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Introduction

Testers and Monitors

introduction

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Laboratory Accuracy in the Field

In the past, measuring and monitoring important parameters was limited to the laboratory. Now, these parameters are being tested right in the field for applications such as 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 (EC), total dissolved solids (TDS), temperature, sodium, salt and relative humidity.

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

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

Hanna testers have easy to read LCDs 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, eliminating the need for frequent battery replacement.

pH Testers

All Hanna pH testers come with a replaceable pH probe, which is a unique advantage over most pH testers found 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 can become slow and unstable. This can be fixed by simply pulling out 3 mm of cloth, and cutting off the dirty junction.

Testers feature Automatic Temperature Compensation (ATC) and calibration at one or two points. Designed to be pocket sized with a narrow tip, they are ideal for measurements in smaller samples.

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Conductivity Testers

Conductivity (EC) 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 the printing industry.

With selectable or fixed conversion factors to relate to EC and TDS, readings can be more accurate. Hanna conductivity testers feature an amperometric graphite 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 can be done manually or automatically with 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 with a sodium ion selective electrode, with one point check in a standard salt solution.

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

Thermometers

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

Hanna Monitors

Hanna monitors 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, horticulture, water treatment and food preparation and processing.

At startup, monitors perform a self-check diagnostic to assure proper working condition. Stability indicators let the user know when to take readings while the HOLD functions 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.

Introduction

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Testers and Monitors

Introduction

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Hanna offers monitors with large backlit LCDs to give users instantaneous readings of multiple parameters with the utmost clarity. Monitors are provided with automatic calibration, automatic buffer selection and automatic temperature compensation (ATC) features.

Hanna's wall-mounted monitors are very easy to install and work with a 12 V power supply. Many models feature interchangeable probes so an application specific probe can easily 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 one or two-point manual or automatic calibration.

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 monitors 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 conversion factor of 0.5 can be used for agriculture measurements on application specific measurements. Both the direct two pin probes and graphite probes assure great accuracy and minimal maintenance.

ORP Monitors

Hanna has developed oxidation-reduction (ORP) monitors specially for swimming pool and spa facilities where monitoring is crucial. 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 placed in refrigerators for continuous readings of cold storage products.

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 calibration equipment.

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


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Product Spotlights

Testers and Monitors

product spotlights

1.4

HI98129 • HI98130

pH/Conductivity/TDS Testers

HI98129 and HI98130 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.

See page 1.8



HI98100

Checker®Plus pH Tester

The pH Checker®Plus series provides users with fast and accurate readings from 0 to 14 pH with a resolution of 0.01 pH. The Checker®Plus features an easy-to-read LCD and two-point calibration with automatic buffer recognition.

The HI1271 pH electrode of the Checker®Plus can be easily replaced. You only need to unscrew the electrode from the meter body and screw on a new one.

The Checker®Plus is fast, accurate, lightweight and with 1000 hours of battery life, there is no need to worry about frequent battery replacement.

See page 1.14



HI98331

Soil Test™ Direct Soil EC Tester

The HI98331 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.

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Product Spotlights

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Testers and Monitors

product spotlights

1.5



HI98501 Checktemp®

Digital Thermometer

The Checktemp delivers high accuracy temperature measurements over a wide temperature range without worrying about breakage or condensation.

The Checktemp offers NO breakage, NO waste, NO injuries and NO difficulty in reading; the digital display prevents a parallax error (observing the wrong measurement due to the angle of view) and is optimized for a wide range of environmental temperatures.

Checktemp is provided with Hanna's unique CAL Check™ function for accurate measurements every time.

[See page 1.26](#)



HI98509 Checktemp®1

Digital Thermometer

with Stainless Steel Probe Attached to a 3.3' Silicone Cable

The Checktemp 1 is a high-accuracy thermometer with a 1 m (3.3') flexible, silicone cable connecting the meter and the AISI 316 stainless steel probe. This probe is in compliance with food regulations, making it an ideal instrument for measuring temperature to HACCP requirements. The sharp-tip penetration probe easily lances semi-solid products such as fruits, vegetables, and cheeses. This probe can also handle liquid, air and measurements in frozen materials. The probe incorporates an 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 for reliable and accurate measurements.

[See page 1.28](#)



HI98539 Checktemp®Dip

Digital Thermometer

with Weighted Stainless Steel Probe Attached to a 9.9' Silicone Cable

The Checktemp Dip is a high-accuracy thermometer with a 3 m (9.9') flexible, silicone cable connecting the meter and the AISI 316 stainless steel weighted probe. This probe is in compliance with food regulations, making it an ideal instrument for measuring temperature in food applications such as wine casks and milk tanks. The probe incorporates an NTC thermistor sensor to measure the temperature. Thermistors make it possible to obtain extremely high accuracy in a very short period of time.

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Comparison Guides

Testers and Monitors

comparison guides

Code	pH Range	EC Range	TDS Range	ORP 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/Probe	Cloth Extendable Junction	HOLD Function	BEPS	Auto-off	Page
Multiparameter																				
HI98129	•	•	•			°C/°F	•	•	•	2	1	2	•	•	•	•	•	•	•	1.8
HI98130	•	•	•			°C/°F	•	•	•	2	1	2	•	•	•	•	•	•	•	1.8
pH/ORP																				
HI98127	•					°C/°F	•	•		2		2	•	•	•	•	•	•	•	1.10
HI98128	•					°C/°F	•	•		2		2	•	•	•	•	•	•	•	2.10
HI98111	•						•			2			•		•					1.11
HI98112	•						•			2			•		•					1.11
HI98113	•					°C	•			2			•		•					1.11
HI98106	•									1						•				1.12
HI98107	•									2						•				1.12
HI98108	•									2			•			•				1.12
pH128	•						•			2					•				•	1.13
HI98100	•						•			2					•				•	1.14
HI98103	•						•			2					•					1.16
HI99104	•						•			2					•					1.17
HI98120			•			°C/°F								•	•		•	•	•	1.18
HI98121	•			•		°C/°F	•			2		2	•	•	•	•	•	•	•	1.18
HI98201				•																1.19
EC/TDS																				
HI98311	•	•				°C/°F			•		1		•	•	•		•	•	•	1.20
HI98312	•	•				°C/°F			•		1		•	•	•		•	•	•	1.20
HI98331	•					°C					1		•		•					1.21
HI98301			•								1		•							1.22
HI98302			•								1		•							2.22
HI98303	•										1		•							2.22
HI98304	•										1		•							1.22
Primo			•					•			1		•						•	1.23
Primo 2			•			°C		•			1		•						•	1.23
Primo 5	•							•			1		•						•	1.23
HI98203					•						1									1.24
HI98308	•										1				•					1.25
HI98309	•																			1.25

Comparison Guides

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Testers and Monitors

comparison guides

Code	pH Range	EC Range	TDS Range	ORP Range	Temperature Range(s)	pH Calibration Points	pH Buffer Sets	Automatic Calibration	pH Temperature Compensation	EC Temperature Compensation	TDS Temperature Compensation	CAL Check™	Waterproof	HOLD Function	Backlit LCD	12 VDC Power Supply	Battery Power	Visual Alarm	Auto-off	Page
Temperature																				
HI98501					°C/°F							*							*	1.26
HI98509					°C/°F							*							*	1.28
HI98539					°C/°F							*							*	1.29
HI151-00					°C							*							*	1.30
HI151-01					°F							*							*	1.30
HI145-00					°C							*							*	1.31
HI145-01					°F							*							*	1.31
HI145-20					°C							*							*	1.31
HI145-30					°F							*							*	1.31
HI98517					°C															1.32
Monitors																				
HI991404	*	*	*		°C/°F	2	2	*	*	*	*		*	*	*	*				1.33
HI991405	*	*	*		°C/°F	2	2	*	*	*	*		*	*	*	*				1.33
HI981504/5	*		*		°C/°F	2					*				*	*				1.34
HI981504/7	*		*		°C/°F	2					*				*	*				1.34
HI981404N	*		*			2					*					*				1.35
HI981405N	*	*				2				*						*				1.35
HI991401	*				°C/°F	2	2	*	*				*	*	*	*				1.36
HI981401N	*					2										*				1.37
HI981402	*					2										*	*			1.38
HI993301		*	*		°C/°F			*		*	*		*	*	*	*				1.39
HI993302		*	*		°C/°F			*		*	*		*	*	*	*				1.39
HI983302N		*							*							*				1.40
HI983307		*							*							*	*			1.41
HI983308			*							*						*	*			1.41
HI983304	*								*							*	*			1.42
HI146-00					°C												*			1.43
HI147-00					°C												*			1.43
HI147-01					°F												*			1.44

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Testers and Monitors

testers

HI98129 (Combo) · HI98130 (Combo)

pH/EC/TDS Testers

- **Waterproof**
 - Designed to float if accidentally dropped in a tank
- **Automatic Temperature Compensation**
 - All readings are compensated for variations in temperature
 - Temperature displayed in °C or °F along with pH reading
- **Stability indicator**
 - Meter displays a clock tag that will disappear when the reading has achieved stability
- **HOLD button**
 - Freezes reading on the display to allow recording of measurement
- **BEPS (Battery Error Prevention System)**
 - Meter will automatically shut off if there is not enough power to get an accurate measurement
- **Battery % level at startup**
- **Low Battery Indicator**
- **Auto-off**
 - Automatically shuts off after 8 minutes of non-use to maximize battery life

The HI98129 and HI98130 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 probe. The renewable 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 testers combine 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.
- **Extendable cloth junction**
 - Simply pull out 3 mm (1/8") and cut when the cloth junction becomes dirty to improve response time and stability.

