





# Catalog Contents

## Introduction

- 1** Testers and Monitors
- 2** pH
- 3** ISE
- 4** Titration
- 5** Conductivity
- 6** Dissolved Oxygen
- 7** Multiparameter
- 8** Magnetic Stirrers
- 9** Chemical Test Kits
- 10** Photometers
- 11** Chemical Oxygen Demand (COD)
- 12** Turbidity
- 13** Refractometers
- 14** Temperature, RH, and Lux
- 15** Process Instrumentation
- 16** Glossary
- 17** Technical Tables
- 18** Product Code Index
- 19** Alphabetical Index

Inside back cover:  
Warranty and Returns

# President's Message

January 2020

Dear Valued Customer:

Our mission is to support you with any analytical measurements you perform. We understand you base important decisions on these measurements, so they must be accurate. Whether you are in surface finishing, water treatment, or food and beverage, the quality of your product is influenced by the quality of our instruments. Which is why we sincerely hope that you see us as a partner and not just a supplier of instrumentation. We are happy to share our expertise with electro-analytical measurements. We can guide you through product selections and their proper use so that you can have confidence that your results are the actual values.

The foundation of our business is to create innovative instruments that are accurate, affordable, and intuitive to use. This philosophy contributes to our continued growth as a global leading manufacturer of electro-analytical instrumentation. With local offices in 46 countries, our worldwide network gives you greater access to product availability, support, and service. As your partner, we are only a phone call away for any questions or challenges that you might have.

On behalf of Hanna worldwide, thank you for your continued and loyal support.

Martino Nardo  
President, Hanna Instruments





About Hanna ..... ii

- Production Overview.....ii
- History and Philosophy .....iii
- 360° Value..... iv
- Hanna Milestones ..... vi

Contacts .....X

New Products ..... xiv





# Production Overview

Introduction

about Hanna



## Hanna Design and Manufacturing

In a short time, Hanna has reached its target to produce all of its instrumentation in-house. Since the introduction of its industrial science park located in Romania, the facility is equipped to support all phases of production such as product research and design, plastic injection molding, electronic assembly, glass blowing for electrodes, standards production and final assembly of product. Hanna oversees all aspects of its products from conception to the final quality check and packaging. Hanna is an ISO 9001:2008 certified company.

Our Woonsocket and Smithfield, RI facilities house our primary research and development centers and assemble select products such as titrators, ISEs, HI921 autosampler and HALO®.

In-house production affords Hanna the freedom to efficiently bring new and innovative products to market while continuously improving the quality and features of existing products.







## History

In 1978 Hanna Instruments was founded in Limena, Italy by Oscar and Anna Nardo. Since that time, Hanna Instruments has grown to be a worldwide leader in the development of electro-analytical instrumentation. The development of novel instrumentation for customers that would not have normally used instrumentation is what has led to the success of the company.

In the 80's the company had a mission to provide a pH meter that was affordable, accurate and easy to use. The result was the pHep (pH electronic paper). This meter used an integrated circuit to measure the voltage response of a pH electrode packaged into a pocket-sized meter. The calibration of the meter was performed manually and the price was less than \$50.00. Having a simple operation and very affordable price point brought the advantages of an electro-analytical measurement of pH to the masses. Whether it be a farmer looking to measure the pH of soil to the printing press operator that needs to measure the pH of a fountain solution. Hanna Instruments provided the user with an accurate electronic alternative to litmus paper and chemical indicators.

Hanna Instruments has a history of developing innovative products that make analytical measurements easier to perform at an affordable price. Many innovations introduced by Hanna are now the norm for the instrumentation industry.

Hanna Instruments is currently headed by Martino Nardo, son of Oscar and Anna Nardo. Under the direction of Martino Nardo, Hanna Instruments® continues to develop innovative and unique products. The most recent innovations include both the thinnest multiparameter meter in the market and pH sensors that incorporate Bluetooth Smart technology. edge® pH/EC/DO meter was launched in 2014 and is only 0.5" thick. edge uses digital sensors with a 3.5mm connector and to change from one parameter to the next all the user has to do is unplug and plug in a different sensor. Also in 2014, the HALO® pH electrode was released. This electrode is the first Bluetooth pH/temperature electrode. The HALO transmitted measurement data wirelessly to an iPad that was running the Hanna Lab App. In 2015, edge blu was released and it brought the Bluetooth connectivity to a pH meter. Now the HALO can be used with a tablet style computer or a traditional pH meter. The HALO line of pH electrodes continues to be expanded to accommodate the diversity of applications. These Bluetooth enabled sensors are setting a new standard and it is safe to say that they will become commonplace in the future.

Being a leader in innovation is only part of our story. We are not only an instrumentation designer but also a vertically integrated manufacturer. From an original idea for a product to the finished good we are in control of the entire process. We employ our own engineers that design the circuits and program the firmware for the meters. We use surface mounted technology machines (SMT) to populate the circuit boards, injection molding machines to make the meter cases and other plastics, chemical manufacturing for solutions and reagents, glass blowers for the manufacture of pH and ORP electrodes, and even the printing of the packaging materials. Everything is done in-house. This ensures a high quality product while reducing the cost by not outsourcing to third parties. Even more importantly, it allows



Today, Hanna manufactures over 3,000 products in production facilities located in USA, Romania, Italy and Mauritius. We are proud to offer unique solutions for our customers. We continue to strive to understand the challenges that our customers are faced with in performing analytical measurements so that we can develop a solution that will provide a simplified and accurate way to measure.

for flexibility to produce short runs of products. Meaning that if the market demand for a particular product is very limited we will still produce it because we know that there is a customer that requires a unique solution and not a general one size fits all type of product.

## Philosophy

The philosophy of the Nardo family has always been to supply customers around the world with practical, cost-effective solutions for their testing needs.

When Hanna introduced the pHep®pH (pH Electronic Paper) tester in 1986 it revolutionized the world of testing. Millions of people from various industries were now capable of testing pH simply, accurately and affordably. This is the basis for the winning philosophy strongly embedded in Hanna. When Hanna introduced the world's first single parameter series of automatic titrators dedicated to food analysis in 2005, thousands of users from around the world were put in the position to improve the quality of their product by performing their own in-house analytical tests.

The driving philosophy that has been a Hanna trademark for over three decades has enabled the company to provide the right instrumentation to their customers with world class service and support.





# 360° Value

Introduction

about Hanna



## We Design, Manufacture, Supply and Support All of Our Products.

### A Worldwide Leader

With 60 offices in over 45 countries, Hanna dedicates itself to be a worldwide leader in service and selection.

Offering research grade quality at competitive prices, every Hanna office strives to work with each customer to develop a solution tailored to their needs, on their budget.

### Hanna 360° Value

When you buy a Hanna product, you're not only buying the best value for your money, but you're also receiving the benefit of Hanna's unsurpassed customer service and post-sale technical support.

### Quality

Our products are designed and manufactured under strict ISO 9001:2008 standards. Every instrument undergoes stringent quality control tests at different stages of manufacturing including 100% quality control checks just prior to shipment.



### Close to You

It is our policy to regularly participate in local trade shows and advertise our latest innovations in market specific magazines.

### Local Support

After you have made your investment, you should never feel uncertain about the support or technical service you will receive. Hanna develops relationships with its customers built on quality products with personal service and support.

### 24/7 Access

Visit us on the web at [www.hannainst.com](http://www.hannainst.com). There you can search for products, look up local office contacts, read the latest news from Hanna and download instruction manuals, MSDS and brochures.

### Certification

All Hanna products are in compliance with CE directives and our production facilities are ISO 9001:2008 certified.



## Casing, injection, and rubber molding

Hanna designs and manufactures all of our instrument casings, custom cases and inserts, solution and reagent bottles and rubberized shockproof boots.

## Electronics

Our electronics department mounts and connects the electronic components onto our custom circuit boards. The boards are then tested and installed into our instruments.



## Glass Blowing

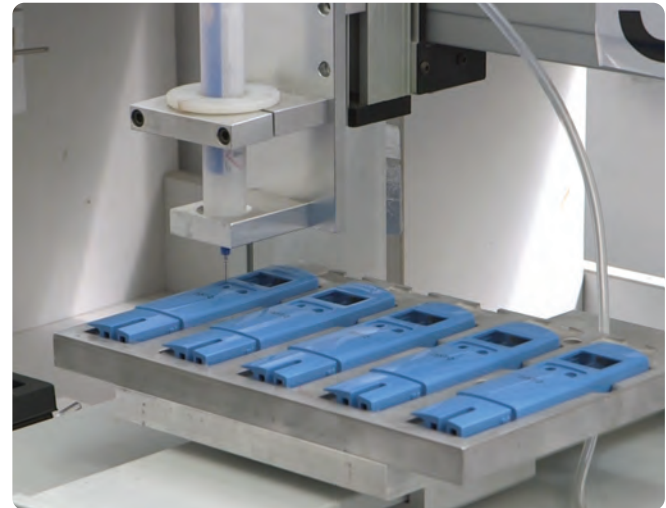
Our glass blowing department combines artistry and science to create our electrodes. Glass is heated and shaped within strict tolerances by hand in both of our facilities in Nusfalau, Romania and Rhode Island, USA.

## Electrode assembly

Our glass blowing, injection molding and electronics department work together to supply our electrode assembly department with the materials they need to build Hanna electrodes.

## Labels and keypads

All of the masks, labels and pad printing for our instruments and solution bottles is designed, printed, and die-cut in-house.



## Assembly

Our assembly department finalizes the production of the instrument by putting all the components together to form a working instrument. This includes LCD's, probes, buttons.

## Solutions

Our solutions are formulated and mixed on premises and are prepared to precise formulas and standardized with a pH electrode and meter calibrated to NIST standards.

## Reagents

Powder and liquid reagents are carefully formulated and filled to ensure maximum precision.

## Packaging

Hanna produces the packaging for all product lines. Each package is carefully designed for safety and practicality. The in-house control of all research, design and production steps provides continual quality control at all phases to assure the highest level of quality.

## Manuals and literature

Our manuals and quick start guides are printed on our Heidelberg press as well as much of our leaflets, flyers and catalogs.

## Quality control

After continuous validation and testing, Hanna products undergo a final quality check before they are packaged and released to consumers.





# Hanna Milestones

Introduction

about Hanna

## Hanna is Technology and Innovation

For 40 years, Hanna has prided itself in being a world leader in innovation of analytical instrumentation. Headed by our team at the home office, Hanna's research and development department constantly challenge themselves to invent new testing techniques and to advance existing technology. The minds at Hanna work to achieve the common goal of simplifying analytical testing through improving instrumentation, sensor development, reagents and chemicals.

1978

### Hanna Opens in Italy

Hanna was founded in Limena, Italy. Limena is a province of Padua (AKA Padova) and is located in Northern Italy. It is approximately 40 km west of Venice. Padua is well known for the University of Padua. Many great scholars of our time have spent time at the university. Most notable scholars include Galileo Galilei and Nicolaus Copernicus.

1980

### World's first single-probe portable conductivity meter

The HI8033 is a four pole conductivity portable meter. Having a four pole design allowed the meter to measure a variety of different solutions with different conductivity values. The same meter can be used to measure both deionized water and fertilizer solution.



1982

### World's first pH controlled chemical dosing pump

The DP7916 combined a pH meter with a chemical dosing pump in order to maintain a desired set point of a process applications. The BL7916 is the second-generation design and is still widely used by many customers including plating, wastewater treatment, water treatment and swimming pools.

1984

### World's first microprocessor-based hand held pH meter

The HI8424 was the first portable microprocessor pH meter. The microprocessor allowed for automatic calibration as compared to manual calibration with trimmers or potentiometers. The calibration information was stored in the meter even when it was powered off.

1985

### World's first pH electrode with built-in temperature sensor

The HI8414 pH meter was the first meter to use a pH electrode (HI1213S) with a built in temperature sensor. The temperature sensor allowed for the automatic correction for changes in pH with changes in temperature as calculated by the Nernst equation. This advancement is now commonplace in the industry.





## 1986 World's first electronic pocket sized pH tester

The pHep® or pH electronic paper revolutionized the way pH can be measured. This tester brought the electronic pH measurement to the masses. It allowed farmers, students, and many other users access to a pH meter that was simple to use and very accurate. The meter was also very affordable with a price point less than \$50.00.

## 1988 World's first pre-amplified pH electrode

The 1910 and 1912 were the first pH electrodes to have a built in amplifier within the probe. The pH electrode produces a high impedance signal. Due to the low current signal the measurement is susceptible to electrical noise, humidity, and a bad connection. Utilizing an amplifier allowed for signal with a higher current, which overcame the measurement issues. We continue to use amplifiers in many electrodes including some of those with built in temperature sensors.

## 1990 World's first waterproof portable pH meter

The HI9023 was the first waterproof portable pH meter. A pH measurement is usual for many industrial and environmental applications. In these situations it is common that a pH meter can get wet. If water or chemical solutions get inside the meter then it is possible that the sensitive electronics can be damaged. For this reason Hanna Instruments designed a meter that would be completely waterproof. The HI9023 and successive portables including the HI9024, HI9025 and HI9026 have been the work horse meter for many customers that need a rugged waterproof meter.

## 1991 World's first replaceable electrode pH pocket tester

The Checker® 1 (HI98103) was the first pocket pH meter that had a replaceable electrode. The HI1270 pH electrode has a screw cap threaded end that was simple to replace extending the list of the pH meter. The Checker is by far the most popular and recognizable tester in the market with over 1 million meters used. The Checker is still in production and continues to be one of the most popular meters.

## 1992 World's first portable pH meter with plain-paper printer

The HI9224 was the first portable pH meter with a built in printer. The addition of the printer to a meter was for the customers that required unalterable documentation. This is a great value for many industries including in the pharmaceutical and food industries.

## 1995 World's first pocket thermometer with CAL Check™

The Checktemp® series of pocket thermometers were the first thermometers that incorporated a unique calibration check feature for determining any drift of the internal electronics. A switch is used to place the thermometer in CAL Check mode. If the reading was inside  $\pm 0.3^{\circ}\text{C}$  from  $0.0^{\circ}\text{C}$  reference point that is simulated then the internal electronics are within an acceptable tolerance.

## 1997 World's first pH tester with double junction electrode

The pHel pH testers were the first pocket size meters with a double junction. Many industries have metals or other compounds that react and form a precipitate with silver ions from the silver chloride found in a single junction reference design. With a double junction electrode the silver chloride is located in an inner compartment while an outer compartment is silver free. This design extended the life of an electrode and was useful for customers that preferred the convenience of a tester with features of a traditional laboratory electrode.

## 1999 World's first pH/temperature tester with dual-level LCD

The pHep®4 and 5 were the second generation of the original pHep. These meters used a large dual-level LCD that allowed many advance features that would only be found on more expensive portable and benchtop instrumentation. The Dual level LCD was able to display both pH and Temperature simultaneously along with a battery and stability indicators. The meters also feature automatic temperature compensation, automatic calibration, battery percent level at start up, waterproof, and a replaceable electrode. pHep 4 and 5 set the standard for all instrumentation manufacturers that offer handheld testers.





# Hanna Milestones



## 2000 World's first multiparameter (pH/conductivity/temperature) pocket tester

The Combo pH/EC/TDS/Temperature meters were the first testers to combine pH and conductivity sensors into a single meter. They offered all the features of the redesigned pHeP handheld testers with the addition of a graphite amperometric sensor for the measurement of EC and TDS. The Combo meters also had an exposed temperature sensor that allowed for a quick and accurate temperature compensation for both pH and conductivity measurements.

## 2002 World's first colorimeter with CAL Check™ feature

The HI95 series of portable photometers were the second generation of our single parameter photometers. The HI93 series first generation meters used an LED at a specific wavelength as a light source. The HI95 series optical system was improved to use a tungsten lamp and narrow band interference filter for a much narrower spectral bandwidth. Hanna Instruments also incorporated a unique CAL Check function in which a traceable secondary standard is used to check the pre-programmed curve. If readings are outside a specified tolerance then the unit could be calibrated with the standards and an offset to the curve applied.

## 2003 World's first pH meter with CAL Check

Many problems in pH measurement result from a lack of understanding of the Nernstian response for a pH electrode. Every pH electrode generates a mV response in solutions at a specific pH. By monitoring the offset and slope characteristics of a pH electrode during the calibration process it is possible to determine potential problems. The pH221 and pH222 were the first pH meters to offer a unique CAL Check feature. During calibration these meters would alert the user if the probe needs to be cleaned or the buffer is contaminated. After calibration the probe condition (based on offset and slope) and the probe response were displayed with a five bar indicator. The greater the number of bars the better the condition and response.



## 2004 World's first process pH meter with integrated cellular communication

The ability for remote data acquisition is becoming of increasing importance. Many times it is convenient to monitor a process parameter remotely. With the HI504900 GSM module it is possible to use a SIM card from cellular provider to transmit measurement data over a cellular connection. The HI504 process pH/mV controller allows for the digital transmission of data by using an RS485 serial connection. The HI504 allows for programming responses based on measurement criteria. These responses include the use of sending a text (SMS) messages over the cellular connection.

## 2004 World's first pH/ORP combo tester

The measurement of pH and ORP is very common for industries that rely upon oxidizers for sanitization or to promote an oxidation reaction such as with the oxidation of cyanide to cyanate for the treatment of plating wastewater. Both pH and ORP measurements are also made for chemical reactions that use a reducing agent. The ORP generated by oxidizers and reductants are dependent on the pH of the solution. Many times there is enough oxidizer or reductant present but the pH is not at the optimum. With the HI98121 it is possible to monitor both pH and ORP at the same time. The HI98121 is commonly used to monitor pH and chlorine for many applications including swimming, food sanitization, plating wastewater treatment, and cooling tower water treatment.

2005

## World's first single parameter line of auto titrators for wine testing

Total titratable acidity and sulfur dioxide are two important parameters that are measured during the wine making process. To measure these parameters either a pH/mV meter would be used with a volumetric burette or a very expensive and complex titration system is used. Hanna Instruments developed the HI84100 (sulfur dioxide) and HI84102 (acidity) titrators for the wine industry. Both meters were inexpensive and simple to operate. All the chemistry used is premixed and the end point criteria pre-programmed. These meters allowed for the winemaker to perform analytical measurements without the need for sending samples to a lab.

