators perform a self-check to assure proper working condition. The stability indicator and HOLD function lets the user know when to take readings and freezes the reading on display for easy and accurate recording.



HI 981504

pH/TDS/Temperature Monitor

2.40

Simply install the HI 981504 above the sample to be tested, plug the monitor in and immerse the probes. pH, TDS and temperature measurements will be simultaneously displayed on three backlit LCDs.

Users can easily select the temperature unit (°C or °F) through a switch on the back panel.

The HI 1286 gel-filled pH electrode is provided with a waterproof sheath to protect the BNC connector. The unique design of the electrode provides longer life in aggressive solutions. The HI 7634 TDS probe is easy to clean and requires little maintenance. Measurements are accurate and the meter can be calibrated at one or two points for pH and at a single point for TDS. Temperature range is factory calibrated.



HI 147

Checkfridge™ Remote Sensor Thermometer

2.53

Few manufacturers have given any thought to providing the user a convenient means to monitor internal temperature conditions of a refrigerator or freezer from the outside. When contents of freezer and refrigeration units need to be monitored to ensure safety and preservation, the HI 147 is the accurate and reliable solution.

Comparison Guide

GUIDE	pH Range	EC Range	TDS Range	ORP Range	Relative Humidity Range	Salinity Range	Temperature Range(s)	0.01 pH Resolution	Automatic Calibration	Automatic EC Calibration	pH Calibration Points	EC/TDS Calibration Points	pH Buffer Sets	ATC	Waterproof	Replaceable Electrode	Cloth Extendable Junction	HOLD Function	BEPS	Auto Shut Off	Page
Multiparameter																					
HI 98129	•	•	•				°C/°F	•	•	•	2	1	2	•	•	•	•	•	•	•	2.8
HI 98130	•	•	•				°C/°F	•	•	•	2	1	2	•	•	•	•	•	•	•	2.8
HI 98204	•	•		•			°C				2	1									2.10
pH/ORP																					
HI 98127	•						°C/°F		•		2		2	•	•	•	•	•	•	•	2.11
HI 98128	•						°C/°F	•	•		2		2	•	•	•	•	•	•	•	2.11
HI 98111	•						°C	•			2			•							2.12
HI 98112	•						°C	•			2			•							2.12
HI 98113	•						°C	•			2			•							2.12
HI 981408	•										1										2.13
HI 98109	•							•			2										2.14
HI 98110	•							•			2										2.14
HI 98106	•										1						•				2.15
HI 98107	•										2						•				2.15
HI 98108	•										2			•			•				2.15
HI 98103	•							•			2										2.16
HI 99104	•							•			2					•					2.17
HI 96106	•										1										2.18
HI 96107	•										1										2.18
HI 96108	•										2			•							2.18
HI 98201				•																	2.18
HI 98120				•			°C/°F								•	•		•	•	•	2.19
HI 98121	•			•			°C/°F	•			2		2	•	•	•	•	•	•	•	2.19
EC/TDS																					
HI 98311		•	•				°C/°F			•		1		•	•			•	•	•	2.20
HI 98312		•	•				°C/°F			•		1		•	•			•	•	•	2.20
HI 98331		•					°C				1		•			•					2.21
HI 98323		•	•				°C/°F					1		•	•			•	•		2.22
HI 98324		•	•				°C/°F			•		1		•	•			•	•		2.22
HI 983311		•	•				°C							•				•		•	2.23
HI 983310			•				°C							•				•		•	2.23
HI 981409		•								•		1		•		•					2.24
HI 981410			•						•			1		•		•					2.24
HI 98300			•									1		•							2.25
HI 98301			•									1		•							2.25
HI 98302			•									1		•							2.25
HI 98303		•										1		•							2.25
HI 98304		•										1		•							2.25
HI 96301			•									1		•							2.26
HI 96302			•									1		•							2.26
HI 96303		•										1		•							2.26
HI 96304		•										1		•							2.26
Primo		•	•						•			1		•						•	2.27
Primo 2		•	•				°C		•			1		•						•	2.27
Primo 5		•	•						•			1		•						•	2.27
Primo 1			•						•			1		•						•	2.27
Primo 3			•				°C		•			1		•						•	2.27
Primo 4			•						•			1		•						•	2.27
HI 98203					•							1									2.28
TDS 1			•									1		•							2.28
HI 98202					•							1									2.29
HI 98308		•										1									2.30
HI 98309		•																			2.30
HI 98601					•																2.31

GUIDE	pH Range	EC Range	TDS Range	ORP Range	Temperature Range(s)	pH Calibration Points	pH Buffer Sets	Automatic Calibration	pH Temp. Compensation	EC Temp. Compensation	TDS Temp. Compensation	CAL CHECK®	Waterproof	HOLD Function	Backlit LCD	12 VDC Power Supply	Battery Power	Visual Alarm	Auto Shut Off	Page
Temperature																				
HI 98501					°C							•								2.32
HI 98503					°C							•								2.32
HI 98502					°F							•								2.32
HI 98504					°F							•								2.32
HI 98505					°C							•								2.32
HI 98507					°C							•								2.32
HI 98506					°F							•								2.32
HI 98508					°F							•								2.32
HI 98509					°C							•								2.33
HI 98510					°F							•								2.33
HI 151-00					°C							•						•		2.34
HI 151-01					°F							•						•		2.34
HI 98501-1					°C															2.35
HI 98509-1					°C															2.35
HI 98509-01					°C							•								2.35
HI 98509-03					°C							•								2.35
HI 98510-01					°F							•								2.35
HI 145-00					°C							•								2.36
HI 145-01					°F							•								2.36
HI 145-20					°C							•								2.36
HI 145-30					°F							•								2.36
HI 149-00					°C															2.37
HI 149-01					°F															2.37
HI 98517					°C															2.38
HI 98518					°F															2.38
Monitors																				
HI 991404	•	•	•		°C/°F	2	2	•	•	•	•		•	•	•	•				2.39
HI 991405	•	•	•		°C/°F	2	2	•	•	•	•		•	•	•	•				2.39
HI 981504/5	•		•		°C/°F	2					•				•	•				2.40
HI 981504/7	•		•		°C/°F	2					•				•	•				2.40
HI 991401	•				°C/°F	2	2	•	•				•	•	•	•				2.41
HI 981401N	•					2										•				2.42
HI 981402	•					2										•		•		2.43
HI 981400	•					2										•		•		2.44
HI 981406	•			•		2										•		•		2.45
HI 982401				•												•		•		2.46
HI 981404N	•		•			2					•					•				2.47
HI 981405N	•	•				2				•						•				2.47
HI 993301		•	•		°C/°F			•		•	•		•	•	•	•				2.48
HI 993302		•	•		°C/°F			•		•	•		•	•	•	•				2.48
HI 983301N			•								•					•				2.49
HI 983301N/5			•								•					•				2.49
HI 983302N		•								•						•				2.49
HI 983303		•								•						•		•		2.50
HI 983306			•								•					•		•		2.50
HI 983307		•								•						•		•		2.50
HI 983308			•								•					•		•		2.50
HI 983309			•								•					•		•		2.50
HI 983304		•								•						•		•		2.51
HI 983305		•								•						•		•		2.51
HI 146-00					°C												•			2.52
HI 146-01					°F												•			2.52
HI 146-99					°C												•			2.52
HI 147-00					°C												•			2.53
HI 147-01					°F												•			2.53

pH/Conductivity/TDS Testers

- Waterproof and designed to float
- Cloth, renewable junction
- Close proximity temperature probe
- Automatic Temperature Compensation
- Automatic 1 or 2 point pH calibration
- Tactile grip casings
- HOLD function
- BEPS (Battery Error Prevention System)
- Battery % displayed at startup
- Automatic shut-off
- Efficient two button operation
- Temperature in °C or °F

Easily switch between Celsius and Fahrenheit readouts.



HI 98129 and HI 98130 are waterproof testers that offer high accuracy pH, EC/TDS and temperature measurements in a single tester! No more switching between meters for your routine measurements. These floating, waterproof combination testers have an easy to read, LCD and an automatic shut-off. pH and EC/TDS readings are automatically temperature compensated.

These testers feature a replaceable pH electrode cartridge with an extendable cloth junction as well as an EC/TDS graphite electrode. The extendable cloth junction provides an extended electrode life and the replaceable pH cartridge means that this tester does not need to be thrown away when the pH sensor is exhausted.

The EC/TDS conversion factor is user selectable as well as the temperature compensation coefficient (β).

Fast, efficient, accurate and portable, the Combo pH, EC/TDS and temperature tester combines all the features users have requested and more!



Replaceable pH electrode cartridge

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



High accuracy EC/TDS graphite probe

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



Cloth extendable junction

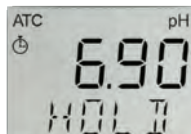
When the cloth junction becomes dirty from routine testing, simply pull out 3 mm (1/8") to increase response time and stability.

LCD Display Features



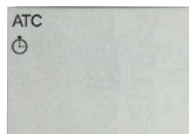
On-screen battery life

LCD indicates the percentage of battery power remaining upon startup.



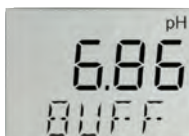
HOLD function

The HOLD function “freezes” the LCD display temporarily.



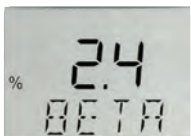
Instability & ATC indicators

Ensures reliable EC and TDS measurements. ATC symbol is shown when active.



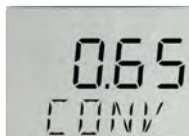
Standard or N.I.S.T buffer calibration

Automatic calibration is performed with 2 sets of memorized buffers for greater accuracy.



Adjustable temperature coefficient factor

Users can choose between different BETA (β) factors for precise temperature compensated measurements.



Adjustable TDS ratio

For measurement accuracy, users can choose between different conductivity to TDS conversion factors.



Calibrate right in our buffer solution sachets

An easy calibration can be performed right in our buffer solution sachets for the most accurate readings.

SPECIFICATIONS		HI 98129	HI 98130
Range	pH	0.00 to 14.00 pH	
	EC	0 to 3999 $\mu\text{S}/\text{cm}$	0.00 to 20.00 mS/cm
	TDS	0 to 2000 mg/L (ppm)	0.00 to 10.00 g/L (ppt)
	Temperature	0.0 to 60.0°C / 32.0 to 140.0°F	
Resolution	pH	0.01 pH	
	EC	1 $\mu\text{S}/\text{cm}$	0.01 mS/cm
	TDS	1 mg/L (ppm)	0.01 g/L (ppt)
	Temperature	0.1°C / 0.1°F	
Accuracy (@20°C)	pH	± 0.05 pH	
	EC / TDS	$\pm 2\%$ F.S.	
	Temperature	$\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{F}$	
Temperature Compensation		pH: automatic; EC/TDS: automatic with β adjustable from 0.0 to 2.4% / °C	
Calibration	pH	automatic, one or two points with two sets of standard buffers (pH 4.01 / 7.01 / 10.01 or 4.01 / 6.86 / 9.18)	
	EC / TDS	automatic, one point at 1413 $\mu\text{S}/\text{cm}$ or 1382 mg/L (ppm)	automatic, one point at 12.88 mS/cm or 6.44 g/L (ppt)
TDS Conversion Factor		0.45 to 1.00	
pH Electrode		HI 73127 (replaceable; included)	
Environment		0 to 50°C (32 to 122°F); RH max 100%	
Battery Type / Life		1.5V (4) / approximately 100 hours of continuous use, auto-off after 8 minutes of non-use	
Dimensions/Weight		163 x 40 x 26 mm (6.4 x 1.6 x 1.0")/100 g (3.5 oz.)	

ORDERING INFORMATION

HI 98129 (Combo) and HI 98130 (Combo) are supplied with HI 73127 pH electrode and HI 73128 electrode removal tool, batteries and instructions.

ELECTRODES

HI 73127 Spare pH electrode for (Combo)

SOLUTIONS

- HI 70004P pH 4.01 buffer solution, 20 mL sachets (25)
- HI 70006P pH 6.86 buffer solution, 20 mL sachets (25)
- HI 70007P pH 7.01 buffer solution, 20 mL sachets (25)
- HI 70009P pH 9.18 buffer solution, 20 mL sachets (25)
- HI 70010P pH 10.01 buffer solution, 20 mL sachets (25)
- HI 70030P 12.88 mS/cm buffer solution, 20 mL sachets (25)
- HI 70031P 1413 $\mu\text{S}/\text{cm}$ buffer solution, 20 mL sachets (25)
- HI 70032P 1382 mg/L (ppm) buffer solution, 20 mL sachets (25)
- HI 70038P 6.44 g/L (ppt) buffer solution, 20 mL sachets (25)
- HI 70442P 1500 mg/L (ppm) buffer solution, 20 mL sachets (25)
- HI 70300M Electrode storage solution, 250 mL
- HI 7061M Electrode cleaning solution, 250 mL

ACCESSORIES

HI 73128 Electrode removal tool

For a complete list of Solutions, see the end of pH Section 3 and Conductivity Section 6.

HI 98204

pH/ORP/EC/°C Field Meter

- Four instruments in one
- Lightweight with handle
- Easy to take measurements
- Long battery life

Water Test provides quick and reliable measurement of the four most important variables of water analysis: pH, ORP, conductivity and temperature.

The lightweight and compact body makes it perfect to use in the plant as well as in the field. Superior in design and construction, Water Test is made of rugged VALOX® material which offers excellent protection from typical environmental conditions.

Water Test is designed with such simplicity that even non-technical users can operate it: fill the base of Water Test with the sample to be measured, press "RANGE" to select the mode and then simply read your measurement!

The rugged construction and simple operation make Water Test ideal for water treatment analysis, wastewater tests, ecological studies, aquaculture and hydroponic applications.

**ORDERING INFORMATION**

HI 98204 (Water Test) is supplied with measuring compartment, batteries and instructions.

SOLUTIONS

HI 740088	Plastic vessel for sample
HI 7004M	pH 4.01 buffer solution, 250 mL
HI 7007M	pH 7.01 buffer solution, 250 mL
HI 7010M	pH 10.01 buffer solution, 250 mL
HI 7020M	200/275 mV test solution, 250 mL
HI 7031M	1413 µS/cm calibration solution, 250 mL
HI 70300M	Electrode storage solution, 250 mL
HI 7091M	Reducing solution, 250 mL
HI 7092M	Oxidizing solution, 250 mL



SPECIFICATIONS	pH	ORP	EC	°C
Range	0.0 to 14.0 pH	±1000 mV	0 to 1999 µS/cm	0.0 to 60.0°C
Resolution	0.1 pH	1 mV	1 µS/cm	0.1°C
Accuracy (@20°C/68°F)	±0.2 pH	±5 mV	±2% F.S.	±1°C
Calibration	manual, two points	factory calibrated	manual, one point	factory calibrated
Battery Type / Life	1.5V (3) / approximately 200 hours of continuous use			
Environment	0 to 50°C (32 to 122°F); RH max 95%			
Dimensions	190 x 85 x 85 mm (7.5 x 3.3 x 3.3")			
Weight	260 g (9.2 oz.)			

For a complete list of Solutions, see the end of pH Section 3 and Conductivity Section 6.

pHep®4
& pHep®5



Replaceable pH electrode

Electrode replacement with the stainless steel round connector means there are no pins to bend or break during replacement.



Cloth extendable junction

When the cloth junction becomes dirty from routine testing, simply pull out 3 mm (1/8") to increase response time and stability.

Exposed temperature sensor

The exposed temperature sensor provides fast response time, and its proximity to the pH electrode guarantees greater accuracy in temperature compensated readings.



HI 98127 (pHep®4) • HI 98128 (pHep®5) pH/Temperature Testers

- Waterproof and designed to float
- Automatic Temperature Compensation
- Automatic calibration
- Tactile grip casings
- HOLD function
- Automatic shut-off
- Efficient two button operation
- Temperature in °C or °F
- BEPS (Battery Error Prevention System)
- Battery % displayed at startup

The pHep®4 and pHep®5 testers are for users that require the greatest accuracy and features while staying economical. The pHep®4 has a 0.1 pH resolution and pHep®5 reads up to 0.01 pH.

Both models have BEPS as well as user selectable automatic shut-off, replaceable pH electrode cartridge, stability indicator and automatic calibration.

Calibrate
right in our
buffer
solution
sachets



SPECIFICATIONS		HI 98127 (pHep®4)	HI 98128 (pHep®5)
Range	pH	-2.0 to 16.0 pH	-2.00 to 16.00 pH
	Temperature	-5.0 to 60.0°C / 23.0 to 140.0°F	
Resolution	pH	0.1 pH	0.01 pH
	Temperature	0.1°C / 0.1°F	
Accuracy (@20°C)	pH	±0.1 pH	±0.05 pH
	Temperature	±0.5°C / ±1°F	
pH Calibration		automatic, at one or two points with two sets of standard buffers (pH 4.01 / 7.01 / 10.01 or pH 4.01 / 6.86 / 9.18)	
Temperature Compensation		automatic	
Battery Type / Life		1.5V (4) / approximately 300 hours of continuous use; auto-off after 8 minutes of non-use	
Environment		-5 to 50°C (23 to 122°F); RH max 100%	
Dimensions		163 x 40 x 26 mm (6.4 x 1.6 x 1.0")	
Weight		100 g (3.5 oz.)	

ORDERING INFORMATION

HI 98127 (pHep®4) and HI 98128 (pHep®5) are supplied with HI 73127 pH electrode, HI 73128 electrode removal tool, batteries and instructions.

SOLUTIONS

- HI 70004P pH 4.01 buffer solution, 20 mL sachets (25)
- HI 70006P pH 6.86 buffer solution, 20 mL sachets (25)
- HI 70007P pH 7.01 buffer solution, 20 mL sachets (25)
- HI 70009P pH 9.18 buffer solution, 20 mL sachets (25)
- HI 70010P pH 10.01 buffer solution, 20 mL sachets (25)

ACCESSORIES

- HI 73127 Spare electrode
- HI 73128 Electrode removal tool

For a complete list of Solutions, see the end of pH Section 3.

HI 98111 PICCOLO® • HI 98112 PICCOLO®2 • HI 98113 PICCOLO® plus

Stick pH Tester

- Pre-amplified electrode
- Narrow, replaceable probe
- Easy to hold and operate

PICCOLO® is a revolutionary pH meter with a 4-in-1 amplified electrode.

Conventional pH meters are susceptible to the weak, high impedance signal which makes the electrode, connector, cable and meter vulnerable to noise, humidity and dirty environments. PICCOLO® has overcome these problems with a pre-amplified electrode delivering a strong signal to the meter. The interchangeable electrode is inexpensive, rugged and houses the pH sensor, reference system, temperature sensor and the amplifier module.