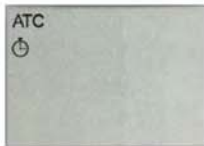
LCD Display Features



- 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 two sets of memorized buffers for greater accuracy.



- Adjustable temperature coefficient factor
 - Users can choose between different factors (β) for precise temperature compensated measurements.



- Adjustable TDS conversion factor
 - For measurement accuracy, users can choose between a range of conductivity to TDS conversion factors.

Specifications	HI98129	HI98130
pH	Range	0.00 to 14.00 pH
	Resolution	0.01 pH
	Accuracy	±0.05 pH
Conductivity	Range	0 to 3999 µS/cm
	Resolution	1 µS/cm
	Accuracy	±2% F.S.
TDS	Range	0 to 2000 mg/L (ppm)
	Resolution	1 mg/L (ppm)
	Accuracy	±2% F.S.
Temperature	Range	0.0 to 60.0°C / 32.0 to 140.0°F
	Resolution	0.1°C / 0.1°F
	Accuracy	±0.5°C / ±1°F
Additional Specifications	EC/TDS Calibration	automatic, one point at 1413 µS/cm or 1382 mg/L (ppm)
	pH Calibration	automatic, one or two-point with two sets of standard buffers (pH 4.01 / 7.01 / 10.01 or 4.01 / 6.86 / 9.18)
	Temperature Compensation	pH: automatic; EC/TDS: automatic with β adjustable from 0.0 to 2.4% / °C
	TDS Conversion Factor	0.45 to 1.00
	pH Electrode	HI73127 (replaceable; included)
	Environment	0 to 50°C (32 to 122°F); RH max 100%
	Battery Type / Life	1.5V (4) / approx. 100 hours of continuous use; auto-off after 8 minutes of non-use
Ordering Information	HI98129 (Combo) and HI98130 (Combo) are supplied with HI73127 pH electrode and HI73128 electrode removal tool, batteries and instructions.	



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

pH solutions begin on page 2.110; EC and TDS solutions begin on page 5.31; see pH electrode specifications on page 1.45

HI98127 (pHep®4) · HI98128 (pHep®5)
pH and Temperature
Testers

- **Waterproof**
 - Designed to float if accidentally dropped in a tank
- **Automatic Temperature Compensation**
 - All readings are compensated for variations in temperature
 - Temperature displayed in °C or °F along with pH reading
- **Stability indicator**
 - Meter displays a clock tag that will disappear when the reading has achieved stability
- **HOLD button**
 - Freezes reading on the display to allow recording of measurement
- **BEPS (Battery Error Prevention System)**
 - Meter will automatically shuts off if there is not enough power to get an accurate measurement
- **Battery % level at startup**
- **Low Battery Indicator**
- **Auto-off**
 - Automatically shuts off after 8 minutes of non-use to maximize battery life

The pHep®4 and pHep®5 are waterproof pH testers that have many advanced features found in more expensive portable instrumentation. These ergonomic meters feature automatic one or two point calibration to a known buffer, automatic temperature compensation, battery percent level indicator at start up, and a stability indicator to alert the user when a stable reading has been obtained. The large multi level LCD display shows both pH and temperature simultaneously.



These meters also feature the HI73127 replaceable electrode with a stainless steel round connector and extendable cloth junction. This cartridge design has no pins to line up or that can break.



Specifications		HI98127 (pHep®4)	HI98128 (pHep®5)
pH	Range	-2.0 to 16.0 pH	-2.00 to 16.00 pH
	Resolution	0.1 pH	0.01 pH
	Accuracy	±0.1 pH	±0.05 pH
Temperature	Range	-5.0 to 60.0°C / 23.0 to 140.0°F	-5.0 to 60.0°C / 23.0 to 140.0°F
	Resolution	0.1°C / 0.1°F	0.1°C / 0.1°F
	Accuracy	±0.5°C / ±1°F	±0.5°C / ±1°F
Additional Specifications	pH Calibration	automatic, one or two-point 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) / approx. 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	HI98127 (pHep®4) and HI98128 (pHep®5) are supplied with HI73127 pH electrode, HI73128 electrode removal tool, batteries and instructions.		



HI98111 PICCOLO® · HI98112 PICCOLO® 2
HI98113 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 that delivers 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 (HI1280).

PICCOLO® 2 with a 16 cm (6.3") electrode (HI1290).

PICCOLO® plus with a 16 cm (6.3") electrode (HI1295) and temperature readout on LCD.

Specifications		HI98111 (PICCOLO®)	HI98112 (PICCOLO®2)	HI98113 (PICCOLO® plus)
pH	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 (@25°C/77°F)	±0.01 pH	±0.01 pH	±0.01 pH; ±1°C
Additional Specifications	Electrode	HI1280	HI1290	HI1295
	Calibration	manual, two-point	manual, two-point	manual, two-point
	Temperature Compensation	automatic, 0 to 70°C (32 to 150°F)		
	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")	265 x 29 x 15 mm (10.4 x 1.1 x 0.6")
	Weight	70 g (2.5 oz.)		
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. HI98111 (PICCOLO®) is supplied with 90 mm (3.5") HI1280 amplified pH electrode. HI98112 (PICCOLO®2) is supplied with 160 mm (6.3") HI1290 amplified pH electrode. HI98113 (PICCOLO® plus) is supplied with HI1295 amplified electrode with temperature sensor.		

pH and ORP solutions begin on page 2.110; see pH electrode specifications on page 1.46

HI98106 Champ® · HI98107 pHep®
HI98108 pHep®+

pHep pH Tester

- Renewable junction
- Easy one or two-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.

The HI98107 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 becomes contaminated, the HI98107 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 one or two 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		HI98106 (Champ®)	HI98107 (pHep®)	HI98108 (pHep®+)
pH	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 (@25°C/77°F)	±0.2 pH	±0.1 pH	±0.1 pH
Additional Specifications	Calibration	manual, one-point	manual, two-point	manual, one-point
	Temperature Compensation	–	–	automatic from 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%	0 to 50°C (32 to 122°F); RH max 95%	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")	175 x 41 x 23 mm (6.9 x 1.6 x 0.9")	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.)	95 g (3.4 oz.)
Ordering Information		HI98106 (Champ®), HI98107 (pHep®), HI98108 (pHep®+) are supplied with protective cap, calibration screwdriver, batteries and instructions.		





The HI1271 pH electrode can be easily replaced. Just unscrew the electrode from the meter body and screw on a new one.



An easily removable cover provides access to the replaceable battery.



pH calibration can be performed directly in our solution sachets.