2010

## World's first handheld colorimeters (Checker®HC) to offer ease of use and high accuracy in a palm sized design

The Checker HC handheld colorimeter series are the first single parameter colorimeters available in a convenient palm size design. Before the Checker HC colorimeters the user either used an expensive \$200-300 portable photometer or they used an inexpensive chemical test kit. The chemical test kits offer the advantage of being inexpensive but they do not provide the high degree of resolution or the non-subjective nature of a photometer. The Checker HC's provide the benefits of a colorimeter at a price point of a chemical test kit. The Checker HC's, like the pHep, are another prime example of Hanna Instruments bringing technology to people that would not normally think of using.



2013

## World's most innovative pH, EC and DO handheld/portable/wall-mount meter...edge®

edge is the thinnest multiparameter meter available. At just 0.5" thick the edge is loaded with many of the features found in expensive benchtop instrumentation. Features include data logging, USB ports, CAL Check™, auto ranging EC /TDS ranges, and GLP data review. edge uses digital pH, ORP, EC and DO probes with a small 3.5 mm connector. The edge is extremely versatile in that it can be used as a portable, benchtop or even as a wall mount indicator.



2014

## "World's first pH electrode with Bluetooth Smart technology (HALO®)

The HI11312 HALO is the world's first professional pH probe with Bluetooth Smart technology (Bluetooth 4.0). It is a high quality, double junction, refillable glass pH probe with a built-in temperature sensor that can be used virtually anywhere: in the field, laboratory or classroom. HALO transmits measurement data wirelessly to a compatible smart phone or tablet running the Hanna Lab App. Since the introduction of HALO in 2014 the family has grown to include other specialized electrodes including the FC2022 pH electrode for the measurement of pH in food products. Halo has set the new standard in technology for pH measurement that will be commonplace in the future.

2015

## World's first pH electrode and meter with Bluetooth Smart technology (HALO and edge blu)



The edge blu is the first Bluetooth enabled pH meter for the use with HALO Bluetooth pH electrodes. The edge blu receives measurement data wirelessly from the Halo pH electrode. The logging of data by the meter is performed by touching the HALO pH electrode button. The type of logging mode used is based on the setup configuration of edge blu. Data is logged at interval, on demand or by stability.



2019

## First complete line of pH testers with application specific probes for the food and beverage industries.





# Hanna Instruments® World Headquarters

Introduction

contacts

## HANNA INSTRUMENTS, INC.

Highland Industrial Park, 584 Park East Drive,  
Woonsocket, RI 02895 USA

P: (401) 765-7500

F: (401) 765-7575

E: [intsales@hannainst.com](mailto:intsales@hannainst.com)

W: [www.hannainst.com](http://www.hannainst.com)

Hanna's headquarters is located in Woonsocket, Rhode Island, USA. This facility also houses our primary research and development center, global marketing and sales coordination, technical training facility as well as the primary sales and technical service office for the USA.



[www.hannainst.com](http://www.hannainst.com)



## ARGENTINA

Hanna Instruments Argentina s.a.  
Saavedra 1023 (C 1229 ACK), Buenos Aires  
P: (11) 4308.1905/4308.4807  
F: (11) 4308.1904  
E: ventas@hannaarg.com  
W: www.hannaarg.com

## AUSTRALIA

Hanna Instruments Australia  
18 Fiveways Boulevard  
Keysborough Victoria 3173  
P: 03 9769 0666  
F: 03 9769 0699  
E: sales@hannainst.com.au  
W: www.hannainst.com.au

## AUSTRIA

Hanna Instruments Österreich GmbH  
Rosenkranzgasse 6, 8020 Graz, Austria  
P: +43 (0) 316 72 00 29  
E: info@hannainstruments.at  
W: www.hannainstruments.at

## BANGLADESH

Hanna Instruments Bangladesh  
Road# 2, Block# L, House# 14/A,  
Banani, Dhaka, Bangladesh  
P: +88 02 9852557  
F: +88 02 9872152  
W: www.hannainst.com.bd

## BELGIUM

Hanna Instruments BVBA  
Winninglaan 8, 9140 Temse  
P: +32 3 710 93 40  
F: +32 3 710 93 59  
E: info@hannainstruments.be  
W: www.hannainstruments.be

## BOLIVIA

Hanna Instruments Bolivia  
Av. Banzer Km 6 1/2, Edificio Arysta  
Santa Cruz  
P: (591 3) 3116969  
E: ventas@hannabolivia.bo  
W: www.hannabolivia.bo

## BRAZIL

HANNA instruments Brasil importação e  
exportação LTDA.  
Alameda Juari, 539, Tamboré Barueri -  
SP06460-090  
P: 55 (11) 20765080  
F: 55 (11) 20765080  
E: vendas@hannainst.com.br  
W: www.hannainst.com.br

## CANADA

Hanna Instruments Canada Inc.  
3156 Industriel  
Laval, Quebec, H7L 4P7  
P: (450) 629.1444  
F: (450) 629.3335  
E: info@hannacan.com  
W: www.hannacan.com

## CHILE

Hanna Instruments Equipos Ltda.  
Lo Echevers 311, Quilicura  
Santiago  
P: (56 2) 28625700  
E: ventas@hannachile.com  
W: www.hannachile.com

## CHINA

Hanna World Instruments (Beijing) Co.,Ltd  
Room 911, Building C, Webok Time Center,  
Yard No.17 Zhongguancun South St.,  
Haidian Dist., Beijing 100081  
P: (8610)8857 0068/8857 0069  
F: (8610)8857 0060  
E: china@hannainst.cn  
W: www.hannainst.cn

## COLOMBIA

Hanna Instruments Colombia  
Carrera 98 N° 25G - 10, Bodega 9, Fontibón  
Bogotá  
P: (57 1) 5189995  
E: ventas@hannacolombia.com  
W: www.hannacolombia.com

## COSTA RICA

Pavas, Rohrmoser, Costado Este de Centro  
Comercial Plaza Mayor.  
Plaza Amatista Local #1.  
San José  
P: 00 (506) 2296 5368  
F: 00 (506) 2296 5368  
E: hannacostarica@hannainst.cr  
W: www.hannainst.cr

## CROATIA

Hanna Instruments d.o.o  
Jure Kaštelana 19, 10 000  
Zagreb  
P: 00385 (0)1 2446 721  
00385 (0)1 2446 550  
F: 00385 (0)1 2446 721  
E: sales@hannainst.hr  
W: www.hannainst.hr

## CZECH REPUBLIC

Hanna Instruments Czech s.r.o.  
Mezi vodami 1903/17a  
143 00 Praha 4  
P: 800 20 30 20  
+420 244 401 144  
E: info@hanna-instruments.cz  
W: www.hanna-instruments.cz

## ECUADOR

HANNA Instruments Ecuador S.A.  
Inglaterra N31-126 y Mariana de Jesús,  
Sector la Mariscal, Quito  
P: (593-2) 601 6989 / 352 0335 / 353 0464  
F: (593-2) 601 6989  
E: hannaecuador@hannainst.ec  
W: www.hannainst.ec

## FRANCE

Hanna Instruments France  
1 rue du Tanin  
Parc des Tanneries  
67380 LINGOLSHEIM  
P: (0)3 33 76 91 88  
F: (0)3 33 76 58 80  
E: info@hannainstruments.fr  
W: www.hannainstruments.fr

## GERMANY

Hanna Instruments Deutschland GmbH  
An der alten Ziegelei 7  
D-89269 Vöhringen  
P: +49 7306 3579100  
F: +49 7306 3579101  
E: info@hannainst.de  
W: www.hannainst.de

## GREECE

Hanna Instruments Hellas Ltd.  
Marni 10, 10433 Athens  
P: 210 8235192  
F: 210 8840210  
E: hannainfo@hannagreece.gr  
W: www.hannagreece.gr

## GUATEMALA

7 calle 3-24 Zona 18 Ofiespacio 101  
Interbodegas, Guatemala Guatemala  
P: 00 (502) 2316 7574, 2316 7592  
F: 00 (502) 2369 5499  
E: hannaguatemala@hannainst.com.gt  
W: www.hannainst.com.gt





# Hanna Instruments® Offices Worldwide

## HUNGARY

Hanna Instruments Service KFT  
6726 Szeged Alsó-kikötő sor 11. C.  
P: +36 62 541-034  
F: +36 62 541-035  
E: sales@hih.hu  
W: www.hannainst.hu

## INDIA

Hanna Equipments (India) Pvt. Ltd.  
3,4,5,6 First floor, Aum Sai Building,  
Plot 23C, Sector - 7, Kharghar,  
Navi Mumbai - 410 210  
P: 22 2774 6554  
F: 22 2774 6557  
E: sales@hannainst.in  
W: www.hannainst.in

## INDONESIA

PT. Hanna Instruments Indotama  
Perkantoran Plaza Pasifik,  
Jl. Raya Barat Boulevard Blok A4 no 86  
Kelapa Gading Permai - Jakarta Utara 14240  
P: 62-021 45842941 / 4525106  
F: 62-021 45842942  
E: hannainstruments.indotama@gmail.com

## ITALY

Hanna Instruments Italia Srl  
Viale delle Industrie, 11  
35010 Villafranca Padovana  
P: 049.9070367  
F: 049.9070488  
E: padova@hanna.it  
W: www.hanna.it

## JAPAN

Hanna Instruments Japan Corporation  
NTT Makuhari Bldg. 14F-EN, 1-6 Nakase  
Mihama-Ku, Chiba 261-0023  
P: 81-43-216-2601  
F: 81-43-216-2602  
E: sales@hanna.co.jp  
W: www.hanna.co.jp

## KOREA

Hanna Instruments Korea  
134 Hyundai Tresbien  
Donhwamun-ro 11ga-gil,  
Jongno-gu, Seoul  
P: (82)02-743-5147  
F: (82)02-743-1896  
E: mccoohan@naver.com  
W: www.hannainst.co.kr

## LITHUANIA

Hanna Instruments Baltics, UAB  
VITP  
Mokslininkų str. 2A, 4floor - 411  
LT-08412 Vilnius, Lietuva  
P: +370 5 260 1910  
e: office@hannainst.lt  
W: www.hannainst.lt

## MALAYSIA

Hanna Instruments (M) SDN. BHD (Co. 173054-W)  
No. 11A, Jalan PJS 11/20, Bandar Sunway  
46150 Petaling Jaya, Selangor  
P: (603) 5638 9940  
F: (603) 5638 9829  
E: sales@hannamalaysia.com  
W: www.hannamalaysia.com

## MEXICO

Hannapro S.A. de C.V.  
Vainilla 462, Col. Granjas, México, D.F.  
CP 08400  
P: 01 (55) 5649 1185  
F: 01 (55) 5649 1186  
E: hannapro@prodigy.net.mx  
W: www.hannainst.com.mx

## MOROCCO

Hanna Instruments Morocco S.a.r.l.  
Km 3.5 Route National  
10 Boutsara Bensergao  
Agadir  
P: 00212 (0) 5 28 28 35 35 /30  
F: 00212 (0) 5 28 28 32 31  
E: info@hannamaroc.com  
W: www.hannamaroc.com

## THE NETHERLANDS

Hanna Instruments BV  
Betuwehaven 6  
3433 PV Nieuwegein,  
P: +31 (0)30-289 68 42  
F: +31 (0)30-267 14 27  
E: info@hannainstruments.nl  
W: www.hannainstruments.nl

## POLAND

Hanna Instruments Poland  
HANNA Instruments Polska  
Al. J. Piłsudskiego 73  
10-449 OLSZTYN  
P: 089) 539 09 61  
F: (089) 539 09 63  
E: info@hanna-polska.com  
W: www.hanna-polska.com

## PORTUGAL

Hanna Instruments Portugal LDA.  
Zona Industrial de Amorim  
Rua Manuel Dias, Fracção I nº 392  
4495-129 Amorim - Póvoa de Varzim  
P: +351 252 248 670  
F: +351 252 248 679  
E: info@hannacom.pt  
W: www.hannacom.pt

## ROMANIA

Hanna Instruments Romania SRL  
Str Heltai Gaspar, nr 9A, Cluj Napoca,  
Cluj, 400427  
P: +40 264 599 459  
F: +40 264 598 740  
E: info@hannainst.ro  
W: www.hannainst.ro

## SERBIA

Hanna Instruments d.o.o  
Palmotićevo 20a, Beograd, Srbija  
P: +381 (0)11 3244 201  
F: +381 (0)11 3242 922  
E: info@hannainstruments.rs  
W: www.hannainstruments.rs

## SINGAPORE

Hanna Instruments (S) Pte. Ltd  
161, Kallang Way #07-12/14, 349247  
P: (65)6296-7118  
F: (65)6291-6906  
E: sales@hannasingapore.com  
W: www.hannasingapore.com

## SLOVENIA

Hanna Service doo  
Srmin 75H Bertoki  
6000 - Koper  
P: 00386 (0) 59029902/3  
F: 00386(0) 59029898  
E: sales@hannaservice.eu  
W: www.hannaservice.si

## SOUTH AFRICA

Hanna Instruments (Pty) Ltd  
6 Vernon Road, Morninghill, Bedfordview  
P: (011) 615.6076  
F: (011) 615.8582  
E: hanna@hanna.co.za  
W: www.hanna.co.za

## SPAIN

Hanna Instruments S.L.  
Polígono Industrial Azitain, Parcela 3D,  
20600 Eibar, Guipúzcoa  
P: 902 420 100 / 943 820 100  
F: 902 420 101  
E: info@hanna.es  
W: www.hanna.es

## SWEDEN

Hanna Norden AB  
Energigatan 15 B  
S-434 37 KUNGSBACKA  
P: +46 300 404018  
F: +46 300 14122  
E: help@hannanorden.com  
W: www.hannanorden.com

## TAIWAN

Hanna Instruments Taiwan Ltd.  
3F., No.56, Ln. 188, Ruiguang Rd.,  
Neihu Dist., Taipei City 114, Taiwan  
P: +886 2 8797 2918  
F: +886 2 8797 2731  
E: Jacky@hannainst.com.tw  
W: www.hannainst.com.tw

## THAILAND

Hanna Instruments Thailand Ltd  
410/67-68 Soi Ratchadapisek 24,  
Ratchadapisek Road, Samsen Nork,  
Huay Kwang, Bangkok 10310  
P: 0-2541-4199  
F: 0-2541-4198  
E: sales@hannathai.com  
W: www.hannathai.com

## UNITED ARAB EMIRATES

Hanna Instruments FZE  
WH: F-10 Gate No 4 Ajman Free Zone  
Ajman, UAE  
PO Box: 5197  
P: +97167406681  
E: info@hannainst.ae  
W: www.hannainst.ae

## UNITED KINGDOM

Hanna Instruments Ltd  
Eden Way, Pages Industrial Park  
Leighton Buzzard, Bedfordshire LU7 4AD  
P: 01525 850855  
F: 01525 853668  
E: sales@hannainstruments.co.uk  
W: www.hannainst.co.uk

## UNITED STATES

Hanna Instruments USA  
Highland Industrial Park,  
270 George Washington Highway,  
Smithfield, RI 02917  
P: (800) 426-6287  
F: (401) 765-7575  
E: sales@hannainst.com  
W: www.hannainst.com

## VIETNAM

Hanna Instruments Vietnam  
5th Floor, 208 Nguyen Trai,  
Pham Ngu Lao Wrd, District I  
Hochiminh City  
P: 84-8-39260457/58/59  
F: 84-8-39260461  
E: sales.hcm@hannavietnam.com  
W: www.hannavietnam.com





New



## Upgraded pH / Temperature Testers

Now with 0.01 resolution,  $\pm 0.05$  accuracy, and automatic temperature compensation

See pages 1.19-1.28



HI981037

### Skin & Scalp pH Tester

*with specialized probe*

The HI981037 is a tester made specifically for measuring the pH of the skin and scalp. This meter uses a flat tip electrode with an open reference junction that allows for the direct contact surface measurement of pH. An open junction design is necessary in order to permit contact between the internal reference cell and the surface of the skin.

See page 1.28



### Foodcare

HI981038

### Bread and Dough pH Tester

*with specialized probe*

The HI981038 Foodcare Bread and Dough pH tester is an application specific designed pH tester for the measurement of pH during the dough and bread making process. This meter offers many advanced features including a pH electrode designed specifically for bread and dough.

See page 1.24



### Foodcare

HI981039

### Chocolate pH Tester

*with specialized probe*

The HI981039 Foodcare Chocolate pH tester is an application specific designed pH tester for the measurement of pH during the chocolate making process. This meter offers many advanced features including a pH electrode designed specifically for chocolate.

See page 1.25



See page 1.44

HI151 series

## Checktemp®4 Temperature Tester

with folding probe

HI151 Checktemp 4 is the perfect portable, high-accuracy thermometer for home and professional kitchens. The sharp, stainless steel, fold-out probe is ideal when testing fresh, cooked and semi-frozen food. The sensing tip allows the user to accurately measure the temperature of thin food or the thickest part of the sample. HI151 Checktemp 4 measures temperature in both °C and °F.

The thermometer has a waterproof and compact casing and is factory calibrated. The calibration is verified every time the thermometer is turned ON. The thermometer features a motion sensor which eliminates the need of closing and reopening the probe when the meter goes idle.

Six color-coded thermometers are available to meet the food hygiene and Hazard Analysis Critical Control Point (HACCP) regulations.

- Ergonomic shape
- Measures in both °C and °F
- Case features IP67 protection and floats
- Large LCD
- Turns on by motion sensor
- Internal calibration verification



white, for dairy products



red, for raw meat



blue, for raw fish



yellow, for cooked meat



green, for salad and fruits



brown, for vegetables





New



HI98199

## pH • EC • DO Waterproof Meter

*Use three professional probes with Hanna's Quick Connect*

The HI98199 is a versatile meter that can monitor pH, EC, and dissolved oxygen when paired with the respective probe. Hanna's pH probe is included with the HI98199 and the EC and DO probes can be ordered separately. Each digital probe features Hanna's Quick Connect DIN connector and the included carrying case contains all the accessories necessary to start taking pH measurements.