PICCOLO® with a 9 cm (3.5") electrode (HI 1280).

PICCOLO® 2 with a 16 cm (6.3") electrode (HI 1290).

PICCOLO® plus with a 16 cm (6.3") electrode (HI 1295) and temperature readout on LCD.

ORDERING INFORMATION

All PICCOLO® models are supplied complete with pH electrode, pH 4.01 and pH 7.01 buffer solution sachets, calibration screwdriver, batteries, rugged carrying case and instructions.

HI 98111 (PICCOLO®) is supplied with 90 mm (3.5") HI 1280 amplified pH electrode.

HI 98112 (PICCOLO®2) is supplied with 160 mm (6.3") HI 1290 amplified pH electrode.

HI 98113 (PICCOLO® plus) is supplied with HI 1295 amplified electrode with temperature sensor.

ELECTRODES

HI 1280	Spare pH electrode for Piccolo® polypropylene body, pre-amplified pH electrode with internal temperature sensor
HI 1290	Spare pH electrode for Piccolo®2 polypropylene body, pre-amplified pH electrode with internal temperature sensor
HI 1295	Spare pH electrode for Piccolo® plus polypropylene body, pre-amplified pH electrode with internal temperature sensor

SOLUTIONS

HI 70004P	pH 4.01 buffer solution, 20 mL sachets (25)
HI 70007P	pH 7.01 buffer solution, 20 mL sachets (25)
HI 70010P	pH 10.01 buffer solution, 20 mL sachets (25)
HI 70300M	Electrode storage solution, 250 mL
HI 7061M	Cleaning solution, 250 mL



SPECIFICATIONS	HI 98111 (PICCOLO®)	HI 98112 (PICCOLO®2)	HI 98113 (PICCOLO® plus)
Range	1.00 to 13.00 pH	1.00 to 13.00 pH	1.00 to 13.00 pH; 0.0 to 70.0°C
Resolution	0.01 pH	0.01 pH	0.01 pH; 0.1°C
Accuracy (@20°C/68°F)	±0.01 pH	±0.01 pH	±0.01 pH; ±1°C
Calibration	manual, two points		
Temperature Compensation	automatic, 0 to 70°C (32 to 150°F)		
Electrode	HI 1280	HI 1290	HI 1295
Battery Type / Life	1.5V (3) / approximately 100 hours of continuous use		
Environment	0 to 50°C (32 to 122°F); RH max 95%		
Dimensions (with electrode)	194 x 29 x 15 mm (7.6 x 1.1 x 0.6")	265 x 29 x 15 mm (10.4 x 1.1 x 0.6")	
Weight	70 g (2.5 oz.)		

For a complete list of Solutions, see the end of pH Section 3.

Agriculture pH Stick Tester

2

TESTERS



GRO'CHEK

- Shock-resistant casing
- Long probe is ideal for fertilizer solution in tanks and vats
- 2000 hours of operation on 2 AA batteries
- Floating
- Replaceable probe

HI 981408 has been specifically designed to address the needs of growers in hydroponics, greenhouses and nurseries.

The meter has all the features necessary to check the pH of the fertilizer solution during preparation. With a sturdy body, it also floats so that it can be quickly retrieved if accidentally dropped in the tank.

Frequent battery replacement is no longer an issue, the HI 981408 will run for 2000 hours continuously on common AA-type batteries. This translates into more than 2 years of continuous use up to 2 hours a day, seven days a week! Calibration has been simplified to one point through a dial on the front of the meter. The outer casing also incorporates a molded eye so you can hang the meter when not in use.



SPECIFICATIONS	HI 981408
Range	0.00 to 14.00 pH
Resolution	0.01 pH
Accuracy (@20°C/68°F)	±0.02 pH
Calibration	manual, one point
Electrode	HI 1219 polypropylene body pH electrode, 240 mm (9.4") long, with DIN connector (included)
Battery Type / Life	1.5V AA (2) / approximately 2000 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH max 100%
Dimensions (meter only)	86 x 94 x 33 mm (3.4 x 3.7 x 1.3")
Weight (meter only)	150 g (5.3 oz.)

ORDERING INFORMATION

HI 981408 is supplied with HI 1219 pH electrode, pH 7 buffer solution, batteries and instructions

ELECTRODES

HI 1219 Spare double junction pH electrode

SOLUTIONS

HI 70007P pH 7.01 buffer solution, 20 mL sachets (25)
 HI 70300M Electrode storage solution, 250 mL
 HI 7061M Cleaning solution, 250 mL

For a complete list of Solutions, see the end of pH Section 3.

HI 98109 Skincheck™ • HI 98110 Skincheck™1

Skin pH Tester

- Easy, non-intrusive pH measurement
- Fast accurate results
- Cable model is ideal for easy viewing and for self measurements
- Approximately 3000 hours of operation
- Replaceable probe

The health and beauty industry has been searching for a professional product that can determine the pH value of the scalp, hair strands and skin, quickly, accurately and inexpensively.

HANNA offers Skincheck™, the first pH meter that makes it possible for you to easily measure pH in this application.

Skincheck™ measures pH in just a few seconds with a special flat-tip electrode specifically designed to measure pH on body surfaces. Skincheck™ has a measurement range that covers the full spectrum of hair and skin pH levels. Measurements are quickly displayed on the LCD with an accuracy of ± 0.2 pH.

Skincheck is an absolute must for hair care specialists, beauty salons, cosmeticians, beauticians, dermatologists and the cosmetic industry.

ORDERING INFORMATION

HI 98109 (Skincheck™) is supplied with HI 1413S/50 pH electrode, calibration screwdriver, batteries and instructions.

HI 98110 (Skincheck™1) is supplied with HI 1413B/50 pH electrode, calibration screwdriver, batteries and instructions.

ELECTRODES

HI 1413S/50 Spare glass body pH electrode for Skincheck™ with flat tip and screw connector

HI 1413B/50 Spare glass body pH electrode for Skincheck™1 with flat tip, BNC connector and 1 m (3.3') cable

HI 740173 Protective cap for electrode

SOLUTIONS

HI 70004P pH 4.01 buffer solution, 20 mL sachets (25)

HI 70007P pH 7.01 buffer solution, 20 mL sachets (25)

HI 70010P pH 10.01 buffer solution, 20 mL sachets (25)

HI 70300M Electrode storage solution, 250 mL

HI 7061M Cleaning solution, 250 mL



The First Step to Healthy, Balanced Skin

SPECIFICATIONS	HI 98109 (Skincheck™)	HI 98110 (Skincheck™1)
Range	0.00 to 14.00 pH	
Resolution	0.01 pH	
Accuracy (@20°C/68°F)	± 0.2 pH	
Calibration	manual, one or two points	
Electrode	HI 1413S/50 glass body pH electrode with flat tip and screw connector (included)	HI 1413B/50 glass body pH electrode with flat tip, BNC connector and 1 m (3.3') cable (included)
Battery Type / Life	1.5V (2) / approx. 3000 hours of continuous use	
Environment	0 to 50°C (32 to 122°C); RH max 95%	
Dimensions	66 x 50 x 25 mm (2.6 x 2.0 x 1.0")	
Weight (with electrode)	70 g (2.5 oz.)	90 g (3.2 oz.)

For a complete list of Solutions, see the end of pH Section 3.

**Renewable junction**

HI 98107 pHep® features an innovative, renewable cloth junction.

**Guides**

The max level guide lets you know how deep to submerge the probe.



- Renewable junction
- Easy 1 or 2 point manual calibration
- 700 hour battery life
- Simple to use
- Economical

The pHep® revolutionized the pH industry by providing non-technical personnel with a simple, inexpensive solution to accurate pH measurement.

HI 98107 is used by millions of people around the world to monitor pH in laboratories and industrial applications as well as in agriculture, fish farming, food manufacturing and quality control, swimming pools and the printing industry.

With a renewable cloth junction, the pHep® has an extended life over typical pH testers. A normal junction clogs with use over time and a typical tester would normally have to be thrown away once the junction is too contaminated. HI 98107's junction is 2 cm long and when dirty, can be pulled out to expose a fresh section to effectively renew the pHep's life.

Calibration is performed manually at 1 or 2 points with a trimmer located on the side of the tester.

With a battery life of 700 hours of continuous use, the pHep® will provide years of testing before the batteries need to be replaced.

SPECIFICATIONS	HI 98106 (Champ®)	HI 98107 (pHep®)	HI 98108 (pHep®+)
Range	0.0 to 14.0 pH		
Resolution	0.1 pH		
Accuracy (@20°C/68°F)	±0.2 pH	±0.1 pH	±0.1 pH
Calibration	manual, one point	manual, two points	manual, two points
Temp. Compensation	–	–	automatic, 0 to 50°C
Battery Type / Life	1.5V (4) / approximately 800 hours of continuous use	1.5V (4) / approximately 700 hours of continuous use	1.5V (4) / approximately 200 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH max 95%		
Dimensions	175 x 41 x 23 mm (6.9 x 1.6 x 0.9")		
Weight	78 g (2.7 oz.)	95 g (3.4 oz.)	

ORDERING INFORMATION

HI 98106 (Champ®), HI 98107 (pHep®), HI 98108 (pHep®+) are supplied with protective cap, calibration screwdriver, batteries and instructions.

ELECTRODES

- HI 73106* Spare electrode
 HI 98107-T* Spare electrode for HI 98107

SOLUTIONS

- HI 77400P pH 4.01 and pH 7.01 buffer solution, 20 mL sachets (5 ea)
 HI 70300M Electrode storage solution, 250 mL
 HI 7061M Cleaning solution, 250 mL

* To be replaced by authorized technical personnel only.

For a complete list of Solutions, see the end of pH Section 3.

HI 98103

CHECKER® pH Tester

- High accuracy with 0.01 pH resolution
- Two point fast and accurate calibration
- Usable with virtually any electrode that shares the same connector
- 3000 hours of battery life
- HI 1270 small diameter probe fits easily into a test tube

The pH Checker® series supplies users with fast and accurate readings from 0 to 14 pH with a resolution of 0.01 pH. This compact tester features an easy to read LCD and simple to perform two point calibration.

The pH electrode of the Checker® can be easily replaced. You only need to unscrew the electrode from the meter body and screw on a new one.

The Checker® is fast, accurate, lightweight and with 3000 hours of battery life, you don't have to worry about frequent battery replacement.

**ORDERING INFORMATION**

HI 98103 (Checker®) is supplied with HI 1270 pH electrode, batteries and instructions.

ELECTRODES

- HI 1270** Plastic body, pH electrode with screw-type connector
- HI 1207** Plastic body, pH electrode with screw-type connector

SOLUTIONS

- HI 77400P** pH 4.01 and pH 7.01 buffer solution, 20 mL sachets (5 ea)
- HI 70300M** Electrode storage solution, 250 mL
- HI 7061M** Cleaning solution, 250 mL



Testing pH has never been easier!

SPECIFICATIONS	HI 98103 Checker®
Range	0.00 to 14.00 pH
Resolution	0.01 pH
Accuracy (@20°C/68°F)	±0.2 pH
Calibration	manual, two points
Electrode	HI 1270 (included)
Battery Type / Life	1.5V (2) / approximately 3000 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH max 95%
Dimensions	66 x 50 x 25 mm (2.6 x 2.0 x 1.0") - without probe
Weight	50 g (1.8 oz.) - without probe

For a complete list of Solutions, see the end of pH Section 3.



- Accurate and economical measurements
- Simple calibration
- Long battery life
- Small diameter probe fits easily into a test tube
- Replaceable electrode

HI 99104 is an ideal pocket tester for educational purposes.

Designed with a 0.01 pH resolution and two point manual calibration through easy to reach trimmers, it immediately displays pH variations to reflect the smallest change in the sample.

Unlike conventional testers, HI 99104 has a long and slim stem, ideal for measurements in small samples or test tubes.

HI 99104 is supplied with a rugged, plastic body electrode with a screw connector that allows for quick and easy electrode replacement.

Additionally, its low power demand allows for 1000 hours of battery life with common 1.5V batteries.



SPECIFICATIONS	HI 99104
Range	0.00 to 14.00 pH
Resolution	0.01 pH
Accuracy (@20°C/68°F)	±0.2 pH
Calibration	manual, two points
pH Electrode	HI 1270 (included)
Battery Type / Life	1.5V (2) / approximately 1000 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH max 95% non-condensing
Dimensions	200 x 28 x 20 mm (7.9 x 1.1 x 0.8")
Weight	46 g (1.6 oz.)

ORDERING INFORMATION

HI 99104 is supplied with HI 1270 pH electrode, batteries and instructions.

ELECTRODES

HI 1270 Plastic body, pH electrode with screw-type connector

SOLUTIONS

HI 77400P pH 4.01 and pH 7.01 buffer solution, 20 mL sachets (5 ea)
HI 70300M Electrode storage solution, 250 mL
HI 7061M Cleaning solution, 250 mL

For a complete list of Solutions, see the end of pH Section 3.

HI 96106 • HI 96107 • HI 96108

The Original pHep®



Simple, precise and rugged, the pHep® is the answer to the inaccuracy observed with litmus paper. This tester family includes 3 models:

The **HI 96106 (Champ)** is an economical pH pocket tester with manual 1 point calibration and ± 0.2 pH accuracy.

The **HI 96107 (pHep)** is an economical pH pocket tester with manual 1 point calibration and ± 0.1 pH accuracy.

The **HI 96108 (pHep®+)** features Automatic Temperature Compensation (ATC) and calibration at 2 points. ATC measures the temperature of the sample and compensates the pH reading relative to the temperature of the pH bulb. Precision is increased by this feature even in quick measurements.

SPECIFICATIONS	HI 96106 (Champ®)	HI 96107 (pHep®)	HI 96108 (pHep®+)
Range	0.0 to 14.0 pH	0.0 to 14.0 pH	0.0 to 14.0 pH
Resolution	0.1 pH	0.1 pH	0.1 pH
Accuracy (20°C/68°F)	± 0.2 pH	± 0.1 pH	± 0.1 pH
Calibration	manual, one point	manual, one point	manual, two points
Temp. Compensation	–	–	automatic, 0 to 50°C
Battery Type / Life	1.5V (3) / approximately 150 hours		
Environment	0 to 50°C (32 to 122°F); RH max 95%		
Dimensions	150 x 30 x 21 mm (5.9 x 1.2 x 0.8")		
Weight	70 g (2.5 oz.)		

ORDERING INFORMATION

HI 96106 (Champ®), HI 96107 (pHep®), HI 96108 (pHep®+) are supplied with protective cap, calibration screwdriver, batteries and instructions.

SOLUTIONS

HI 77400P	pH 4.01 and pH 7.01 buffer solution, 20 mL sachets (5 ea)
HI 70300M	Electrode storage solution, 250 mL
HI 7061M	Cleaning solution, 250 mL

HI 98201

ORP Tester



Oxidation reduction is a process by which a molecule or ion loses or gains electrons. This occurs most readily in water treatment and in pool and spa maintenance where an oxidizer, such as chlorine, is added to the water to destroy contaminants. The higher the ORP value, the greater the sanitizing power of your water.

HI 98201 is ideal for swimming pools and spas and can provide a valuable indication of water quality. This tester utilizes a platinum electrode and HANNA unique renewable cloth junction, that can be pulled out when clogging occurs, reactivating the reference and restoring the electrode.

SPECIFICATIONS	HI 98201
Range	± 999 mV
Resolution	1 mV
Accuracy (@20°C/68°F)	± 5 mV
Battery Type / Life	1.5V (4) / approximately 700 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH max 95%
Dimensions (meter only)	175 x 41 x 23 mm (6.9 x 1.6 x 0.9")
Weight (meter only)	95 g (3.4 oz.)

ORDERING INFORMATION

HI 98201 (ORP) is supplied with protective cap, batteries and instructions

ELECTRODES

HI 73201	Spare ORP electrode*
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SOLUTIONS

HI 7020M	ORP test solution, 200/275 mV, 250 mL
HI 7091M	Reducing solution, 250 mL
HI 7092M	Oxidizing solution, 250 mL

* To be replaced by authorized technical personnel only.

For a complete list of Solutions, see the end of pH Section 3.

pH/ORP and ORP Testers

2

TESTERS



HI 98120



HI 98121

- Waterproof and it floats!
- HANNA's exclusive cartridge pH and ORP electrode
- Extendable cloth pH junction (HI 98121)
- Automatic Temperature Compensation (HI 98121)
- Automatic calibration (HI 98121)
- Battery % Level at startup and stability indicator
- HOLD function

The HI 98120 is a waterproof ORP and temperature meter while HI 98121 measures pH, ORP and temperature. The housing of these testers have been completely sealed against humidity and are designed to float.

Electrode replacement with the stainless steel round connector means there are no pins to bend or break during replacement.

When the cloth junction becomes clogged and response time is sluggish, simply pull out 3 mm (1/8") to clear the clogging which will improve response time and stability.

The exposed stainless steel temperature sensor on these models facilitates faster and more accurate temperature measurement.

SPECIFICATIONS		HI 98120	HI 98121
Range	ORP		± 1000 mV
	pH	–	-2.00 to 16.00 pH
	Temperature		-5.0 to 60.0°C / 23.0 to 140.0°F
Resolution	ORP		1 mV
	pH	–	0.01 pH
	Temperature		0.1°C / 0.1°F
Accuracy (@20°C)	ORP		±2 mV
	pH	–	±0.05 pH
	Temperature		±0.5°C / ±1°F
Calibration	ORP		factory calibrated
	pH	–	automatic, one or two points with two sets of memorized buffers (pH 4.01 / 7.01 / 10.01 or 4.01 / 6.86 / 9.18)
Temperature Compensation		–	automatic for pH readings
Electrodes		HI 73120 replaceable ORP electrode (included)	HI 73127 replaceable pH electrode (included); fixed ORP sensor
Battery Type / Life		1.5V (4) / approximately 250 hours of continuous use; auto-off after 8 minutes of non-use	
Environment		-5 to 50°C (23 to 122°F); RH max 100%	
Dimensions		163 x 40 x 26 mm (6.4 x 1.6 x 1.0")	
Weight		100 g (3.5 oz.)	

ORDERING INFORMATION

HI 98120 (ORP) is supplied with HI 73120 ORP electrode, HI 73128 electrode removal tool, batteries and instructions.

HI 98121 (ORP/pH) is supplied with HI 73127 pH electrode, HI 73128 electrode removal tool, batteries and instructions.

ELECTRODES

HI 73127	Spare pH electrode (HI 98121)
HI 73120	Spare ORP electrode (HI 98120)
HI 73128	Electrode removal tool

SOLUTIONS

HI 7004M	pH 4.01 buffer solution, 250 mL
HI 7007M	pH 7.01 buffer solution, 250 mL
HI 7010M	pH 10.01 buffer solution, 250 mL
HI 7021M	ORP test solution, 240 mV, 250 mL
HI 7022M	ORP test solution, 470 mV, 250 mL
HI 70300L	Storage solution, 460 mL

For a complete list of Solutions, see the end of pH Section 3.