Specifications		pH128
pH	Range	0.00 to 14.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.2 pH
Additional Specifications	Calibration	automatic, one or two-point
	Electrode	HI1271 (included)
	Battery Type / Life	CR2032 Li-ion / approximately 1000 hours of continuous use
	Auto-off	8 minutes, 60 minutes, or can be disabled
	Environment	0 to 50°C (32 to 122°F); RH 95% max
	Dimensions	50 x 174 x 21 mm (2 x 6.8 x 0.9")
	Weight	50 g (1.8 oz)
Ordering Information		pH128 is supplied with HI1271 pH electrode, pH 4.01 buffer solution sachet (2), pH 7.01 buffer solution sachet (2), electrode cleaning solution sachet (2), battery, quality certificate, and instruction manual in a carrying case.

pH solutions begin on page 2.110; see pH electrode specifications on page 1.45

pH128
GroPro™ pH Tester

- **Economical**
 - The pH128 is a full-featured pH tester at a price that anyone that needs to measure pH can afford.
- **Large LCD**
 - Enhanced LCD that displays reading, stability indicator, low battery indicator and calibration tags.
- **Replaceable pH Electrode**
 - The HI1271 supplied gel filled pH electrode is 103 mm long and tapers to an 8 mm diameter at the sensing end. This narrow electrode easily fits into test tubes, vials, and other containers with small opening.
- **Automatic Calibration**
 - The pH128 is calibrated automatically to one or two points. The calibration buffers are automatically recognized and after calibration the buffer values used are shown on the display as a tag.
- **Stability Indicator**
 - An hourglass indicator is displayed on the LCD until a stable reading is obtained. Once a reading stabilized the indicator disappears and a reading can be recorded.
- **Automatic Shut-Off**
 - The meter can be set to automatically turn off after 8 minutes or 60 minutes to conserve battery life in the event that the meter is left on. The auto off feature can be disabled.
- **Long Battery Life**
 - The pH128 has an exceptional long battery life of approximately 1000 hours. When the battery power is running low a low battery indicator is displayed.
- **Plastic Carrying Case**
 - The pH128 is supplied complete with meter, probe, calibration solutions and cleaning solutions packaged in a durable plastic carrying case

The GroPro pH tester has been designed with many advanced features for growers of all types. This pH tester offers automatic calibration to one or two points, automatic buffer recognition, calibrated buffer tags, stability indicator, low battery indicator, and selectable automatic shut-off. With its compact size, one-button operation, and ease of calibration, the pH128 GroPro is the optimal tool for pH measurement in nutrient solutions and soil slurries.

1

Testers and Monitors

testers

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Over 1 million users
since its introduction

HI98100

Checker® Plus pH Tester

The HI98100 Checker Plus is the next generation of the original Hanna Checker pH tester. The Checker is by far one of the most popular pH meters in the world with over 1 million meters used since its introduction in 1991. From students to researchers, the Checker has been helping people with their pH measurements as a meter that is simple to use and operate.

The HI98100 Checker Plus pH tester has been designed with many advanced features while maintaining the look and feel of the original Checker. The Checker Plus now offers automatic calibration to one or two points, automatic buffer recognition, calibrated buffer tags, stability indicator, low battery indicator, and selectable automatic shut off. The Checker plus still maintains the iconic pentagon design with a probe measuring 103 mm in length that is tapered to an 8 mm diameter, making it ideal for measurements in test tubes and vials.

- **Replaceable pH Electrode**
 - The supplied HI1271 pH electrode is 103 mm long and tapers to an 8 mm diameter at the sensing end to easily fit into test tubes, vials, and other containers with small a opening.
- **Economical**
 - The Checker Plus is a full-featured pH tester at a price that anyone that needs to measure pH can afford.
- **High accuracy**
 - The Checker Plus features ±0.2 pH accuracy with 0.01 resolution.
- **Large LCD**
 - Enhanced LCD that displays reading, stability indicator, low battery indicator, and calibration tags.
- **Automatic Calibration**
 - The Checker Plus is calibrated automatically to one or two points. The calibration buffers are automatically recognized and after calibration the buffer values used are shown on the display as a tag.
- **Stability Indicator**
 - An hourglass indicator is displayed on the LCD until a stable reading is obtained. Once a reading stabilizes, the indicator disappears and a reading can be recorded.
- **Automatic Shut-off**
 - The meter can be set to automatically turn off after 8 minutes or 60 minutes to conserve battery life in the event that the meter is left on. The auto-off feature can also be disabled.
- **Long Battery Life**
 - The Checker Plus has a long battery life of approximately 1000 hours. When the battery power is running low a battery indicator is displayed.
- **Plastic Carrying Case**
 - The HI98100 Checker Plus is supplied complete with meter, probe, calibration solutions, and cleaning solutions packaged in a durable plastic carrying case.

Specifications		HI98100 Checker® Plus
pH	Range	0.00 to 14.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.2 pH
Additional Specifications	Calibration	automatic, one or two-point
	Electrode	HI1271 (included)
	Battery Type / Life	CR2032 Li-ion / approximately 1000 hours of continuous use
	Auto-off	8 minutes, 60 minutes, or can be disabled
	Environment	0 to 50°C (32 to 122°F); RH 95% max
	Dimensions	50 x174 x 21 mm (2 x 6.8 x 0.9")
	Weight	50 g (1.8 oz)
Ordering Information	HI98100 (Checker Plus) is supplied with HI1271 pH electrode, pH 4.01 buffer solution sachet (2), pH 7.01 buffer solution sachet (2), electrode cleaning solution sachet (2), battery, quality certificate, and instruction manual in a carrying case.	

pH solutions begin on page 2.110; see pH electrode specifications on page 1.45



The HI1271 pH electrode can be easily replaced. Just unscrew the electrode from the meter body and screw on a new one.



Calibration can be performed directly in our solution sachets.



An easily removable cover provides access to the replaceable battery.



Supplied in a carrying case with buffer and cleaning solutions.

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HI98103
Checker® pH Tester

- High accuracy with 0.01 pH resolution
- Two-point manual calibration
- Usable with virtually any electrode that has the same connector
- 3000 hours of battery life
- HI1270 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 and lightweight. With 3000 hours of battery life, you no longer have to worry about frequent battery replacement.



The HI1270pH electrode can be easily replaced. Just unscrew the electrode from the meter body and screw on a new one.



An easily removable cover provides access to the replaceable battery.



Specifications		HI98103 Checker®
pH	Range	0.00 to 14.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.2 pH
Additional Specifications	Calibration	manual, two-point
	Electrode	HI1270 (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") - excluding probe
	Weight	50 g (1.8 oz.) - excluding probe
Ordering Information		HI98103 (Checker®) is supplied with HI1270 pH electrode, batteries and instructions.



HI99104

Education pH Tester

The HI99104 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, the HI99104 has a long and slim stem, ideal for measurements in small samples or test tubes.

The HI99104 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.

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Testers and Monitors

testers

Specifications		HI99104
pH	Range	0.00 to 14.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.2 pH
Additional Specifications	Calibration	manual, two point
	pH Electrode	HI1270 (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	HI99104 is supplied with HI 1270T pH electrode, batteries and instructions.	

pH solutions begin on page 2.110; see pH electrode specifications on page 1.45

HI98120 · HI98121

pH/ORP and ORP Testers

- Automatic one or two-point pH calibration (HI98121)
- Waterproof
 - Waterproof and designed to float
- ATC
 - Automatic Temperature Compensation (HI98121)
- HOLD Feature
 - HOLD button to freeze readings on the display
- Battery indicator
 - Battery life indicator at startup

The HI98120 is a waterproof ORP and temperature meter, while the HI98121 measures pH, ORP and temperature. The housing of these testers has been completely sealed against humidity and is 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.



- Replaceable pH (HI98121) or ORP (HI98120) electrode cartridge



- Exposed temperature sensor
 - The exposed stainless steel temperature sensor facilitates faster and more accurate temperature measurement.



Specifications		HI98120	HI98121
pH	Range	–	-2.00 to 16.00 pH
	Resolution	–	0.01 pH
	Accuracy	–	±0.05 pH
ORP	Range	± 1000 mV	± 1000 mV
	Resolution	1 mV	1 mV
	Accuracy	±2 mV	±2 mV
Temperature	Range	-5.0 to 60.0°C / 23.0 to 140.0°F	-5.0 to 60.0°C / 23.0 to 140.0°F
	Resolution	0.1°C / 0.1°F	0.1°C / 0.1°F
	Accuracy	±0.5°C / ±1°F	±0.5°C / ±1°F
Additional Specifications	ORP Calibration	factory calibrated	factory calibrated
	pH Calibration	–	automatic, one or two-point with two sets of standard buffers (pH 4.01 / 7.01 / 10.01 or 4.01 / 6.86 / 9.18)
	Temperature Compensation	–	automatic for pH readings
	Electrodes	HI73120 replaceable ORP electrode (included)	HI73127 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%	
Ordering Information	Dimensions / Weight	163 x 40 x 26 mm (6.4 x 1.6 x 1.0") / 100 g (3.5 oz.)	
		HI98120 (ORP) is supplied with HI73120 ORP electrode, HI73128 electrode removal tool, batteries and instructions. HI98121 (ORP/pH) is supplied with HI73127 pH electrode, HI73128 electrode removal tool, batteries and instructions.	