[See page 2.54](#)



### pH

The HI98199 allows for the measurement of pH and temperature when used with the included HI829113 digital pH probe.



### Conductivity

The HI98199 allows for the measurement of conductivity, TDS (total dissolved solids), Resistivity, Salinity, seawater  $\sigma$ , and temperature when used with the optional HI763093 digital EC probe.



### Dissolved Oxygen

The HI98199 allows for the measurement of dissolved oxygen, atmospheric pressure, and temperature when used with the optional HI764103 digital DO probe.



Compatible with:  
iOS  
Android™  
edge®/blu

HI10532

**HALO**®

Ideal for food applications

The HI10532 HALO is a Bluetooth pH electrode that turns a smart device into a fully functional pH meter for measuring the pH of food products. The HI10532 features a conic shaped sensing tip along with a triple ceramic junction in the outer reference for stable and reliable measurements in samples that would be a challenge for standard pH electrode designs.

See page 2.29



**Foodcare**

HI98169

## pH/Temperature Meter for Wine

HI98169 is a rugged, waterproof, portable pH meter that measures pH and temperature of must in winemaking. This meter is supplied with a specialized pH probe that features an open junction with Clogging Prevention System (CPS™) technology.

See page 2.86



1 m (3.3')  
titanium  
sheath

**Foodcare**

FC2423-1

## pH / Temperature Electrode for Cheese and Milk Production

FC2423-1 electrode has a 1 m (3.3') titanium sheath and conical tip to ensure quick, easy measurements and fast response. FC2423-1 pH electrode features a built-in temperature sensor and is ideal for measurements in milk and semi-solid samples such as cheeses.

See page 2.147





New



### HI90060X Series

## Photometric Electrodes

These photometric probes are used with a potentiometric titration for equivalence end point detection of colorimetric reactions. These probes are available in 4 different wavelengths from 470 nm to 625 nm and have a universal BNC connector that is used as a potentiometric input on Hanna titrators and autosamplers.

All of the HI90060X have the same design but vary in the wavelength of light used for the photometric analysis.

The probes open cell design that allows for the solution to pass through with the use of a stirrer.

- **Reflective Measurement**
  - Allows for a high color sensitivity in a compact design
- **Temperature Compensation**
  - Drift from variances in temperature are automatically compensated
- **Glass Body**
  - All of the photometric probes have a glass body that offers excellent chemical resistance. The body of the electrode is 12 mm in diameter and fits easily into sampling beakers
- **LED Brightness Trimmer**
  - If needed, a trimmer is provided in the head of the electrode to adjust the led output value.

See page 4.30



### HI84534

## Titratable Acidity Titrator and pH Meter

*for Vinegar*

The HI84534 is a low-cost, easy to use automatic minititrator and pH meter designed for the rapid and accurate analysis of Total Titratable Acidity in Vinegar. The HI84534 minititrator is a valuable tool because of its ability to eliminate subjective factors including color indicators, errors in mathematical calculations or erratic titrant additions, it will quickly become a valuable acidity analysis tool of vinegar.

See page 4.56

HI933

## Karl Fischer Volumetric Titrator

*for Moisture Determination*

The HI933 is an automatic volumetric Karl Fischer titrator with high accuracy, great flexibility and repeatability.

The titrator is designed to perform titrations for a variety of sample types/matrices, allowing the user to obtain both good results and high-speed analysis. The HI933 analyzes for water content ranging from 100 ppm to 100%. This powerful titrator automatically dispenses the titrant, detects the endpoint, and performs all necessary calculations and graphing.

See page 4.22



HI934

## Karl Fischer Coulometric Titrator

The HI934 is an Karl Fischer coulometric titrator with high accuracy, great flexibility and repeatability.

The titrator is designed to perform titrations for a variety of applications, allowing the user to obtain both good results and high-speed analysis. The HI934 analyzes for water content ranging from 1 ppm to 5%. This powerful titrator effectively monitors the KF reaction, detects the endpoint, and performs all necessary calculations and graphing.

See page 4.26





New



HI9700 Series

## Advanced Waterproof Portable Photometers

- **Waterproof casing**
  - The casing offers IP67 waterproof protection and floats.
- **Advanced LED optical system**
  - LEDs have a much higher luminous efficiency, providing more light while using less power. They also produce little heat, which could otherwise affect electronic stability.
- **Multiple measurement methods**
  - Users can select the use of powder reagents supplied in packets or the use of low cost liquid reagents supplied in a dropper bottle.
- **Intuitive dot matrix display**
  - These photometers are designed with a backlit, graphic LCD. With virtual keys, a battery status indicator, and error messages. Users will find the interface intuitive and easy to read.
- **Auto logging**
  - Log and recall the last 50 measurements.
- **On-screen tutorial mode with animations**
  - The built in Tutorial mode guides users step-by-step through the measurement process.

These portable photometers are designed with an innovative optical system that offers superior performance in accuracy, repeatability, and the amount of time that it takes to do a measurement.

These waterproof meters are extremely user friendly with a tutorial mode that walks the user graphically, step by step, in performing a measurement. The use of a backlit dot matrix LED allows the use of virtual keys making operation of the meter very intuitive.

[See page 10.42](#)





HI93754

## COD Certified Standards and Reagents

Feel confident when using our COD vials that you'll achieve the same accurate and repeatable results as always. Each COD vial is pre-filled with dichromate chemistry providing consistent results for hassle-free handling.

- **New compact packaging**
  - Each set of COD vials is stored in fully recyclable, sustainable, compact plastic packaging rather than standard styrofoam. A smaller box allows you to store more on your shelf, and reduce waste when disposing of your packaging.

See page 11.16



HI148 Series

## Waterproof Thermologgers

- IP67 waterproof casing
- Wall cradle included for versatile installation and easy thermologger removal
- One or two channels, with internal and/or external sensor.

The HI148 series of thermologgers are ideal for monitoring temperature in applications such as food processing, transportation, museums, and horticulture.

The thermologgers feature extensive memory capacity: 16,000 samples for 1-channel models and 8000 samples/channel for 2-channel models.

See page 14.52

FC766TR2 and FC767TR2

## Foodcare Penetration Probe for Semi-Solid Samples

See page 14.44 and 14.48



FC766TZ

## Foodcare Wire Stainless Steel Probes for Sous Vide

- 30, 60, Or 120 mm probe available

See page 14.47







New



BL122 • BL123

## Swimming Pool Controllers

*with Cloud Connectivity*

BL122 and BL123 are designed to maintain constant pH and disinfectant levels in swimming pools, hot tubs, and spas and offer the added benefit of allowing remote connection and access to devices via the Hanna Cloud web based application.

Both BL122 and BL123 are available in two configurations. The basic version is the in-line model which allows for direct installation of probe and chemical injection fittings into existing piping. A panel mounted version with a bypass flow cell is also available. The bypass flow cell allows for calibration and maintenance of the probe without having to shut down the recirculation pump.



Keep track anywhere with Hanna Cloud connectivity

[www.hannacloud.com](http://www.hannacloud.com)

The Hanna Cloud is a web based application that connects users to measurement devices such as the BL122 and BL123. Measurements and data storage are accessible from a PC, tablet or phone with an internet connection. Multiple registered devices may be connected.

See page 15.16



Introduction..... 1.2

- Product Spotlights.....1.4
- Comparison Guide .....1.6

Testers..... 1.8

- Multiparameter .....1.8
- pH/ORP.....1.12
- Salinity.....1.32
- Salt Content.....1.34
- Conductivity/TDS.....1.35
- Water Purity.....1.41
- Temperature.....1.42

Monitors.....1.50

- Multiparameter .....1.50
- pH.....1.61
- Conductivity/TDS.....1.64
- Temperature.....1.68

Replacement Electrodes .....1.70





### 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.

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.

### Conductivity Testers

Conductivity (EC) testers are widely used for monitoring EC/TDS with 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. Multiparameter models allow the user to monitor up to three different parameters with one indicator.

Each monitor is designed for 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 function freezes readings on the 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 monitors that feature large backlit LCDs for easy visual reading of multiple parameters as well as automatic calibration, automatic buffer selection, and automatic temperature compensation (ATC).

Hanna's wall-mounted monitors are very easy to install and work with a 12V 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 ( $\beta$ ) 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.

## 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.





## Product Spotlights

**Foodcare**

HI981039

Chocolate  
pH Tester*with specialized probe*

See page 1.25

**Foodcare**

HI981038

Bread and  
Dough  
pH Tester*with specialized probe*

See page 1.24



HI981037

Skin & Scalp  
pH Tester*with specialized probe*

See page 1.28

**Foodcare**

HI981035

Sushi pH  
Tester*with specialized probe*

See page 1.22

**Foodcare**

HI981033

Wine pH  
Tester*with specialized probe*

See page 1.26

**Foodcare**

HI981031

Beer pH  
Tester*with specialized probe*

See page 1.27

HI151

## Checktemp®4 Temperature Tester

*with folding probe*

HI151 Checktemp 4 is the perfect portable, high-accuracy waterproof thermometer for home and professional kitchens. HI151 Checktemp 4 measures temperature in both °C and in °F.

Six color-coded thermometers are available to meet the food hygiene and Hazard Analysis Critical Control Point (HACCP) regulations.

- Ergonomic shape
- Measures in both °C and °F
- Case features IP67 protection and floats

[See page 1.44](#)



## GroLine

HI981421

## GroLine Hydroponics Monitor

*with inline multiparameter probe*

The HI981421 GroLine Monitor provides 24 hour continuous monitoring of pH, conductivity (EC or TDS), and temperature in hydroponic nutrients. Quick to setup and simple to use, this monitor was designed with Hydroponics, Aquaponics, and Greenhouses in mind. Make your nutrient solution easy to manage with the GroLine Monitor and combined pH/EC/Temperature probe.

[See page 1.50](#)

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	Quick Cal Calibration Solution Compatible	pH Buffer Sets	ATC	Waterproof	Replaceable Electrode/Probe	Cloth Extendable Junction	HOLD Function	BEPS	Auto-off	Page
<b>Multiparameter</b>																					
HI98129	•	•	•			°C/°F	•	•	•	2	1		2	•	•	•	•	•	•	•	1.8
HI98130	•	•	•			°C/°F	•	•	•	2	1		2	•	•	•	•	•	•	•	1.8
HI98131	•	•	•			°C/°F	•	•	•	2	1	•	2	•	•	•	•	•	•	•	1.10
<b>pH/ORP</b>																					
HI98127	•					°C/°F				2			2	•	•	•	•	•	•	•	1.12
HI98128	•					°C/°F	•	•		2			2	•	•	•	•	•	•	•	1.12
HI98107	•					°C/°F		•		2					•		•			•	1.14
HI98108	•					°C/°F	•	•		2				•	•		•			•	1.14
HI98118	•					°C/°F	•	•		2		•		•	•		•			•	1.15
HI98100	•						•	•		2						•				•	1.16
HI98103	•							•		2						•				•	1.16
HI98115	•						•	•		2						•				•	1.18
HI981030	•						•	•		2						•				•	1.19
HI981034	•						•	•		2						•				•	1.20
HI981032	•						•	•		2						•				•	1.21
HI981035	•						•	•		2						•				•	1.22
HI981036	•						•	•		2						•				•	1.23
HI981038	•						•	•		2						•				•	1.24
HI981039	•						•	•		2						•				•	1.25
HI981033	•						•	•		2						•				•	1.26
HI981031	•						•	•		2						•				•	1.27
HI981037	•						•	•		2						•	•			•	1.28
HI98111	•						•	•		2				•		•					1.29
HI98112	•						•	•		2				•		•					1.29
HI98113	•					°C	•	•		2				•		•					1.29
HI98120				•		°C/°F									•	•		•	•	•	1.30
HI98121	•			•		°C/°F	•			2			2	•	•	•	•	•	•	•	1.30
HI98201				•																	1.34
<b>EC/TDS</b>																					
HI98319					•	°C/°F		•						•	•					•	1.33
HI98203					•						1										1.34
HI98301			•			°C/°F		•		1				•	•					•	1.35
HI98302			•			°C/°F		•		1				•	•					•	1.35
HI98303			•			°C/°F		•		1				•	•					•	1.35
HI98304			•			°C/°F		•		1				•	•					•	1.35
HI98311			•	•		°C/°F		•		1				•	•	•		•	•	•	1.36
HI98312			•	•		°C/°F		•		1				•	•	•		•	•	•	1.36
HI98318			•	•		°C/°F		•		1	•			•	•					•	1.38
HI98331			•			°C/°F		•		1				•		•				•	1.39
Primo			•					•		1				•						•	1.40
Primo 5			•					•		1				•						•	1.40
Primo 4			•					•		1				•						•	1.40
HI98308			•							1						•					1.41
HI98309			•																		1.41



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	EN 13485 certified	HOLD Function	Backlit LCD	12 VDC Power Supply	Battery Power	Visual Alarm	Auto-off	Page
<b>Temperature</b>																					
HI98501					°C/°F							•								•	1.42
HI151					°C/°F							•	•							•	1.44
HI151-000					°C/°F							•	•	•						•	1.44
HI151-1					°C/°F							•	•							•	1.44
HI151-100					°C/°F							•	•	•						•	1.44
HI151-2					°C/°F							•	•							•	1.44
HI151-200					°C/°F							•	•	•						•	1.44
HI151-3					°C/°F							•	•							•	1.44
HI151-300					°C/°F							•	•	•						•	1.44
HI151-4					°C/°F							•	•							•	1.44
HI151-400					°C/°F							•	•	•						•	1.44
HI151-5					°C/°F							•	•							•	1.44
HI151-500					°C/°F							•	•	•						•	1.44
HI98509					°C/°F							•								•	1.46
HI98539					°C/°F							•								•	1.47
HI145-00					°C							•								•	1.48
HI145-01					°F							•								•	1.48
HI145-20					°C							•								•	1.48
HI145-30					°F							•								•	1.48
HI98517					°C																1.49
<b>Monitors</b>																					
HI981421	•	•	•		°C/°F	2		•	•	•	•		•		•	•	•		•		1.50
HI981420	•	•	•		°C/°F	2		•	•	•	•		•		•	•	•		•		1.54
HI991404	•	•	•		°C/°F	2	2	•	•	•	•		•		•	•	•				1.58
HI991405	•	•	•		°C/°F	2	2	•	•	•	•		•		•	•	•				1.58
HI981504/5	•		•		°C/°F	2										•	•				1.59
HI981504/7	•		•		°C/°F	2										•	•				1.59
HI981404N	•		•			2											•				1.60
HI981405N	•	•				2				•							•				1.60
HI991401	•				°C/°F	2	2	•	•				•		•	•	•				1.61
HI981401N	•					2											•				1.62
HI981402	•					2											•		•		1.63
HI993301		•	•		°C/°F			•	•	•			•		•	•	•				1.64
HI993302		•	•		°C/°F			•	•	•			•		•	•	•				1.64
HI983302N		•							•								•				1.65
HI983307		•							•								•		•		1.66
HI983304		•							•								•		•		1.67
HI146-00					°C													•			1.68
HI147-00					°C													•			1.69
HI147-01					°F													•			1.69

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 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 as well as an EC/TDS graphite electrode. The replaceable pH cartridge means this tester does not need to be discarded when the pH sensor is exhausted.

The EC/TDS conversion factor is user-selectable, as well as the temperature compensation coefficient ( $\beta$ ).



## 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 ( $\beta$ ) 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	0.00 to 14.00 pH
	Resolution	0.01 pH	0.01 pH
	Accuracy	±0.05 pH	±0.05 pH
Conductivity	Range	0 to 3999 $\mu$ S/cm	0.00 to 20.00 mS/cm
	Resolution	1 $\mu$ S/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 ppm (mg/L)	0.01 ppt (g/L)
	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 $\mu$ S/cm or 1382 ppm (mg/L)	automatic, one point at 12.88 mS/cm or 6.44 ppt (g/L)
	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 $\beta$ 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	
	Dimensions / Weight	163 x 40 x 26 mm (6.4 x 1.6 x 1.0") / 100 g (3.5 oz.)	
Ordering Information	<b>HI98129</b> (Combo) is supplied with HI73127 pH electrode, HI73128 electrode removal tool, pH 4.01 buffer solution sachet, pH 7.01 buffer solution sachet, 1413 $\mu$ S/cm conductivity standard sachet, 1382 ppm TDS standard sachet, pH electrode cleaning solution sachet, storage solution sachet, batteries, and instructions.		
	<b>HI98130</b> (Combo) is supplied with HI73127 pH electrode, HI73128 electrode removal tool, pH 4.01 buffer solution sachet, pH 7.01 buffer solution sachet, 12880 $\mu$ S/cm conductivity standard sachet, 6.44 ppt TDS standard sachet, pH electrode cleaning solution sachet, storage solution sachet, batteries, and instructions.		



### High accuracy EC/TDS graphite probe

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



### Replaceable pH electrode cartridge

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



# GroLine

HI98131

## GroLine pH/EC/TDS Combo Tester

- **Waterproof**
  - Designed to withstand the humidity of a growing environment
- **Automatic one-point calibration** using our Quick Cal solution
- **Automatic Temperature Compensation**
  - All readings are compensated for variations in temperature
  - Temperature displayed in °C or °F along with pH reading
- **Measurement instability indicator**
  - Meter displays a 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 or 60 minutes of non-use to maximize battery life

The HI98131 GroLine Combo offers high accuracy pH, EC (conductivity), TDS (total dissolved solids), and temperature measurements in a rugged, waterproof casing that floats.

The GroLine Combo features a replaceable pH electrode as well as an EC/TDS graphite electrode. The replaceable pH cartridge means this tester does not need to be discarded when the pH sensor is exhausted.

The EC/TDS conversion factor is user-selectable, as well as the temperature compensation coefficient ( $\beta$ ).





