

HANNA Products for

Hydroponics

Testers | Meters | Test Kits

Monitors | Photometers | Controllers | Enclosures



pH | TDS | EC | LUX | Brix | Iron | Phosphate | Free & Total Chlorine | Temperature

 **HANNA**[®]
instruments
www.hannainst.com

pHep®4 & pHep®5



pH/Temperature Testers

with Replaceable pH Electrode Cartridge

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



Snap on pH Electrode

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



Cloth renewable junction

When the cloth junction becomes dirty from routine testing, pull out 1/8" to rejuvenate the electrode.

Specifications	HI 98127 (pHep®4)	HI 98128 (pHep®5)
Range	pH -2.0 to 16.0 pH Temp -5.0 to 60.0°C / 23.0 to 140.0°F	pH -2.00 to 16.00 pH Temp 0.1 pH / 0.01 pH
Resolution	pH 0.1 pH Temp 0.1°C / 0.1°F	pH 0.01 pH Temp 0.1°C / 0.1°F
Accuracy (@20°C)	pH ±0.1 pH Temp ±0.5°C / ±1°F	pH ±0.05 pH Temp ±0.5°C / ±1°F
pH Calibration	automatic, at 1 or 2 points with 2 sets of memorized buffers (pH 4.01/7.01/10.01 or pH 4.01/6.86/9.18)	
Temp. Compensation	automatic	
Battery Type/Life	4 x 1.5V with BEPS/approx. 300 hours of continuous use	
Environment	-5 to 50°C (23 to 122°F); RH max 100%	
Dimensions	163 x 40 x 26 mm (6.4 x 1.6 x 1.0")	
Weight	100 g (3.5 oz.)	

ORDERING INFORMATION

HI 98127 (pHep®4) & HI 98128 (pHep®5) are supplied with protective cap, electrode removal tool, (4) 1.5V batteries and instructions.

pH GRO'CHEK pH Stick Tester

with replaceable electrode



The pH Gro'Chek® is an ideal tester for use in nutrient mixing tanks or vats. The stick type rugged sensor is designed for mixing solution. The sensor also has a cloth-renewable junction. pH readout is 0.1 and calibration is 1 point with the knob.

Specifications	HI 981408 (pH Gro'Chek®)
Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy (@20°C/68°F)	±0.2 pH
Calibration	manual, 1 point
Electrode (included)	HI 1219 pH electrode, 240 mm (9.4") long, with double junction and DIN connector
Battery Type/Life	2 x 1.5V AA / approx. 2000 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH max 100%
Dimensions (meter only)	86 x 94 x 33 mm (3.4 x 3.7 x 1.3")
Weight (meter only)	150 g (5.3 oz.)

ORDERING INFORMATION

HI 981408 (pH Gro'Chek®) is supplied with HI 1219 interchangeable pH electrode, pH 7 calibration solution, (2) 1.5V batteries and instructions.





pHep® pH Tester

pH Electronic Paper

- **Cloth Renewable Junction**
- **Large LCD**
- **2-Point Calibration**
- **0.1 pH Accuracy**

pHep®, the standard in pH measurement with 0.1 pH accuracy, has 2-point calibration, large LCD, pull-out, replenishable junction and 700 hours of battery life. The **pHep®** pH tester features a casing that is more rugged and has been ergonomically enhanced to better fit your hand. The **pHep®** comes with a protective cap that can be used as a measurement vessel.

Specifications	HI 98107 (pHep®)
Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy (@20°C/68°F)	±0.1pH
Calibration	manual, 2 point
Battery Type / Life	4 x 1.5V / approx. 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

HI 98107 (pHep®) is supplied with cap, (4) 1.5V batteries and instructions.

Checker® 1 Economical pH Tester

The **Checker®1** provides growers with fast and accurate pH readings. The **Checker®1** is easy to calibrate, uses a replaceable pH electrode and works for 3000 hours before you have to change the batteries!