HI98201
ORP Tester

Oxidation-reduction (ORP) is a process by which a chemical species 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.

The HI98201 is ideal for swimming pools and spas because it 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.

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Testers and Monitors

testers

Specifications		HI98201
ORP	Range	±999 mV
	Resolution	1 mV
	Accuracy (@25°C/77°F)	±5 mV
Additional Specifications	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	HI98201 (ORP) is supplied with protective cap, batteries and instructions	

ORP solutions begin on page 2.116

HI98311 · HI98312

EC/TDS and Temperature Testers

- Waterproof
 - Waterproof and designed to float
- ATC
 - Automatic Temperature Compensation
- HOLD Feature
 - HOLD button to freeze readings on the display
- BEPS
 - Alerts the user of low battery power that could adversely affect readings

When the original DiST® (Dissolved Solids Tester) was first introduced, conductivity (EC) and total dissolved solids (TDS) 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 offers greater accuracy by resisting 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 and temperature measurements.



- 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		HI98311 (DiST®5)	HI98312 (DiST®6)
EC	Range	0 to 3999 µS/cm	0.00 to 20.00 mS/cm
	Resolution	1 µS/cm	0.01 mS/cm
	Accuracy	±2% F.S.	±2% F.S.
TDS	Range	0 to 2000 mg/L (ppm)	0.00 to 10.00 g/L (ppt)
	Resolution	1 mg/L (ppm)	0.01 g/L (ppt)
	Accuracy	±2% F.S.	±2% F.S.
Temperature	Range	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	0.1°C / 0.1°F	0.1°C / 0.1°F
	Accuracy	±0.5°C / ±1°F	±0.5°C / ±1°F
Additional Specifications	Calibration	automatic, one point at 1413 µS/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	HI73311 replaceable EC/TDS graphite electrode (included)	
	Environment	0 to 50°C (32 to 122°F); RH max 100%	
	Battery Type / Life	1.5V (4) / approx. 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")	
Ordering Information	Weight	100 g (3.5 oz.)	
		HI98311 (DiST®5) and HI98312 (DiST®6) are supplied with HI73311 EC/TDS probe, HI73128 probe removal tool, batteries and instructions.	

EC and TDS solutions begin on page 5.31; see EC electrode specifications on page 1.45



- Replaceable 122 mm (4.5") penetration probe

Specifications	HI98331 Soil Test™	
EC	Range	0.00 to 4.00 mS/cm (dS/m)*
	Resolution	0.01 mS/cm
	Accuracy	±0.05 mS/cm (0.00 to 2.00 mS/cm), ±0.30 mS/cm (2.00 to 4.00 mS/cm)
Temperature	Range	0.0 to 50.0°C
	Resolution	0.1°C
	Accuracy	±1°C
Additional Specifications	Calibration	manual, one point
	Probe	HI73331 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.)
Ordering Information	HI98331 (Soil Test™) is supplied with HI73331 penetration conductivity probe, calibration screwdriver, batteries and instructions.	

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

EC solutions begin on page 5.31; see EC electrode specifications on page 1.45

HI98331

Soil Test™ Direct Soil EC Tester

- Automatic Temperature Compensation (ATC)
- One-point calibration

The HI98331 Soil Test™ is a pocket tester 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.

DiST®: HI98301 · HI98302 · HI98303
HI98304

EC and TDS Testers

- Automatic temperature compensation (ATC)
- One-point calibration

The DiST® family 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 improved 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 directly affect accuracy. DiST® non-oxidizing graphite pins are able to provide an optimal surface for accurate, dependable results.

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



- 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.



Specifications		HI98301 (DiST® 1)	HI98302 (DiST® 2)	HI98303 (DiST® 3)	HI98304 (DiST® 4)
TDS	Range	1999 mg/L (ppm)	10.00 g/L (ppt)	–	–
	Resolution	1 mg/L (ppm)	0.01 g/L (ppt)	–	–
	Accuracy (@25°C/77°F)	±2% F.S.	±2% F.S.	–	–
EC	Range	–	–	1999 µS/cm	19.99 mS/cm
	Resolution	–	–	1 µS/cm	0.01 mS/cm
	Accuracy (@25°C/77°F)	–	–	±2% F.S.	±2% F.S.
Additional Specifications	TDS Factor	0.65 / 0.5	0.5	–	–
	Calibration Solution	HI70442: 1500 ppm HI70032: 1382 ppm	HI70038: 6.44 ppt	HI70031: 1413 mS/cm	HI70039: 5.00 mS/cm HI70030: 12.88 mS/cm
	Calibration	manual, one point	manual, one point	manual, one point	manual, one point
	Temperature Compensation	automatic from 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.)			
Ordering Information	HI98301 (DiST®1), HI98302 (DiST®2), HI98303 (DiST®3) and HI98304 (DiST®4) are supplied with protective cap, screwdriver, batteries and instructions.				



Primo

EC/TDS Testers

- Automatic temperature compensation (ATC)

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.

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

Operating and 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 automatically recognizes the calibration solution.

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Testers and Monitors

testers

Specifications		Primo	Primo 2	Primo 5
TDS	Range	0 to 1999 mg/L (ppm)	0 to 1999 mg/L (ppm); 0.0 to 60.0°C	–
	Resolution	1 mg/L (ppm)	1 mg/L (ppm); 0.1°C	–
	Accuracy (@25°C/77°F)	±2% F.S.	±2% F.S.; ±0.5°C	–
EC	Range	–	–	0 to 1999 µS/cm
	Resolution	–	–	1 µS/cm
	Accuracy (@25°C/77°F)	–	–	±2% F.S.
Additional Specifications	Calibration	automatic, at 1382 mg/L (ppm)	automatic, at 1382 mg/L (ppm)	automatic, at 1413 µS/cm
	Probe Connection	direct	direct	direct
	Dimensions	180 x 50 x 25 mm (7.1 x 2.0 x 1.0")	180 x 50 x 25 mm (7.1 x 2.0 x 1.0")	180 x 50 x 25 mm (7.1 x 2.0 x 1.0")
	Weight	50 g (1.8 oz.)	50 g (1.8 oz.)	50 g (1.8 oz.)
	Temperature Compensation	automatic from 0 to 60°C (32 to 140°F), β=2%/°C		
	Battery Type / Life	1.5V (2) / approximately 200 hours of continuous use; auto-off after 5 minutes of non-use		
	Environment	0 to 50°C (32 to 122°F); RH max 95%		
Ordering Information		Primo, Primo 2 and Primo 5 are supplied with batteries and instructions.		



EC and TDS solutions begin on page 5.31

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HI98203 SALINTEST

Salt Content Meter

- Replaceable sodium ion selective 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.

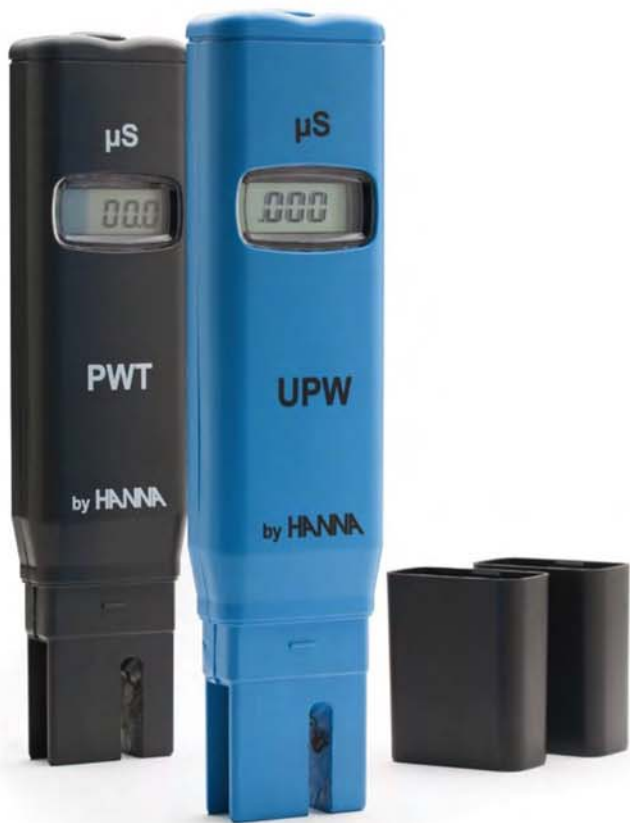
The main form of salt in seawater is sodium chloride (NaCl). The SALINTEST can help you accurately monitor the concentration of sodium chloride in aquaculture systems to ensure fish populations remain healthy.