### High accuracy EC/TDS graphite probe

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



### Replaceable pH electrode cartridge

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



### Protective cap

The protective cap features an internal cup that can be filled with storage solution to keep the pH sensor moist.

## Specifications

### HI98131

pH	Range	0.00 to 14.00 pH
	Resolution	0.01 pH
	Accuracy	±0.1 pH
	Calibration	automatic, one or two-point calibration (using pH 4.01, 7.01, 10.01 buffers); one-point calibration using HI5036 or HI50036 Quick Cal calibration solution
	Temperature Compensation	automatic
EC	Range	0.00 to 6.00 mS/cm
	Resolution	0.01 mS/cm
	Accuracy	±2% F.S.
	Calibration	automatic, one-point at 1.41 mS/cm or 5.00 mS/cm; one-point calibration using Quick Cal calibration solution
	Temperature Compensation	automatic, with $\beta = 1.9\%/^{\circ}\text{C}$
TDS	Range	0 to 3000 ppm (500 CF); 0 to 3999 ppm (700 CF)
	Resolution	10 ppm (mg/L)
	Accuracy	±2% F.S.
	Conversion Factor**	0.5 (500 ppm) or 0.7 (700 ppm)
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	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 min or 60 min of non-use; can be disabled
	Dimensions / Weight	163 x 40 x 26 mm (6.4 x 1.6 x 1.0") / 100 g (3.5 oz.)
Ordering Information	<b>HI98131</b> (GroLine Combo) is supplied with HI73127 pH electrode, electrode removal tool, Quick Cal calibration solution sachets (4), electrode cleaning solution sachet, batteries, storage cap, quality certificate, and instruction manual.	



### Calibrate pH and EC with one solution

Calibration of both pH and EC can be performed using our Quick Cal calibration solution



### Supplied complete

Supplied with all the tools necessary to start performing tests

HI98127 (pHep®4) · HI98128 (pHep®5)

## pH and Temperature Testers

- **Waterproof**
  - Designed to float if accidentally dropped in water
- **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 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**
- **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.

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. This cartridge design has no pins which could bend or break.





## 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.



### Standard or N.I.S.T buffer calibration

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



### Replaceable pH electrode cartridge

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



### Exposed temperature sensor

An exposed temperature sensor allows for rapid automatic temperature compensated pH measurements.



### Pocket clip

A pocket clip is featured on the back of the the pHep 4 and pHep 5

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	<b>HI98127</b> (pHep®4) and <b>HI98128</b> (pHep®5) are supplied with HI73127 pH electrode, HI73128 electrode removal tool, pH 4.01 buffer solution sachets (2), pH 7.01 buffer solution sachets (2), electrode cleaning solution sachet, electrode storage solution sachet, batteries, and instructions.		



### Protective cap

The protective cap features an internal cup that can be filled with storage solution to keep the pH sensor moist.

HI98107 pHep® · HI98108 pHep+

## pHep pH Testers

- Waterproof
- Built in temperature sensor for Automatic Temperature Compensated measurements
- Automatic one or two-point calibration
- Stability indicator
- Low battery indicator
- Two-button operation

The pHep 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.



### Exposed temperature sensor

An exposed temperature sensor facilitates faster response times.



### Watertight seal

An easily removable cover provides access to the battery compartment.



Supplied in a carrying case with buffer and cleaning solutions.



Specifications	HI98107 (pHep®)	HI98108 (pHep®+)	
pH	Range	0.0 to 14.0 pH	0.00 to 14.00 pH
	Resolution	0.1 pH	0.01 pH
	Accuracy (@25°C/77°F)	±0.1 pH	±0.10 pH
	Calibration	automatic, one or two-points (pH 4.01, 7.01, 10.01)	
Temperature	Range	0.0 to 50.0 °C (32.0 to 122.0 °F)	0.0 to 50.0 °C (32.0 to 122.0 °F)
	Resolution	0.1°C / 0.1°F	0.1°C / 0.1°F
	Accuracy (@25°C/77°F)	±0.5°C / ±1.0°F	±0.5°C / ±1.0°F
Additional Specifications	Temperature Compensation	automatic, 0 to 50°C (32 to 122°F)	
	Glass Type	GP (general purpose)	
	Battery Type / Life	CR2032 3V Li-ion / approximately 800 hours of continuous use	
	Auto-off	8 minutes, 60 minutes, or can be disabled	
	Environment	0 to 50°C (32 to 122°F); RH 100% max	
	Dimensions	160 x 40 x 17 mm (6.3 x 1.6 x 0.7")	
Weight	75 g (2.6 oz.)		
Ordering Information	<b>HI98107 (pHep)</b> is supplied with CR2032 battery, electrode cleaning solution sachet, pH 4.01 buffer solution sachet, pH 7.01 buffer solution sachet (2), storage/protection sleeve, instruction manual, and quality certificate.		
	<b>HI98108 (pHep+)</b> is supplied with CR2032 battery, electrode cleaning solution sachet, pH 4.01 buffer solution sachet, pH 7.01 buffer solution sachet (2), storage/protection sleeve, instruction manual, and quality certificate.		



GroLine

HI98118

## GroLine pH Tester

- Waterproof
- Quick calibration mode using Hanna Quick Cal pH/EC calibration solution
- Two-button operation

The GroLine HI98118 pH/temperature tester is our latest pocket meter for measuring the pH of a hydroponic nutrient solution. The HI98118 has a very large easy to read LCD display that shows both pH and temperature along with calibration, stability, and low battery indicators. All operations are simplified to two buttons.



### Exposed temperature sensor

HI98118 features an exposed temperature sensor for faster response times.



### Watertight seal

An easily removable cover provides access to the battery compartment.



Supplied in a carrying case with buffer and cleaning solutions.

Specifications	HI98118	
pH	Range	0.00 to 14.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.10 pH
	Calibration	automatic, one or two-points (pH 4.01, 7.01, 10.01)
	Quick Calibration	one-point calibration using HI5036 or HI50036P Quick Cal calibration solution
Temperature	Range	0.0 to 50.0 °C (32.0 to 122.0 °F)
	Resolution	0.1°C/0.1°F
	Accuracy (@25°C/77°F)	±0.5°C/±1.0°F
Additional Specifications	Temperature Compensation	automatic, 0 to 50°C (32 to 122°F)
	Glass Type	GP (general purpose)
	Battery Type / Life	CR2032 3V 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 100% max
	Dimensions	160 x 40 x 17 mm (6.3 x 1.6 x 0.7")
	Weight	75 g (2.6 oz.)
Ordering Information	<b>HI98118</b> GroLine pH tester, Quick Cal calibration sachets (3), electrode cleaning solution sachet, battery, instruction manual, and quality certificate.	



HI98100 · HI98103

## Checker® pH Testers

The latest HI98103 Checker and HI98100 Checker Plus are 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.

These Checker pH testers have been designed with many advanced features while maintaining the look and feel of the original Checker. The HI98100 Checker Plus and HI98103 Checker now offer automatic calibration to one or two points, automatic buffer recognition, calibrated buffer tags, stability indicator, low battery indicator, and selectable automatic shut off. Both the Checker and Checker Plus maintain 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.

Over 1 million  
users since its  
introduction



### 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 openings.

### Economical

The Checker and Checker Plus are full-featured pH testers at an affordable price.

### High accuracy

The HI98100 Checker Plus features  $\pm 0.2$  pH accuracy with 0.01 resolution while the HI98103 features 0.1 resolution.

### Large LCD

Enhanced LCD that displays reading, stability indicator, low battery indicator, and calibration tags.

### Automatic Calibration

These meters are 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

These meters 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

These Checkers have 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 and HI98103 are supplied complete with meter, probe, calibration solutions, and cleaning solutions packaged in a durable plastic carrying case.





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.

Specifications	HI98100 Checker®Plus	HI98103 Checker	
pH	Range	0.00 to 14.00 pH	0.0 to 14.0 pH
	Resolution	0.01 pH	0.1 pH
	Accuracy (@25°C/77°F)	±0.2 pH	
	Calibration	automatic, one or two-point	
Additional Specifications	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	<b>HI98100 (Checker)</b> and <b>HI98103 (Checker Plus)</b> are 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.		

## GroLine

HI98115

### pH Tester

The HI98115 GroLine 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 HI98115 is the optimal tool for pH measurement in nutrient solutions and soil slurries.

#### 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 openings.

#### Economical

The HI98115 is a full-featured pH tester at a price that anyone that needs to measure pH can afford.

#### High accuracy

The HI98115 GroLine pH tester features  $\pm 0.2$  pH accuracy with 0.01 resolution.

#### Large LCD

Enhanced LCD that displays reading, stability indicator, low battery indicator, and calibration tags.

#### Automatic Calibration

HI98115 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.



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

#### Plastic Carrying Case

Supplied complete with meter, probe, calibration solutions, and cleaning solutions packaged in a durable plastic carrying case.

Specifications	HI98115	
pH	Range	0.00 to 14.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	$\pm 0.2$ pH
	Calibration	automatic, one or two-point
Additional Specifications	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	<p><b>HI98115</b> 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.</p>	



## GroLine

HI981030

### Soil pH Tester

with specialized probe

The HI981030 GroLine soil pH tester is an application specific designed pH tester for the measurement of soil pH. This meter offers many advanced features including the ability to clear any clogging of the reference junction, which results in a longer life than standard pH testers.

- **pH electrode with replaceable bridge electrolyte**
  - The pH electrode has an outer junction sleeve that can be removed and cleaned. Once cleaned a small amount of supplied gel electrolyte is added and the junction is refreshed improving the pH measurement and extending the life of the meter.
- **Conical tip**
  - Allows for easy penetration into wetted soil. If stones are present or the soil is hardened then it is best to use an auger to make a hole for the pH electrode to be inserted into. If the soil is dry the use of purified water can be used to wet the soil.
- **PVDF body**
  - Polyvinylidene Fluoride (PVDF) is a food grade plastic that is resistant to most chemicals and solvents, including sodium hypochlorite that is used for disinfection. It has high abrasion resistance, mechanical strength, and resistance to ultraviolet light. PVDF is also resistant to fungal growth.
- **Large LCD**
  - An enhanced LCD displays the measurement reading, stability indicator, low battery indicator, and calibration tags.
- **Automatic calibration**
  - The GroLine soil pH tester 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.
- **Automatic temperature compensation**
- **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 taken.
- **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.
- **Probe diagnostic**
  - During calibration the meter will display an error (Err) message as an indicator that the probe needs to be cleaned.
- **Long battery life**
  - The GroLine soil pH tester has an exceptional battery life of approximately 700 hours. When the battery power is running low, a low battery indicator is displayed.
- **Economical**
  - The GroLine soil pH tester is an advanced meter at a price that is affordable for both the home gardener and professional grower.

Removable sleeve to extend probe life



Supplied complete

Supplied complete with meter, probe, calibration solutions, and cleaning solutions.

Specifications	HI981030	
pH	Range	0.00 to 12.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.05 pH
	Calibration	automatic, one or two-point
Additional Specifications	Temperature Compensation	automatic, 0 to 50°C (32 to 122°F)
	Glass Type	LT (low temperature)
	Battery Type / Life	CR2032 Li-ion / approx. 800 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	51 x 151 x 21 mm (2 x 5.9 x 0.9")
	Weight	44 g (1.6 oz.)
Ordering Information	<b>HI981030</b> is supplied with pH 4.01 buffer solution sachets (2), pH 7.01 buffer solution sachets (2), electrode cleaning solution sachets for soil deposits (1) and humus deposits (1), gelled bridge electrolyte, electrode storage solution, CR2032 3V Li-ion battery, quality certificate, and instruction manual.	

## Foodcare

HI981034

# Milk pH Tester

with specialized probe

The HI981034 Foodcare Milk pH tester is an application specific designed pH tester for the measurement of pH in the milk production process. This meter offers many advanced features including resistance to clogging of the reference junction, which results in a longer life than standard pH testers.

- **pH electrode with open junction**
  - The pH electrode of this tester uses an open outer junction design. The open junction is more resistant to clogging when the probe is inserted into solids and semisolids than pH electrodes that use ceramic or other porous materials.
- **Low temperature (LT) glass**
  - The pH glass tip uses a special low temperature (LT) glass formulation with a lower resistance of approximately 50 Megaohms compared to general purpose (GP) with a resistance of about 100 Megaohms. This is beneficial when measuring food products at lower temperatures in order to have the ideal resistance for the measuring circuit.
- **Conical tip**
  - Allows for a large surface area and easy penetration into semisolids making it ideal for milk and milk products like yogurt.
- **Glass body**
  - Glass body is non-porous and easy to clean and disinfect.
- **Large LCD**
  - An enhanced LCD displays the measurement reading, stability indicator, low battery indicator, and calibration tags.
- **Automatic calibration**
  - The Foodcare Milk pH Tester 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.
- **Automatic temperature compensation**
- **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 taken.
- **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.
- **Probe diagnostic**
  - During calibration the meter will display an error (Err) message as an indicator that the probe needs to be cleaned.
- **Long battery life**
  - The Foodcare Milk pH Tester has an exceptional battery life of approximately 700 hours. When the battery power is running low, a low battery indicator is displayed.
- **Economical**
  - The Foodcare Milk pH Tester is an advanced meter at a price that is affordable for both the hobbyist and professional.



### Conical tip electrode

Easy to clean electrode-free gel with a maintenance-free gel electrolyte



### Supplied complete

Supplied complete with meter, probe, calibration solutions, and cleaning solutions.

Specifications	HI981034	
pH	Range	0.00 to 12.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.05 pH
	Calibration	automatic, one or two-point
Additional Specifications	Temperature Compensation	automatic, 0 to 50°C (32 to 122°F)
	Glass Type	LT (low temperature)
	Battery Type / Life	CR2032 Li-ion / approx.800 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	51 x 159 x 21 mm (2 x 6.3 x 0.9")
	Weight	50 g (1.8 oz.)
<b>Ordering Information</b>	<b>HI981034</b> is supplied with pH 4.01 buffer solution sachet (2), pH 7.01 buffer solution sachet (2), electrode cleaning solution sachet for milk deposits (2), electrode storage solution, CR2032 3V Li-ion battery, quality certificate, and instruction manual.	



### Conical tip electrode

Easy to clean electrode with a maintenance-free gel electrolyte



### Supplied complete

Supplied complete with meter, probe, calibration solutions, and cleaning solutions.

Specifications	HI981032	
pH	Range	0.00 to 12.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.05 pH
	Calibration	automatic, one or two-point
Additional Specifications	Temperature Compensation	automatic, 0 to 50°C (32 to 122°F)
	Glass Type	LT (low temperature)
	Battery Type / Life	CR2032 Li-ion / approx. 800 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 129 x 21 mm (2 x 5.1 x 0.9")
	Weight	40 g (1.4 oz.)
Ordering Information	<p><b>HI981032</b> is supplied with pH 4.01 buffer solution sachets (2), pH 7.01 buffer solution sachets (2), electrode cleaning solution sachets for cheese deposits (2), electrode storage solution, CR2032 3V Li-ion battery, quality certificate, and instruction manual.</p>	

## Foodcare

HI981032

# Cheese pH Tester

with specialized probe

The HI981032 Foodcare Cheese pH tester is an application specific designed pH tester for the measurement of pH during the cheesemaking process. This meter offers many advanced features including a pH electrode designed specifically for cheese.

- **pH Electrode with open junction**
  - The pH electrode of this tester uses an open outer junction design. The open junction is more resistant to clogging when the probe is inserted into solids and semisolids than pH electrodes that use ceramic or other porous materials.
- **Low temperature (LT) glass**
  - The pH glass tip uses a special low temperature (LT) glass formulation with a lower resistance of approximately 50 Megaohms compared to general purpose (GP) with a resistance of about 100 Megaohms. This is beneficial when measuring food products at lower temperatures in order to have the ideal resistance for the measuring circuit.
- **Conical tip**
  - Allows for easy penetration into solids and semisolids, which is needed when wanting to take a direct measurement in cheese.
- **PVDF body**
  - Polyvinylidene Fluoride (PVDF) is a food grade plastic that is resistant to most chemicals and solvents, including sodium hypochlorite. It has high abrasion resistance, mechanical strength, and resistance to ultraviolet. PVDF is also resistant to fungal growth
- **Large LCD**
  - An enhanced LCD displays the measurement reading, stability indicator, low battery indicator, and calibration tags.
- **Automatic calibration**
  - The Foodcare Cheese pH Tester 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.
- **Automatic temperature compensation**
- **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 taken.
- **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.
- **Probe diagnostic**
  - During calibration the meter will display an error (Err) message as an indicator that the probe needs to be cleaned.
- **Long battery life**
  - The Foodcare Cheese pH Tester has an exceptional battery life of approximately 700 hours. When the battery power is running low, a low battery indicator is displayed.
- **Economical**
  - The Foodcare Cheese pH Tester is an advanced meter at a price that is affordable for both the hobbyist and professional.



**Foodcare**

HI981035

**Sushi pH Tester***with specialized probe*

The HI981035 Foodcare Sushi pH tester is an application specific designed pH tester for the measurement of pH of sushi rice as part of a Hazardous Analysis of Critical Control Points (HACCP) plan. This meter offers many advanced features including a pH electrode designed specifically for sushi.

- **Flat tip pH sensor**
  - A flat tip pH electrode allows for the direct measurement of solids by simply touching the surface of the product. No need to make slurries with purified water.
- **pH Electrode with open junction**
  - The pH electrode of this tester uses an open outer junction design. The open junction is clog resistant due to the hard gel surface known as Viscolene that is used for the reference cell. When the junction becomes coated with starch from the rice simply clean the probe to expose the viscolene reference.
- **Titanium body**
  - A titanium body offers additional protection as compared to traditional glass body pH probes.
- **Large LCD**
  - An enhanced LCD displays the measurement reading, stability indicator, low battery indicator, and calibration tags.
- **Automatic calibration**
  - The Foodcare Sushi pH Tester 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.
- **Automatic temperature compensation**
- **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 taken.
- **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.
- **Probe diagnostic**
  - During calibration the meter will display an error (Err) message as an indicator that the probe needs to be cleaned.
- **Long battery life**
  - The Foodcare Sushi pH Tester has an exceptional battery life of approximately 700 hours. When the battery power is running low, a low battery indicator is displayed.
- **Economical**
  - The Foodcare Sushi pH Tester is a feature rich meter at a price that is affordable for both the hobbyist and professional.