Specifications	HI 98103 Checker®
Range	0.00 to 14.00 pH
Resolution	0.01 pH
Accuracy (@20°C/68°F)	±0.2 pH
Calibration	manual, 2 points
Electrode	HI 1270 (included)
Battery Type/Life	2 x 1.5V/ approx. 3000 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH max 95%
Dimensions	66 x 50 x 25 mm (2.6 x 2 x 1") - without probe
Weight	50 g (1.8 oz.)

- **Replaceable Electrode**
- **Easy Calibration**
- **3000 Hours Battery Life**



ORDERING INFORMATION

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



GRO'CHEK pH Monitor

With Large LCD & Waterproof Casing

The popular **Gro'Chek®** pH monitor has a larger, easy-to-read LCD. The waterproof casing guarantees operation after incidental exposure to water and the professional pH electrode provides accurate results every time.

- **Waterproof**
- **Rugged Housing**
- **High Accuracy**
- **12 VDC Adapter included**

Specifications	HI 981401N
Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy (@20°C/68°F)	±0.2 pH
Calibration	manual 2 point, at pH 4 and 7
pH electrode	HI 1286, plastic body, double junction, with 2 m (6.6') cable and BNC connector (included)
Power supply	12 Vdc power adapter (included)
Environment	0 to 50°C; RH max 100%
Dimensions	86 x 110 x 43 mm (3.4 x 4.3 x 1.7")
Weight	150 g (5.3 oz.)

ORDERING INFORMATION

HI 981401N is supplied with HI 1286 pH electrode, HI 1283 stainless steel grounding pin, pH 4 and 7 buffers (20 mL ea.), calibration screwdriver, 12 VDC adapter and instructions.



Updated!



Visit
www.hannainst.com
 to view tutorial
 product video

Direct media pH portable meter

The HI 99121 kit has been designed to measure pH directly in growing media accurately and quickly. Every item in this kit has been made to facilitate measurements in the field without compromising accuracy. With HI 99121 you can test both the pH of media directly or after preparation of a diluted sample. In order to measure the pH directly, the kit includes a plastic auger to perforate the media.

Use the specially made HI 7051M soil preparation solution for higher degrees of accuracy, or for stony ground where the electrode may be damaged. This solution is included to help you measure pH more precisely by diluting the soil sample.

- Specialized electrode for direct pH readings of any growing media
- Waterproof
- On scene help
- New larger LCD
- New rugged, thinner ergonomic case
- Perfect for Soil or Coco Coir



HI 1292D CONIC TIP pH ELECTRODE

The HI 1292D pH electrode has been specifically designed for direct soil or growing media measurement. It has a conical, rugged tip and can be directly inserted in moist or soft media. The electrode incorporates a temperature sensor right near the tip to enable it to measure and quickly compensate for temperature.

ORDERING INFORMATION

HI 99121 is supplied with hard carrying case, HI 1292D pH electrode, HI 721319 soil auger, HI 7051M soil preparation solution, starter set of calibration solution sachets, 100 ml plastic beaker, (3) 1.2V AAA batteries and instructions.



The optional protective rubber boot (HI 710020) helps protect your meter

Specifications	HI 99121	
Range	pH	-2.00 to 16.00 pH
	Temp	-5.0 to 105.0 °C / 23.0 to 221.0 °F
Resolution	pH	0.01 pH
	Temp	0.1 °C / 0.1 °F
Accuracy (@20 °C)	pH	±0.02 pH
	Temp	-±0.5 °C (up to 60 °C), ±1 °C (outside); ±1.0 °F (up to 140 °F), ±2 °F (outside)
pH Calibration	Automatic, 1 or 2 point with 2 sets of memorized buffer values (pH 4.01 / 7.01 / 10.01 or pH 4.01 / 6.86 / 9.18)	
pH Electrode	HI 1292D, refillable, glass body, internal temperature sensor, DIN connector and 1 m (3.3') cable (included)	
Temp. Compensation	Automatic, -5 to 105 °C (23 to 221 °F)	
Battery Type/Life	3x1.5V AA/approx. 1500 hours of continuous use: auto-off after 8 minutes of non-use	
Environment	0 to 50 °C (32 to 122 °F); RH max 100%	
Dimensions	150 x 80 x 36 mm (5.9 x 3.1 x 1.4")	
Weight	210 g (7.4 oz.)	