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.



Specifications		HI98203 (SALINTEST)
NaCl	Range	0.00 to 1.00 pNaCl (58.4 to 5.84 g/L (ppt) NaCl)
	Resolution	0.01 pNaCl
	Accuracy (@25°C/77°F)	±0.02 pNaCl
Additional Specifications	Calibration	manual, one-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	HI98203 (SALINTEST) is supplied with protective cap, calibration screwdriver, batteries and instructions. SALINTEST is also supplied with a handy chart that converts readings into g/L of sodium chloride.	



HI98308 · HI98309

Water Purity Testers

The HI98308 and HI98309 use a conductometric measurement to determine the purity of water.

The HI98308 Pure Water Test (PWT) enables users to check the purity of distilled or demineralized water in laboratory or industrial environments.

The HI98309 Ultra Pure Water (UPW) is an ideal tester for high purity water, which has less conductivity.

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 (μ S) and provides fast spot checks for minute traces of water contamination.

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

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Testers and Monitors

testers

Specifications		HI98308 (PWT)	HI98309 (UPW)
EC	Range	0.0 to 99.9 μ S/cm	0.000 to 1.999 μ S/cm
	Resolution	0.1 μ S/cm	0.001 μ S/cm
	Accuracy	$\pm$ 2% F.S.	$\pm$ 2% F.S.
	Calibration	manual, one point	factory calibrated
Additional Specifications	Temperature Compensation	automatic from 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% non condensing	
	Dimensions	175 x 41 x 23 mm (6.9 x 1.6 x 0.9")	
	Weight	95 g (3.4 oz.)	
Ordering Information		HI98308 (PWT) and HI98309 (UPW) are supplied with protective cap, calibration screwdriver (HI98308 only), batteries and instructions.	

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Testers and Monitors

testers

HI98501 Checktemp®

Digital
Thermometerwith Stainless Steel
Penetration Probe

- Large display
 - The large display features a wide temperature range and optimal viewing angle.
- IP65 water resistant protection
- HACCP
 - Use as a tool for control in HACCP analysis
- AISI 316 stainless steel penetration probe

The Checktemp® delivers high accuracy temperature measurements over a wide range without concern for breakage or condensation.

The Checktemp® offers no breakage, no waste, no injuries and no difficulty in reading; the digital display prevents a parallax error (observing the wrong measurement due to the angle of view) and is optimized for a wide range of environmental temperatures.

Checktemp® is provided with Hanna's unique CAL Check™ function for accurate measurements every time. The Checktemp® implements a CAL Check™ upon startup and reports the status as "-0-" or "Err".

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





- CAL Check™
- Automatically verifies calibration at startup and alerts the user of the calibration status



- Save battery life with auto-off feature
 - With the auto-off feature, select from 8 min., 60 min., or disable the feature
- Easy battery change
 - Easily replace the battery with a twist-off cover



- Protective probe sleeve included
 - Protects the probe when not in use

Select between °C or °F measurement in one tester



Specifications	°C	°F
Range	-50.0 to 150.0°C	-58.0 to 302°F
Resolution	0.1°C (-50.0 to 150.0°C)	0.1°F (-58.0 to 199.9°F); 1°F (above 200°F)
Accuracy	±0.2°C (-30 to 120°C) ±0.3°C (outside: -50.0 to -30.0°C and 120.0 to 150.0°C)	±0.5°F (-22 to 199.9°F) ±1°F (outside: -58.0 to -22.0°F and 200 to 302°F)
Probe	fixed, stainless steel probe: 106 x ø 3.6 mm (penetration)	
Battery Type / Life	CR2032 Li-ion / approximately 2000 hours of continuous use	
Auto Off	8 min (default), 60 min or OFF	
Environment	-30 to 50°C (-22 to 122°F); IP65	
Dimensions	50 x 185 x 21 mm (2 x 7.3 x 0.9")	
Weight	50 g (1.8 oz.)	
Ordering Information	HI98501 (Checktemp®) is supplied with penetration probe, protective cap, battery and instructions.	

HI98509 Checktemp®1
Digital Thermometer
with Stainless Steel Probe
Attached to a 3.3' Silicone Cable

- Battery life up to two years
 - With the Auto-Off feature, select from 8 min., 60 min., or disable the feature
- HACCP
 - Use as a tool for control in HACCP analysis
- Large display
 - The large display features a wide temperature range and viewing angle
- IP65 water resistant protection
- Silicone probe cable
 - 3.3' silicone cable maintains flexibility and performance in applications where temperatures are widely variable
- AISI 316 stainless steel penetration probe

The Checktemp®1 is a high-accuracy thermometer with a 1 m (3.3') flexible, silicone cable connecting the meter and the AISI 316 stainless steel probe. This probe is in compliance with food regulations, making it an ideal instrument for measuring temperature according to HACCP requirements. The sharp-tip penetration probe easily lances semi-solid products such as fruits, vegetables, and cheeses. This probe can also handle measurements in liquid, air and frozen materials. The probe incorporates an 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 for reliable and accurate measurements. CAL Check™ automatically runs a self-check diagnostic upon startup and reports status back to the user.

Select between °C or °F measurement
in one tester



- CAL Check™
 - Automatically verifies calibration at startup and alerts the user of the calibration status.

Specifications	°C	°F
Range	-50.0 to 150.0°C	-58.0 to 302°F
Resolution	0.1°C (-50.0 to 150°C)	0.1°F (-58.0 to 199.9°F); 1°F (above 200°F)
Accuracy	±0.2°C (-30 to 120.0°C) ±0.3°C (outside: -50.0 to -30.0°C and 120.0 to 150.0°C)	±0.5°F (-22.0 to 199.9°F) ±1°F (outside: -58.0 to -22.0°F and 200 to 302°F)
Probe	stainless steel probe with 1 m (3.3') silicone cable; 97.3 x dia 3.5 mm (3.8 x dia 0.14")	
Battery Type / Life	3 x 1.5V AAA / approximately 2 years of use	
Auto Off	8 min (default), 60 min or OFF	
Environment	-30 to 50°C (-4 to 122°F); IP65	
Dimensions	107 x 59 x 17 mm (4.2 x 5.3 x .65")	
Weight	130 g (4.6 oz.)	
Ordering Information	HI98509 (Checktemp®1) is supplied with penetration probe, batteries, stand and instructions.	

HI98539 Checktemp®Dip

Digital Thermometer

with Weighted Stainless Steel Probe Attached to a 9.9' Silicone Cable

- Battery life up to two years
 - With the Auto-Off feature, select from 8 min., 60 min., or disable the feature
- HACCP
 - Use as a tool for control in HACCP analysis
- Large display
 - The large display features a wide temperature range and viewing angle
- IP65 water resistant protection
- Silicone probe cable
 - 3.3' silicone cable maintains flexibility and performance in applications where temperatures are widely variable
- AISI 316 stainless steel weighted probe

The Checktemp®Dip is a high-accuracy thermometer with a 3 m (9.9') flexible, silicone cable connecting the meter and the AISI 316 stainless steel weighted probe. This probe is in compliance with food regulations, making it an ideal instrument for measuring temperature in food applications such as wine casks and milk tanks. The probe incorporates an NTC thermistor sensor to measure the temperature. Thermistors make it possible to obtain extremely high accuracy in a very short period of time.

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 dip the probe in.

The Hanna CAL Check™ feature has been incorporated into the Checktemp®Dip for reliable and accurate measurements. CAL Check™ automatically runs a self-check diagnostic upon startup and reports status back to the user.

Select between °C or °F measurement in one tester



- CAL Check™
 - Automatically verifies calibration at startup and alerts the user of the calibration status.

Specifications	°C	°F
Range	-20.0 to 80.0°C	-4.0 to 176.0°F
Resolution	0.1°C	0.1°F
Accuracy	±0.3°C	±0.5°F
Probe	weighted stainless steel probe with 3 m (9.9') silicone cable	
Battery Type / Life	3 x 1.5V AAA / approximately 2 years of use	
Auto Off	8 min (default), 60 min or OFF	
Environment	-30 to 50°C (-22 to 122°F); IP65	
Dimensions	107 x 59 x 17 mm (4.2 x 2.3 x 0.7")	
Weight	109 g (3.8 oz.)	
Ordering Information	HI98539 (Checktemp®Dip) is supplied with stainless steel weighted probe, stand, batteries and instructions.	