HI 98311 • HI 98312

EC/TDS/ Temperature Testers

- Waterproof and it floats!
- High accuracy
- Automatic calibration and temperature compensation
- HOLD function
- BEPS (Battery Error Prevention System)

When the original DiST® (Dissolved Solids Tester) was first introduced, conductivity and total dissolved solids measurements became easy and affordable. The DiST's ease of use, in combination with its affordability made it the standard in EC and TDS measurement. HANNA continues the standard in EC and TDS testing with the DiST®5 and DiST®6.

These testers include features such as: a replaceable graphite electrode, adjustable TDS ratio, °C or °F measurement, Automatic Temperature Compensation (ATC) with adjustable β , battery level indicator, stability indicator, automatic shut-off and automatic calibration.

The graphite conductivity electrode provides greater accuracy because it resists contamination by salt deposits in the sample.

All of these features are packed in a floating, waterproof casing. These 3-in-1 testers are unmatched in EC/TDS/ temperature measurements.

ORDERING INFORMATION

HI 98311 (DiST®5) and HI 98312 (DiST®6) are supplied with HI 73311 EC/TDS probe, HI 73128 probe removal tool, batteries and instructions.

PROBES

HI 73311 Spare probe

SOLUTIONS

HI 70030P 12.88 mS/cm calibration solution, 20 mL sachets (25)
 HI 70031P 1413 μ S/cm calibration solution, 20 mL sachets (25)
 HI 70032P 1382 mg/L (ppm) calibration solution, 20 mL sachets (25)
 HI 70038P 6.44 g/L (ppt) calibration solution, 20 mL sachets (25)
 HI 70442P 1500 mg/L (ppm) calibration solution, 20 mL sachets (25)

ACCESSORIES

HI 73128 Probe removal tool

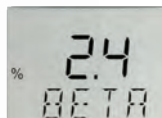


**DiST®5
& DiST®6**



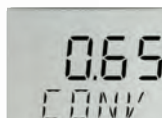
On-screen battery life

LCD indicates the percentage of battery power remaining upon startup.



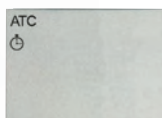
Adjustable temperature coefficient

For more precise temperature compensated measurements users can choose between different BETA (β) factors.



Adjustable TDS ratio

For measurement accuracy, users can choose between different conductivity to TDS conversion factors.



Instability and ATC indicators

Ensures reliable EC and TDS measurements. ATC symbol is shown when active.



• Replaceable graphite electrode

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

SPECIFICATIONS		HI 98311 (DiST®5)	HI 98312 (DiST®6)
Range	EC	0 to 3999 μ S/cm	0.00 to 20.00 mS/cm
	TDS	0 to 2000 mg/L (ppm)	0.00 to 10.00 g/L (ppt)
	Temperature	0.0 to 60.0°C / 32.0 to 140.0°F	
Resolution	EC	1 μ S/cm	0.01 mS/cm
	TDS	1 mg/L (ppm)	0.01 g/L (ppt)
	Temperature	0.1°C / 0.1°F	
Accuracy (@20°C)	EC	±2% F.S.	
	TDS	±2% F.S.	
	Temperature	±0.5°C / ±1°F	
Calibration		automatic, one point at 1413 μ S/cm or 1382 mg/L (ppm)	automatic, one point at 12.88 mS/cm or 6.44 g/L (ppt)
TDS Conversion Factor		adjustable from 0.45 to 1.00	
Temperature Compensation		automatic, with β adjustable from 0.0 to 2.4% / °C	
Probe		HI 73311 replaceable EC/TDS graphite electrode (included)	
Environment		0 to 50°C (32 to 122°F); RH max 100%	
Battery Type / Life		1.5V (4) / approximately 100 hours of continuous use, auto-off after 8 minutes of non-use	
Dimensions		163 x 40 x 26 mm (6.4 x 1.6 x 1.0")	
Weight		100 g (3.5 oz.)	

For a complete list of Solutions, see the end of Conductivity Section 6.

Soil Test™ Direct Soil EC Tester



- Replaceable 122 mm (4.5") penetration probe
- Automatic Temperature Compensation
- Lightweight and portable

The HI 98331 Soil Test™ is a pocket tester specifically designed to directly measure soil conductivity and temperature. With a temperature sensor in the penetration probe, measurements are automatically temperature compensated.

The conductivity range can be calibrated at one point and is designed to be performed in a standardized solution.



SPECIFICATIONS		HI 98331 Soil Test™
Range	EC	0.00 to 4.00 mS/cm (dS/m)*
	Temperature	0.0 to 50.0°C
Resolution	EC	0.01 mS/cm
	Temperature	0.1°C
Accuracy (@20°C)	EC	±0.05 mS/cm (0.00 to 2.00 mS/cm), ±0.30 mS/cm (2.00 to 4.00 mS/cm)
	Temperature	±1°C
Calibration	manual, one point	
Probe	HI 73331 122 mm (4.5") penetration (included)	
Temperature Compensation	automatic, temperature coefficient (β) fixed 2% / °C	
Environment	0 to 50°C (32 to 122°F); RH max 100%	
Battery Type	1.5V (4)	
Dimensions (without probe)	163 x 40 x 26 mm (6.4 x 1.6 x 1.0")	
Weight	100 g (3.5 oz.)	

* The meter gives indicative readings with lower accuracy between 4 mS/cm and 10 mS/cm.

ORDERING INFORMATION

HI 98331 (Soil Test™) is supplied with HI 73331 penetration conductivity probe, calibration screwdriver, batteries and instructions.

PROBES

HI 73331 Direct soil conductivity probe

SOLUTIONS

HI 7031L 1413 µS/cm (1.4 mS/cm) calibration solution, 500 mL
 HI 7031M 1413 µS/cm (1.4 mS/cm) calibration solution, 250 mL
 HI 70031P 1413 µS/cm (1.4 mS/cm) calibration solution, 20 mL sachets (25)

ACCESSORIES

HI 731326 Calibration screwdrivers (20)

For a complete list of Solutions, see the end of Conductivity Section 6.

HI 98323 • HI 98324

Sample Cell EC/TDS Testers

- Multiple ranges
- Automatic calibration
- Automatic Temperature Compensation
- HOLD function
- BEPS (Battery Error Prevention System)
- Battery % on Startup

DiST® 7 & DiST® 8 handheld meters from HANNA are designed for quick and easy EC, TDS and temperature measurements with high accuracy. These waterproof instruments display EC or TDS and temperature in either °C or °F.

These meters have been developed in direct response to users' requests in water treatment, boilers, cooling towers, reverse osmosis and agricultural applications.

Rugged and easy to use, each feature an on-board sample cell with built-in funnel, digital readout, push button automatic calibration and Automatic Temperature Compensation. The EC/TDS conversion factor and temperature coefficient (β) are user adjustable for application specific measurements.

At startup DiST®7 and DiST®8 perform a self-check and then display the battery level to ensure proper working conditions. Each unit has a stability indicator and HOLD function to prompt the user when to freeze the display and take a reading for easy and accurate recording.



ORDERING INFORMATION

HI 98323 (DiST®7) is supplied with calibration solution, batteries and instructions.

HI 98324 (DiST®8) is supplied with calibration solution, batteries and instructions.

SOLUTIONS

HI 70030P	12880 μ S/cm calibration solution, 20 mL sachets (25)
HI 70031P	1413 μ S/cm calibration solution, 20 mL sachets (25)
HI 70032P	1382 mg/L (ppm) calibration solution, 20 mL sachets (25)
HI 70038P	6.44 g/L (ppt) calibration solution, 20 mL sachets (25)
HI 70442P	1500 mg/L (ppm) calibration solution, 20 mL sachets (25)

SPECIFICATIONS		HI 98323 (DiST®7)	HI 98324 (DiST®8)
Range	EC	0 to 3999 μ S/cm	0.00 to 20.00 mS/cm
	TDS	0 to 2000 mg/L (ppm)	0.00 to 10.00 g/L (ppt)
	Temperature	0.0 to 60.0°C / 32.0 to 140.0°F	
Resolution	EC	1 μ S/cm	0.01 mS/cm
	TDS	1 mg/L (ppm)	0.01 g/L (ppt)
	Temperature	0.5°C / 0.1°F	
Accuracy (@20°C)	EC	±2% F.S.	
	TDS	±2% F.S.	
	Temperature	±0.5°C / ±1°F	
Calibration		automatic, one point at 1413 μ S/cm or 1382 mg/L (ppm)	automatic, one point at 12.88 mS/cm or 6.44 g/L (ppt)
TDS Conversion Factor		adjustable from 0.45 to 1.00	
Temperature Compensation		automatic, with β adjustable from 0.0 to 2.4% / °C	
Environment		0 to 50°C (32 to 122°F); RH max 100%	
Battery Type / Life		1.5V AA (4) / approximately 2000 hours of continuous use; auto-off after 8 minutes of non-use	
Dimensions		120 x 53 x 81 mm (4.7 x 2.1 x 3.2")	
Weight		205 g (7.2 oz.)	

For a complete list of Solutions, see the end of Conductivity Section 6.

EC/TDS and TDS Testers



Over 38 cm (15")

HI 983311
Aqua Dip™ EC/TDS

- Probe can be used as a fertilizer solution stirrer
- HOLD function
- Auto shut-off (HI 983311)
- No calibration needed

HI 983311 Aqua Dip™ EC/TDS provides simple and fast EC/TDS/Temperature measurements in places with high relative humidity. Aqua Dip™ EC/TDS allows immediate and precise response with only two operation buttons. This rugged unit is tough and built to last. The probe is even durable enough to be used as a stirrer. The HOLD button will freeze the display reading for your documentation requirements. Aqua Dip™ EC/TDS is factory calibrated and offers total protection against humidity, which makes Aqua Dip™ EC/TDS ideal for field use.

To perform TDS measurements in places with a high percentages of humidity, HANNA offers the HI 983310 Aqua Dip™ TDS. This instrument indicates the TDS measurement in ppm and the temperature in °C. With 2-button operation the Aqua Dip™ TDS is simple to use. One button turns the meter on and the other switches from TDS to temperature measurements and activates the HOLD function.

SPECIFICATIONS		HI 983311 AQUA DIP™ EC/TDS	HI 983310 AQUA DIP™ TDS
Range	EC	0 to 3999 μ S/cm	–
	TDS	0 to 2000 mg/L (ppm)	0 to 1999 mg/L (ppm)
	°C	0.0 to 60.0°C	0.0 to 60.0°C
Resolution	EC	1 μ S/cm	–
	TDS	1 mg/L (ppm)	1 mg/L (ppm)
	°C	0.1°C	0.1°C
Accuracy (@20°C)	EC	±2% F.S.	–
	TDS	±2% F.S.	±2% F.S.
	°C	±0.5°C	±0.5°C
Calibration		factory calibrated	
TDS Factor		0.5 (HI 983311) or 0.7 (HI 983311/7)	0.5
Temperature Compensation		automatic, with $\beta = 2.1\%$ / °C	
Environment		0 to 50°C (32 to 122°F); RH max 100%	
Battery Type / Life		1.5V (2) AAA / approximately 180 hours of use	1.5V AAA (2) / approximately 1000 hours of use
Dimensions		94 x 38 x 440 mm (3.7 x 1.5 x 17.3")	
Weight		200 g (7.8 oz.)	



HI 983310
Aqua Dip™ TDS

ORDERING INFORMATION

HI 983311 (Aqua Dip™ 0.5 TDS factor) is supplied with batteries and instructions.

HI 983311/7 (Aqua Dip™ 0.7 TDS factor) is supplied with batteries and instructions.

HI 983310 (Aqua Dip™ TDS) is supplied with batteries and instructions.

For a complete list of Solutions, see the end of Conductivity Section 6.

HI 981409 • HI 981410

EC and TDS Testers for Fertigation Solutions

- Lightweight and they float!
- Water resistant
- Ideal for mixing fertilizer
- Automatic calibration
- Automatic Temperature Compensation

HI 981409 and HI 981410 TDS and EC testers have been specifically designed to address the needs of operators in hydroponics, greenhouses and nurseries.

Calibration is easy and completely automatic. Simply press and hold the on/off button for a few seconds and the meter will request the appropriate calibration solution. Place the probe in the solution and wait until it is calibrated. No extra buttons to push or dials to turn!

HI 1220 probe measures 24 cm (9.4") and can be used to mix the fertilizer solution. The meter switches off after five minutes of inactivity to save battery life. The outer casing also incorporates a molded eye so that the meter can be hung right where it is needed.

EC GRÖCHEK



TDS GRÖCHEK



ORDERING INFORMATION

HI 981409 is supplied with HI 1220 EC/TDS probe (L: 240 mm) with DIN connector and protective sheath, batteries (2) and 1500 mg/L ppm solution sachet.

HI 981410 is supplied with HI 1220 EC/TDS probe (L: 240 mm) with DIN connector and protective sheath, batteries and 5.00 mS/cm solution sachet.

ELECTRODES

HI 1220 Spare probe for HI 981409 and HI 981410

SOLUTIONS

HI 70442P 1500 mg/L (ppm) calibration solution, 20 mL sachets (25)

HI 70039P 5.00 mS/cm calibration solution, 20 mL sachets (25)

SPECIFICATIONS

	HI 981409	HI 981410
Range	0 to 1999 mg/L (mg/L (ppm))	0.00 to 10.00 mS/cm
Resolution	1 mg/L (mg/L (ppm))	0.01 mS/cm
Accuracy (@20°C/68°F)	±2% F.S.	
Calibration	automatic, at 1500 mg/L (ppm)	automatic, at 5.00 mS/cm
Temperature Compensation	automatic, 5 to 50°C (41 to 122°F) with $\beta = 2\%/^{\circ}\text{C}$	
Probe	HI 1220, replaceable EC/TDS probe, 240 mm (9.4") long, with DIN connector (included)	
Battery Type / Life	1.5V AA (2) / approximately 300 hours of continuous use; auto-off after 5 minutes of non-use	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions (meter only)	86 x 94 x 33 mm (3.4 x 3.7 x 1.3")	
Weight (meter only)	150 g (5.3 oz.)	

For a complete list of Solutions, see the end of Conductivity Section 6.

DiST®**Exposed temperature sensor**

These testers feature exposed temperature sensors for faster response times.

**Guides**

The max level guide lets you know how deep to submerge the probe.



- Graphite electrodes
- ATC
- Simple one point calibration
- Easy to use
- Economical

DiST's are rugged and reliable pocket-sized testers that offer quick and accurate readings of conductivity or TDS.

The DiST® family of testers is widely used for monitoring EC/TDS in drinking water, water conditioning, reverse osmosis, cooling towers, wastewater, laboratories, agriculture, aquaculture and aquariums, hydroponics and the printing industry.

These testers feature an amperometric graphite electrode that provides better repeatability in measurements since they do not oxidize. An amperometric measurement of EC/TDS is based on Ohm's Law, $I = V/R$ where R depends on the distance between two pins and their surface. Oxidation changes both the distance and surface which will affect accuracy. The DiST's non-oxidizing graphite pins are able to provide an optimal surface for accurate, dependable results.

When calibration is necessary, simply submerge the electrode tip into calibration solution and adjust the trimmer on the side of the tester.

ORDERING INFORMATION

HI 98300 (DiST®1), HI 98301 (DiST®1), HI 98302 (DiST®2), HI 98303 (DiST®3) and HI 98304 (DiST®4) are supplied with protective cap, screwdriver, batteries and instructions.

ELECTRODES

HI 73301*	Spare probe for HI 98300 / HI 98301
HI 73302*	Spare probe for HI 98302
HI 73303*	Spare probe for HI 98303
HI 73304*	Spare probe for HI 98304

SOLUTIONS

HI 70030P	12.88 mS/cm calibration solution, 20 mL sachets (25)
HI 70031P	1413 µS/cm calibration solution, 20 mL sachets (25)
HI 70032P	1382 mg/L (ppm) calibration solution, 20 mL sachets (25)
HI 70442P	1500 mg/L (ppm) calibration solution, 20 mL sachets (25)
HI 70038P	6.44 g/L (ppt) calibration solution, 20 mL sachets (25)
HI 70039P	5.00 mS/cm calibration solution, 20 mL sachets (25)

* To be replaced by authorized technical personnel only.

SPECIFICATIONS	HI 98300 / HI 98301 (DiST® 1)	HI 98302 (DiST® 2)	HI 98303 (DiST® 3)	HI 98304 (DiST® 4)
Range	1999 mg/L (ppm)	10.00 g/L (ppt)	1999 µS/cm	19.99 mS/cm
Resolution	1 mg/L (ppm)	0.01 g/L (ppt)	1 µS/cm	0.01 mS/cm
Accuracy (@20°C/68°F)	±2% F.S.	±2% F.S.	±2% F.S.	±2% F.S.
TDS Factor	0.65 / 0.5	0.5	-	-
Calibration Solution	HI 70442 / HI 70032	HI 70038	HI 70031	HI 70039 or HI 70030
Calibration	manual, one point	manual, one point	manual, one point	manual, one point
Probe	HI 73301	HI 73302	HI 73303	HI 73304
Temperature Compensation	automatic, 0 to 50°C (32 to 122°F)			
Battery Type / Life	1.5V (4) / approx. 200 hours of continuous use			
Environment	0 to 50°C (32 to 122°F); RH max 95% non-condensing			
Dimensions	175 x 41 x 23 mm (6.9 x 1.6 x 0.9")			
Weight	95 g (3.4 oz.)			

For a complete list of Solutions, see the end of Conductivity Section 6.

DiST®: HI 96301 • HI 96302 • HI 96303 • HI 96304

The Original DiST®

- Automatic Temperature Compensation
- Rugged casing

For many applications, it is crucial to determine the quantity of dissolved salts in a body of water. High concentrations can cause corrosion, deposits in heating systems and can be detrimental to aquatic plant life and animals.

DiST® is an affordable pocket tester that ensures precise EC and TDS readings. Simply immerse the tester in the solution and the reading will be displayed.

HI 96301 (DiST®1) and HI 96302 (DiST®2) read in ppm, while HI 96303 (DiST®3) and HI 96304 (DiST®4) read in $\mu\text{S}/\text{cm}$.

Calibration is very simple to perform: immerse the tester in the calibration solution and adjust the trimmer on the rear of the meter until the correct value is displayed.

Automatic Temperature Compensation ensures correct readings. The digital display allows the operator to see the readings from every angle.



The
Original
DiST®

ORDERING INFORMATION

HI 96301 (DiST®1) is supplied with protective cap, calibration screwdriver, batteries and instructions.