**Flat tip electrode**

Easy to clean electrode with a maintenance-free gel electrolyte

**Supplied complete**

Supplied complete with meter, probe, calibration solutions, and cleaning solutions

**Specifications****HI981035**

pH	Range	0.00 to 12.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.05 pH
	Calibration	automatic, one or two-point
Additional Specifications	Temperature Compensation	automatic, 0 to 50°C (32 to 122°F)
	Glass Type	LT (low temperature)
	Battery Type / Life	CR2032 Li-ion / approx. 800 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	51 x 160 x 21 mm (2 x 6.3 x 0.9")
	Weight	52 g (1.8 oz.)

**Ordering Information**

**HI981035** is supplied with pH 4.01 buffer solution sachets (2), pH 7.01 buffer solution sachets (2), electrode cleaning solution for sushi (2), electrode storage solution, CR2032 3V Li-ion battery, quality certificate, and instruction manual.

## Foodcare

HI981036

# Meat pH Tester

with specialized probe

The HI981036 Foodcare Meat pH tester is an application specific designed pH tester for the measurement of pH during the meat processing process. This meter offers many advanced features including a pH electrode designed specifically for meat.

- **pH electrode with replaceable bridge electrolyte**
  - The pH electrode has an outer junction sleeve that can be removed and cleaned. Once cleaned a small amount of supplied gel electrolyte is added and the junction is refreshed improving the pH measurement and extending the life of the meter.
- **Low temperature (LT) glass**
  - The pH glass tip uses a special low temperature (LT) glass formulation with a lower resistance of approximately 50 Megaohms compared to general purpose (GP) with a resistance of about 100 Megaohms. This is beneficial when measuring food products at lower temperatures in order to have the ideal resistance for the measuring circuit.
- **Conical tip**
  - Allows for easy penetration into solids and semisolids, which is needed when wanting to take a direct measurement in meat.
- **PVDF body**
  - Polyvinylidene Fluoride (PVDF) is a food grade plastic that is resistant to most chemicals and solvents, including sodium hypochlorite. It has high abrasion resistance, mechanical strength, and resistance to ultraviolet light. PVDF is also resistant to fungal growth.
- **Large LCD**
  - An enhanced LCD displays the measurement reading, stability indicator, low battery indicator, and calibration tags.
- **Automatic calibration**
  - The Foodcare Meat pH Tester 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.
- **Automatic temperature compensation**
- **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 taken.
- **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.
- **Probe diagnostic**
  - During calibration the meter will display an error (Err) message as an indicator that the probe needs to be cleaned.
- **Long battery life**
  - The Foodcare Meat pH Tester has an exceptional battery life of approximately 700 hours. When the battery power is running low, a low battery indicator is displayed.
- **Economical**
  - The Foodcare Meat pH Tester is a fully featured meter at a price that is affordable for both the hobbyist and professional.



Removable sleeve to extend probe life



Supplied complete

Supplied complete with meter, probe, calibration solutions, and cleaning solutions.

Specifications	HI981036	
pH	Range	0.00 to 12.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.05 pH
	Calibration	automatic, one or two-point
Additional Specifications	Temperature Compensation	automatic, 0 to 50°C (32 to 122°F)
	Glass Type	LT (low temperature)
	Battery Type / Life	CR2032 Li-ion / approx. 800 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	51 x 148 x 21 mm (2 x 5.8 x 0.9")
	Weight	43 g (1.5 oz.)
Ordering Information	<b>HI981036</b> is supplied with pH 4.01 buffer solution sachets (2), pH 7.01 buffer solution sachets (2), electrode acid cleaning solution sachets for meat, grease and fats (2), gelled bridge electrolyte, electrode storage solution, CR2032 3V Li-ion battery, quality certificate, and instruction manual.	

**Foodcare**

HI981038

# Bread and Dough pH Tester

*with specialized probe*

The HI981038 Foodcare Bread and Dough pH tester is an application specific designed pH tester for the measurement of pH during the dough and bread making process. This meter offers many advanced features including a pH electrode designed specifically for bread and dough.

- **pH Electrode with open junction**
  - The pH electrode of this tester uses an open outer junction design. The open junction is more resistant to clogging when the probe is inserted into solids and semisolids than pH electrodes that use ceramic or other porous materials.
- **Low temperature (LT) glass**
  - The pH glass tip uses a special low temperature (LT) glass formulation with a lower resistance of approximately 50 Megaohms compared to general purpose (GP) with a resistance of about 100 Megaohms. This is beneficial when measuring food products at lower temperatures in order to have the ideal resistance for the measuring circuit.
- **Conical tip**
  - Allows for easy penetration into solids and semisolids, which is needed when wanting to take a direct measurement in bread or dough.
- **PVDF body**
  - Polyvinylidene Fluoride (PVDF) is a food grade plastic that is resistant to most chemicals and solvents, including sodium hypochlorite. It has high abrasion resistance, mechanical strength, and resistance to ultraviolet. PVDF is also resistant to fungal growth.
- **Large LCD**
  - An enhanced LCD displays the measurement reading, stability indicator, low battery indicator, and calibration tags.
- **Automatic calibration**
  - The Foodcare Bread and Dough pH Tester 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.
- **Automatic temperature compensation**
- **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 taken.
- **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.
- **Probe diagnostic**
  - During calibration the meter will display an error (Err) message as an indicator that the probe needs to be cleaned.
- **Long battery life**
  - The Foodcare Bread and Dough pH Tester has an exceptional battery life of approximately 700 hours. When the battery power is running low, a low battery indicator is displayed.
- **Economical**
  - The Foodcare Bread and Dough pH Tester is an advanced meter at a price that is affordable for both the hobbyist and professional.



## Conical tip electrode

Easy to clean electrode with a maintenance-free gel electrolyte



## Supplied complete

Supplied complete with meter, probe, calibration solutions, and cleaning solutions.

Specifications	HI981038	
pH	Range	0.00 to 12.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.05 pH
	Calibration	automatic, one or two-point
Additional Specifications	Temperature Compensation	automatic, 0 to 50°C (32 to 122°F)
	Glass Type	LT (low temperature)
	Battery Type / Life	CR2032 Li-ion / approx. 800 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 129 x 21 mm (2 x 5.1 x 0.9")
Weight	42 g (1.5 oz.)	
Ordering Information	<p><b>HI981038</b> is supplied with pH 4.01 buffer solution sachets (2), pH 7.01 buffer solution sachets (2), electrode cleaning and disinfection solution for bread and dough deposits (2), electrode storage solution, CR2032 3V Li-ion battery, quality certificate, and instruction manual.</p>	



## Foodcare

HI981039

# Chocolate pH Tester

with specialized probe

The HI981039 Foodcare Chocolate pH tester is an application specific designed pH tester for the measurement of pH during the chocolate making process. This meter offers many advanced features including a pH electrode designed specifically for chocolate.

- **pH electrode with replaceable bridge electrolyte**
  - The pH electrode has an outer junction sleeve that can be removed and cleaned. Once cleaned a small amount of supplied gel electrolyte is added and the junction is refreshed improving the pH measurement and extending the life of the meter.
- **Low temperature (LT) glass**
  - The pH glass tip uses a special low temperature (LT) glass formulation with a lower resistance of approximately 50 Megaohms compared to general purpose (GP) with a resistance of about 100 Megaohms. This is beneficial when measuring food products at lower temperatures in order to have the ideal resistance for the measuring circuit.
- **Conical tip**
  - Allows for easy penetration into semisolids, which is needed when wanting to take a direct measurement in chocolate.
- **PVDF body**
  - Polyvinylidene Fluoride (PVDF) is a food grade plastic that is resistant to most chemicals and solvents, including sodium hypochlorite. It has high abrasion resistance, mechanical strength, and resistance to ultraviolet light. PVDF is also resistant to fungal growth.
- **Large LCD**
  - An enhanced LCD displays the measurement reading, stability indicator, low battery indicator, and calibration tags.
- **Automatic calibration**
  - The Foodcare Chocolate pH Tester 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.
- **Automatic temperature compensation**
- **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 taken.
- **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.
- **Probe diagnostic**
  - During calibration the meter will display an error (Err) message as an indicator that the probe needs to be cleaned.
- **Long battery life**
  - The Foodcare Chocolate pH Tester has an exceptional battery life of approximately 700 hours. When the battery power is running low, a low battery indicator is displayed.
- **Economical**
  - The Foodcare Chocolate pH Tester is a fully featured meter at a price that is affordable for both the hobbyist and professional.



Removable sleeve to extend probe life



Supplied complete

Supplied complete with meter, probe, calibration solutions, and cleaning solutions.

Specifications	HI981039	
pH	Range	0.00 to 12.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.05 pH
	Calibration	automatic, one or two-point
Additional Specifications	Temperature Compensation	automatic, 0 to 50°C (32 to 122°F)
	Glass Type	LT (low temperature)
	Battery Type / Life	CR2032 Li-ion / approx.800 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	51 x 148 x 21 mm (2 x 5.8 x 0.9")
	Weight	45 g (1.6 oz.)
Ordering Information	<p><b>HI981039</b> is supplied with pH 4.01 buffer solution sachets (2), pH 7.01 buffer solution sachets (2), electrode cleaning and disinfection solution for chocolate deposits (2), gelled bridge electrolyte, electrode storage solution, CR2032 3V Li-ion battery, quality certificate, and instruction manual.</p>	

## Foodcare

HI981033

## Wine pH Tester

with specialized probe

The HI981033 Foodcare Wine pH tester is an application specific designed pH tester for the measurement of pH of grape juice, must, and wine. This meter offers many advanced features including a unique Clogging Prevention System (CPS™) that uses a movable Polyethylene (PE) sleeve for the ability to clear any clogging of the reference junction. The CPS Technology results in a much longer life than standard pH testers.

- **pH electrode with PE movable sleeve junction (CPS Technology)**
  - The pH electrode of this tester uses a PE movable sleeve as part of the outer ground glass junction. The PE material repels solids to prevent clogging. When clogging does occur the sleeve can be moved and the ground glass surface cleaned resulting in stable readings and fast response time.
- **Refillable**
  - The open junction design of the PTFE sleeve allows for a high flow rate of electrolyte for a fast and steady reading. The sleeve can be moved to expose the fill hole for reference electrolyte. The ability to refill the probe extends the life of the electrode.
- **Low temperature (LT) glass**
  - The pH glass tip uses a special low temperature (LT) glass formulation with a lower resistance of approximately 50 Megaohms compared to general purpose (GP) with a resistance of about 100 Megaohms. This is beneficial when measuring samples at lower temperatures in order to have the ideal resistance for the measuring circuit.
- **Domed tip**
  - Allows for large surface area to be in contact with the wine sample.
- **Glass body**
  - A glass body is easy to clean and stain resistant.
- **Large LCD**
  - An enhanced LCD displays the measurement reading, stability indicator, low battery indicator, and calibration tags.
- **Automatic calibration**
  - The Foodcare Wine pH Tester 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.
- **Automatic temperature compensation**
- **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 taken.
- **Automatic shut-off**
  - The meter can be set to automatically turn off after 8 minutes or 60 minutes to conserve battery life.
- **Probe diagnostic**
  - During calibration the meter will display an error (Err) message as an indicator that the probe needs to be cleaned.
- **Long battery life**
  - The Foodcare Wine pH Tester has an exceptional battery life of approximately 700 hours. When the battery power is running low, a low battery indicator is displayed.



## Clogging Prevention System (CPS) technology

Moveable, anti-clogging PE sleeve that maintains stability and fast response



## Supplied complete

Supplied complete with meter, probe, calibration solutions, and cleaning solutions

## Specifications

## HI981033

pH	Range	0.00 to 12.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.05 pH
	Calibration	automatic, one or two-point
Additional Specifications	Temperature Compensation	automatic, -5 to 60°C (23 to 140°F)
	Glass Type	LT (low temperature)
	Battery Type / Life	CR2032 Li-ion / approx. 800 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	51 x 157 x 21 mm (2 x 6.2 x 0.9")
	Weight	46 g (1.6 oz.)
<b>Ordering Information</b>	<b>HI981033</b> is supplied with pH 3.00 buffer solution sachets (2), pH 7.01 buffer solution sachets (2), electrode cleaning solution sachets for wine stains (1) and wine deposits (1), electrolyte fill solution, electrode storage solution, refilling pipette, CR2032 3V Li-ion battery, quality certificate, and instruction manual.	



Titanium body

Specialized flat tip pH sensor



## Supplied complete

Supplied complete with meter, probe, calibration solutions, and cleaning solutions

## Foodcare

HI981031

## Beer pH Tester

with specialized probe

The HI981031 Beer pH tester is an application specific designed pH tester for the measurement of pH during the brewing process. This meter offers many advanced features including an application specific pH electrode for measuring the pH of mash, cooled wort, and beer samples with a temperature up to 80°C (176°F).

- **Titanium body**
  - A titanium body offers additional protection as compared to traditional glass body pH probes.
- **Flat tip pH sensor**
  - The flat tip sensor allows easy cleaning of the pH sensing surface as compared to rounded bulbs as solids from mash and cooled wort collect on the surface.
- **Large LCD**
  - An enhanced LCD displays the measurement reading, stability indicator, low battery indicator, and calibration tags.
- **Automatic calibration**
  - The Foodcare Beer pH Tester 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.
- **Automatic temperature compensation**
- **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 taken.
- **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.
- **Probe diagnostic**
  - During calibration the meter will display an error (Err) message as an indicator that the probe needs to be cleaned.
- **Long battery life**
  - The Foodcare Beer pH Tester has an exceptional battery life of approximately 700 hours. When the battery power is running low, a low battery indicator is displayed.
- **Economical**
  - The Foodcare Beer pH Tester is a fully featured meter at a price that is affordable for both the home brewer to professional brewmaster looking to start experimenting with pH measurements.

Specifications	HI981031	
pH	Range	0.00 to 12.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.05 pH
	Calibration	automatic, one or two-point
Additional Specifications	Temperature Compensation	automatic, 0 to 50°C (32 to 122°F)
	Glass Type	LT (low temperature)
	Battery Type / Life	CR2032 Li-ion / approx. 800 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	51 x 165 x 21 mm (2 x 6.5 x 0.9")
	Weight	58 g (2 oz.)
Ordering Information	HI981031 is supplied with pH 4.01 buffer solution sachets (2), pH 7.01 buffer solution sachets (2), electrode cleaning solution sachets for brewing deposits (2), electrode storage solution, CR2032 3V Li-ion battery, quality certificate, and instruction manual.	



HI981037

## Skin & Scalp pH Tester

with specialized probe

The HI981037 is a tester made specifically for measuring the pH of the skin and scalp. This meter uses a flat tip electrode with an open reference junction that allows for the direct contact surface measurement of pH. An open junction design is necessary in order to permit contact between the internal reference cell and the surface of the skin.

The pH of the skin is slightly acidic at a pH of approximately 5. Having an acidic pH helps to protect against harmful bacteria and fungi while promoting the growth of beneficial bacteria. Disruption of the skin pH can lead to or amplify skin disorders. Many skin care products and soaps are made to be pH balanced so that the product does not alter the pH of skin outside a desirable range.

### Electrode features:

- **Flat tip pH Electrode**
  - A flat tip electrode allows for the direct pH measurement of a surface.
- **Open reference junction**
  - The pH electrode of this tester uses an open outer junction design. The open junction provides for a direct contact with the skin or scalp for the electrode to work with minimal moisture for a stable measurement.
- **Glass Body**
  - The glass body of the pH electrode is not porous and can be cleaned and disinfected.

### Tester features:

- **Large LCD**
  - Displays the measurement reading, stability indicator, low battery indicator, and calibration tags.
- **Automatic Calibration**
  - This pH tester is calibrated automatically to one or two points. Buffers are recognized automatically and after calibration, buffer values used are shown on the display.
- **Automatic temperature compensation**
- **Stability Indicator**
  - An hourglass indicator is displayed on the LCD until a stable reading is obtained.
- **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.
- **Probe Diagnostic**
  - During calibration the meter will display an error (Err) message as an indicator that the probe needs to be cleaned.
- **Long Battery Life**
  - The skin & scalp pH tester has an exceptional battery life of approximately 700 hours. When the battery power is running low, a low battery indicator is displayed.



### Flat tip electrode

Easy to clean electrode with a maintenance-free gel electrolyte

### Supplied complete

Supplied complete with meter, probe, calibration solutions, and cleaning solutions.



Specifications	HI981037	
pH	Range	0.00 to 12.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.05 pH
	Calibration	automatic, one or two-point
Additional Specifications	Temperature Compensation	automatic, 0 to 50°C (32 to 122°F)
	Battery Type / Life	CR2032 Li-ion / approx. 800 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	51 x 124 x 21 mm (2 x 4.9 x 0.9")
	Weight	46 g (1.6 oz.)
	Ordering Information	<b>HI981037</b> is supplied with pH 4.01 buffer solution sachet (2), pH 7.01 buffer solution sachet (2), cleaning and disinfection solution sachet for skin residuals, electrode cleaning solution sachet for skin grease and sebum, electrode storage solution (13 mL), CR2032 3V Li-ion battery, quality certificate, and instruction manual.

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 a 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; 0.0 to 70.0°C	
	Resolution	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 158°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. <b>HI98111</b> (PICCOLO®) is supplied with 90 mm (3.5") HI1280 amplified pH electrode. <b>HI98112</b> (PICCOLO®2) is supplied with 160 mm (6.3") HI1290 amplified pH electrode. <b>HI98113</b> (PICCOLO® plus) is supplied with HI1295 amplified electrode with temperature sensor.			

HI98120 · HI98121

## ORP and pH/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.



HI73120 replaceable ORP cartridge for HI98120.