HI151

Folding Pocket Thermometer

- CAL Check™
 - Alerts users of calibration status

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 while the LCD on the side of the handle remains 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 such as 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.



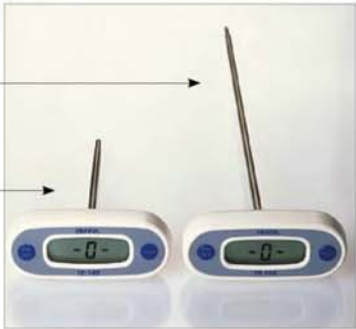
- Turns on and off by opening and closing the probe

Specifications	HI151-00 (Checktemp®4C)	HI151-01 (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	±0.3°C ±1 digit (-20.0 to 90.0°C); ±1% F.S. ±1 digit (outside)	±0.5°F ±1 digit (-4.0 to 194.0°F); ±1% F.S. ±1 digit (outside)
CAL 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 / approx. 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.)	
Ordering Information	HI151-00 (Checktemp®4 C) is supplied complete with battery and instructions HI151-01 (Checktemp®4 F) is supplied complete with battery and instructions	



HI145-20 (°C) – HI145-30 (°F):
Stainless steel probe 300 x dia 5 mm

HI145-00 (°C) – HI145-01 (°F):
Stainless steel probe 125 x dia 5 mm



HI145
T-Shaped
Thermometer

- CAL Check™
 - Alerts users of calibration status
- HOLD Feature
 - HOLD button to freeze readings on the display

HI145 thermometers were developed for HACCP programs that require 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.

The HI145-00 and HI145-01 thermometers 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.

The HI145-20 and HI145-30 thermometers are supplied with a 300 mm (12") long stainless steel probe, ideal for monitoring hot liquids, such as in deep frying and soup preparation.

With an automatic CAL Check™ feature, the HI145 series performs a self-check of its calibration status and displays it on the LCD. This feature ensures accuracy, repeatability and confidence in readings.

Specifications	HI145-00	HI145-01	HI145-20	HI145-30
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%		-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.)	
Ordering Information	All models of the HI145 series are supplied complete with battery and instructions. HI145-00 with 125 mm probe, HI145-01 with 125 mm probe, HI145-20 with 300 mm probe; HI145-30 with 300 mm probe			

HI98517 KEY® °C

KEY® Pocket Thermometer

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

The KEY® is a pocket 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.

Four 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.

The HI98517-13 probe is for penetration and is included with the meter, providing a fast response typical of a thermocouple probe. The HI98517-15 and HI98517-30 probes are for general liquid monitoring, while the HI98517-12 is a surface probe made for machine shops, molding facilities and welding surfaces.

4 probes available:

HI98517-13
penetration/general purpose

K-type thermocouple probe supplied with KEY®.
Application: liquid, air/gas, penetration of semi-solids.



HI98517-15 and HI98517-30
liquid/general purpose

K-type thermocouple probe for KEY®.
Application: liquids, air/gas.



HI98517-12
surface

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



Specifications	HI98517 (KEY®C)
Range	-40 to 550°C
Resolution	1°C
Accuracy	±2°C
Response Time	approximately 20 seconds in water with HI98517-13 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.)
Ordering Information	HI98517 (KEY®C) is supplied with HI 98517-13 probe, batteries and instructions.



HI991404 · HI991405

pH/EC/TDS and Temperature Monitors

- HOLD button to freeze readings on the display
- Waterproof
- Automatic temperature compensation (ATC)

These monitors continuously monitor the three most crucial nutrient parameters in hydroponic, greenhouse and horticultural applications: pH, EC/TDS and temperature.

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.

Specifications		HI991404	HI991405
pH	Range	0.0 to 14.0 pH	0.0 to 14.0 pH
	Resolution	0.1 pH	0.1 pH
	Accuracy	±0.1 pH	±0.1 pH
EC	Range	0 to 3999 µS/cm	0.00 to 20.00 mS/cm
	Resolution	1 µS/cm	0.01 mS/cm
	Accuracy	±2% F.S.	±2% F.S.
TDS	Range	0 to 2000 mg/L (ppm)	0.00 to 10.00 g/L (ppt)
	Resolution	1 mg/L (ppm)	0.01 g/L (ppt)
	Accuracy	±2% F.S.	±2% F.S.
Temperature	Range	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	0.1°C (or 0.1°F)	0.1°C (0.1°F)
	Accuracy	±0.5°C (±1°F)	±0.5°C (±1°F)
Additional Specifications	Temperature Compensation	pH: automatic; EC/TDS: automatic with β adjustable from 0.0 to 2.4%/°C	
	pH Calibration	pH: automatic, one or two-point with auto-buffer recognition	
	EC/TDS Calibration	automatic, one-point at 1413 µS/cm or 1382 ppm	automatic, one-point at 12.88 mS/cm or 6.44 g/L (ppt)
	pH Electrode	HI1293 PEI body, pre-amplified pH electrode with 1/2" NPT pipe thread, DIN connector and 2 m (6.6') cable (included);	
	EC/TDS Probe	HI7630 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 (6.2 x 4.1 x 1.2) / 190 g (6.7 oz.)	
Ordering Information		HI991404-01 (Combo Gro'Chek) (115V) and HI991404-02 (Combo Gro'Chek) (230V) is supplied with HI1293D pH electrode, HI7630 EC probe (fixed), HI70004 pH 4.01 buffer solution sachet, HI70007 pH 7.01 buffer solution sachet, HI70031 1413 µS/cm calibration solution sachet, 12 VDC adapter and instructions. HI991405-01 (Combo Gro'Chek) (115V) and HI991405-02 (Combo Gro'Chek) (230V) is supplied with HI1293D pH electrode, HI7630 EC probe (fixed), HI70004 pH 4.01 buffer solution sachet, HI70007 pH 7.01 buffer solution sachet, HI70030 1288 mS/cm calibration solution sachet, 12 VDC adapter and instructions.	

pH solutions begin on page 2.110; EC and TDS solutions begin on page 5.31; see pH electrode specifications on page 1.46

HI981504/5 · HI981504/7

pH/TDS and Temperature Monitor

- Backlit, graphic LCD display
- Automatic temperature compensation (ATC)

Set-up for the HI981504 is simple; install the HI981504 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 HI1286 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 HI7634 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.



Specifications		HI981504/5 · HI981504/7
pH	Range	0.0 to 14.0
	Resolution	0.1
	Accuracy	±0.2
TDS	Range	0 to 1990 ppm
	Resolution	10 ppm
	Accuracy	±2% F.S
Temperature	Range	-10.0 to 60.0°C or -14.0 to 140.0°F
	Resolution	0.1°C or 0.1°F
	Accuracy	±0.3°C or ±0.5°F
Additional Specifications	pH Calibration	manual, two-point through trimmers
	TDS Calibration	manual, one-point through trimmer
	TDS Factor	HI981504/5: 0.5; HI981504/7: 0.7
	Probes	pH: HI1286 PEI body pH electrode with 2 m (6.6') cable (included); TDS: HI7634 TDS probe (fixed); temperature: stainless steel with 2 m cable (fixed)
	Temperature Compensation	automatic from 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.)
Ordering Information		HI981504/5-1 (115V) and HI981504/5-2 (230V) are supplied with HI1286 pH electrode, HI7634 TDS probe (fixed), temperature probe (fixed), HI70004 pH 4.01 buffer solution sachet, HI70007 pH 7.01 buffer solution sachet, HI70032 1382 ppm calibration solution sachet, HI700661 electrode cleaning solution sachet (2), screwdriver, 12 VDC adapter and instructions.
		HI981504/7-1 (115V) and HI981504/7-2 (230V) are supplied with HI1286 pH electrode, HI7634 TDS probe (fixed), temperature probe (fixed), HI70004 pH 4.01 buffer solution sachet, HI70007 pH 7.01 buffer solution sachet, HI70442 1500 ppm calibration solution sachet, HI700661 electrode cleaning solution sachet (2), screwdriver, 12 VDC adapter and instructions.



HI981404N · HI981405N

pH/TDS or pH/EC Continuous Indicators

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

The HI981404N and HI981405N are ideal for agricultural, horticultural and hydroponics applications where pH and TDS (HI981404N) or pH and EC (HI981405N) levels need to be monitored for optimal plant growth. These instruments continuously monitor and display the values of a solution on an easy-to-read set of LCDs.