HI 96302 (DiST®2) is supplied with protective cap, calibration screwdriver, batteries and instructions.

HI 96303 (DiST®3) is supplied with protective cap, calibration screwdriver, batteries and instructions.

HI 96304 (DiST®4) is supplied with protective cap, calibration screwdriver, batteries and instructions.

SOLUTIONS

HI 70031P	1413 $\mu\text{S}/\text{cm}$ calibration solution, 20 mL sachets (25)
HI 70032P	1382 ppm calibration solution, 20 mL sachets (25)
HI 70038P	6.44 g/L (ppt) calibration solution, 20 mL sachets (25)
HI 70039P	5000 $\mu\text{S}/\text{cm}$ calibration solution, 20 mL sachets (25)

SPECIFICATIONS	HI 96301 (DiST® 1)	HI 96302 (DiST® 2)	HI 96303 (DiST® 3)	HI 96304 (DiST® 4)
Range	1990 ppm	10000 ppm	1990 $\mu\text{S}/\text{cm}$	19900 $\mu\text{S}/\text{cm}$
Resolution	10 ppm	100 ppm	10 $\mu\text{S}/\text{cm}$	100 $\mu\text{S}/\text{cm}$
Accuracy (@20°C/68°F)	±2% F.S.			
Calibration	manual, one point, through trimmer			
Temperature Compensation	automatic, 5 to 50°C (41 to 122°F)			
Battery Type / Life	1.5V (4) / approximately 150 hours of continuous use			
Environment	0 to 50°C (32 to 122°F); RH max 95%			
Dimensions	150 x 30 x 21 mm (5.9 x 1.2 x 0.8")			
Weight	70 g (2.5 oz.)			

For a complete list of Solutions, see the end of Conductivity Section 6.

Conductivity and TDS Testers

2

TESTERS



- Choose from TDS or EC
- Direct or cable probe connection
- Automatic calibration
- Automatic Temperature Compensation

The Primo series of testers provide a fast and dependable way to measure the total dissolved solids or conductivity in your water samples. It is ideally suited for the rigorous demands of water quality professionals. Many professionals use the cabled version of the Primo when demonstrating the before and after results of conditioning and filtration systems.

Temperature is compensated automatically to ensure the readings are consistent to the standard or reference temperature.

Operating and routine maintenance has never been easier. Primo uses a single button at the top of the meter. Press it once and the meter is powered and ready for use. Press and hold the button for a few seconds and Primo automatically enters calibration mode. Simply open a sachet of calibration solution, dip the probe in, and within seconds the meter recognizes the calibration solution and calibrates itself!

SPECIFICATIONS	Primo	Primo 2	Primo 5	Primo 1	Primo 3	Primo 4
Range	0 to 1999 mg/L (ppm)	0 to 1999 mg/L (ppm); 0.0 to 60.0°C	0 to 1999 µS/cm	0 to 1999 mg/L (ppm)	0 to 1999 mg/L (ppm); 0.0 to 60.0°C	0.00 to 10.00 mS/cm
Resolution	1 mg/L (ppm)	1 mg/L (ppm); 0.1°C	1 µS/cm	1 mg/L (ppm)	1 mg/L (ppm); 0.1°C	0.01 mS/cm
Accuracy (@20°C/68°F)	±2% F.S.	±2% F.S.; ±0.5°C	±2% F.S.	±2% F.S.	±2% F.S.; ±0.5°C	±2% F.S.
Calibration	automatic, at 1382 mg/L (ppm)	automatic, at 1382 mg/L (ppm)	automatic, at 1413 µS/cm	automatic, at 1382 mg/L (ppm)	automatic, at 1382 mg/L (ppm)	automatic, at 5.00 mS/cm
Probe Connection	Direct	Direct	Direct	1 m (3.3') cable	1 m (3.3') cable	1 m (3.3') cable
Temperature Compensation	automatic, 0 to 60°C (32 to 140°F), β=2%/°C					
Battery Type / Life	1.5V (2) / approximately 200 hours or continuous use; auto-off after 5 minutes of non-use					
Environment	0 to 50°C (32 to 122°F); RH max 95%					
Dimensions	180 x 50 x 25 mm (7.1 x 2.0 x 1.0")			66 x 50 x 25 mm (2.6 x 2.0 x 1.0") meter only		
Weight	50 g (1.8 oz.)			115 g (4.1 oz.)		

ORDERING INFORMATION

Primo, Primo 2 and Primo 5 with direct probe connection are supplied with batteries and instructions.

Primo 1, Primo 3 and Primo 4 with 1 m (3.3') cable probe connection are supplied with batteries and instructions.

SOLUTIONS

HI 70031P	1413 µS/cm calibration solution, 20 mL sachets (25)
HI 70032P	1382 ppm calibration solution, 20 mL sachets (25)
HI 70039P	5.00 mS/cm calibration solution, 20 mL sachets (25)

For a complete list of Solutions, see the end of Conductivity Section 6.

TDS 1

TDS Tester

- Quick and accurate readings
- Automatic temperature compensation



Water contains a variety of minerals and salts such as carbonates, bicarbonates, chlorides and nitrate. TDS is the parameter that measures the total sum of all of these compounds.

TDS 1 is a simple and affordable tester for TDS measurements. Due to its internal sensor, TDS measurements are automatically compensated for temperature variations. Calibration can be performed in one point with a trimmer.

The tester is supplied with a cap that protects the probe when it is not in use. Batteries can be easily replaced.

Light and small, TDS 1 is an ideal pocket meter to perform quick TDS measurements.

SPECIFICATIONS	TDS 1
Range	0 to 999 mg/L (ppm)
Resolution	1 mg/L (ppm)
Accuracy (@20°C/68°F)	±2% F.S.
Calibration Solution	HI 70080P
Calibration	manual, 1 point, through trimmer
Temperature Compensation	automatic, 5 to 50°C (41 to 122°F)
Battery Type / Life	(4) 1.5V / approx. 150 hours
Environment	0 to 50°C (32 to 122°F); RH max 95%
Dimensions	150 x 30 x 21 mm (5.9 x 1.2 x 0.8")
Weight	70 g (2.5 oz.)

ORDERING INFORMATION

TDS 1 is supplied with protective cap, calibration screwdriver, batteries and instructions

SOLUTIONS

HI 70080P 800 ppm calibration solution, 20 mL sachets (25)

For a complete list of Solutions, see the end of Conductivity Section 6.



HI 98203 SALINTEST

Salt Content Meter

- Replaceable electrode
- Easy to handle
- Quick calibration



Worldwide, fish farming has made great strides in the past two decades, with aquaculture becoming the prime source for quality seafood. As the methods and products keep changing, one crucial factor remains the same: the necessity for salinity testing.

The main component of salt in seawater is sodium chloride. The SALINTEST can help you accurately monitor the concentration of sodium chloride in aquaculture systems. Besides applications in aquaculture, SALINTEST is also ideal for checking salt concentrations in live fish storage tanks, tropical fish aquariums, refrigerated storage and oceanographic investigations.

The SALINTEST is easy to maintain and to assure accuracy, it has one point calibration through a trimmer on the side.

SPECIFICATIONS	HI 98203 SALINTEST
Range	0.00 to 1.00 pNaCl (58.4 to 5.84 g/L (ppt) NaCl)
Resolution	0.01 pNaCl
Accuracy (@20°C/68°F)	±0.02 pNaCl
Calibration	manual, 1 point
Battery Type / Life	1.5V (4) / approximately 500 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH max 95%
Dimensions	175 x 41 x 23 mm (6.9 x 1.6 x 0.9")
Weight	95 g (3.4 oz.)

ORDERING INFORMATION

HI 98203 (SALINTEST) is supplied with protective cap, calibration screwdriver, batteries and instructions. SALINTEST is also supplied with a handy chart that converts readings in g/L of sodium chloride.

ELECTRODES

HI 73202 Spare electrode* for HI 98203

SOLUTIONS

HI 7081L 30 g/L NaCl solution, 500 mL

HI 7061M Cleaning solution, 250 mL

* to be replaced by authorized technical personnel only

For a complete list of Solutions, see ISE Section 4.

With Great Products, Come Great Results™

pNa takes guess
work out of **resin**
regeneration!



The pNa is an easy to use and inexpensive instrument for determining water hardness or softness. The hardness of water is due to the presence of magnesium and calcium. These make washing difficult, wastes soap, and creates unpleasant scum and scale deposits. With a zeolite system, the calcium and magnesium ions are substituted on a one-to-one basis with sodium ions from a conditioning resin. Once all the sodium ions are exhausted, the resin has to be regenerated.

A common but inaccurate way to determine when to change resin is to estimate the volume of water that goes through the softener and guessing when to change the resin! Even though this may work in some cases, it fails in most since the sodium content of feed water is never constant. As a result, either the resin is regenerated too early and wastes resources, or too late, risking damage due to scaling.

With the pNa, you can measure the sodium content of feed and exit water in seconds. When the resin is exhausted of sodium, there will be no exchange and the pNa will read the same value at the two ends. Only then should the resin be changed.



SPECIFICATIONS	HI 98202 pNa
Range	0.0 to 3.0 pNa (23 to 0.023 g/L (ppt) Na ⁺)
Resolution	0.1 pNa
Accuracy (@20°C/68°F)	±0.2 pNa
Calibration	manual, one point
Battery Type / Life	1.5V (4) / approximately 800 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH max 95%
Dimensions	175 x 41 x 23 mm (6.9 x 1.6 x 0.9")
Weight	95 g (3.4 oz)

ORDERING INFORMATION

HI 98202 (pNa) is supplied with protective cap, calibration screwdriver, batteries and instructions.

ELECTRODES

HI 73202* Spare electrode for HI 98202

SOLUTIONS

HI 7080L 2.3 g/L Na⁺ solution, 500 mL
HI 7061M Cleaning solution, 250 mL

* to be replaced by authorized technical personnel only

For a complete list of Standard Solutions, see the end of ISE Section 4. For Cleaning and Maintenance, see the end of pH Section 3.

HI 98308 PWT • HI 98309 UPW

Water Purity Testers

- Exposed temperature probe for fast response
- Graphite sensors for reduced polarization
- Replaceable probes

Pure Water Test (PWT) enables users to check the purity of your distilled or demineralized water in laboratory or industrial environments. Ultra Pure Water (UPW) is an ideal tester for MΩ checks.

PWT is suited for fields such as printed circuit board washing, laundry, steam cleaning, checking car battery water and all areas where distilled, demineralized or pure water is used. UPW is the first pure water tester to measure in 1/1000ths of micro-Siemens (μS) and provides fast, on the spot checks for minute traces of contamination in your water.

These testers are housed in a durable case that provides excellent protection against harsh industrial environments.

RESISTANCE OF DISTILLED/UPW	EQUIVALENT DEIONIZED WATER READING
1 MΩ	1.000 μS/cm
2 MΩ	0.500 μS/cm
5 MΩ	0.200 μS/cm
10 MΩ	0.100 μS/cm
15 MΩ	0.067 μS/cm
20 MΩ	0.050 μS/cm

SOME TYPICAL CONVERSIONS OF MEASUREMENTS PERFORMED WITH PWT		
μS/CM READING	RESISTIVITY	mg/L NaCl
99.9	10 KΩ	48
10	100 KΩ	4.6
1	1 MΩ	0.4
0.1	10 MΩ	0.02

ORDERING INFORMATION

HI 98308 (PWT) and HI 98309 (UPW) are supplied with protective cap, calibration screwdriver (HI 98308), batteries and instructions.

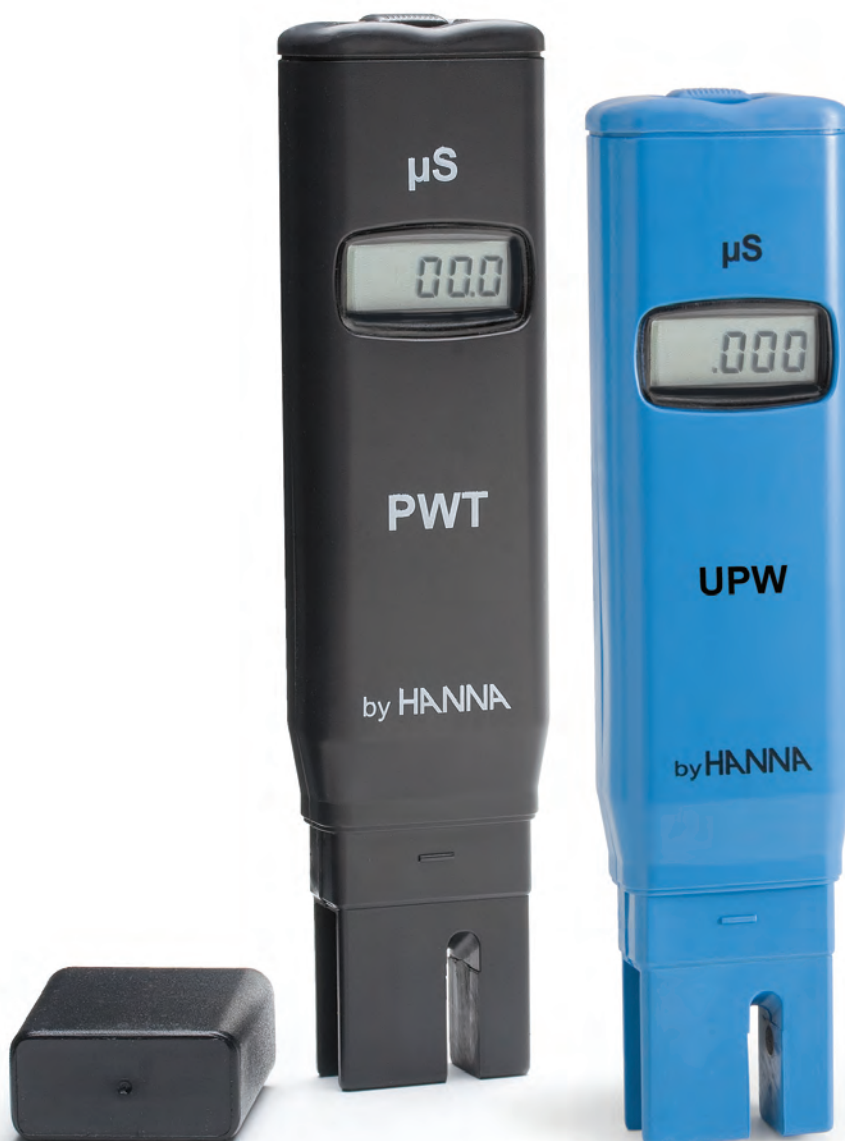
ELECTRODES

HI 73308 Spare probe* for HI 98308
HI 73309 Spare probe* for HI 98309

SOLUTIONS

HI 70033P 84 μS/cm calibration solution, 20 mL sachets (25)

* to be replaced by authorized technical personnel only



SPECIFICATIONS	HI 98308 PWT	HI 98309 UPW
Range	0.0 to 99.9 μS/cm	0.000 to 1.999 μS/cm
Resolution	0.1 μS/cm	0.001 μS/cm
Accuracy (@20°C/68°F)	±2% F.S.	
Calibration	manual, one point	factory calibrated
Temperature Compensation	automatic, 0 to 50°C (32 to 122°F) with β=2%/°C typical	—
Battery Type / Life	1.5V (4) / approximately 250 hours of continuous use	1.5V (4) / approximately 120 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	175 x 41 x 23 mm (6.9 x 1.6 x 0.9")	
Weight	95 g (3.4 oz.)	

For a complete list of Solutions, see the end of Conductivity Section 6.

HYGROCHECK® Relative Humidity Tester



Pocket-Sized for Easy Transport

The HANNA HYGROCHECK® uses the advanced TFPC* sensing method to measure humidity and an integrated electronic circuit to perform all relative conversions. This method of Relative Humidity measurement assures a quick and accurate readings. With a complete measurement range of 10% to 90% RH and an accuracy of 3% across the entire range, HYGROCHECK® is the most complete and versatile pocket-sized Hygrometer available!

Most hygrometers on the market are too large or heavy to be carried around with other instruments for on-the-spot testing. The pocket-sized HYGROCHECK® is only 180 x 30 x 15 mm (7.1 x 1.2 x 0.6") and weighs just 62 grams (2.2 oz.). This compact, rugged unit will slip right into your pocket to be carried anywhere!

The housing is constructed of durable ABS material and the LCD is protected behind a transparent plastic cover. The LCD displays the RH reading which can be read from any angle. Also, a vented cap protects the sensor while allowing maximum airflow for fast response.

No Conversions Necessary

Unlike traditional hygrometers, HANNA's HYGROCHECK® performs all relative conversions electronically. NO charts, NO estimating, NO broken thermometers, NO human error! This unit measures RH in seconds without the limitations associated with traditional hygrometers.

(*Thin Film Polymer Capacitance)



SPECIFICATIONS	HI 98601 HYGROCHECK®
Range	10.0 to 90.0% RH
Resolution	0.1% RH
Accuracy (@20°C/68°F)	±3% F.S.
Response Time	Up to 20 seconds for 95% accuracy
Battery Type / Life	1.5V (3)/ approximately 100 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH 95%
Dimensions	180 x 30 x 15 mm (7.1 x 1.2 x 0.6")
Weight	62 g (2.2 oz.)

ORDERING INFORMATION

HI 98601 (HYGROCHECK®) is supplied complete with batteries, soft carrying case and instruction manual.

ACCESSORIES

HI 740203 Soft carrying case

HI 98501 • HI 98502 • HI 98505 • HI 98506

Checktemp® Electronic Digital Thermometer

- $\pm 0.3^{\circ}\text{C}$ accuracy
- CAL CHECK®
- Ideal for spot checks
- Fast and accurate results

If you ever wished that your temperature measurements could be made a little easier, the Checktemp® might just be what you're looking for! The Checktemp® offers high accuracy over a wider range without worrying about breakage or condensation.

The Checktemp® offers 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!

Checktemp® is provided with HANNA's unique CAL CHECK™ function for accurate measurements every time: simply activate a switch and the instrument will simulate an ice bath of 0.0°C (32.0°F) signal that is displayed on the LCD within a range of $\pm 0.3^{\circ}\text{C}$ ($\pm 0.5^{\circ}\text{F}$).

The sharp-tip probe of the Checktemp® easily penetrates semisolid products, making routine controls simple and quick for both incoming and outgoing goods. Checktemp® is the ideal instrument for measuring temperature according to HACCP requirements.

Checktemp® L models feature a round tip probe for liquid measurements and safety.

Models with factory calibration certificate against NIST standards are also available.

ORDERING INFORMATION

HI 98501 (Checktemp®C) is supplied with penetration probe, protective cap, battery and instructions.

HI 98503 (Checktemp®C) is supplied with penetration probe, protective cap, battery, factory calibration certificate and instructions.