HI73127 replaceable pH cartridge for HI98121.



HI98120

HI98121



## 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.



### Standard or N.I.S.T buffer calibration (HI98121)

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



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

The easy-to-replace electrode cartridge features a sturdy, snap-in connector with no pins which could bend or break.



### Exposed temperature sensor

An exposed temperature sensor allows for rapid automatic temperature compensated pH measurements.



### Pocket clip

A pocket clip is featured on the back of these testers.

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%	
	Dimensions / Weight	163 x 40 x 26 mm (6.4 x 1.6 x 1.0") / 100 g (3.5 oz.)	
Ordering Information	<p><b>HI98120</b> (ORP) is supplied with HI73120 ORP electrode, HI73128 electrode removal tool, 470 mV ORP test solution sachets (6), batteries, and instructions.</p> <p><b>HI98121</b> (ORP/pH) is supplied with HI73127 pH electrode, HI73128 electrode removal tool, pH 4.01 buffer solution sachet, pH 7.01 buffer solution sachet, 470 mV ORP test solution sachets (2), pH electrode cleaning solution sachet, pH electrode storage solution sachet, batteries, and instructions.</p>		



### Protective cap

The protective cap features an internal cup that can be filled with storage solution to keep the sensor moist.







## HI98319 Salinity Tester

- Waterproof
- Automatic temperature compensation (ATC)
- Dual pin graphite EC probe

Salinity is the measurement of all the dissolved salts in water. Salinity is one of the most widely tested parameters in saltwater aquariums. It is often the first water parameter many aquarists test for as it is crucial in making artificial saltwater.



### Exposed temperature sensor

HI98319 features an exposed temperature sensor for faster response times.



### Watertight seal

An easily removable cover provides access to the battery compartment.



Supplied in a carrying case with calibration solutions.

### Specifications

HI98319

ppt	Range	0.0 to 70.0 ppt (g/L)
	Resolution	0.1 ppt (g/L)
	Accuracy	±1.0 ppt for 0.0 to 40.0 ppt; ±2.0 ppt for 40.0 to 70.0 ppt
	Method	International Oceanographic Tables, 1966
PSU	Range	0.0 to 70.0 PSU
	Resolution	0.1 PSU
	Accuracy	±1.0 PSU for 0.0 to 40.0 PSU; ±2.0 PSU for 40.0 to 70.0 PSU
	Method	Standard Methods for the Examination of Water and Wastewater, 2520 B, Electrical Conductivity Method
S.G. (Specific gravity)	Range	1.000 to 1.041
	Resolution	0.001
	Accuracy	±0.001 S.G.
	Method	Standard Methods for the Examination of Water and Wastewater, 2520 C, Density Method
Temperature	Range	0.0 to 50.0°C/32.0 to 122.0°F
	Resolution	0.1°C/0.1°F
	Accuracy	±0.5°C/±1°F
Additional Specifications	Calibration	automatic, single point 35.00 ppt
	Temperature Compensation	automatic, 5 to 50°C (41 to 122°F)
	Battery Type / Life	CR2032 Li-ion (included) / approx. 100 hours of continuous use
	Auto-off	8 min., 60 min., or can be disabled
	Environment	0 to 50°C (32 to 122°F); RH 100% max
	Dimensions	160 x 40 x 17 mm (6.3 x 1.6 x 0.7")
	Weight	75 g (2.6 oz.)

### Ordering Information

**HI98319** Marine Line Salinity Tester is supplied with protective cap, 35.00 ppt calibration solution sachet (4), CR2032 battery, instrument quality certificate, and instructional manual.





HI98201

## ORP Tester

- 700-Hour battery life

The HI98201 is an ORP tester ideal for use in swimming pools and spas, as it can provide a valuable indication of water quality. This tester utilizes a platinum electrode.

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.

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	175 x 41 x 23 mm (6.9 x 1.6 x 0.9")
	Weight	95 g (3.4 oz.)
Ordering Information	<b>HI98201</b> (ORP) is supplied with protective cap, batteries, and instructions	



HI98203 SALINTEST

## Salt Content Meter

- Sodium ISE for NaCl readings

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		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	<b>HI98203</b> (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.	



Supplied in a carrying case with buffer and cleaning solutions.



DiST®: HI98301 · HI98302 · HI98303 HI98304

## EC and TDS Testers

- Waterproof
- Automatic temperature compensation (ATC)
- Automatic one-point calibration
- Measurement stability indicator
- Temperature measurement

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 the meter will auto calibrate.

Specifications	HI98301 (DiST®1)	HI98302 (DiST®2)	HI98303 (DiST®3)	HI98304 (DiST®4)	
TDS	Range	0 to 2000 ppm (mg/L)	0.00 to 10.00 ppt (g/L)	-	
	Resolution	1 ppm (mg/L)	0.01 ppt (g/L)	-	
	Accuracy (@25°C/77°F)	±2% F.S.	-	-	
	TDS Factor	0.5	0.5	-	
EC	Range	-	-	0 to 2000 µS/cm	
	Resolution	-	-	1 µS/cm	
	Accuracy (@25°C/77°F)	-	-	±2% F.S.	
Temperature	Range	0.0 to 50.0°C/32.0 to 122.0°F			
	Resolution	0.1°C / 0.1°F			
	Accuracy (@25°C/77°F)	±0.5°C / ±1.0°F			
Additional Specifications	Calibration Solution	HI70032: 1382 ppm	HI70038: 6.44 ppt	HI70031: 1413 mS/cm	
	Calibration	automatic, one-point			
	Temperature Compensation	automatic from 0 to 50°C (32 to 122°F)			
	Battery Type / Life	CR2032 3V Li-ion / approx. 250 hours of continuous use			
	Environment	0 to 50°C (32 to 122°F); RH 100% max			
	Dimensions	160 x 40 x 17 mm (6.3 x 1.6 x 0.7")			
	Weight	75 g (2.6 oz.)			
Ordering Information	<p><b>HI98301</b> (DiST 1) is supplied with CR2032 battery, 1382 ppm calibration solution sachet (4), storage/protection sleeve, instruction manual, and quality certificate.</p> <p><b>HI98302</b> (DiST 2) is supplied with CR2032 battery, 6.44 ppt calibration solution sachet (4), storage/protection sleeve, instruction manual, and quality certificate.</p> <p><b>HI98303</b> (DiST 3) is supplied with CR2032 battery, 1413 µS/cm calibration solution sachet (4), storage/protection sleeve, instruction manual, and quality certificate.</p> <p><b>HI98304</b> (DiST 4) is supplied with CR2032 battery, 12.88 mS/cm calibration solution sachet (4), storage/protection sleeve, instruction manual, and quality certificate.</p>				

HI98311 · HI98312

## EC/TDS and Temperature Testers

- **Waterproof**
  - Waterproof and designed to float
- **Automatic Temperature Compensation (ATC)**
- **HOLD feature**
  - HOLD button to freeze readings on the display
- **Battery Error Prevention System (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  $\beta$ , 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.



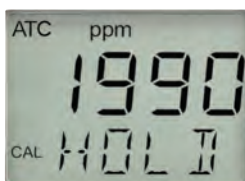


## LCD Display Features



### 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.



### Adjustable temperature coefficient factor

Users can choose between different factors ( $\beta$ ) for precise temperature compensated measurements.



### Adjustable TDS conversion factor

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



### Exposed temperature sensor

An exposed temperature sensor allows for rapid automatic temperature compensated 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.



### Pocket clip

A pocket clip is featured on the back of the the pHep 4 and pHep 5

Specifications	HI98311 (DiST®5)	HI98312 (DiST®6)	
EC	Range	0 to 3999 $\mu$ S/cm	0.00 to 20.00 mS/cm
	Resolution	1 $\mu$ S/cm	0.01 mS/cm
	Accuracy	$\pm$ 2% F.S.	$\pm$ 2% F.S.
TDS	Range	0 to 2000 ppm (mg/L)	0.00 to 10.00 ppt (g/L)
	Resolution	1 ppm (mg/L)	0.01 ppt (g/L)
	Accuracy	$\pm$ 2% F.S.	$\pm$ 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	$\pm$ 0.5°C / $\pm$ 1°F	$\pm$ 0.5°C / $\pm$ 1°F
Additional Specifications	Calibration	automatic, one point at 1413 $\mu$ S/cm or 1382 ppm (mg/L)	automatic, one point at 12.88 mS/cm or 6.44 ppt (g/L)
	TDS Conversion Factor	adjustable from 0.45 to 1.00	
	Temperature Compensation	automatic, with $\beta$ 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")	
Weight	100 g (3.5 oz.)		
Ordering Information	<p><b>HI98311</b> (DiST®5) is supplied with HI73311 EC/TDS probe, HI73128 probe removal tool, 1413 <math>\mu</math>S/cm conductivity standard sachets (3), 1382 ppm TDS standard sachets (3), batteries, and instructions.</p> <p><b>HI98312</b> (DiST®6) is supplied with HI73311 EC/TDS probe, HI73128 probe removal tool, 12880 <math>\mu</math>S/cm conductivity standard sachets (3), 6.44 ppt TDS standard sachets (3), batteries, and instructions.</p>		

# GroLine

HI98318

## EC/TDS Tester

- Waterproof
- Automatic temperature compensation (ATC)
- Automatic one-point EC calibration
- Measurement stability indicator

The GroLine waterproof EC/TDS tester is ideal for hydroponics, greenhouses, or anywhere you need quick and accurate conductivity measurements.



### Exposed temperature sensor

HI98318 features an exposed temperature sensor for faster response times.



### Watertight seal

An easily removable cover provides access to the battery compartment.



Supplied in a carrying case with calibration solutions.



### Specifications

	HI98318	
EC/TDS	Range	0.00 to 6.00 mS/cm; 0 to 3000 ppm (0.5); 0 to 4000 ppm (0.7)
	Resolution	0.01 mS/cm; 10 ppm (0.5); 10 ppm (0.7)
	Accuracy (@25°C/77°F)	±2% F.S.
	Calibration	automatic, one-point (1.41 mS)
	Quick Calibration	one-point calibration using HI5036 or HI50036P Quick Cal calibration solution
	TDS Conversion Factor (CF)*	0.5 (500 ppm) or 0.7 (700 ppm)
Temperature	Range	0.0 to 50.0°C/32.0 to 122.0°F
	Resolution	0.1°C/0.1°F
	Accuracy (@25°C/77°F)	±0.5°C/±1°F
Additional Specifications	Temperature Compensation	automatic, 0.0 to 50.0°C (32 to 122°F)
	Battery Type / Life	CR2032 Li-ion (Included) / approx. 250 hours of continuous use
	Auto-off	8 minutes, 60 minutes, or can be disabled
	Environment	0 to 50°C (32 to 122°F); RH 100% max
	Dimensions	160 x 40 x 17 mm (6.3 x 1.6 x 0.7")
	Weight	75 g (2.6 oz.)

### Ordering Information

**HI98318** GroLine EC/TDS tester is supplied with Quick Cal calibration sachets (4), battery, storage cap, instruction manual, and quality certificate.



114 mm (4.5")  
stainless steel  
penetration probe

max immersion  
level

recommended  
immersion level

**GroLine**

HI98331 Soil Test™

## Direct Soil EC and Temperature Tester

with Built-in Stainless Steel EC Probe

- One-point calibration
- Automatic calibration to 1413  $\mu\text{S}/\text{cm}$  conductivity standard
- Automatic Temperature Compensation (ATC)
  - Samples automatically compensated for temperature variations
- Uses a fixed 2%/°C temperature correction coefficient
- Stainless steel penetration electrode
- Allows for direct measurement in soil

The Soil Test™ Direct Soil EC Tester is a rugged and reliable pocket-sized tester that offers quick and accurate readings. The Soil Test™ features a stainless steel penetration probe for direct measurement of conductivity in soils. With a compact size, single button operation, and automatic calibration, Soil Test is an excellent choice for taking direct conductivity measurements in soil.



### Battery compartment

An easily removable cover provides access to the battery compartment.



Supplied in a carrying case with probe sleeve

### Specifications

### HI98331 Soil Test™

EC	Range	0 to 4000 $\mu\text{S}/\text{cm}$ 0.00 to 4.00 mS/cm (dS/m)
	Resolution	1 $\mu\text{S}/\text{cm}$ 0.01 mS/cm (dS/m)
	Accuracy (@25°C/77°F)	$\pm 50 \mu\text{S}/\text{cm}$ (0 to 2000 $\mu\text{S}/\text{cm}$ ) $\pm 300 \mu\text{S}/\text{cm}$ (2000 to 4000 $\mu\text{S}/\text{cm}$ ) $\pm 0.05 \text{ mS}/\text{cm}$ (0.00 to 2.00 mS/cm) $\pm 0.30 \text{ mS}/\text{cm}$ (2.00 to 4.00 mS/cm)
	Calibration	automatic, one-point (1.41 mS/cm)
Temperature	Range	0.0 to 50.0°C (32.0 to 122.0°F)
	Resolution	0.1°C (0.1°F)
	Accuracy (@25°C/77°F)	$\pm 1^\circ\text{C}$ ( $\pm 1.5^\circ\text{F}$ )
Additional Specifications	Temperature Compensation	Automatic, with coefficient ( $\beta$ ) fixed @ 2%/°C
	Probe	114 mm (4.5") stainless steel penetration (fixed)
	Battery Type / Life	CR2032 Li-ion (included) / approx. 100 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 196 x 21 mm (2.0 x 7.7 x 0.9")
Weight	74 g (2.4 oz.)	
Ordering Information	<b>HI98331</b> (Soil Test) is supplied with HI73331 penetration conductivity probe, calibration screwdriver, batteries, and instructions.	



## Primo

## EC/TDS Testers

- Single point automatic calibration
- Automatic temperature compensation (ATC)

The Primo series of testers provide a fast and dependable way to measure the total dissolved solids (TDS) or conductivity (EC) in your water samples. It is ideally suited for the rigorous demands of water quality professionals. These meters feature Automatic Temperature Compensation (ATC) and automatic single point calibration.

Primo TDS tester is a rugged and reliable pocket-sized tester that offers quick and accurate readings. Primo is used for testing TDS in applications such as hydroponics, drinking water, reverse osmosis systems, and aquariums.

Primo 5 EC tester is a rugged and reliable pocket-sized tester that offers quick and accurate readings. Primo 5 is used for testing low range conductivity (EC) in applications such as hydroponics, drinking water, reverse osmosis systems, boilers and cooling towers, and aquariums.

Primo 4 EC tester is a rugged and reliable pocket-sized tester with a 1 m (3.3') cable probe connection that offers quick and accurate EC reading in the 0.00 to 10.00 mS/cm range. Perfect for applications such as hydroponics, drinking water, and aquariums.



Specifications	Primo	Primo 5	Primo 4	
TDS	Range	0 to 1999 ppm (mg/L)	-	-
	Resolution	1 ppm (mg/L)	-	-
	Accuracy (@25°C/77°F)	±2% F.S.	-	-
EC	Range	-	0 to 1999 µS/cm	0.00 to 10.00 mS/cm
	Resolution	-	1 µS/cm	0.01 mS/cm
	Accuracy (@25°C/77°F)	-	±2% F.S.	±2% F.S.
Additional Specifications	Calibration	automatic, at 1382 ppm (mg/L)	automatic, at 1413 µS/cm	automatic, at 5.00 mS/cm
	Probe Connection	direct	direct	1 m (3.3') cable
	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")	66 x 50 x 25 mm (2.6 x 2.0 x 1.0")
	Weight	50 g (1.8 oz.)	50 g (1.8 oz.)	115 g (4.1 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%		
<b>Ordering Information</b>	<b>Primo</b> and <b>Primo 5</b> are supplied with batteries and instructions. <b>Primo 4</b> with 1 m (3.3') cable probe connection are supplied with batteries and instructions.			

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 ( $\mu\text{S}$ ) and provides fast spot checks for minute traces of water contamination.

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



Specifications		HI98308 (PWT)	HI98309 (UPW)
EC	Range	0.0 to 99.9 $\mu\text{S}/\text{cm}$	0.000 to 1.999 $\mu\text{S}/\text{cm}$
	Resolution	0.1 $\mu\text{S}/\text{cm}$	0.001 $\mu\text{S}/\text{cm}$
	Accuracy	$\pm 2\%$ F.S.	$\pm 2\%$ F.S.
Additional Specifications	Calibration	manual, one point	factory calibrated
	Temperature Compensation	automatic from 0 to 50°C (32 to 122°F) with $\beta = 2\%/^{\circ}\text{C}$ 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.	

HI98501 Checktemp®

## Digital Thermometer

with Stainless Steel Penetration Probe

- Large display
  - The large display features a wide temperature range and optimal viewing angle.
- User selectable °C or °F
- CAL Check™
  - Automatically verifies calibration at startup
- IP65 water resistant protection
- Use as a tool for control in HACCP analysis
- AISI 316 stainless steel penetration probe

Checktemp® Digital Thermometer is a great choice for easy operation with clear digits and better accuracy over a wide range.

Measure temperature without fear of breakage or condensation. This compact meter with a direct probe is ideal for taking quick temperature measurement in semi-solids and liquids.

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.

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".



Select between °C or °F measurement in one tester







### CAL Check™

Automatically verifies calibration at startup and alerts the user to the calibration status



### Easy battery change

Easily replace the battery with a twist-off cover

### Save battery life with auto-off feature

With the auto-off feature, select from 8 min., 60 min., or disable the feature



### Protective probe sleeve included

Protects the probe when not in use

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.)	
<b>Ordering Information</b>	<b>HI98501</b> (Checktemp®) is supplied with penetration probe, protective cap, battery, and instructions.	



HI151

## Checktemp®4 Temperature Testers

*with folding probe and five-point factory calibration*

HI151 Checktemp 4 is the perfect portable, high-accuracy thermometer for home and professional kitchens. The sharp, stainless steel, fold-out probe is ideal when testing fresh, cooked and semi-frozen food. The sensing tip allows the user to accurately measure the temperature of thin or thick foods. HI151 Checktemp 4 measures temperature in both °C and in °F. EN 13485 certified models are available

Checktemp 4 has a waterproof and compact casing and is factory calibrated. Calibration is verified every time the thermometer is turned ON. A motion sensor eliminates the need of closing and reopening the probe when the meter goes idle.