The HI1286 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 nutrients. 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 HI981404N and HI981405N are compact and easy to install, making them ideal for all continuous monitoring applications.

Specifications		HI981404N	HI981405N
pH	Range	0.0 to 14.0 pH	0.0 to 14.0 pH
	Resolution	0.1 pH	0.1 pH
	Accuracy (@25°C/77°F)	±0.2 pH	±0.2 pH
EC	Range	–	0.00 to 9.99 mS/cm
	Resolution	–	0.01 mS/cm
	Accuracy (@25°C/77°F)	–	±2% F.S.
TDS	Range	0 to 1990 mg/L (ppm)	–
	Resolution	10 mg/L (ppm)	–
	Accuracy (@25°C/77°F)	±2% F.S.	–
Calibration	Calibration	manual, one or two-point (pH); manual, one-point (TDS)	manual, one or two-point (pH); manual, one-point (EC)
Temperature Compensation	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	TDS Conversion Factor	0.7 ppm = 1 µS/cm	–
Probes	Probes	HI1286 interchangeable pH electrode (included), HI7634 TDS probe (fixed), HI1283 grounding bar with 2 m (6.6') cable (included)	HI1286 interchangeable pH electrode (included), HI7632 EC probe (fixed), HI1283 grounding bar with 2 m (6.6') cable (included)
Power Supply	Power Supply	12 VDC adapter (included)	
Environment	Environment	0 to 50°C (32 to 122°F), RH 95%	
Dimensions	Dimensions	160 x 110 x 35 mm (6.5 x 4.3 x 1.4")	
Weight	Weight	300 g (10.6 oz.)	
Ordering Information		HI981404N-01 (Gro'Chek Combo) (115V) and HI981404N-02 (Gro'Chek Combo) (230V) are supplied complete with HI1286 pH electrode, HI7634 TDS probe, HI1283 grounding bar, calibration solutions, screwdriver for calibration, 12 VDC adapter and instructions. HI981405N-01 (Gro'Chek Combo) (115V) and HI981405N-02 (Gro'Chek Combo) (230V) are supplied complete with HI1286 pH electrode, HI7632 EC probe, HI1283 grounding bar, calibration solutions, screwdriver for calibration, 12 VDC adapter and instructions.	

pH solutions begin on page 2.110; EC and TDS solutions begin on page 5.31;
see pH electrode specifications on page 1.46

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HI991401 (pH Gro'Chek)

pH and Temperature Monitor

- Automatic Temperature Compensation (ATC)
- HOLD button to freeze readings on the display
- Waterproof
- Backlit, graphic LCD display

This monitor 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 HI991401 provides automatic calibration, automatic buffer selection and automatic temperature compensation.

The HI991401's waterproof housing has been designed to meet the grower's need for a monitor that is well-suited to the 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 HI1293 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 to ensure longer electrode life.



Specifications		HI991401 (pH Gro'Chek)
pH	Range	0.0 to 14.0 pH
	Resolution	0.1 pH
	Accuracy	±0.1 pH
Temperature	Range	0.0 to 60.0°C (32.0 to 140.0°F)
	Resolution	0.1°C (0.1°F)
	Accuracy	±0.5°C (±1°F)
Additional Specifications	Probes	HI1293 PEI body, pre-amplified pH electrode with 1/2" NPT pipe thread, DIN connector and 2 m (6.6') cable (included); HI1294 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)
	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 (6.2 x 4.1 x 1.2")
	Weight	190 g (6.7 oz.) - meter only
Ordering Information	HI991401-01 (pH Gro'Chek) (115V) and HI991401-02 (pH Gro'Chek) (230V) are supplied with HI1293D pH electrode, HI1294 temperature probe (fixed), HI70004 pH 4.01 buffer solution sachet, HI70007 pH 7.01 buffer solution sachet, 12 VDC power adapter and instructions.	



HI981401N (Gro'Chek pH)
pH Monitor

- Two-point calibration
- Water-resistant

The pH monitor HI981401N has been designed to meet the grower's need for equipment suited to the 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.

Specifications	HI981401N
Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy (@25°C/77°F)	±0.2 pH
Calibration	manual, two-point, at pH 4 and 7
pH Electrode	HI1286 PEI body pH electrode with 2 m (6.6') cable (included); HI1283 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.)
Ordering Information	HI981401N-01 (Gro'Chek pH) (115V) and HI981401N-02 (Gro'Chek pH) (230V) are supplied with HI1286 pH electrode, HI1283 stainless steel grounding bar, HI70004 pH 4.01 buffer solution sachet, HI70007 pH 7.01 buffer solution sachet, calibration screwdriver, 12 VDC adapter and instructions.

pH solutions begin on page 2.110; see pH electrode specifications on page 1.46

HI981402 (Pronto pH)
pH Monitor

- Waterproof
- LED indicators

The HI981402 is a water-resistant pH meter with a built-in digital LCD. The meter is supplied with the HI1286 double junction, plastic bodied, 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 setpoint 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 HI981402 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	HI981402 (Pronto pH)
Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy (@25°C/77°F)	±0.2 pH
Calibration	manual, one or two-point
Setpoint	adjustable from 3.0 to 11.0 pH
Alarm	red LED (blinks when pH reading differs from the setpoint more than ±0.5 pH)
pH Electrode	HI1286 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	HI981402-01 (Pronto pH) (115V) and HI981402-02 (Pronto pH) (230V) is supplied with HI1286 pH electrode, calibration screwdriver, 12 VDC power adapter and instructions.



HI993301 · HI993302

EC/TDS and Temperature Monitors

- HOLD button to freeze readings on the display
- Waterproof
- Backlit, graphic LCD display

Waterproof and chemically resistant, the HI993301 and HI993302 monitors have been designed to meet the grower's need for equipment suited to the environments found in agricultural and hydroponics applications. At startup, the HI993301 and HI993302 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.

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 (β) are user-adjustable for application-specific measurements.

Specifications		HI993301	HI993302
EC	Range	0 to 3999 μS/cm	0.00 to 20.00 mS/cm
	Resolution	1 μS/cm	0.01 mS/cm
	Accuracy	±2% F.S.	±2% F.S.
TDS	Range	0 to 2000 mg/L (ppm)	0.00 to 10.00 g/L (ppt)
	Resolution	1 mg/L (ppm)	0.01 g/L (ppt)
	Accuracy	±2% F.S.	±2% F.S.
Temperature	Range	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	0.1 °C (0.1°F)	0.1 °C (0.1°F)
	Accuracy	±0.5°C (±1°F)	±0.5°C (±1°F)
Additional Specifications	EC/TDS Calibration	automatic, one point at 1413 μS/cm or 1382 mg/L (ppm)	automatic, one point at 12.88 mS/cm or 6.44 g/L (ppt)
	Probe	HI7630 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 (6.2 x 4.1 x 1.2")	
	Weight	190 g (6.7 oz.) - meter only	
Ordering Information	HI993301-01 (EC/TDS Gro'Chek) (115V) and HI993301-02 (EC/TDS Gro'Chek) (230V) is supplied with HI7630 conductivity probe, HI70031 1413 μS/cm calibration solution sachet, 12 VDC adapter and Instructions.		
	HI993302-01 (EC/TDS Gro'Chek) (115V) and HI993302-02 (EC/TDS Gro'Chek) (230V) is supplied with HI7630 conductivity probe, HI70030 12.88 mS/cm calibration solution sachet, 12 VDC adapter and Instructions.		

EC and TDS solutions begin on page 5.31

HI983302N (Gro'Chek EC)

EC Meter

- Water-resistant
- Automatic Temperature Compensation (ATC)

The HI983302N has 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.

The HI983302N is supplied with a probe specifically made for horticulture and hydroponics applications. The easy-to-clean probe compensates for temperature variations automatically and provides stable readings.

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



Specifications	HI983302N (Gro'Chek EC)
Range	0.00 to 9.99 mS/cm
Resolution	0.01 mS/cm
Accuracy (@25°C/77°F)	2% F.S.
Calibration	manual, one-point through trimmer
Temperature Compensation	automatic from 5 to 50°C (41 to 122°F)
Probe	HI7632 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.)
Ordering Information	HI983302N-01 (Gro'Chek EC) (115V) and HI983302N-02 (Gro'Chek EC) (230V) is supplied with HI7632 probe, 12 VDC adapter, 1413 mS/cm calibration solution (20 mL), calibration screwdriver and instructions.