HI 98502 (Checktemp®F) is supplied with penetration probe, protective cap, battery and instructions.

HI 98504 (Checktemp®F) is supplied with penetration probe, protective cap, battery, factory calibration certificate and instructions.

HI 98505 (Checktemp®LC) is supplied with liquid probe, protective cap, battery and instructions.

HI 98507 (Checktemp®LC) is supplied with liquid probe, protective cap, battery, factory calibration certificate and instructions.

HI 98506 (Checktemp®LF) is supplied with liquid probe, protective cap, battery and instructions.

HI 98508 (Checktemp®LF) is supplied with liquid probe, protective cap, battery, factory calibration certificate and instructions.

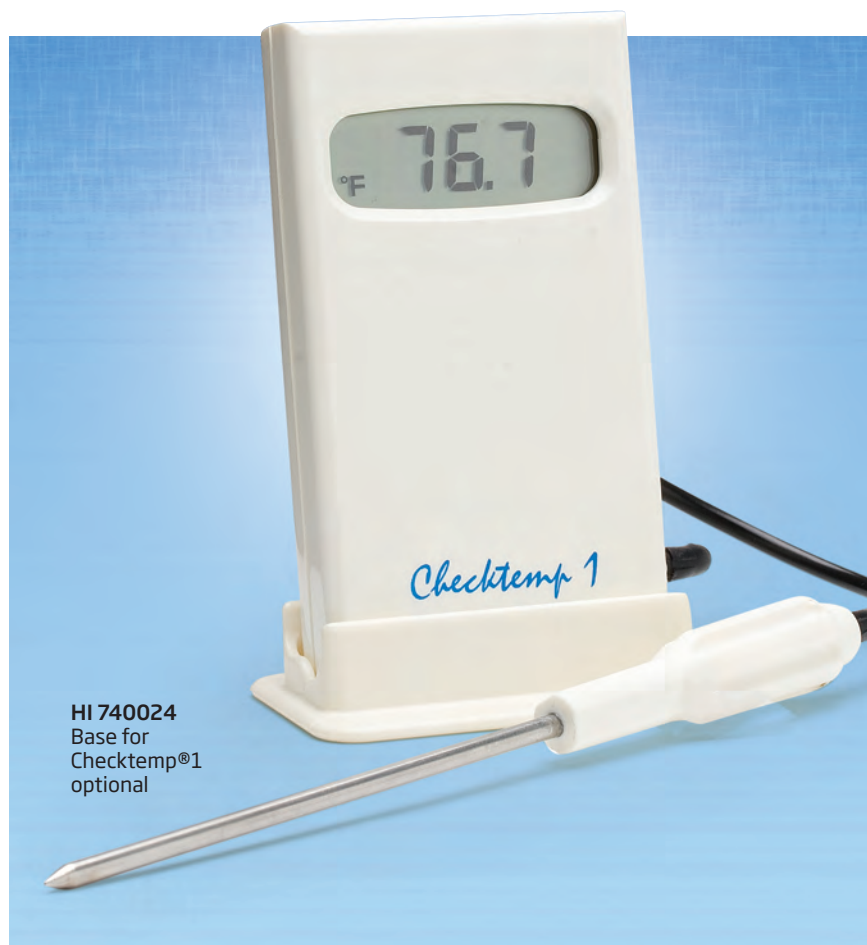


SPECIFICATIONS	HI 98501/ HI 98503 (Checktemp®C)	HI 98502/ HI 98504 (Checktemp®F)	HI 98505/ HI 98507 (Checktemp®LC)	HI 98506/ HI 98508 (Checktemp®LF)
Range	-50.0 to 150.0°C	-58.0 to 302.0°F	-50.0 to 150.0°C	-58.0 to 302.0°F
Resolution	0.1°C	0.1°F (58.0 to 199.9°F); 1°F (200 to 302°F)	0.1°C	0.1°F (58.0 to 199.9°F); 1°F (200 to 302°F)
Accuracy	$\pm 0.3^{\circ}\text{C}$ (-20 to 90°C) $\pm 0.5^{\circ}\text{C}$ (outside)	$\pm 0.5^{\circ}\text{F}$ (-4 to 194°F) $\pm 1^{\circ}\text{F}$ (outside)	$\pm 0.3^{\circ}\text{C}$ (-20 to 90°C) $\pm 0.5^{\circ}\text{C}$ (outside)	$\pm 0.5^{\circ}\text{F}$ (-4 to 194°F) $\pm 1^{\circ}\text{F}$ (outside)
Probe	fixed, stainless steel probe; 105 x \varnothing 3 mm (penetration)	fixed, stainless steel probe; 105 x \varnothing 3 mm (penetration)	fixed, stainless steel probe; 105 x \varnothing 3 mm (liquid)	fixed, stainless steel probe; 105 x \varnothing 3 mm (liquid)
Battery Type / Life	1.5V / approximately 3000 hours of continuous use			
Environment	0 to 50°C (32 to 122°F); RH max 95%			
Dimensions	66 x 50 x 25 mm (2.6 x 2.0 x 1.0")			
Weight	50 g (1.8 oz.) - meter only			

Pocket Thermometers

2

TESTERS



- $\pm 0.3^{\circ}\text{C}$ accuracy
- Stainless steel probe with sharp tip for semi-solids
- CAL CHECK®
- Ideal for HACCP requirements

The Checktemp®1 is a high accuracy thermometer with a 1 m (3.3') flexible cable between the meter and the stainless steel probe. The sharp-tip penetration probe easily penetrates semisolid products such as fruits, vegetables, and cheeses. This probe can also handle liquid, air and measurements in frozen materials. These thermometers utilize a NTC thermistor sensor to measure the temperature. Thermistors make it possible to obtain extremely high accuracy in a very short period of time.

The HANNA CAL CHECK® feature has been incorporated into the Checktemp®1. Activate the "test" switch and this device will simulate an ice bath of 0.0°C (32.0°F) signal that is displayed on the LCD within a range of $\pm 0.3^{\circ}\text{C}$ ($\pm 0.5^{\circ}\text{F}$). This assures the user that the reading is reliable and accurate, every time.

Checktemp®1 makes routine controls fast and simple for both incoming and outgoing goods. Constructed of AISI 316 stainless steel material, this probe is in compliance with food regulations making it an ideal instrument for measuring temperature according to HACCP requirements.



The Checktemp®1 is ideal to check the temperature of meat

SPECIFICATIONS	HI 98509 Checktemp®1C	HI 98510 Checktemp®1F
Range	-50.0 to 150.0°C	-58.0 to 302.0°F
Resolution	0.1°C	0.1°F
Accuracy	$\pm 0.3^{\circ}\text{C}$ (-20 to 90°C) / $\pm 0.5^{\circ}\text{C}$ (outside)	$\pm 0.5^{\circ}\text{F}$ (-4 to 194°F) / $\pm 1^{\circ}\text{F}$ (outside)
Probe	stainless steel probe with 1 m (3.3') cable; 160 x dia 3 mm (6.3 x dia 0.1")	
Battery Type / Life	1.5V AAA / approximately 3 years of use	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	106 x 58 x 19 mm (4.2 x 2.3 x 0.7")	
Weight	80 g (2.8 oz.) - meter only	

ORDERING INFORMATION

HI 98509 (Checktemp®1 C) is supplied with battery and instructions

HI 98511 (Checktemp®1 C) is supplied with battery, factory calibration certificate and instructions

HI 98510 (Checktemp®1 F) is supplied complete with battery and instructions

HI 98512 (Checktemp®1 F) is supplied complete with battery, factory calibration certificate and instructions.

ACCESSORIES

HI 740024P Base for Checktemp®1

HI 151

Folding Pocket Thermometer

- $\pm 0.3^{\circ}\text{C}$ accuracy
- CAL CHECK®
- Stainless steel folding probe with penetration tip
- Enables angled measurement
- Ergonomic
- Auto shut-off

The folding Checktemp®4 provides practical temperature measurement for the food service industry.

Special attention was given to the ergonomic form of Checktemp®4. This thermometer fits comfortably and securely in your hand. The LCD on the side of the handle is easy to see and read. The fast responding, fold-away probe is made of high quality, stainless steel and can penetrate semi-frozen and semi-solid foods like meats, ice cream and cheeses. When you are finished using your Checktemp®4, wipe the probe clean and fold it away. Checktemp®4 automatically turns OFF so you can safely carry it in your pocket.

CAL CHECK®

As you unfold the stainless steel probe, the Checktemp® 4 automatically turns ON and immediately performs a calibration test. This unique HANNA feature, CAL CHECK®, provides the security of knowing you have accurate measurements. CAL CHECK® also lets you know if your battery level is low or if your meter requires recalibration.

ORDERING INFORMATION

HI 151-00 (Checktemp®4 C) is supplied complete with battery and instructions

HI 151-01 (Checktemp®4 F) is supplied complete with battery and instructions

HI 151-001 (Checktemp®4 C) is supplied complete with calibration certificate, battery and instructions

HI 151-011 (Checktemp®4 F) is supplied complete with calibration certificate, battery and instructions

HI 151-02 (Checktemp®4 C) $\pm 0.5^{\circ}\text{C}$ accuracy, without CAL CHECK is supplied complete with battery and instructions



SPECIFICATIONS	HI 151-00 (Checktemp®4C)	HI 151-01 (Checktemp®4F)
Range	-50.0 to 220°C	-58.0 to 428°F
Resolution	0.1°C (-50.0 to 199.9°C); 1°C (200 to 220°C)	0.1°F (-58.0 to 199.9°F); 1°F (200 to 428°F)
Accuracy	$\pm 0.3^{\circ}\text{C} \pm 1$ digit (-20.0 to 90.0°C); $\pm 1\%$ F.S. ± 1 digit (outside)	$\pm 0.5^{\circ}\text{F} \pm 1$ digit (-4.0 to 194.0°F); $\pm 1\%$ F.S. ± 1 digit (outside)
Calibration Check	automatic, at start-up	
Probe	stainless steel probe with penetration tip; 117 x dia 3.5 mm (4.6 x dia 0.14")	
Battery Type / Life	1.5V AA / approximately 25,000 hours of continuous use; auto-off after 8 minutes of non-use	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	165 x 50 x 20 mm (6.5 x 2.0 x 0.8")	
Weight	100 g (3.5 oz.)	

±1°C Accuracy Pocket Thermometers



HI 98501-1 and HI 98509-1 are two models with the same technical characteristics, but designed for different applications.

HI 98501-1 is a compact meter with direct probe that is suitable for temperature measurements in semisolid samples and liquid testing.

HI 98509-1 is provided with a probe and a 1 m (3.3') cable, that allows easy measurements in hard-to-reach locations. In addition, the large LCD immediately displays the temperature value, making routine monitoring simple and fast.

These pocket thermometers are the closest digital alternative to traditional glass thermometers.

SPECIFICATIONS	HI 98501-1	HI 98509-1
Range	-50.0 to 150.0°C	
Resolution	0.1°C	
Accuracy	±1°C	
Probe	stainless steel probe; 105 mm x dia 3 mm (4.1 x dia 0.1")	stainless steel probe with 1 m (3.3') cable; 160 mm x dia 3 mm (6.3 x dia 0.12")
Battery Type / Life	1.5V / approximately 3000 hours of use	1.5V AAA / approximately 3 years of use
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	66 x 50 x 25 mm (2.6 x 2.0 x 1.0")	106 x 58 x 19 mm (4.2 x 2.3 x 0.7")
Weight	50 g (1.8 oz.) - meter only	80 g (2.8 oz.) - meter only

ORDERING INFORMATION

HI 98501-1 and HI 98509-1 are supplied with battery and instructions

Weighted Probe Precision Thermometer



Checktemp® Dip is an accurate thermometer measuring from -20 to 100°C (-4 to 212°F). The stainless steel probe with a flexible 3 m (9.9') cable is weighted so that it can be dipped into any vat or tank to measure the temperature at different depths. Due to its hygienic stainless steel probe, it is ideal for food applications, especially to check the temperature inside wine casks and milk tanks.

Checktemp® Dip can also be used for applications such as fish farms, water reservoirs and pools where the operator can simply stand on the edge of the water and throw the probe over.

In addition, you can check to make sure that your thermometer is measuring the right temperature with HANNA exclusive CAL CHECK® technology. The battery life is a remarkable 3 years with a normal AAA battery.

SPECIFICATIONS	HI 98509-01	HI 98509-03	HI 98510-01
Range	-20.0 to 100.0°C		-4.0 to 212°F
Resolution	0.1°C		0.1°F (-4 to 199.9°F) / 1°F (200 to 212°F)
Accuracy	±0.5°C (-20 to 50°C) / ±0.9°C (outside)		±0.9°F (-4 to 122°F) / ±2°F (outside)
Probe	stainless steel weighted probe and 3 m (9.9') cable	flat probe	stainless steel weighted probe and 3 m (9.9') cable
Battery Type / Life	1.5V AAA / approximately 3 years of use		
Environment	0 to 50°C (32 to 122°F); RH 95% Max		
Dimensions	106 x 58 x 19 mm (4.1 x 5.2 x 0.7")		
Weight	80 g (2.8 oz.)		

ORDERING INFORMATION

HI 98509-01 (Checktemp®Dip C), °C, is supplied with weighted probe and 3 m (9.9') cable (fixed), battery and instructions.

HI 98509-03 (Checktemp®Dip C), °C, is supplied with flat probe and 3 m (9.9') cable (fixed), battery and instructions.

HI 98510-01 (Checktemp®Dip F), °F, is supplied with weighted probe and 3 m (9.9') cable (fixed), battery and instructions.

HI 145

T-Shaped Thermometer

- $\pm 0.3^{\circ}\text{C}$ accuracy
- T-shaped body for easy reading
- Two probe lengths available
- CAL CHECK®
- Ideal for semi-solids, deep fryers and soup preparation
- Exceptionally long battery life of over a year

HI 145 thermometers were developed for HACCP programs that need high standards of performance with simplicity of use. The durable T-shaped handle fits comfortably in hand and is ideal for applications where applied force is necessary for insertion, such as with incoming meat inspection and semi-frozen foods. The LCD positioned on top of the meter allows for easy reading in cooking applications.

HI 145-00 and **HI 145-01** are equipped with a 125 mm (5") long AISI 316 stainless steel probe. The sharp conical tip provides fast response and improved accuracy over the entire range.

HI 145-20 and **HI 145-30** are supplied with a 300 mm (12") long stainless steel probe; ideal for monitoring hot liquids, such as deep frying and soup preparation.

With an automatic CAL CHECK® feature, the HI 145 series performs a self check of its calibration status and displays it on the LCD. This feature ensures accuracy, repeatability and confidence in readings.



HI 145-20 (°C) – HI 145-30 (°F):
Stainless steel probe
300 x dia 5 mm

HI 145-00 (°C) – HI 145-01 (°F):
Stainless steel probe
125 x dia 5 mm



ORDERING INFORMATION

All models of the HI 145 series are supplied complete with battery and instructions

HI 145-00 with 125 mm probe

HI 145-01 with 125 mm probe

HI 145-20 with 300 mm probe

HI 145-30 with 300 mm probe

SPECIFICATIONS	HI 145-00	HI 145-01	HI 145-20	HI 145-30
Range	-50.0 to 220°C	-58.0 to 428.0°F	-50.0 to 220°C	-58.0 to 428.0°F
Resolution	0.1°C (-50.0 to 199.9°C); 1°C (200 to 220°C)	0.1°F (-58.0 to 199.9°F); 1°F (200 to 428°F)	0.1°C (-50.0 to 199.9°C); 1°C (200 to 220°C)	0.1°F (-58.0 to 199.9°F); 1°F (200 to 428°F)
Accuracy	±0.3°C (-20 to 90°C); ±0.4% F.S. (outside)	±0.6°F (-4 to 194°F); ±0.4% F.S. (outside)	±0.3°C (-20 to 90°C); ±0.4% F.S. (outside)	±0.6°F (-4 to 194°F); ±0.4% F.S. (outside)
Probe	stainless steel probe; 125 mm x dia 5 mm (4.9 x dia 0.2")		stainless steel probe; 300 mm x dia 5 mm (11.8 x dia 0.2")	
Battery Type / Life	1.5V AAA / approximately 10,000 hours of continuous use; auto-off after 8 minutes of non-use			
Environment	-10 to 50°C (14 to 122°F); RH max 95%			
Dimensions	92 x 165 x 38 mm (3.6 x 6.5 x 1.5")		92 x 340 x 38 mm (3.6 x 13.4 x 1.5")	
Weight	65 g (2.3 oz.)		80 g (2.8 oz.)	

High Temperature Thermometer



Face slides up to reveal on/off switch



Probe can be detached for more versatile handling

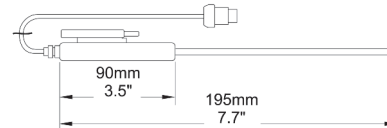


- Interchangeable probes
- Designed for the food industry

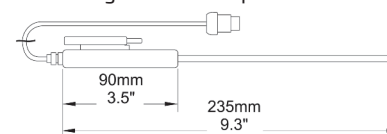
HI 149 is a pocket thermometer for routine checks in the food industry. It provides an extensive measurement range from -40°C to 300°C (-40 to 572°F). With a user replaceable probe, it can be employed in an equally wide range of applications. Users have a choice of four probes specifically manufactured to measure the temperature of liquids, air, surface, solids and semi-solids. This way, users can match the probe to the application as well as change probes without requiring calibration.

4 Probes available

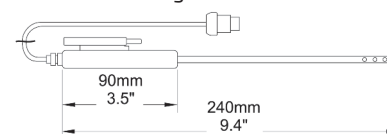
PROBE EPW Penetration Probe



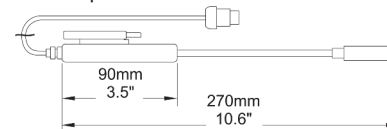
PROBE ELW Probe for general use/liquids



PROBE ECW Probe for air and gas



PROBE EMW Surface probe



SPECIFICATIONS	HI 149-00	HI 149-01
Range	-40 to 300°C	-40 to 572°F
Resolution	1°C	1°F
Accuracy	±2°C	±4 °F
Probe	interchangeable, stainless steel probe with 1 m cable (not included)	
Battery Type / Life	1.5V (3) / approximately 700 hours of continuous use	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	106 x 68 x 21 mm (4.2 x 2.7 x 0.8)	
Weight	80 g (2.8 oz.)	