Six color-coded thermometers are available to meet the food hygiene and Hazard Analysis Critical Control Point (HACCP) regulations.

- Five-point factory calibration
- Ergonomic shape
- Measures in both °C and °F
- Floating case features IP67 protection
- Large LCD
- Turns on by motion sensor
- Internal calibration verification
- EN 13485 certified models available



Easy to access battery compartment



**HI151 / HI151-000**  
white, for dairy products



**HI151-1 / HI151-100**  
red, for raw meat



**HI151-2 / HI151-200**  
blue, for raw fish



**HI151-3 / HI151-300**  
yellow, for cooked meat



**HI151-4 / HI151-400**  
green, for salad and fruits



**HI151-5 / HI151-500**  
brown, for vegetables

## Specifications

## HI151

Temperature	Range	-50.0 to 300 °C / -58.0 to 572.0 °F
	Resolution	0.1 °C (-50.0 to 199.9 °C); 1.0 °C (200.0 to 300.0 °C) 0.1 °F (-58.0 to 199.9 °F); 1.0 °F (200.0 to 572.0 °F)
	Accuracy (@25°C/77°F)	± 0.4 °C (-50.0 to -30.0 °C); ± 0.2 °C (-30.0 to 170.0 °C) ± 0.4 °C (170.0 to 199.9 °C); ± 1.0 °C ± 1 digit (200.0 to 300.0 °C) ± 0.8 °F (-58.0 to -22.0 °F); ± 0.4 °F (-22.0 to 199.9 °F) ± 1.0 °F (200.0 to 392.0 °F); ± 2.0 °F ± 1 digit (392.0 to 572.0 °F)
	Calibration	factory calibrated
Additional Specifications	Probe	stainless steel probe with penetration tip; 103 x 3 mm (dia.) (4.06 x 0.12" dia.)
	Battery Type / Life	CR2032 Li-ion (2) / approx. 4000 hours of continuous use
	Auto-off	1 min, 2 min (default), 8 min, 60 min. or OFF
	Environment	-30.0 to 50.0°C (32.0 to 122.0°F)
	Case ingress protection rating	IP67, floating case
	Dimensions	165 x 45 x 24 mm (6.5 x 1.8 x 0.9")
Weight	85 g (3.0 oz)	

## Ordering Information

**HI151** (white/dairy products) is supplied with batteries, quality certificate, and instruction manual.  
**HI151-000** (white/dairy products, EN 13485 certified) is supplied with batteries, quality certificate, and instruction manual.  
**HI151-1** (red/raw meat) is supplied with batteries, quality certificate, and instruction manual.  
**HI151-100** (red/raw meat, EN 13485 certified) is supplied with batteries, quality certificate, and instruction manual.  
**HI151-2** (blue/raw fish) is supplied with batteries, quality certificate, and instruction manual.  
**HI151-200** (blue/raw fish, EN 13485 certified) is supplied with batteries, quality certificate, and instruction manual.  
**HI151-3** (yellow/cooked meat) is supplied with batteries, quality certificate, and instruction manual.  
**HI151-300** (yellow/cooked meat, EN 13485 certified) is supplied with batteries, quality certificate, and instruction manual.  
**HI151-4** (green/salad and fruits) is supplied with batteries, quality certificate, and instruction manual.  
**HI151-400** (green/salad and fruits, EN 13485 certified) is supplied with batteries, quality certificate, and instruction manual.  
**HI151-5** (brown/vegetables) is supplied with batteries, quality certificate, and instruction manual.  
**HI151-500** (brown/vegetables, EN 13485 certified) is supplied with batteries, quality certificate, and instruction manual.



HI98509 Checktemp®1

## Digital Thermometer

with Stainless Steel Probe Attached to a 1 m (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**
  - 1 m (3.3') silicone cable maintains flexibility and performance in applications where temperatures are widely variable
- **AISI 316 stainless steel penetration probe**

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 to 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.)	
<b>Ordering Information</b>	<b>HI98509</b> (Checktemp 1) is supplied with penetration probe, batteries, stand, and instructions.	

HI98539 Checktemp®Dip

## Digital Thermometer

with Weighted Stainless Steel Probe Attached to a 3 m (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 m (9.9') silicone cable maintains flexibility and performance in applications where temperatures are widely variable
- **AISI 316 stainless steel weighted probe**



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.

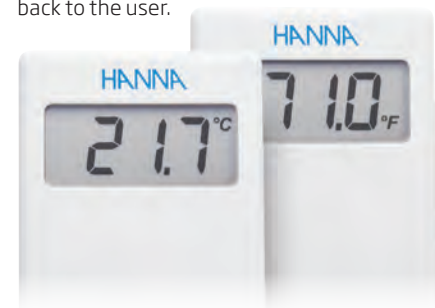
Checktemp Dip can also be used for applications such as fish farms, water reservoirs, and pools where the operator can simply stand on the edge of the water and dip the probe in.

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.



### CAL Check™

Automatically verifies calibration at startup and alerts the user of the calibration status.



Select between °C or °F measurement in one tester

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.)	
<b>Ordering Information</b>	<b>HI98539</b> (Checktemp®Dip) is supplied with stainless steel weighted probe, stand, batteries, and instructions.	

HI145

# T-Shaped Thermometer

- **CAL Check™**
  - Alerts users to 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 your 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.)	
<b>Ordering Information</b>	All models of the HI145 series are supplied complete with battery and instructions. <b>HI145-00</b> with 125 mm probe, <b>HI145-01</b> with 125 mm probe, <b>HI145-20</b> with 300 mm probe; <b>HI145-30</b> 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*

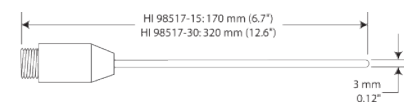
K-type thermocouple probe supplied with KEY®. Applications: liquid, air/gas, penetration of semi-solids.



#### HI98517-15 and HI98517-30

*liquid/general purpose*

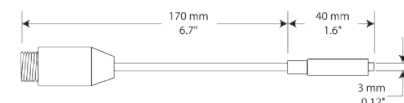
K-type thermocouple probe for KEY®. Applications: liquids, air/gas.



#### HI98517-12

*surface*

K-type thermocouple probe for KEY®. Applications: 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.)
<b>Ordering Information</b>	<b>HI98517</b> (KEY C) is supplied with HI 98517-13 probe, batteries, and instructions.

*GroLine*

HI981421

# GroLine Hydroponics Monitor

with inline multiparameter probe

Testers and Monitors

monitors



## 24/7 Monitoring

The HI981421 GroLine Monitor provides 24 hour continuous monitoring of pH, conductivity (EC or TDS), and temperature in hydroponic nutrients. Quick to setup and simple to use, this monitor was designed with hydroponics, aquaponics, and greenhouses in mind. Make your nutrient solution easy to manage with the GroLine Monitor and combined pH/EC/Temperature probe.

## Instantly See All Measurements

The versatile display of the GroLine Monitor allows for three screen modes. The LCD can display all three essential hydroponic nutrients measurements at one time, a 3-second cycle of single measurements, or a real-time graph screen with options for measurement selection and log recall.

## Features

- Can be integrated into a fertilizer system
- pH/EC inline probe with built-in temperature sensor
- IP65 rated enclosure designed to withstand harsh growing environments
- Selectable EC to TDS conversion factor: choice of either a 0.5 or 0.7 conversion factor
- Automatic Temperature Compensation
  - All readings are compensated for variations in temperature. Temperature displayed in °C or °F along with pH, EC, or TDS reading
- Large LCD with plant-friendly green backlighting
- Ambient light sensor for automatic LCD dimming
- Quick calibration using Quick Cal solution simultaneously for pH and EC
- Calibration reminder
- Data logging for 30 days
  - Logs every 15 minutes for last 30 days, stores min, max, and average values
- Setup, Calibration, and Operating parameters are stored in nonvolatile memory. All settings are retained if power is lost
- 24 hour summary screens (plot and details)
- GLP feature calibration data for the pH and EC (up to 5 calibrations)
- Alarms feature for all parameters



## Quick Cal

Quick Cal is for use with Hanna's GroLine pH and/or EC/TDS meters. Using the Quick Cal function found in compatible meters allows for single-point calibration for pH and/or conductivity sensors.

## Monitor Changes Over Time

Fluctuations in your hydroponic nutrient solution can have lasting effects on your plants. The GroLine Monitor automatically logs every 15 minutes for the last 30 days, and stores min, max, and average values so you can recognize when patterns arise and help prevent future problems. For review and storage, use the USB-C to easily transfer data to a flash drive or PC using a cable. Files are exported as .csv.

## Grow With Confidence

The GroLine Monitor frees up your time by doing the testing for you. Simply set high and low alarm levels - if your hydroponic nutrient solution moves out of range a measurement error will display. A quick look at the large display will let you know if your nutrient solution needs adjusting.



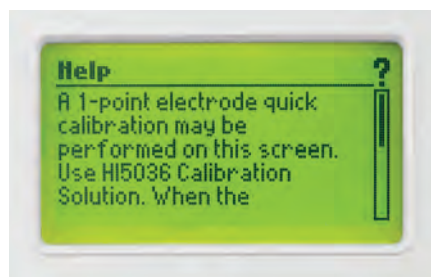


## Inline Probe

The supplied HI1285-9 multiparameter probe measures pH, EC, and temperature in one convenient, rugged probe. A solid-state preamplifier is integrated into the probe to protect the pH measurement from transient electrical noise. Sources of electrical noise include ballasts used in lighting and pumps to circulate water and nutrient solutions. The HI1285-9 incorporates two graphite EC sensors for reliable conductivity readings



## On-Screen Features



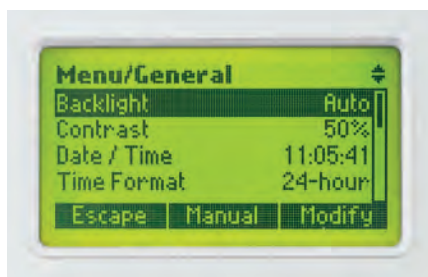
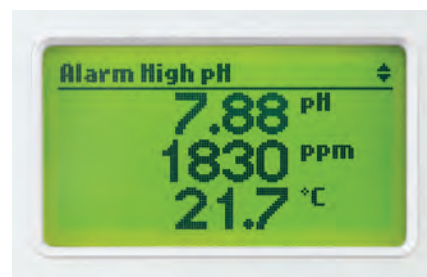
### On-screen Help

Contextual help is available at the push of a button.



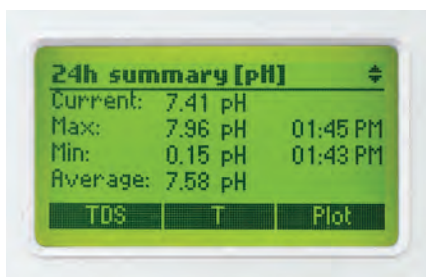
### High and Low Alarms

High and Low alarms for pH, EC/TDS, and Temperature. Warns when process is out of desired range by flashing display and message



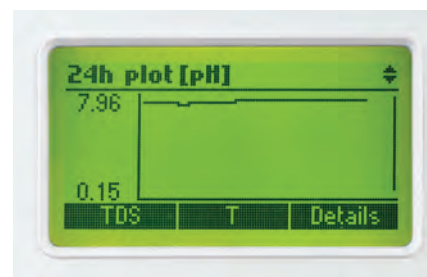
### Menu Navigation

Easy to navigate menu system to access calibration, GLP, and meter setup



### Data Viewing

30 day and 24 hour summary screens can be viewed in plot or detail views. Real-time data can be viewed in plot view



### Data Transfer

Data transfer: USB-C port for easy data transfer to memory stick or PC



### Calibration Timeout

Set a reminder to calibrate your probe. Reminder can be set from 1 to 30 days



### GLP

The HI981421 can store calibration info from the last 5 pH and EC calibrations

## Supplied Complete

HI981421 GroLine Monitor is supplied with all the tools necessary so you can start monitoring right away.



Specifications	HI981421	
pH	Range	0.00 to 12.00 pH, 0.0 to 12.0 pH
	Resolution	0.01 pH; 0.1 pH
	Accuracy	±0.05 pH, ±0.1pH
	Calibration	one or two-point calibration (using pH 4.01, 7.01, 10.01 buffers) using auto buffer recognition; one-point calibration using quick calibration solution
	Temperature Compensation	Automatic: 0.0 to 60.0°C; 32.0 to 140.0°F
EC	Range	0.00 to 10.00 mS/cm
	Resolution	0.01 mS/cm
	Accuracy	±0.1 mS/cm from 0.00 to 5.00 mS/cm; ±0.2 mS/cm from 5.00 to 10.00 mS/cm)
	Calibration	one-point at 1.41 mS/cm or 5.00 mS/cm using auto standard recognition; one-point calibration using quick calibration solution
	Temperature Compensation	automatic, with $\beta = 1.9\%/^{\circ}\text{C}$
TDS	Range	0 to 5000 ppm (0.5 TDS Factor*); 0 to 7000 ppm (0.7 TDS Factor*)
	Resolution	10 ppm (mg/L)
	Accuracy	±2%FS
	Calibration	through EC calibration
	Conversion Factor (CF)*	0.5 (500 ppm) or 0.7 (700 ppm)
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
Probe	Description	HI1285-9 triple junction inline pH/EC/TDS temperature PVC body, pre-amplified multiparameter probe with internal temperature sensor, DIN connector, 3 m (9.8') cable
	Max Pressure	8 bar
	Range	0 to 12 pH
	Ingress protection	IP68 (continuous immersion up to 2 meters)
	Dimensions	187 x 25 x 25mm (7.36 x 0.98 x 0.98")
	Weight	191g (7.7oz.)
Additional Specifications	Automatic Logging	measurements (pH, EC, TDS, Temperature) min/max/average/status logged continuously at 15 minutes interval, recall graphic modes
	Data Export	export on USB-C flash drive or PC; log files in CSV format
	Data Storage	30 days stored data at 15 minutes interval
	Display	128 x 64 pixel B/W LCD with green backlight, Automatic backlight dimming using ambient light sensor.
	GLP	Good Laboratory Practice with last 5 pH and EC calibration history.
	Monitor Waterproof Protection	IP65 (dust and low pressure water jets)
	Alarms	high and low with enable/disable option for all parameters.
	USB-C (Host/Device)	Export logged data on USB flash drive / PC
	Power Supply	12VDC adapter (included)
	Environment	0 to 50°C (32 to 122°F), RH max 95% non-condensing
	Dimensions	125 x 185 x 38 mm (4.92 x 7.28 x 1.49")
Weight	333g (11.7oz.)	
Ordering Information	<b>HI981421-01</b> (115V) and <b>HI981421-02</b> (230V) is supplied with HI1285-9 multiparameter probe, Quick Cal buffer solution sachets (2), HI700661 electrode cleaning solution sachets for agriculture (2), 12VDC power adapter, quality certificates and instruction manual.	

\*Note: 1000  $\mu\text{S}/\text{cm}$  = 500 ppm with 0.5 TDS Factor  
= 700 ppm with 0.7 TDS Factor

pH solutions begin on page 2.154; Quick Cal solutions begin on page 2.161;  
EC and TDS solutions begin on page 5.34; see pH electrode specifications on page 1.72

*GroLine*

HI981420

# GroLine Hydroponics Monitor

Testers and Monitors

monitors





## 24/7 Monitoring

The HI981420 GroLine Monitor provides 24 hour continuous monitoring of pH, conductivity (EC or TDS), and temperature in hydroponic nutrients. Quick to setup and simple to use, this monitor was designed with hydroponics, aquaponics, and greenhouses in mind. Make your nutrient solution easy to manage with the GroLine Monitor and combined pH/EC/Temperature probe.

## Instantly See All Measurements

The versatile display of the GroLine Monitor allows for three screen modes. The LCD can display all three essential hydroponic nutrients measurements at one time, a 3-second cycle of single measurements, or a real-time graph screen with options for measurement selection and log recall.

## Features

- 3 sensors combined in a single rugged probe body
  - pH electrode, amperometric EC/TDS sensor, and an internal temperature sensor for temperature compensated readings
- IP65 rated enclosure designed to withstand harsh growing environments
- Selectable EC to TDS conversion factor: choice of either a 0.5 or 0.7 conversion factor
- Automatic Temperature Compensation
  - All readings are compensated for variations in temperature. Temperature displayed in °C or °F along with pH, EC or TDS reading
- Large LCD with plant-friendly green backlighting
- Ambient light sensor for automatic LCD dimming
- Calibration reminder
- Data logging for 30 days
  - Logs every 15 minutes for last 30 days, stores min, max, and average values

## Monitor Changes Over Time

Fluctuations in your hydroponic nutrient solution can have lasting effects on your plants. The GroLine Monitor automatically logs every 15 minutes for the last 30 days, and stores min, max, and average values so you can recognize when patterns arise and help prevent future problems. For review and storage, use the USB-C to easily transfer data to a flash drive or PC using a cable. Files are exported as .csv.

## Grow With Confidence

The GroLine Monitor frees up your time by doing the testing for you. Simply set high and low alarm levels - if your hydroponic nutrient solution moves out of range a measurement error will display. A quick look at the large display will let you know if your nutrient solution needs adjusting.



## Quick Cal

Quick Cal is for use with Hanna's GroLine pH and/or EC/TDS meters. Using the Quick Cal function found in compatible meters allows for single-point calibration for pH and/or conductivity sensors.

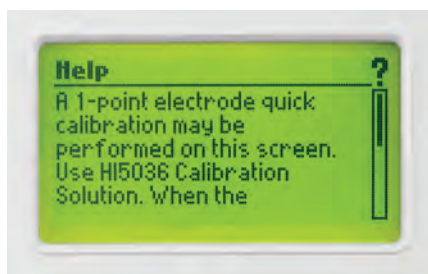




### Simpler with a combination probe

The HI1285-8 is a 3-in-1 pre-amplified combination probe. This probe is built to be durable and features two graphite sensors for reliable conductivity readings. A built-in temperature sensor ensures fast, accurately compensated readings even during sudden temperature fluctuations.