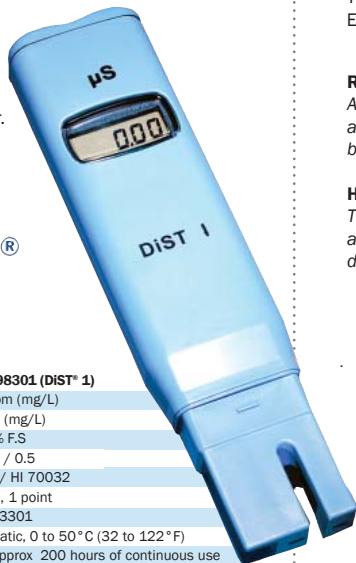
DiST® Dissolved Solids Tester

The Original Conductivity & TDS Testers

- Automatic Temperature Compensation
- Simple 1 point calibration

The **DiST®** series of testers is a reliable, easy-to-use and inexpensive way to measure nutrient solution. The graphite sensors provide better repeatability over conventional stainless steel pins.

To calibrate, dip the electrode tip into calibration solution and adjust the easily accessible trimmer on the side of the tester.



DiST®

Specifications	HI 98300/HI 98301 (DiST® 1)
Range	1999 ppm (mg/L)
Resolution	1 ppm (mg/L)
Accuracy (@20°C/68°F)	±2% F.S
TDS Factor	0.65 / 0.5
Calibration Solution	HI 70442 / HI 70032
Calibration	manual, 1 point
Probe	HI 73301
Temp. Compensation	automatic, 0 to 50°C (32 to 122°F)
Battery Type / Life	4 x 1.5V / approx. 200 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH max 95%
Dimensions / Weight	175 x 41 x 23 mm (6.9 x 1.6 x 0.9") / 95 g (3.4 oz.)

ORDERING INFORMATION

HI 98300 (TDS factor = 0.65) (DiST® 1) is supplied complete with protective cap, (4) 1.5V batteries and instructions.
 HI 98301 (TDS factor = 0.5) (DiST® 1) is supplied complete with protective cap, (4) 1.5V batteries and instructions

Waterproof EC/TDS Testers

For users who need an accurate, versatile instrument, **HANNA** offers **DiST®5** and **DiST®6** for EC and TDS measurements. These advanced testers offer features such as a replaceable graphite electrode, adjustable TDS ratio, temperature in °C or °F, automatic temperature compensation with adjustable Beta factor, battery level indicator, stability indicator, automatic shut-off, and automatic calibration all in a floating, waterproof casing. These 3-in-1 testers are unmatched in EC/TDS/Temperature measurement!

Replaceable graphite electrode

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

DiST® 5 & DiST® 6



High accuracy

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

Specifications	HI 98311 (DiST®5)	HI 98312 (DiST®6)	
Range	EC	0 to 3999 µS/cm	0.00 to 20.00 mS/cm
	TDS	0 to 2000 ppm	0.00 to 10.00 ppt
	Temperature	0.0 to 60.0°C / 32.0 to 140.0°F	
Resolution	EC	1 µS/cm	0.01 mS/cm
	TDS	1 ppm	0.01 ppt
	Temperature		0.1°C / 0.1°F
Accuracy (@20°C)	EC		±2% F.S
	TDS		±2% F.S
	Temperature		±0.5°C / ±1°F
Calibration		automatic, 1 point	
TDS Conversion Factor		adjustable from 0.45 to 1.00	
Temperature Compensation		automatic, with β adjustable from 0.0 to 2.4%/°C	
Environment		0 to 50°C (32 to 122°F); RH max 100%	
Battery Type / Life		4 x 1.5V with BEPS / 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

HI 98311 (DiST®5) & HI 98312 (DiST®6) are supplied with protective cap, electrode removal tool, (4) 1.5V batteries and instructions



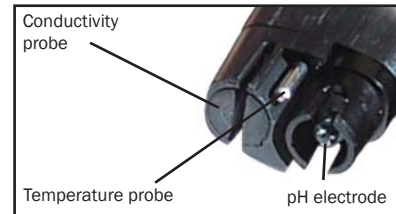
Multiparameter

Combo pH/EC/TDS/Temperature Testers

Waterproof with Replaceable pH Electrode

The HI 98129 and HI 98130 Combo waterproof testers offer the highest accuracy in pH, EC/TDS and temperature measurements with a single tester. pH and EC/TDS measurement combined is technically very difficult to achieve, and HANNA is the only company in the world that was able to solve the challenges of combined measurement in a tester.