ORDERING INFORMATION

HI 149-00, °C readings, is supplied with batteries and instructions

HI 149-01, °F readings, is supplied with batteries and instructions

PROBES (at least 1 required)

- PROBE EPW** Penetration probe
- PROBE ELW** General purpose/liquid probe
- PROBE ECW** Air/gas probe
- PROBE EMW** Surface probe

HI 98517 KEY® °C • HI 98518 KEY® °F

KEY® Pocket Thermometer

- Ideal for spot measurements
- Five interchangeable stainless steel probes available

The KEY® is a thermometer with an interchangeable probe for quick spot measurements. With a response time of less than 20 seconds in water, KEY® is ideal for quality control and industrial temperature monitoring.

Five interchangeable temperature probes are available to meet specific requirements. Each probe is constructed out of rugged AISI 316 stainless steel, which resists the harmful effects of chemicals and humidity.

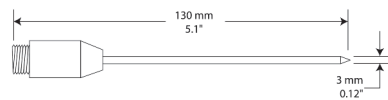
In the HVAC field, gas and air can be monitored with the HI 98517-11 probe. The HI 98517-13 probe is for penetration and is included with the meter. It also provides a fast response typical of a thermocouple probe. HI 98517-15 and HI 98517-30 probes are for general liquid monitoring. The HI 98517-12 being a surface probe is made for machine shops, molding facilities and welding surfaces.



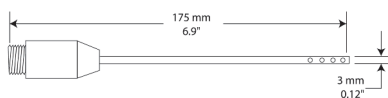
The KEY® is a K-Type Thermocouple

5 Probes available

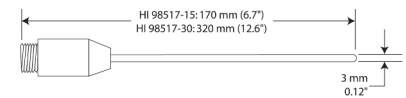
HI 98517-13
penetration/general purpose
K-type thermocouple probe supplied with KEY®. Application: liquid, air/gas, penetration of semisolids.



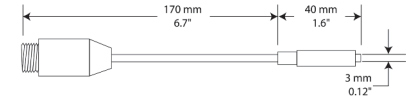
HI 98517-11
air/gas
K-type thermocouple probe for KEY®. Application: air/gas.



HI 98517-15 and HI 98517-30
liquid/general purpose
K-type thermocouple probe for KEY®. Application: liquids, air/gas.



HI 98517-12
surface
K-type thermocouple probe for KEY®. Application: solids, plates, furnaces, molds.

**ORDERING INFORMATION**

HI 98517 (KEY®C) and HI 98518 (KEY®F) are supplied with HI 98517-13 probe, batteries and instructions.

HI 98517-00 (KEY®C) is supplied with batteries and instructions (without probe).

PROBES

- HI 98517-11** K-thermocouple probe for air/ gas
HI 98517-12 K-thermocouple probe for surfaces
HI 98517-13 K-thermocouple probe for penetration
HI 98517-15 K-thermocouple probe for liquid/general purpose, length 170 mm (6.7")
HI 98517-30 K-thermocouple probe for liquid/general purpose, length 320 mm (12.6")

SPECIFICATIONS	HI 98517 (KEY®C)	HI 98518 (KEY®F)
Range	-40 to 550°C	-40 to 999°F
Resolution	1°C	1°F
Accuracy	±2°C	±4°F
Response Time	approximately 20 seconds in water with HI 98517-13 probe (included)	
Battery Type / Life	1.5V (4) / approximately 700 hours of continuous use	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions (meter only)	175 x 41 x 23 mm (6.2 x 1.4 x 0.8")	
Weight	78 g (3.0 oz.)	

pH/EC/TDS/Temperature Monitors

2

MONITORS



Backlit LCD!

- Waterproof
- Adjustable TDS ratio and adjustable β
- Stability indicator and HOLD

These indicators continuously monitor the three most crucial nutrient parameters in hydroponic, greenhouse and horticultural applications.

At startup, these indicators perform a self-check to assure proper working condition. The stability indicator and HOLD function lets the user know when to take readings and freezes the reading on display for easy and accurate recording.

These instruments are supplied with a non-clogging double junction pH electrode as well as a rugged conductivity probe that will withstand even the most aggressive environments. The 12 VDC adapter makes these instruments ideal for all continuous monitoring applications.

ORDERING INFORMATION

HI 991404-01 (115V) and **HI 991404-02** (230V) is supplied with HI 1293 pH electrode, HI 7630 EC probe (fixed), HI 70004 pH 4.01 buffer solution sachet, HI 70007 pH 7.01 buffer solution sachet, HI 70031 1413 $\mu\text{S}/\text{cm}$ calibration solution sachet, 12 VDC adapter and instructions.

HI 991405-01 (115V) and **HI 991405-02** (230V) is supplied with HI 1293 pH electrode, HI 7630 EC probe (fixed), HI 70004 pH 4.01 buffer solution sachet, HI 70007 pH 7.01 buffer solution sachet, HI 70030 1288 mS/cm calibration solution sachet, 12 VDC adapter and instructions.

ELECTRODES

- HI 7630** Conductivity probe with 1/2" NPT pipe thread and 2 m (6.6') cable*
- HI 1293** PEI body, pre-amplified pH electrode with 1/2" NPT pipe thread, DIN connector and 2 m (6.6') cable

SOLUTIONS

- HI 70004P** pH 4.01 buffer solution, 20 mL sachets (25)
- HI 70007P** pH 7.01 buffer solution, 20 mL sachets (25)
- HI 70010P** pH 10.01 buffer solution, 20 mL sachets (25)
- HI 70030P** 12.88 mS/cm calibration solution, 20 mL sachets (25)
- HI 70031P** 1413 $\mu\text{S}/\text{cm}$ calibration solution, 20 mL sachets (25)
- HI 70032P** 1382 ppm calibration solution, 20 mL sachets (25)
- HI 70038P** 6.44 g/L (ppt) calibration solution, 20 mL sachets (25)
- HI 70442P** 1500 ppm calibration solution, 20 mL sachets (25)
- HI 70300M** Electrode storage solution, 250 mL
- HI 7061M** Probe cleaning solution, 250 mL

* to be replaced by authorized technical personnel only

SPECIFICATIONS		HI 991404	HI 991405
Range	pH	0.0 to 14.0 pH	0.0 to 14.0 pH
	EC	0 to 3999 $\mu\text{S}/\text{cm}$	0.00 to 20.00 mS/cm
	TDS	0 to 2000 mg/L (ppm)	0.00 to 10.00 g/L (ppt)
	Temperature	0.0 to 60.0°C / 32.0 to 122.0°F	0.0 to 60.0°C / 32.0 to 122.0°F
Resolution	pH	0.1 pH	0.1 pH
	EC	1 $\mu\text{S}/\text{cm}$	0.01 mS/cm
	TDS	1 mg/L (ppm)	0.01 g/L (ppt)
	Temperature	0.1°C (0.1°F)	0.1°C (0.1°F)
Accuracy (@20°C/68°F)	pH	± 0.1 pH	
	EC/TDS	$\pm 2\%$ F.S.	
	Temperature	$\pm 0.5^\circ\text{C}$ ($\pm 1^\circ\text{F}$)	
Temperature Compensation		pH: automatic; EC/TDS: automatic with β adjustable from 0.0 to 2.4%/°C	
pH Calibration		pH: automatic, one or two points with auto-buffer recognition	
EC/TDS Calibration		automatic, one point at 1413 $\mu\text{S}/\text{cm}$ or 1382 ppm	automatic, one point at 12.88 mS/cm or 6.44 g/L (ppt)
pH Electrode		HI 1293 PEI body, pre-amplified pH electrode with 1/2" NPT pipe thread, DIN connector and 2 m (6.6') cable (included);	
EC/TDS Probe		HI 7630 conductivity probe with 1/2" NPT pipe thread and 2 m (6.6') cable (fixed)	
TDS Conversion Factor		adjustable from 0.45 to 1.00	
Environment		0 to 50°C (32 to 122°F); RH max 95% non-condensing	
Input Impedance		10^{12} Ohm	
Power Supply		12 VDC adapter (included)	
Dimensions / Weight (meter only)		160 x 105 x 31 mm (6.3 x 4.1 x 1.2) / 190 g (6.7 oz.)	

For a complete list of Solutions, see the end of pH Section 3 and Conductivity Section 6.

HI 981504

pH/TDS/Temperature Monitor

- Simultaneous display of pH, TDS and temperature
- Continuous measurements
- Measure in °C or °F
- Three, backlit displays

Set-up is simple. Install the HI 981504 near the sample to be tested, plug the indicator in and immerse the probes. pH, TDS and temperature measurements will be simultaneously displayed on three backlit LCDs.

Users can easily select the temperature unit (°C or °F) on the back panel.

The HI 1286 gel-filled pH electrode is provided with a waterproof sleeve to protect the BNC connector. The unique design of the electrode provides longer life in aggressive solutions. The HI 7634 TDS probe is easy to clean and requires little maintenance. Measurements are accurate and the meter can be calibrated at one or two points for pH and at a single point for TDS. Temperature is factory calibrated.

ORDERING INFORMATION

HI 981504/5-01 (115V) and **HI 981504/5-02** (230V) are supplied with HI 1286 pH electrode, HI 7634 TDS probe (fixed), temperature probe (fixed), HI 70004 pH 4.01 buffer solution sachet, HI 70007 pH 7.01 buffer solution sachet, HI 70032 1382 ppm calibration solution sachet, HI 700661 electrode cleaning solution sachet (2), screwdriver, 12 VDC adapter and instructions.

HI 981504/7-01 (115V) and **HI 981504/7-02** (230V) are supplied with HI 1286 pH electrode, HI 7634 TDS probe (fixed), temperature probe (fixed), HI 70004 pH 4.01 buffer solution sachet, HI 70007 pH 7.01 buffer solution sachet, HI 70442 1500 ppm calibration solution sachet, HI 700661 electrode cleaning solution sachet (2), screwdriver, 12 VDC adapter and instructions.

ELECTRODES

HI 1286 PEI body pH electrode with BNC connector and 2 m (6.6') cable

SOLUTIONS

HI 70004P pH 4.01 calibration solution, 20 mL sachets (25)
HI 70007P pH 7.01 calibration solution, 20 mL sachets (25)
HI 70032P 1382 ppm calibration solution, 20 mL sachets (25)
HI 70442P 1500 ppm calibration solution, 20 mL sachets (25)
HI 70300M Electrode storage solution, 250 mL
HI 7061M Probe cleaning solution, 250 mL

ACCESSORIES

HI 731326 Calibration screwdriver, (20)



SPECIFICATIONS	HI 981504/5	HI 981504/7
Range	pH: 0.0 to 14.0; TDS: 0 to 1990 ppm; temperature: -10.0 to 60.0°C or -14.0 to 140.0°F	
Resolution	pH: 0.1; TDS: 10 ppm; temperature: 0.1°C or 0.1°F	
Accuracy	pH: ±0.2; TDS: ±2% F.S.; temperature: ±0.3°C or ±0.5°F	
pH Calibration	manual two points through trimmers	
TDS Calibration	manual one point through trimmer	
TDS Factor	0.5	0.7
Probes	pH: HI 1286 PEI body pH electrode with 2 m (6.6') cable (included); TDS: HI 7634 TDS probe (fixed); temperature: stainless steel with 2 m cable (fixed)	
Temperature Compensation	automatic, 5 to 50°C (41 to 122°F), for TDS readings only	
Power Supply	12 VDC adapter (included)	
Environment	0 to 50°C (32 to 122°F); 95% RH	
Dimensions/Weight	160 x 110 x 35 mm (6.3 x 4.3 x 1.4")/560 g (1.2 lbs.)	

For a complete list of Solutions, see the end of pH Section 3 and Conductivity Section 6.



Backlit LCD!

- Waterproof
- Measure in °C or °F
- Stability indicator
- HOLD function
- Backlit display

This indicator from HANNA has a large backlit LCD to give users instantaneous readings of both pH and temperature that can be easily read in dim light. The HI 991401 provides automatic calibration, automatic buffer selection and automatic temperature compensation.

HI 991401's waterproof housing has been designed to meet the growers' need for an indicator that is well suited to withstand the aggressive environments found in agricultural and hydroponics applications. Measurements are highly accurate and can be verified with one or two point calibrations. With a 12 VDC power supply included with the meter, low battery failures are never an issue.

The pH electrode has been specially designed to address the needs of growers. It's design guarantees greater clogging resistance in fertilizer solutions with high concentrations of phosphate, nitrate, etc. to ensure longer electrode life.

SPECIFICATIONS

HI 991401

Range	pH	0.0 to 14.0 pH
	Temperature	0.0 to 60.0°C (32.0 to 140.0°F)
Resolution	pH	0.1 pH
	Temperature	0.1°C (0.1°F)
Accuracy (@20°C/68°F)	pH	±0.1 pH
	Temperature	±0.5°C (±1°F)
Probes	HI 1293 PEI body, pre-amplified pH electrode with 1/2" NPT pipe thread, DIN connector and 2 m (6.6') cable (included); HI 1294 temperature probe with 1/2" NPT pipe thread and 2 m (6.6') cable (fixed)	
pH Calibration	automatic, one or two points with two sets of memorized buffers (pH 4.01/ 7.01/10.01 or pH 4.01/6.86/9.18)	
Temperature Compensation	automatic	
Input Impedance	10 ¹² Ohm	
Power Supply	12 VDC adapter (included)	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	160 x 105 x 31 mm (6.3 x 4.1 x 1.2)	
Weight	190 g (6.7 oz.) - meter only	

ORDERING INFORMATION

HI 991401-01 (115V) and HI 991401-02 (230V) are supplied with HI 1293 pH electrode, HI 1294 temperature probe (fixed), HI 70004 pH 4.01 buffer solution sachet, HI 70007 pH 7.01 buffer solution sachet, 12 VDC power adapter and instructions.

ELECTRODES

- HI 1293** PEI body, pre-amplified pH electrode with 1/2" NPT pipe thread, DIN connector and 2 m (6.6') cable
- HI 1294** Temperature probe with 1/2" NPT pipe thread and 2 m (6.6') cable*

SOLUTIONS

- HI 70004P** pH 4.01 buffer solution, 20 mL sachets (25)
- HI 70007P** pH 7.01 buffer solution, 20 mL sachets (25)
- HI 70010P** pH 10.01 buffer solution, 20 mL sachets (25)
- HI 77400P** pH 4 and pH 7 solution, (10) 20 mL sachets, (5) each
- HI 70300L** Electrode storage solution, 500 mL
- HI 7061L** Electrode cleaning solution, 500 mL

*Replaceable by technical personnel only.

For a complete list of Solutions, see the end of pH Section 3.

HI 981401N

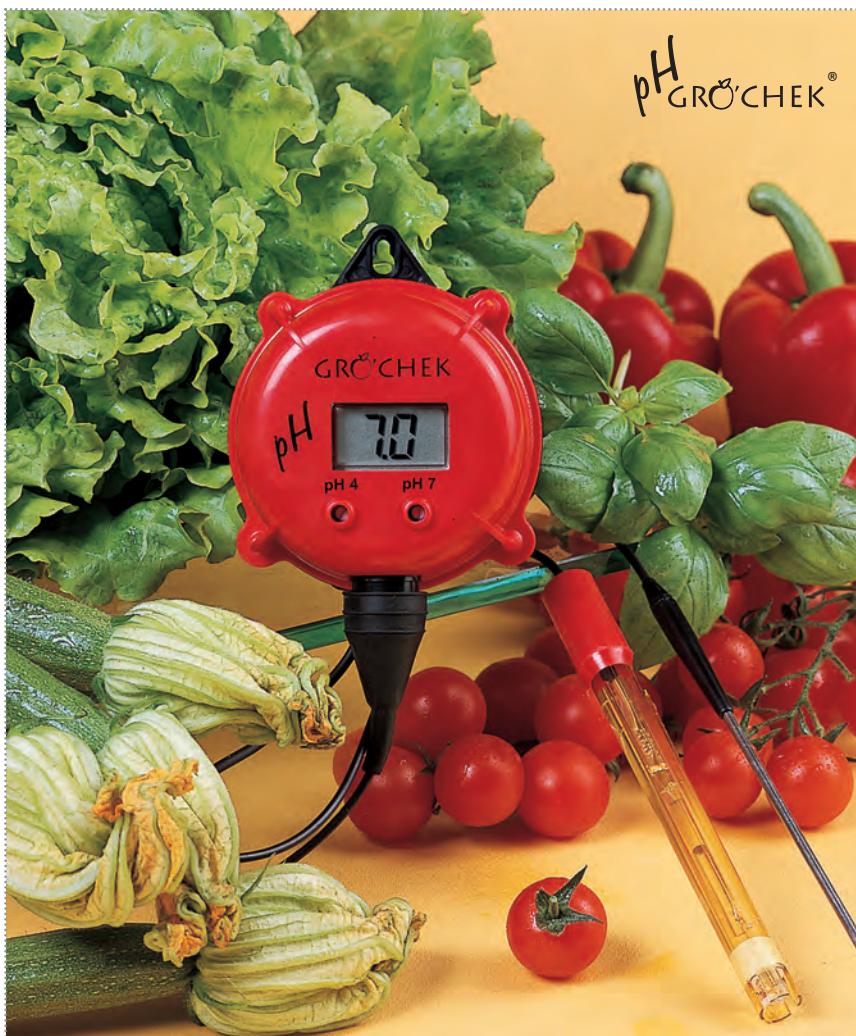
pH Indicator

- Water resistant
- One or two point calibration
- Electrode clog resistance

The pH indicator HI 981401N has been designed to meet the grower's need for equipment suited to the aggressive environments found in agricultural and hydroponics applications. The housing is water resistant and features a molded eye which allows installation right above the sample to be monitored.

Measurements are highly accurate and can be verified with two point calibration. With a 12 VDC power supply included with the meter, low battery failures are never an issue. The electrode is interchangeable and the connector is well protected behind a waterproof sleeve. The meter is supplied with a stainless steel probe, preventing potential grounding problems and ensuring extended electrode life.

The gel-filled pH electrode has been specially designed to address the needs of growers. Its design guarantees greater clogging resistance in fertilizer solutions with high concentrations of nutrients such as phosphate and nitrate.

**ORDERING INFORMATION**

HI 981401N-01 (115V) and HI 981401N-02 (230V) are supplied with HI 1286 pH electrode, HI 1283 stainless steel grounding bar, HI 70004 pH 4.01 buffer solution sachet, HI 70007 pH 7.01 buffer solution sachet, calibration screwdriver, 12 VDC adapter and instructions.

ELECTRODES

- HI 1286 PEI body pH electrode with BNC connector and 2 m (6.6') cable
- HI 1283* Stainless steel grounding bar with 2 m (6.6') cable

SOLUTIONS

- HI 70004P pH 4.01 buffer solution, 20 mL sachets (25)
- HI 70007P pH 7.01 buffer solution, 20 mL sachets (25)
- HI 70010P pH 10.01 buffer solution, 20 mL sachets (25)
- HI 70300L Electrode storage solution, 500 mL
- HI 7061L Electrode cleaning solution, 500 mL

*Replaceable by technical personnel only.