## On-Screen Features



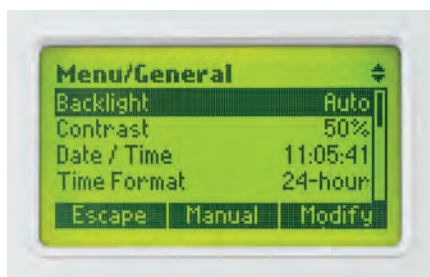
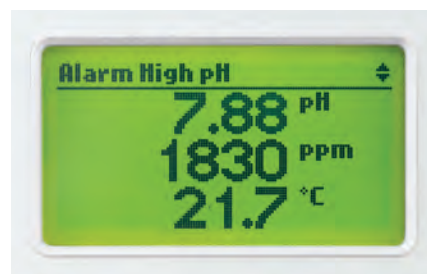
### On-screen Help

Context sensitive help is available at the push of a button



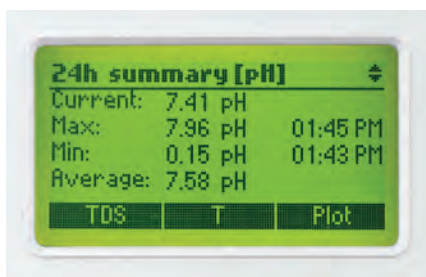
### High and Low Alarms

High and Low alarms for pH, EC/TDS, and Temperature. Warns when process is out of desired range by flashing display and message



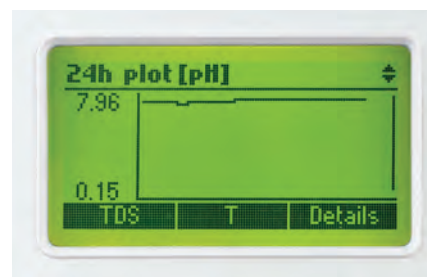
### Menu Navigation

Easy to navigate menu system to access calibration, GLP, and meter setup



### Data Viewing

30 day and 24 hour summary screens can be viewed in plot or detail views. Real-time data can be viewed in plot view



### Data Transfer

Data transfer: USB-C port for easy data transfer to memory stick or PC



### Calibration Timeout

Set a reminder to calibrate your probe. Reminder can be set from 1 to 30 days



### GLP

The HI981420 can store calibration info from the last 5 pH and EC calibrations

## Supplied Complete

HI981420 GroLine Monitor is supplied with all the tools necessary so you can start monitoring right away.



Specifications	HI981420	
pH	Range	0.00 to 14.00 pH; 0.0 to 14.0 pH
	Resolution	0.01 pH; 0.1 pH
	Accuracy	±0.05 pH, ±0.1pH
	Calibration	one or two-point calibration (using pH 4.01, 7.01, 10.01 buffers) using auto buffer recognition; one-point calibration using quick calibration solution
	Temperature Compensation	automatic from 0.0 to 60.0°C (32.0 to 140.0°F)
EC	Range	0.00 to 10.00 mS/cm
	Resolution	0.01 mS/cm
	Accuracy	±0.1 mS/cm from 0.00 to 5.00 mS/cm; ±0.2 mS/cm from 5.00 to 10.00 mS/cm)
	Calibration	one-point at 1.41 mS/cm or 5.00 mS/cm using auto standard recognition; one-point calibration using quick calibration solution
	Temperature Compensation	automatic, with $\beta = 1.9\%/^{\circ}\text{C}$
TDS	Range	0 to 5000 ppm (0.5 TDS Factor)*; 0 to 7000 ppm (0.7 TDS Factor)*
	Resolution	10 ppm (mg/L)
	Accuracy	±2%FS
	Calibration	through EC calibration
	Conversion Factor (CF)	0.5 (500 ppm) or 0.7 (700 ppm)
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
Probe	Description	HI1285-8 pH/EC/TDS/temperature polypropylene body, pre-amplified multiparameter probe with internal temperature sensor DIN connector and 2 m (6.6') cable
	Max Pressure	0.2 bar
	Range	0 to 13 pH
	Ingress protection	IP68 (continuous immersion up to 2 meters)
	Dimensions	187 x 25 x 25mm (7.36 x 0.98 x 0.98")
	Weight	191g (7.7oz.)
Additional Specifications	Automatic Logging	measurements (pH, EC, TDS, Temperature) min/max/average/status logged continuously at 15 minutes interval, recall graphic modes
	Data Export	export on USB-C flash drive or PC; log files in CSV format
	Data Storage	30 days stored data at 15 minutes interval
	Display	128 x 64 pixel B/W LCD with green backlight, Automatic backlight dimming using ambient light sensor.
	GLP	Good Laboratory Practice with last 5 pH and EC calibration history.
	Monitor Ingress Protection	IP65 (dust and low pressure water jets)
	Alarms	high and low with enable/disable option for all parameters.
	USB-C (Host/Device)	Export logged data on USB flash drive / PC
	Power Supply	12VDC adapter (included)
	Environment	0 to 50°C (32 to 122°F), RH max 95% non-condensing
	Dimensions	125 x 185 x 38 mm (4.92 x 7.28 x 1.49")
Weight	333g (11.7oz.)	
Ordering Information	<b>HI981420-01</b> (115V) and <b>HI981420-02</b> (230V) is supplied with HI1285-8 multiparameter probe, Quick Cal buffer solution sachets (2), HI700661 electrode cleaning solution sachets for agriculture (2), power adapter, quality certificates, and instruction manual.	

\*Note: 1000  $\mu\text{S}/\text{cm}$  = 500 ppm with 0.5 TDS Factor  
= 700 ppm with 0.7 TDS Factor

pH solutions begin on page 2.154; Quick Cal solutions begin on page 2.161;  
EC and TDS solutions begin on page 5.34; see pH electrode specifications on page 1.72



HI991404 · HI991405

# pH, EC/TDS, and Temperature Monitors

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

The HI991404 and HI991405 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 (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 <sup>12</sup> 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	<b>HI991404-01</b> (Combo Gro'Chek) (115V) and <b>HI991404-02</b> (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.		
	<b>HI991405-01</b> (Combo Gro'Chek) (115V) and <b>HI991405-02</b> (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.		

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. The monitor 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	<p><b>HI981504/5-1</b> (115V) and <b>HI981504/5-2</b> (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.</p> <p><b>HI981504/7-1</b> (115V) and <b>HI981504/7-2</b> (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.</p>	

HI981404N · HI981405N

## pH/TDS or pH/EC Continuous Monitors

- 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		<b>HI981404N-01</b> (Gro'Chek Combo) (115V) and <b>HI981404N-02</b> (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.	
		<b>HI981405N-01</b> (Gro'Chek Combo) (115V) and <b>HI981405N-02</b> (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.	





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 pH Gro'Chek 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 <sup>12</sup> 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	<b>HI991401-01</b> (pH Gro'Chek) (115V) and <b>HI991401-02</b> (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

- **Water resistant housing**
  - The meter housing is rated IP54 meaning it has a high level of protection against particles and a fair amount of protection against water
- **One-point calibration**
  - Calibrate to pH 7.01 or pH 4.01 solutions using a screwdriver

Engineered to withstand the aggressive environments in agricultural and hydroponic application, the HI981401N is a simple way to measure pH. You can simply hang the meter right above the sample to be tested for continuous measurement and the unit will run without interruption on 12 VDC power supply or take it with you for spot checks. The meter housing is rated IP54 meaning it has a high level of protection against particles and a fair amount of protection against water. The integrated large LCD allows for an easy reading from a distance.

The meters are supplied with a HI1286 pH probe with a PEI body and BNC connector. This double junction, gel-filled combination pH electrode has a unique PTFE sleeve to prevent particulates within a sample from clogging the junction. In addition to the specialized junction, the polyethylenimine (PEI) protective body protects against most aggressive chemicals as seen in fertilizer solutions with high concentrations of 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 <sup>12</sup> 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.)
<b>Ordering Information</b>	<b>HI981401N-01</b> (Gro'Chek pH) (115V) and <b>HI981401N-02</b> (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.





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  $\pm 0.5$  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)	$\pm 0.2$ 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 $\pm 0.5$ 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.)
<b>Ordering Information</b>	<b>HI981402-01</b> (Pronto pH) (115V) and <b>HI981402-02</b> (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 ( $\beta$ ) are user-adjustable for application-specific measurements.



Specifications	HI993301	HI993302	
EC	Range	0 to 3999 $\mu\text{S}/\text{cm}$	0.00 to 20.00 $\text{mS}/\text{cm}$
	Resolution	1 $\mu\text{S}/\text{cm}$	0.01 $\text{mS}/\text{cm}$
	Accuracy	$\pm 2\%$ F.S.	$\pm 2\%$ F.S.
TDS	Range	0 to 2000 $\text{mg}/\text{L}$ (ppm)	0.00 to 10.00 $\text{g}/\text{L}$ (ppt)
	Resolution	1 $\text{mg}/\text{L}$ (ppm)	0.01 $\text{g}/\text{L}$ (ppt)
	Accuracy	$\pm 2\%$ F.S.	$\pm 2\%$ 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	$\pm 0.5^\circ\text{C}$ ( $\pm 1^\circ\text{F}$ )	$\pm 0.5^\circ\text{C}$ ( $\pm 1^\circ\text{F}$ )
Additional Specifications	EC/TDS Calibration	automatic, one point at 1413 $\mu\text{S}/\text{cm}$ or 1382 $\text{mg}/\text{L}$ (ppm)	automatic, one point at 12.88 $\text{mS}/\text{cm}$ or 6.44 $\text{g}/\text{L}$ (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 $\beta$ 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	<b>HI993301-01</b> (EC/TDS Gro'Chek) (115V) and <b>HI993301-02</b> (EC/TDS Gro'Chek) (230V) is supplied with HI7630 conductivity probe, HI70031 1413 $\mu\text{S}/\text{cm}$ calibration solution sachet, 12 VDC adapter, and Instructions.		
	<b>HI993302-01</b> (EC/TDS Gro'Chek) (115V) and <b>HI993302-02</b> (EC/TDS Gro'Chek) (230V) is supplied with HI7630 conductivity probe, HI70030 12.88 $\text{mS}/\text{cm}$ calibration solution sachet, 12 VDC adapter, and Instructions.		



HI983302N (Gro'Chek EC)

## EC Meter

- **Water resistant housing**
  - The meter housing is rated IP54 meaning it has a high level of protection against particles and a fair amount of protection against water
- **One-point calibration**
  - Calibrate with 1413  $\mu\text{S}/\text{cm}$  EC solutions using a screwdriver
- **Automatic Temperature Compensation (ATC)**
  - Samples automatically compensated for temperature variations

Engineered to withstand the aggressive environments in agricultural and hydroponic application, the HI983302N is a simple way to measure EC. You can simply hang the meter right above the sample to be tested for continuous measurement and the unit will run without interruption on 12 VDC power supply or take it with you for spot checks. The meter housing is rated IP54 meaning it has a high level of protection against particles and a fair amount of protection against water. The integrated large LCD allows for an easy reading from a distance.

The meters are supplied with a HI7632 probe that automatically compensates for any temperature variation. The HI7632 is a two-pole amperometric EC probe for panel mounted mini controllers that measure in the high range (mS/cm and ppt). This probe has a built-in temperature sensor for Automatic Temperature Compensation (ATC) and a  $\frac{1}{2}$ " male NPT threaded connection for insertion mounting. The HI7632 probe provides a rapid response and high accuracy EC measurement.

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.)
<b>Ordering Information</b>	<b>HI983302N-01</b> (Gro'Chek EC) (115V) and <b>HI983302N-02</b> (Gro'Chek EC) (230V) is supplied with HI7632 probe, 12 VDC adapter, 1413 mS/cm calibration solution (20 mL), calibration screwdriver, and instructions.

HI983307

## EC Monitor

- Automatic Temperature Compensation (ATC)
- Water-resistant

This water-resistant EC monitor is the result of customer requests for accurate, affordable process monitoring with low maintenance.

HI983307 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  $\beta$  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. This EC monitor 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.



Specifications	HI983307	
EC	Range	0.00 to 9.99 mS/cm
	Resolution	0.01 mS/cm
	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 $\beta$ =2%
	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 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	<b>HI983307-01</b> (115V) and <b>HI983307-02</b> (230V) are supplied with HI7632/2 EC/TDS probe, calibration screwdriver, 12 VDC adapter, and instructions.	



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	<b>HI983304-01</b> (115V) and <b>HI983304-02</b> (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  $\pm 0.3^{\circ}\text{C}$  ( $\pm 0.5^{\circ}\text{F}$ ). 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	$\pm 0.3^{\circ}\text{C}$ (-20 to 90°C) $\pm 0.5^{\circ}\text{C}$ (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.)
<b>Ordering Information</b>	<b>HI146-00 (Pronto)</b> is supplied with stainless steel temperature probe, battery, and instructions.

HI147

## Checkfridge Remote Sensor Thermometer

- **CAL Check™**
  - Alerts users of calibration status
- **Battery Error Prevention System (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 slurry using distilled or deionized water can 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 an ice bath for making these tests; its unique CAL Check feature can simulate it.



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 ±1 digit (-20.0 to 90.0 °C); ±0.5% f.s. ±1 digit (outside)	±0.5°F ±1 digit (-4.0 to 194.0 °F); ±1% f.s. ±1 digit (outside)
CAL Check	manual, through switch	
Temperature Probe	stainless steel probe with 1 m (3.3') cable (fixed); 40 x dia 5 mm (1.6 x dia 0.2")	
Battery Type / Life	1.5V AA / approximately 30,000 hours 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.)	
<b>Ordering Information</b>	<b>HI147-00</b> (Checkfridge C) is supplied with battery and instructions. <b>HI147-01</b> (Checkfridge F) is supplied with battery and instructions.	





CODE	HI73127	HI73120	HI73311	HI1270
Description	pH electrode	ORP electrode	EC/TDS electrode	pH 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: $\pm 2000$ mV	-	pH: 0 to 13
Recommended Operating Temp.	-5 to 50°C (23 to 122°F)	-5 to 50°C (23 to 122°F)	-5 to 50°C (23 to 122°F)	0 to 50°C (32 to 122°F)
Glass Type	LT (low temperature)	-	-	GP (general purpose)
Tip /Shape	spheric (dia: 5.0 mm)	platinum pin	-	spheric (dia: 3.0 mm)
Temperature Sensor	no	no	no	no
Amplifier	no	no	no	no
Body Material	polypropylene	polypropylene	polypropylene	polypropylene
Cable	no	no	no	no
Recommended Use	general purpose, field applications	general purpose, field applications	general purpose, field applications	general purpose, field applications
Connection	pin	pin	pin	screw cap



CODE	HI1271	HI1280	HI1290	HI1295
Description	pH electrode	pH electrode	pH electrode	pH electrode
Reference	single, Ag/AgCl	single, Ag/AgCl	single, Ag/AgCl	single, Ag/AgCl
Junction / Flow Rate	open	ceramic, single / 15-20 µL/H	ceramic, single / 15-20 µL/H	ceramic, single / 15-20 µL/H
Electrolyte	viscolene	gel	gel	gel
Max Pressure	0.1 bar	0.1 bar	0.1 bar	2 bar
Range	pH: 0 to 13	pH: 0 to 13	pH: 0 to 13	pH: 0 to 13
Recommended Operating Temp.	0 to 50°C (32 to 122°F)	0 to 70°C (32 to 158°F)	0 to 70°C (32 to 158°F)	0 to 70°C (32 to 158°F)
Glass Type	GP (general purpose)	GP (general purpose)	GP (general purpose)	GP (general purpose)
Tip /Shape	spheric (dia: 3.0 mm)	spheric (dia: 5.0 mm)	spheric (dia: 5.0 mm)	spheric (dia: 5.0 mm)
Temperature Sensor	no	yes	yes	yes
Amplifier	no	yes	yes	yes
Body Material	polypropylene	polypropylene	polypropylene	polypropylene
Cable	no	no	no	no
Recommended Use	general purpose, field applications	general purpose, field applications	general purpose, field applications	general purpose, field applications
Connection	screw cap	multi-pin	multi-pin	multi-pin



CODE	HI1285-8	HI1285-9	HI1286	HI1293D
Description	pre-amplified pH and EC probe	pre-amplified pH and EC inline probe	pH electrode	pH electrode
Reference	single, Ag/AgCl	triple, Ag/AgCl	double, Ag/AgCl	double, Ag/AgCl
Junction / Flow Rate	cloth	PTFE	PTFE	PTFE
Electrolyte	gel	polymer	polymer	polymer
Max Pressure	.2 bar	8 bar	3 bar	3 bar
Range	pH: 0 to 13 / EC	pH: 0 to 12 / EC	pH: 0 to 13	pH: 0 to 13
Recommended Operating Temp.	0 to 50°C (32 to 122°F)	0 to 60°C (32 to 140°F)	0 to 80°C (32 to 176°F)	0 to 60°C (32 to 140°F)
-	LT (low temperature)	LT (low temperature)	GP (general purpose)	GP (general purpose)
Tip / Shape	spheric (dia: 8.5 mm)	dome	spheric (dia: 7.5 mm)	spheric (dia: 7.5 mm)
Temperature Sensor	yes	yes	no	no
Amplifier	yes	yes	no	yes
Body Material	polypropylene	PVC (thread 3/4" NPT)	PEI	PEI
Cable	7-pole; 1 m cable (3.3')	7-pole; 3 m cable (9.9')	coaxial; 2 m (6.6')	5-pole; 2 m (6.6')
Recommended Use	hydroponics, aquaponics, greenhouses	hydroponics, aquaponics, greenhouses	general purpose, water treatment, agriculture	hydroponics, greenhouses
Connection	DIN*	DIN*	BNC	DIN

\* To be used with HI981420 GroLine monitor

\* To be used with HI981421 GroLine monitor