Specifications	HI 98129	HI 98130	
Range	pH EC TDS Temperature	0.00 to 14.00 pH 0 to 3999 $\mu\text{S}/\text{cm}$ 0 to 2000 ppm 0.0 to 60.0°C / 32.0 to 140.0°F	0.00 to 20.00 mS/cm 0.00 to 10.00 ppt 0.01 pH 0.1°C / 0.1°F
Resolution	pH EC TDS Temperature	1 $\mu\text{S}/\text{cm}$ 1 ppm	0.01 mS/cm 0.01 ppt
Accuracy (@20°C)	pH EC / TDS Temperature	± 0.05 pH $\pm 2\%$ F.S. $\pm 0.5^\circ\text{C} / \pm 1^\circ\text{F}$	
Temp. Compensation		pH: automatic; EC/TDS: automatic with β adjustable from 0.0 to 2.4% / °	
Calibration	pH EC / TDS	automatic, 1 or 2 points with 2 sets of memorized buffers (pH 4.01 / 7.01 / 10.01 or 4.01 / 6.86 / 9.18) automatic, 1 point	
TDS Conversion Factor		adjustable, from 0.45 to 1.00	
pH Electrode		HI 73127 (replaceable; included)	
Environment		0 to 50°C (32 to 122°F); RH max 100%	
Battery Type / Life		4 x 1.5V / 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.)	



Replaceable pH electrode cartridge

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

High accuracy

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

The exposed temperature sensor provides fast response times, and its close proximity guarantees accurate temperature compensated readings.

ORDERING INFORMATION

HI 98129 (Combo) & HI 98130 (Combo) are available with protective cap, electrode removal tool, (4) 1.5V batteries and instructions.

How To Calibrate

HI 98129 and HI 98130 Combo Testers

(Fig. 1)



(Fig. 2)



(Fig. 3)



First Step For New Meters

New meters soak in tap water for 30 minutes to re-hydrate pH bulb. (Fig. 1).

Entering Calibration Mode

Press the HOLD button to move to the meter to pH function. Press and hold the left MODE button. The display will cycle through the OFF screen then display CAL. Release the button when CAL appears on the display (Fig. 2).

The display will next read 7.01 USE. Place the tester in pH 7.01 solution (Fig. 3).

When the display reads 4.01 USE, remove the tester from the pH 7.01 solution and place the tester in pH 4.01 solution.

Calibration Complete

When the tester will display Okay momentarily then read 4.0, or 3.9. The tester is now calibrated.

pH/EC/TDS/ °C PORTABLE METERS

HI 9813-5 and HI 9813-6 are versatile, water resistant multiparameter portable meters specifically designed for agricultural applications such as hydroponics, greenhouses, farming and nurseries.

This series of instruments feature an extra large LCD that clearly displays the parameter being measured as well as calibration instructions. Calibration is fast and easy with knobs located on the front panel of the instrument.

HI 9813-5 is a pH/EC/TDS meter designed for simplicity of use in taking pH, mS/cm, ppm and temperature in the °C scale measurements.

HI 9813-6 includes all the features of the HI 9813-5 while incorporating our exclusive CAL CHECK™ feature. CAL CHECK™ allows the user to easily check the probe calibration status at any time. Both instruments utilize the HI 1285 series pH/EC/TDS/temperature probe. This probe features a fiber junction and gel electrolyte making it ideal for fertilizer solutions.