Grounding pin prevents electrical noise (from light, motors, pumps, etc...) from interfering with readings.

SPECIFICATIONS	HI 981401N
Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy (@20°C/68°F)	±0.2 pH
Calibration	manual two point, at pH 4 and 7
pH Electrode	HI 1286 PEI body pH electrode with 2 m (6.6') cable (included); HI 1283 stainless steel grounding bar with 2 m (6.6') cable (included)
Input Impedance	10 ¹² Ohm
Power Supply	12 VDC power adapter (included)
Environment	0 to 50°C; RH max 100%
Dimensions	86 x 110 x 43 mm (3.4 x 4.3 x 1.7")
Weight	150 g (5.3 oz.)

For a complete list of Solutions, see the end of pH Section 3.



- Water resistant
- LED alarm
- Clog-resistant electrode

HI 981402 is a water resistant pH meter with a built-in digital LCD. The meter is supplied with the HI 1286 double junction, plastic-body, gel-filled combination pH electrode with a flexible 2 m (6.6') cable. The electrode also has a unique clog resistant PTFE junction that enhances both probe life and accuracy. The BNC connector is protected by a waterproof sleeve.

The alarm set point can be selected anywhere in the 3 to 11 pH range. A red LED warns the user in the event the reading is outside the set point by more than ± 0.5 pH. Calibration can be manually performed at two points through two easily accessible trimmers on the front of the unit.

The HI 981402 is suited for outdoor installations and highly humid conditions. The molded eye allows the meter to be installed close to the sample and the 12 VDC power supply is ideal for continuous monitoring for extended periods of time.

SPECIFICATIONS	HI 981402
Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy (@20°C/68°F)	± 0.2 pH
Calibration	manual, one or two points
Set Point	adjustable from 3.0 to 11.0 pH
Alarm	red LED (blinks when pH reading differs from the set point more than ± 0.5 pH)
pH Electrode	HI 1286 PEI body pH electrode with 2 m (6.6') cable (included)
Input Impedance	10^{12} Ohm
Power Supply	12 VDC adapter (included)
Environment	0 to 50°C (32 to 122°F); RH max 100%
Dimensions	86 x 110 x 43 mm (3.4 x 4.3 x 1.7")
Weight	150 g (5.3 oz.)

ORDERING INFORMATION

HI 981402-01 (115V) and HI 981402-02 (230V) is supplied with HI 1286 pH electrode, calibration screwdriver, 12 VDC power adapter and instructions.

ELECTRODES

HI 1286 PEI body pH electrode with BNC connector and 2 m (6.6') cable

SOLUTIONS

HI 70004P pH 4.01 buffer solution, 20 mL sachets (25)

HI 70007P pH 7.01 buffer solution, 20 mL sachets (25)

HI 70010P pH 10.01 buffer solution, 20 mL sachets (25)

HI 70300L Electrode storage solution, 500 mL

HI 7061L Electrode cleaning solution, 500 mL

For a complete list of Solutions, see the end of pH Section 3.

HI 981400

HACCP Compliant pH Meter and Indicator

- HACCP compliant
- Water resistant
- LED alarm
- Clog resistant electrode

pH is monitored at different stages of food preparation and processing to guarantee safety, improve production and enhance quality. The pH of raw ingredients such as milk and meat is measured to ensure that standards have been properly met. Along with temperature and water activity, pH also affects the shelf-life of foodstuffs. For example, by bringing the pH value below 4.5, pathogen growth is inhibited.

HI 981400 is a compact and affordable indicator designed to check the pH of food. It has a molded eye for convenient positioning above a QC bench, or at the goods-in area. An ideal pH value can be set between 4.0 and 7.5 pH through a trimmer on the back of the unit. Should the pH exceed this user selectable limit, an incorporated LED will alert the user with a flashing light. This important feature permits pH control to be delegated to inexperienced operators.

ORDERING INFORMATION

HI 981400-01 (115V) and HI 981400-02 (230V) are supplied with HI 70004 pH 4.01 buffer solution sachet, HI 70007 pH 7.01 buffer solution sachet, calibration screwdriver, 12 VDC adapter and instructions.

ELECTRODES

FC 200B	PVDF body pH electrode for food and HACCP, with BNC connector and 1 m (3.3') cable
FC 230B	PVDF body pH electrode for meat, with BNC connector and 1 m (3.3') cable
FC 098	Stainless steel blade for meat penetration, 20 mm (for use with FC 230B)
FC 099	Stainless steel blade for meat penetration, 35 mm (for use with FC 230B)

SOLUTIONS

HI 70004P	pH 4.01 buffer solution, 20 mL sachets (25)
HI 70007P	pH 7.01 buffer solution, 20 mL sachets (25)
HI 70010P	pH 10.01 buffer solution, 20 mL sachets (25)
HI 70300L	Electrode storage solution, 500 mL
HI 7061L	Electrode cleaning solution, 500 mL



SPECIFICATIONS	HI 981400
Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy (@20°C/68°F)	±0.2 pH
Calibration	manual, one or two points at pH 4 and pH 7
Set Point	adjustable from 4.6 to 7.5 pH
Alarm	red LED (blinks when pH reading > set point)
Input Impedance	10 ¹² Ohm
Power Supply	12 VDC adapter (included)
Environment	0 to 50°C (32 to 122°F); RH max 100%
Dimensions	86 x 110 x 43 mm (3.4 x 4.3 x 1.7")
Weight	150 g (5.3 oz.)

For a complete list of electrodes, see pH food specific electrode section, pages 3.81 to 3.86

For a complete list of Solutions, see the end of pH Section 3.



Grounding pin prevents electrical noise (from light, motors, pumps, etc...) from interfering with readings.

SPECIFICATIONS		HI 981406
Range	pH	0.0 to 14.0 pH
	ORP	±999 mV
Resolution	pH	0.1 pH
	ORP	1 mV
Accuracy (@20°C/68°F)	pH	±0.2 pH
	ORP	±5 mV
pH Calibration		manual, one or two points
Set Points		pH: adjustable from 5.0 to 9.0 pH; ORP: adjustable from 350 to 850 mV
Alarms		2 red LEDs (1 for pH and 1 for ORP), light up for pH value > set point and/or ORP value < set point
Probes		HI 1283 stainless steel grounding bar with 2 m (6.6') cable (included) HI 2114P/2 PEI body pH electrode with BNC connector and 2 m (6.6') cable (not included); HI 3214P/2 PEI body ORP electrode with platinum sensor, BNC connector and 2 m (6.6') cable (not included);
Input Impedance		10 ¹² Ohm
Power Supply		12 VDC adapter (included)
Environment		0 to 50°C (32 to 122°F); RH max 95%
Dimensions		165 x 110 x 35 mm (6.5 x 4.3 x 1.4")
Weight		300 g (10.6 oz.)

- LED alarm signals
- Continuous monitoring
- Displays pH and mV simultaneously
- Adjustable set points

HI 981406 has been specially designed for water treatment and swimming pool applications where both pH and ORP need to be monitored. Instead of sourcing two meters, users can now continuously measure both pH and ORP with HI 981406.

There are two separate adjustable set points for pH and ORP. Once the pH set point is exceeded, the appropriate LED light will come on to alert the operator. Likewise, once the ORP level drops below the set point, the red ORP light will stay on.

HI 981406 is supplied with HI 1283 ground probe. The HI 1283 ground probe provides users with more reliable readouts by suppressing current effects, which are found in pools. The optional HI 2114P/2 pH electrode and HI 3214P/2 ORP electrode are designed specifically for swimming pools. Both probes are constructed with a specially designed fiber salt-bridge making each particularly resistant to clogging in pools.

ORDERING INFORMATION

HI 981406-01 (115V) and HI 981406-02 (230V) are supplied with HI 1283 grounding bar, HI 70004 pH 4.01 buffer solution sachet, HI 70007 pH 7.01 buffer solution sachet, calibration screwdriver, 12 VDC adapter and instructions.

ELECTRODES

- HI 2114P/2** PEI body pH electrode with BNC connector and 2 m (6.6') cable
- HI 3214P/2** PEI body ORP electrode with platinum sensor, BNC connector and 2 m (6.6') cable
- HI 1283** Stainless steel grounding bar with 2 m (6.6') cable*

SOLUTIONS

- HI 70004P** pH 4.01 buffer solution, 20 mL sachets (25)
- HI 70007P** pH 7.01 buffer solution, 20 mL sachets (25)
- HI 77400P** pH 4.01 and pH 7.01 buffer solution, 20mL sachets, (10, 5 ea)
- HI 7020L** ORP test solution 200/275 mV, 500 mL
- HI 7091L** Pretreatment reducing solution, 500 mL
- HI 7092L** Pretreatment oxidizing solution, 500 mL
- HI 70300L** Storage solution, 500 mL
- HI 7061L** Electrode cleaning solution, 500 mL
- HI 70000P** Rinse solution 20 mL sachets (25)

*Replaceable by technical personnel only.

For a complete list of Solutions, see the end of pH Section 3.

HI 982401

ORP Indicator

- Continuous ORP monitoring
- Visual LED alarm
- Platinum electrode available
- Water resistant

HI 982401 is an easy to operate, continuous monitor for ORP (oxidation reduction potential) measurements. It has been produced for monitoring swimming pools, spas and research facilities where ORP specific monitoring is needed.

This monitor measures from -999 to +999 mV in the ORP range. Operators can also set the ORP level at which their application will produce the best results.

The HI 982401's front case incorporates a large, bright LED indicator. Should the measurements fall below the user set ORP values, the red LED flashes and alerts the operator to the undesired condition. Even from a distance, operators can check for status readings.

Thanks to its compact size of 9 cm (3.3") diameter, HI 982401 with its electrode HI 3214P/2, can be mounted in confined spaces and right next to the vat or barrel containing the sample. This casing also incorporates a molded eye so that it can be easily mounted with a single screw.



Pronto
ORP

ORDERING INFORMATION

HI 982401-01 (115V) and HI 982401-02 (230V) is supplied with screwdriver, 12 VDC power adapter and instructions.

ELECTRODES

HI 3214P/2 PEI body ORP electrode with platinum sensor, BNC connector and 2 m (6.6') cable

SOLUTIONS

HI 7020M ORP test solution 200/275 mV, 230 mL
HI 7091L Pretreatment reducing solution, 500 mL
HI 7092L Pretreatment oxidizing solution, 500 mL
HI 70300L Electrode storage solution, 500 mL
HI 7061L Electrode cleaning solution, 500 mL

SPECIFICATIONS

HI 982401

Range	±999 mV
Resolution	1 mV
Accuracy (@20°C/68°F)	±5 mV
Calibration	factory calibrated
Set Point	adjustable from 350 to 850 mV
Alarm	red LED; blinks for ORP value < set point
ORP electrode	HI 3214P/2 PEI body ORP electrode with platinum sensor, BNC connector and 2 m (6.6') cable (not included);
Input impedance	10 ¹² Ohm
Power supply	12 VDC adapter (included)
Environment	0 to 50°C; RH. max 100%
Dimensions	86 x 110 x 43 mm (3.4 x 4.3 x 1.7")
Weight	150 g (5.3 oz.)

For a complete list of Solutions, see the end of pH Section 3.

pH & TDS or EC Continuous Indicators



GRÖCHECK®

- Two parameters with a single instrument
- Advanced electrode technology
- Simple operation and maintenance
- Supplied complete and ready to use

HI 981404N and HI 981405N are ideal for agricultural, horticultural and hydroponics applications where pH and TDS (HI 981404N) or pH and EC (HI 981405N) levels need to be continuously monitored for optimal plant growth. These instruments continuously monitor and display the values of a solution on an easy to read set of LCD's.

The HI 1286 gel filled pH electrode is replaceable and the BNC connector is protected behind a waterproof sleeve. The unique design of the electrode guarantees greater clogging resistance in fertilizer solutions with high concentrations of phosphate, nitrate, etc. TDS measurements are performed using the 4-4-2 conversion factor of 0.7 so you do not need to convert the readings.

Both models are equipped with a grounding bar to ensure highly accurate pH readings and longer electrode life.

The HI 981404N and HI 981405N are compact and easy to install and use making them ideal for all continuous monitoring applications.

ORDERING INFORMATION

HI 981404N-01 (115V) and **HI 981404N-02** (230V) are supplied complete with HI 1286 pH electrode, HI 7634 TDS probe, HI 1283 grounding bar, calibration solutions, screwdriver for calibration, 12 VDC adapter and instructions.

HI 981405N-01 (115V) and **HI 981405N-02** (230V) are supplied complete with HI 1286 pH electrode, HI 7632 EC probe, HI 1283 grounding bar, calibration solutions, screwdriver for calibration, 12 VDC adapter and instructions.

ACCESSORIES

HI 1286	pH electrode, plastic, BNC, 2 m (6.6') cable
HI 70000P	Rinse solution (25 x 20 mL)
HI 70004P	Cal. sol. pH 4 (25 x 20 mL)
HI 70007P	Cal. sol. pH 7 (25 x 20 mL)
HI 70300M	Storage solution, 230 mL
HI 70442P	Cal. sol. 1500 ppm (25 x 20 mL)
HI 77400P	Cal. kit (pH 4 & 7, 20 mL, 5 pcs each)
HI 70039P	Cal. sol. 5000 µS/cm (25 x 20 mL)
HI 7061M	Electrode cleaning solution, 230 mL
HI 710005	12 VDC power supply

SPECIFICATIONS	HI 981404N	HI 981405N
Range	0.0 to 14.0 pH; 0 to 1990 mg/L (ppm)	0.0 to 14.0 pH; 0.00 to 9.99 mS/cm
Resolution	0.1 pH; 10 mg/L (ppm)	0.1 pH; 0.01 mS/cm
Accuracy (@20°C/68°F)	±0.2 pH; ±2% F.S.	±0.2 pH; ±2% F.S.
Calibration	manual at one or two points (pH); manual at one point (TDS)	manual at one or two points (pH); manual at one point (EC)
Temperature Compensation	automatic from 5 to 50°C (41 to 122°F) (TDS only)	automatic from 5 to 50°C (41 to 122°F) (EC only)
TDS Conversion Factor	0.7 ppm = 1 µS/cm	-
Probes	HI 1286 interchangeable pH electrode (included), HI 7634 TDS probe (fixed), HI 1283 grounding bar with 2 m (6.6') cable (included)	HI 1286 interchangeable pH electrode (included), HI 7632 EC probe (fixed), HI 1283 grounding bar with 2 m (6.6') cable (included)
Power Supply	12 VDC adapter (included)	
Environment	0 to 50°C (32 to 122°F), RH 95%	
Dimensions	165 x 110 x 35 mm (6.5 x 4.3 x 1.3")	
Weight	300 g (10.6 oz.)	

For a complete list of Solutions, see the end of pH Section 3.

EC/TDS/Temperature Monitors

EC/TDS
GRÖ'CHEK®

- Waterproof
- Measure in °C or °F
- HOLD function
- Adjustable TDS ratio
- Adjustable β
- Stability indicator
- Backlit display
- 12 VDC power supply

Waterproof and chemically resistant, HI 993301 and HI 993302 have been designed to meet the grower's need for equipment suited to the aggressive environments found in agricultural and hydroponics applications. At startup, HI 993301 and HI 993302 perform a self-check to ensure proper working condition.

These indicators from HANNA have backlit LCDs and display instantaneous readings of both EC or TDS and temperature—even from a distance.

These instruments feature a stability indicator that prompts the user when to take the reading. For manual recording purposes, readings can be frozen on the LCD display by pressing the HOLD button.

Calibration and temperature compensation are automatic, while the EC/TDS conversion factor and temperature coefficient factor (β) are user adjustable for application specific measurements.

ORDERING INFORMATION

HI 993301-01 (115V) and **HI 993301-02** (230V) is supplied with HI 7630 conductivity probe, HI 70031 1413 $\mu\text{S}/\text{cm}$ calibration solution sachet, 12 VDC adapter and Instructions.

HI 993302-01 (115V) and **HI 993302-02** (230V) is supplied with HI 7630 conductivity probe, HI 70030 12.88 mS/cm calibration solution sachet, 12 VDC adapter and Instructions.

ELECTRODES

HI 7630 Conductivity probe with internal temperature sensor, 1/2" NPT pipe thread and 2 m (6.6') cable*

SOLUTIONS

HI 70030P 12.88 mS/cm calibration solution, 20 mL sachets (25)

HI 70031P 1413 $\mu\text{S}/\text{cm}$ calibration solution, 20 mL sachets (25)

HI 70032P 1382 ppm calibration solution, 20 mL sachets (25)

HI 70038P 6.44 g/L (ppt) calibration solution, 20 mL sachets (25)

*Replaceable by technical personnel only.



Backlit LCD!

SPECIFICATIONS		HI 993301	HI 993302
Range	EC	0 to 3999 $\mu\text{S}/\text{cm}$	0.00 to 20.00 mS/cm
	TDS	0 to 2000 mg/L (ppm)	0.00 to 10.00 g/L (ppt)
	Temperature	0.0 to 60.0°C / 32.0 to 140.0°F	0.0 to 60.0°C / 32.0 to 140.0°F
Resolution	EC	1 $\mu\text{S}/\text{cm}$	0.01 mS/cm
	TDS	1 mg/L (ppm)	0.01 g/L (ppt)
	Temperature	0.1 °C (0.1°F)	0.1 °C (0.1°F)
Accuracy (@20°C/68°F)	EC	±2% F.S.	±2% F.S.
	TDS	±2% F.S.	±2% F.S.
	Temperature	±0.5°C (±1°F)	±0.5°C (±1°F)
EC/TDS Calibration		automatic, one point at 1413 $\mu\text{S}/\text{cm}$ or 1382 mg/L (ppm)	automatic, one point at 12.88 mS/cm or 6.44 g/L (ppt)
Probe		HI 7630 conductivity probe with internal temperature sensor, 1/2" NPT pipe thread and 2 m (6.6') cable (fixed, included)	
TDS Conversion Factor		adjustable from 0.45 to 1.00	
Temperature Compensation		automatic with β adjustable from 0.0 to 2.4%/°C	
Power Supply		12 VDC adapter (included)	
Environment		0 to 50°C (32 to 122°F); RH max 95%	
Dimensions		160 x 105 x 31 mm (6.3 x 4.1 x 1.2)	
Weight		190 g (6.7 oz.) - meter only	

For a complete list of Solutions, see the end of Conductivity Section 6.



- Water resistant
- Low maintenance probes
- Hang right above the samples
- Probes designed for horticulture and hydroponics applications

These meters have been engineered with a host of features suited for the aggressive environments commonly found in agricultural applications. Housings and cable connections have been sealed against vapor and humidity.