HI983307 · HI983308

EC/TDS Meters

- Automatic Temperature Compensation (ATC)
- Water-resistant

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

Each meter is supplied with a direct two-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 one-point calibration. The electrical circuitry is tightly sealed inside the water-resistant enclosure. These EC and TDS monitors can be installed anywhere quickly and easily with the casings molded eye. The 12 VDC power supply allows continuous monitoring over extended periods of time.

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Testers and Monitors

monitors

Specifications	HI983307	HI983308
EC	Range	0.00 to 9.99 mS/cm
	Resolution	0.01 mS/cm
	Accuracy (@25°C/77°F)	±2% F. S.
TDS	Range	0.00 to 9.99 g/L (ppt)
	Resolution	0.01 g/L (ppt)
	Accuracy (@25°C/77°F)	±2% F. S.
Additional Specifications	Calibration	manual, one-point, through trimmer
	Calibration Solution	HI70039
	Temperature Compensation	automatic, 5 to 50°C (41 to 122°F) with β=2%
	TDS Factor	0.5
	Setpoint	0.70 to 3.50 mS/cm
	Alarm	red LED blinks when measured value differs from set point more than: ±0.20 mS/cm
	Probe (included)	HI7632/2
		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")
Ordering Information	Weight	215 g (7.6 oz.)
	HI983307-01 (115V), HI983307-02 (230V), HI983308-01 (115V) and HI983308-02 (230V) are supplied with HI7632/2 EC/TDS probe, calibration screwdriver, 12 VDC adapter and instructions.	

EC and TDS solutions begin on page 5.31

HI983304

Conductivity Meter for Demineralized Water

- Automatic Temperature Compensation (ATC)
- Water-resistant
- Adjustable setpoint

The HI983304 is specifically designed for use in demineralized and deionized water, as these applications have low conductivity.

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.

The HI983304 has a built-in LCD display and measures from 0 to 19.99 $\mu\text{S}/\text{cm}$.

This meter is supplied with an HI7631/2 direct two-pin probe with 2 m (6.6') cable and a 1/2" 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, the HI983304's red LED will alert the user as soon as the reading is 1 $\mu\text{S}/\text{cm}$ over the setpoint.



Specifications	HI983304
Range	0.00 to 19.99 $\mu\text{S}/\text{cm}$
Resolution	0.01 $\mu\text{S}/\text{cm}$
Accuracy (@25°C/77°F)	$\pm 2\%$ F.S.
Calibration	manual, one point, through trimmer
Temperature Compensation	automatic, 5 to 50°C (41 to 122°F) with $\beta=2.4\%/^{\circ}\text{C}$
Setpoint	1.00 to 5.00 $\mu\text{S}/\text{cm}$
Alarm	red LED blinks when measured value differs from the setpoint more than 1.00 $\mu\text{S}/\text{cm}$
Probe (included)	HI7631/2 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	HI983304-01 (115V) and HI983304-02 (230V) are supplied with HI7631/2 EC/TDS probe, calibration screwdriver, 12 VDC adapter and instructions.



HI146-00

Wall-Mounted Precision Thermometer

- CAL Check™
 - Alerts users of calibration status
- HACCP
 - Meets HACCP requirements
- Water resistant

The HI146-00 is a high accuracy thermometer with a professional grade probe attached to 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 its compact and simplified design, featuring a fixed stainless steel probe and optional probe holder, this thermometer is ideal for monitoring the temperatures of liquids, semi-solids and refrigerated foods.

The HI146-00 can be easily carried from station to station or installed in a fixed position using the molded eye and a wall mount probe holder.

In order to make sure that the meter is reporting the correct temperature, the HI146-00 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, the HI146-00 shows 0.0 °C (32.0°F) with an accuracy of ±0.3°C (±0.5°F). With this Hanna innovation, the accuracy can be checked throughout the life of the thermometer without requiring any accessories or additional investments.

Specifications	HI146-00 (Pronto)
Range	-50.0 to 150.0°C
Resolution	0.1°C
Accuracy	±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%
Dimensions	86 x 110 x 43 mm (3.4 x 4.3 x 1.7")
Weight	150 g (5.3 oz.)
Ordering Information	HI146-00 (Pronto) is supplied with stainless steel temperature probe, battery and instructions.

HI147
Checkfridge®
Remote Sensor
Thermometer

- CAL Check™
 - Alerts users of calibration status
- BEPS
 - Alerts the user of low battery power that could adversely affect readings

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 HI147 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 between the real and theoretical temperatures. With the HI147, there is no need to waste time preparing and ice bath for making these tests; its unique CAL Check™ feature can simulate it. Conveniently located on the face of the thermometer is a TEST switch. Engage the switch and the HI147 performs an internal CAL Check™. In only a few seconds, you see the results on the large LCD. Return the switch to the READ position and the HI147 returns to its normal measuring status.



Specifications	HI147-00 Checkfridge® C	HI147-01 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	±0.3°C (-20 to 90°C); ±0.5°C (outside)	±0.6°F (-4 to 194°F); ±1°F (outside)
CAL 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	HI147-00 (Checkfridge® C) is supplied with battery and instructions. HI147-01 (Checkfridge® F) is supplied with battery and instructions.	

Replacement Electrodes

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Testers and Monitors

accessories



CODE	HI73127	HI73120	HI73311	HI1270/HI1271	HI73311
Description	pH electrode	ORP electrode	EC/TDS electrode	pH electrode	EC/TDS electrode
Reference	single, Ag/AgCl	single, Ag/AgCl		single, Ag/AgCl	
Junction / Flow Rate	cloth	cloth		open	
Electrolyte	gel	gel		viscolene	
Max Pressure	0.1 bar	0.1 bar		0.1 bar	
Range	pH: 0 to 14	ORP: ±2000 mV		pH: 0 to 13	
Recommended Operating Temp.	-5 to 50°C (23 to 122°F) - GP	-5 to 50°C (23 to 122°F) - GP	-5 to 50°C (23 to 122°F) - GP	0 to 50°C (32 to 122°F) - GP	-5 to 50°C (23 to 122°F)
Tip /Shape	spheric (dia: 5.0 mm)	platinum pin		spheric (dia: 3.0 mm)	conic
Temperature Sensor	no	no	no	no	no
Amplifier	no	no	no	no	no
Body Material	polypropylene	polypropylene	polypropylene	polypropylene	polypropylene, stainless steel
Cable	no	no	no	no	no
Recommended Use	general purpose, field applications	general purpose, field applications	general purpose, field applications	general purpose, field applications	agriculture, soil, field applications
Connection	pin	pin	pin	screw cap	3.5 mm jack

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Replacement Electrodes

Testers and Monitors

accessories



CODE	HI1280	HI1290	HI1295	HI1286	HI1293D
Description	pH electrode	pH electrode	pH electrode	pH electrode	pH electrode
Reference	single, Ag/AgCl	single, Ag/AgCl	single, Ag/AgCl	double, Ag/AgCl	double, Ag/AgCl
Junction / Flow Rate	ceramic, single / 15-20 µL/H	ceramic, single / 15-20 µL/H	ceramic, single / 15-20 µL/H	PTFE	PTFE
Electrolyte	gel	gel	gel	polymer	polymer
Max Pressure	0.1 bar	0.1 bar	2 bar	3 bar	3 bar
Range	pH: 0 to 13	pH: 0 to 13	pH: 0 to 13	pH: 0 to 13	pH: 0 to 13
Recommended Operating Temp.	0 to 70°C (32 to 158°F) - GP	0 to 70°C (32 to 158°F) - GP	0 to 70°C (32 to 158°F) - GP	0 to 80°C (32 to 176°F) - GP	0 to 60°C (32 to 140°F)
Tip /Shape	spheric (dia: 5.0 mm)	spheric (dia: 5.0 mm)	spheric (dia: 5.0 mm)	spheric (dia: 7.5 mm)	spheric (dia: 7.5 mm)
Temperature Sensor	yes	yes	yes	no	no
Amplifier	yes	yes	yes	no	yes
Body Material	polypropylene	polypropylene	polypropylene	PEI	PEI
Cable	no	no	no	coaxial: 2 m (6.6')	5-pole: 2 m (6.6')
Recommended Use	general purpose, field applications	general purpose, field applications	general purpose, field applications	general purpose, water treatment, agriculture	hydroponics, greenhouses
Connection	multi-pin	multi-pin	multi-pin	BNC	DIN