Select HI 983301N for TDS measurements with the common 0.7 TDS conversion factor (4-4-2) or HI 983301N/5 which uses a 0.5 conversion factor.

Both the TDS and EC meters come with a probe specifically made for horticulture and hydroponics applications. The probe compensates for temperature variations automatically, is easy to clean, is very stable and needs little maintenance.

The 12 VDC power supply included with the meter eliminates low battery failures.

ORDERING INFORMATION

HI 983301N-01 (115V) and **HI 983301N-02** (230V) is supplied with HI 7634 probe, 12 VDC adapter, 1500 ppm calibration solution (20 mL), calibration screwdriver and instructions.

HI 983301N/5-01 (115V) and **HI 983301N/5-02** (230V) is supplied with HI 7634 probe, 12 VDC adapter, 1382 ppm calibration solution (20 mL), calibration screwdriver and instructions.

HI 983302N-01 (115V) and **HI 983302N-02** (230V) is supplied with HI 7632 probe, 12 VDC adapter, 1413 mS/cm calibration solution (20 mL), calibration screwdriver and instructions.

ELECTRODES

- HI 7632** EC probe with 2 m (6.6') cable*
- HI 7632/2** EC probe with 2 m (6.6') cable and 1/2" thread for in-line installation*
- HI 7632/3** EC probe with 2 m (6.6') cable and 3/4" thread for in-line installation*
- HI 7634** TDS probe with 2 m (6.6') cable*
- HI 7634/2** TDS probe with 2 m (6.6') cable and 1/2" thread for in-line installation*
- HI 7634/3** TDS probe with 2 m (6.6') cable and 3/4" thread for in-line installation*

SOLUTIONS

- HI 70032P** 1382 ppm calibration solution, 20 mL sachets (25)
- HI 70031P** 1413 mS/cm calibration solution, 20 mL sachets (25)
- HI 70442P** 1500 ppm calibration solution, 20 mL sachets (25)

*Replaceable by technical personnel only.

SPECIFICATIONS	HI 983301N	HI 983301N/5	HI 983302N
Range	0 to 1990 mg/L (ppm)	0 to 1990 mg/L (ppm)	0.00 to 9.99 mS/cm
Resolution	10 mg/L (ppm)	10 mg/L (ppm)	0.01 mS/cm
Accuracy (@20°C/68°F)	2% F.S.		
Calibration	manual at one point, through trimmer		
Temperature compensation	automatic, 5 to 50°C (41 to 122°F)		
TDS conversion factor	0.7	0.5	—
Probe	HI 7634 TDS probe with 2 m (6.6') cable (included)		HI 7632 EC probe with 2 m (6.6') cable (included)
Power supply	12 VDC adapter (included)		
Environment	0 to 50°C (32 to 122°F); RH max 100%		
Dimensions	86 x 110 x 43 mm (3.4 x 4.3 x 1.7")		
Weight	215 g (7.6 oz.)		

For a complete list of Solutions, see the end of Conductivity Section 6.

HI 983303 • HI 983306 • HI 983307 • HI 983308 • HI 983309

EC/TDS Meters

- Water resistant
- Continuous EC and TDS monitoring
- Visual LED alarms

These water resistant conductivity/TDS meters are the result of customer requests for accurate, affordable process monitoring with low maintenance.

Five different models are available to cover all applications. Each meter is supplied with a direct 2-pin probe and 2 m (6.6') cable with a ½" thread for flow-thru mounting. The probe has a temperature sensor to automatically compensate against temperature changes from 5 to 50°C (41 to 122°F) with a β of 2% per degree.

In the measurement mode, a red LED will warn the user in the event the reading is outside of the alarm interval. A front trimmer allows manual calibration at 1 point. The electrical circuitry is tightly sealed inside the water resistant enclosure. EC and TDS can be installed anywhere quickly and easily with the casings molded eye. The casing has been specially designed to sit out of the way and will not roll off a table. The 12 VDC power supply allows continuous monitoring over extended periods of time.



SPECIFICATIONS	HI 983303	HI 983306	HI 983307	HI 983308	HI 983309
Range	0 to 1990 μ S/cm	0 to 1990 mg/L (ppm)	0.00 to 9.99 mS/cm	0.00 to 9.99 g/L (ppt)	0 to 999 ppm (mg/L)
Resolution	10 μ S/cm	10 mg/L (ppm)	0.01 mS/cm	0.01 g/L (ppt)	1 ppm (mg/L)
Accuracy (@20°C/68°F)	$\pm 2\%$ F. S.				
Calibration	manual, one point, through trimmer				
Calibration Solution	HI 70031	HI 70032	HI 70039	HI 70038	HI 70080
Temperature Compensation	automatic, 5 to 50°C (41 to 122°F) with $\beta = 2\%$				
TDS Factor	–	0.5	–	0.5	0.5
Set point	200 to 1600 μ S/cm	200 to 1600 ppm	0.70 to 3.50 mS/cm	0.70 to 3.50 g/L (ppt)	0 to 150 ppm (mg/L)
Alarm	red LED blinks when measured value differs from set point more than:				
	100 μ S/cm	± 100 mg/L (ppm)	± 0.20 mS/cm	± 0.20 g/L (ppt)	over setpoint
Probe (included)	HI 7634/2	HI 7634/2	HI 7632/2	HI 7632/2	HI 7634/2
	all probes are provided with 2 m (6.6') cable and ½" thread for in-line installation				
Power supply	12 VDC adapter (included)				
Environment	0 to 50°C (32 to 122°F); RH max 100%				
Dimensions	86 x 110 x 43 mm (3.4 x 4.3 x 1.7")				
Weight	215 g (7.6 oz.)				

ORDERING INFORMATION

HI 983303-01 (115V), HI 983303-02 (230V), HI 983306-01 (115V), HI 983306-02 (230V), HI 983309-01 (115V) and HI 983309-02 (230V) are supplied with HI 7634/2 EC/TDS probe, calibration screwdriver, 12 VDC adapter and instructions.

HI 983307-01 (115V), HI 983307-02 (230V), HI 983308-01 (115V) and HI 983308-02 (230V) are supplied with HI 7632/2 EC/TDS probe, calibration screwdriver, 12 VDC adapter and instructions.

SOLUTIONS

HI 70031P	1413 μ S/cm calibration solution, 20 mL sachets (25)
HI 70032P	1382 mg/L (ppm) calibration solution, 20 mL sachets (25)
HI 70039P	5.00 mS/cm calibration solution, 20 mL sachets (25)
HI 70038P	6.44 g/L (ppt) calibration solution, 20 mL sachets (25)
HI 70080P	800 mg/L (ppm) calibration solution, 20 mL sachets (25)

For a complete list of Solutions, see the end of Conductivity Section 6.



- Specifically designed for demineralization and deionization applications
- Water resistant enclosure
- External 12 VDC power supply for continuous monitoring
- Selectable setpoint and LED alarm
- Automatic Temperature Compensation
- Molded hook for easy installation

HI 983304 and HI 983305, are specifically designed for use in demineralized and deionized water.

When placed at the output of any demineralization system, the visual alarm will be activated once the demineralizing equipment is exhausted. This exclusive feature will ensure maximum system efficiency with minimum investment.

Both meters measure 0 to 19.99 $\mu\text{S}/\text{cm}$. HI 983304 has a built-in 3½-digit LCD, while HI 983305 is without LCD but comes with an alarm relay.

Each meter is supplied with an HI 7631/2 direct 2-pin probe with 2 m (6.6') cable and a ½" thread for flow-thru mounting. This probe is also equipped with a temperature sensor to automatically compensate measurements against temperature changes from 5 to 50°C (41 to 122°F).

When operating in the measurement mode, HI 983304's red LED will alert the user as soon as the reading is 1 $\mu\text{S}/\text{cm}$ over the setpoint. The alarm relay of HI 983305 is activated in the same circumstances and can be connected to any external device.

SPECIFICATIONS	HI 983304	HI 983305
Range	0.00 to 19.99 $\mu\text{S}/\text{cm}$	
Resolution	0.01 $\mu\text{S}/\text{cm}$	
Accuracy (@20°C/68°F)	±2% F. S.	
Calibration	manual, one point, through trimmer	not required
Temperature Compensation	automatic, 5 to 50°C (41 to 122°F) with $\beta=2.4\%/^{\circ}\text{C}$	
Set point	1.00 to 5.00 $\mu\text{S}/\text{cm}$	
Alarm	red LED blinks when measured value differs from the set point more than 1.00 $\mu\text{S}/\text{cm}$	
Probe (included)	HI 7631/2 conductivity probe with 2 m (6.6') cable and 1/2" thread for flow-thru monitoring (included)	
Power supply	12 VDC adapter (included)	
Environment	0 to 50°C (32 to 122°F); RH max 100%	
Dimensions	86 x 110 x 43 mm (3.4 x 4.3 x 1.7")	
Weight	215 g (7.6 oz.)	

ORDERING INFORMATION

HI 983304-01 (115V), HI 983304-02 (230V) and HI 983305-01 (115V) and HI 983305-02 (230V) are supplied with HI 7631/2 EC/TDS probe, calibration screwdriver, 12 VDC adapter and instructions.

SOLUTIONS

HI 70031P 1413 $\mu\text{S}/\text{cm}$ calibration solution, 20 mL sachets (25)

For a complete list of Solutions, see the end of Conductivity Section 6.

HI 146-00 • HI 146-01 • HI 146-99

Wall-Mounting Precision Thermometer

- HACCP compliant
- CAL CHECK®
- Hang above the samples or spot check
- Stainless steel temperature probe
- Water resistant (HI 146-00/HI 146-01)
- Waterproof (HI 146-99)

HI 146-00, HI 146-01 and the waterproof HI 146-99 are high accuracy thermometers with a professional grade probe and a flexible 2 m (6.6') cable. The CAL CHECK® feature is incorporated into its function to allow you to confirm the accuracy of the meters any time.

You can monitor the exact temperature of any product continuously and easily observe it on the LCD display.

With their compact and simplified design featuring a fixed stainless steel probe and optional probe holder, these thermometers are ideal for monitoring the temperatures of liquids, semi-solids and refrigerated foods.

HI 146-00, HI 146-01 and HI 146-99 can be easily carried from station to station or installed in a fixed position using the molded eye and a wall mount probe holder.



HI 750146 Wall-mounted probe holder

ORDERING INFORMATION

HI 146-00, HI 146-01 and HI 146-99 are supplied with stainless steel temperature probe, battery and instructions

ACCESSORIES

HI 750146 Wall-mounted probe holder

In order to make sure that the meter is reporting the correct temperature, HI 146 has been designed with HANNA's exclusive CAL CHECK® switch. By simply setting the switch from "READ" to "TEST" and without requiring any external equipment, users can ensure the accuracy of the meter. In the "TEST" mode, HI 146 shows 0.0 °C (or 32.0°F) ±0.3°C (±0.5°F) which is the accuracy of the meter. With this HANNA innovation, the accuracy can be checked throughout the life of the thermometer without requiring any accessories or additional investments.

SPECIFICATIONS	HI 146-00	HI 146-01	HI 146-99
Range	-50.0 to 150.0°C	-58.0 to 302.0°F	-50.0 to 150.0°C
Resolution	0.1°C	0.1°F (-58.0 to 199.9 °F) 1°F (200 to 302 °F)	0.1°C
Accuracy	±0.3°C (-20 to 90°C) ±0.5°C (outside)	±0.5°F (4 to 194°C) ±1°F (outside)	±0.3°C (-20 to 90°C) ±0.5°C (outside)
Temperature Probe	stainless steel probe (fixed) with 2 m (6.6') cable; 160 x dia 3 mm (6.3 x dia 0.1")		
Battery type / life	1.5V AA / approximately 5 years		
Environment	0 to 50°C (32 to 122°F); RH max 95%		0 to 50°C; RH max 100%
Dimensions	86 x 110 x 43 mm (3.4 x 4.3 x 1.7")		
Weight	150 g (5.3 oz.)		

Checkfridge™ Remote Sensor Thermometer

2

MONITORS



- Perfect for refrigerator and incubator monitoring
- Magnetic backing
- Food grade stainless steel thermistor probe on 1 m (3.3') cable
- Fast response
- $\pm 0.3^{\circ}\text{C}$ accuracy
- CAL CHECK® verification at 0°C
- Low battery warning

Few manufacturers have given any thought to providing the user a convenient means to monitor internal temperature conditions of a refrigerator or freezer from the outside.

Water testing laboratories require constant monitoring of refrigerators and incubators for compliance to standard operations. The HANNA HI 147 Checkfridge™ is the ideal thermometer for accurate, reliable internal temperature readings.

How do you know when the reading on the thermometer is correct? An ice point or slurry could be made. Even then there could be several degrees difference in the real vs theoretical temperatures. With the HI 147, there is no need to waste time preparing and ice bath for making these tests. It's unique CAL CHECK® feature can simulate it. 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, you see the results on the large LCD. Return the switch to the READ position and the HI 147 returns to its normal measuring status.



SPECIFICATIONS	HI 147-00 Checkfridge™ C	HI 147-01 Checkfridge™ F
Range	-50.0 to 150.0°C	-58.0 to 302.0°F
Resolution	0.1°C	0.1°F (-58.0 to 199.9°F) 1°F (200 to 302°F)
Accuracy	$\pm 0.3^{\circ}\text{C}$ (-20 to 90°C); $\pm 0.5^{\circ}\text{C}$ (outside)	$\pm 0.6^{\circ}\text{F}$ (-4 to 194°F); $\pm 1^{\circ}\text{F}$ (outside)
Calibration Check	manual, through switch	
Temperature Probe	stainless steel, general purpose with 1 m (3.3') cable (fixed); 40 x dia 5 mm (1.6 x dia 0.2")	
Battery Type / Life	1.5V AAA / approximately 3 years of continuous use	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions (meter only)	93 x 39 x 31 mm (3.7 x 1.5 x 1.2")	
Weight	60 g (2.1 oz.)	

ORDERING INFORMATION

HI 147-00 (Checkfridge™ C) is supplied with battery and instructions

HI 147-01 (Checkfridge™ F) is supplied with battery and instructions

HI 147-001 (Checkfridge™ C) is supplied with calibration certificate, battery and instructions

Replacement pH Electrodes



CODE	HI 73127	HI 1280	HI 1290	HI 1295	HI 1219
Description	spare electrode	spare electrode	spare electrode	spare electrode	spare electrode
Reference	single Ag/AgCl	single, Ag/AgCl	single, Ag/AgCl	single, Ag/AgCl	single, Ag/AgCl
Junction / Flow Rate	cloth	ceramic, single	ceramic, single / 15-20 μ L/H	ceramic, single / 15-20 μ L/H	cloth
Electrolyte	gel	gel	gel	gel	gel
Max Pressure	3 bar	0.1 bar	0.2 bar	2 bar	3 bar
Range	pH: 0 to 14	pH: 0 to 13	pH: 0 to 13	pH: 0 to 13	pH: 0 to 13
Tip /Shape	spheric (dia: 5.0 mm)	spheric (dia: 5.0 mm)	spheric (dia: 5.0 mm)	spheric (dia: 5.0 mm)	spheric (dia: 5.0 mm)
Temperature Sensor	no	yes	yes	yes	no
Amplifier	no	yes	yes	yes	no
Body Material	polypropylene	polypropylene	polypropylene	polypropylene	polypropylene
Cable	no	no	no	no	no
Recommended Use	general purpose, field applications	general purpose, field applications	general purpose, field applications	general purpose, field applications	field applications, fertigation solutions

Electrodes are not to scale

CONNECTION

HI 73127 pin

To be used with HI 98127, HI 98128, HI 98121, HI 98129 and HI 98130

CONNECTION

HI 1280 multi-pin

To be used with HI 98111

CONNECTION

HI 1290 multi-pin

To be used with HI 98112

CONNECTION

HI 1295 multi-pin

To be used with HI 98113

CONNECTION

HI 1219 screw cap

To be used with HI 981408



CODE	HI 1413X/50	HI 1270	HI 1207	HI 73120	HI 3214P
Description	pH electrode	spare electrode	spare electrode	spare electrode	spare electrode
Reference	single, Ag/AgCl	single, Ag/AgCl	single, Ag/AgCl	single	double, Ag/AgCl
Junction / Flow Rate	open	cloth	cloth	cloth	cloth
Electrolyte	viscolene	gel	gel	gel	gel
Max Pressure	0.1 bar	0.1 bar	0.1 bar	0.1 bar	3 bar
Range	pH: 0 to 12	pH: 0 to 13	pH: 0 to 13	ORP: ±2000 mV	ORP: ±2000 mV
Tip /Shape	flat	spheric (dia: 3.0 mm)	spheric (7.5 mm)	platinum pin	platinum pin
Temperature Sensor	no	no	no	no	no
Amplifier	no	no	no	no	no
Body Material	glass	polypropylene	PEI	polypropylene	PEI
Cable	coaxial; 1 m (3.3')	no	no	no	coaxial; 2 m (6.6')
Recommended Use	skin, scalp	general purpose, field applications	general purpose, field applications	general purpose, field applications	general purpose, agriculture, disinfection

Electrodes are not to scale

CONNECTION	CONNECTION	CONNECTION	CONNECTION	CONNECTION
HI 1413B/50 BNC HI 1413S/50 screw cap	HI 1270 screw cap	HI 1207 screw cap	HI 73120 pin	HI 3214P BNC
To be used with Skincheck™ series	To be used with HI 98103 and HI 99104	To be used with HI 98104	To be used with HI 98120	To be used with HI 981406 and HI 982401

Replacement pH Electrodes



CODE	HI 1286	HI 2114P	HI 1293
Description	spare electrode	spare electrode	spare electrode
Reference	double, Ag/AgCl	double, Ag/AgCl	double, Ag/AgCl
Junction / Flow Rate	PTFE	cloth	PTFE
Electrolyte	polymer	gel	polymer
Max Pressure	3 bar	3 bar	3 bar
Range	pH: 0 to 13	pH: 0 to 13	pH: 0 to 13
Tip /Shape	spheric (dia: 7.5 mm)	spheric (dia: 7.5 mm)	spheric (dia: 7.5 mm)
Temperature Sensor	no	no	no
Amplifier	no	no	yes
Body Material	PEI	PEI	PEI
Cable	coaxial; 2 m (6.6')	coaxial; 2 m (6.6')*	5-pole; 2 m (6.6')
Recommended Use	general purpose, water treatment, agriculture	general purpose, agriculture	hydroponics, greenhouses

Electrodes are not to scale

CONNECTION

HI 1286 BNC

To be used with HI 981401N and HI 981402

CONNECTION

HI 2114P multi-pin
HI 2114P/5 multi-pin
*(5 m cable)

To be used with HI 981406

CONNECTION

HI 1293 DIN

To be used with HI 991401, HI 991404 and HI 991405