Specifications	9813-5/ HI 9813-6	
Range	pH	0.0 to 14.0 pH
	EC	0.00 to 4.00 mS/cm
	TDS	0 to 1999 ppm (mg/L)
	Temperature	0.0 to 60.0 °C
Resolution	pH	0.1 pH
	EC	0.01 mS/cm
	TDS	1 ppm (mg/L)
	Temperature	0.1 °C
Accuracy (@20 °C/68 °F)	pH	±0.1 pH
	EC	±2% F.S. mS/cm
	TDS	±2% F.S. ppm
	Temperature	±0.5 °C
Battery Type / Life (1) 9V / approximately 150 hours of continuous use		
Environment 0 to 50 °C (32 to 122 °F); 100% RH		
Dimensions/Weight 144.6x79.5x37 mm (5.7x3.1x1.5")/230 g (8.1 oz.)		

HI 9813-6 EXCLUSIVE CAL CHECK™ FEATURE

HI 9813-6N's CAL CHECK™ feature allows the user to check the meter calibration status at any time using by checking the HI 1285-6 probe against HI 50021 check solution.

If "Clean Probe and Calibrate" is displayed, just immerse the probe in HI 700661 cleaning solution or 5 minutes. Re-calibration is needed if "Clean Probe and Calibrate" message is displayed again after cleaning.



HI 1285 SERIES PROBE

The specially engineered HI 1285-5 and HI 1285-6 pH/EC/TDS/temperature probes utilize a fiber junction and gel electrolyte which provide a fast response and reduced contamination.



pH/EC/TDS/Temperature Probe & Starter Solutions Included!

TIP: Calibrate with the HANNA 1500ppm solution to set the conversion factor to 0.7.

Multiparameter

Updated!



pH/EC/TDS Meters

Versatile & Accurate Field Meter

- Extended EC/TDS Range
- Water Resistant
- 1 Probe for All Parameters
- 0.0 to 70.0° Temperature Range (HI 9811-5)
- Battery Error Prevention System (BEPS)

The HI 9811-5 is a portable meters for field measurement of pH, conductivity and TDS. HI 9811-5 features temperature measurement in °C. This versatile instrument is ideal for use in hydroponics. This rugged instrument has been specifically designed for easy field use and reduces the number of instruments required for water quality analysis.

SPECIFICATIONS	HI 9811-5
Range	pH: 0.0 to 14.0; EC: 0 to 6000 µS/cm; TDS: 0 to 3000 ppm (mg/L); Temperature: 0.0 to 70.0°C
Resolution	pH: 0.1; EC: 10 µS/cm; TDS: 10 mg/L; Temperature: 0.1°C
Accuracy (@20°C/68°F)	pH: ±0.1; EC/TDS: ±2% F.S.; Temperature: ±0.5°C
Calibration	manual at 1 point (all parameters except temperature)
Temp. Compensation	automatic 0 to 50°C with β = 2% / °C (EC/TDS only)
TDS Conversion Factor	0.5 mg/L = 1 µS/cm
Probe	HI 1285-0 pH/EC/TDS, 1 m cable (included)
Battery Type / Life	(1) 9V / approximately 150 hours of continuous use
Environment	0 to 50°C (32 to 122°F); 100% RH
Dimensions / Weight	165 x 75 x 45 mm (6.9 x 2.9 x 1.8") / 180 g (6.3 oz.)

ORDERING INFORMATION

HI 9811-5 is supplied complete with HI 1285-5 (-5) probe with 1 m (3.3') cable, pH 7 calibration solution, 1382 ppm and 1413 µS/cm calibration solutions (1 ea), cleaning solution (2 pcs), blue protective case, battery and instructions.

pH/EC/TDS/Temperature Megameter

Waterproof 4-in-1 Meter

Updated!

- 4 Parameters - 1 Probe!
- Automatic Calibration
- 2 Button Operation

This multi-parameter instrument tests for 4 of the most important factors in the growing environment. Calibration is performed at the touch of a button with memorized pH and EC buffers. Accuracy is ensured with Automatic Temperature Compensation and the advanced sensor which completely eliminates polarization and oxidation problems. Beta factor and TDS ratio are user selectable as is the ability to read in °C or °F. The HI 991300 is supplied complete with probe and carrying case.



SPECIFICATIONS	HI 991300
Range	pH: 0.00 to 14.00; EC: 0 to 3999 µS/cm; TDS: 0 to 2000 ppm; Temp.: 0.0 to 60.0° or 32 to 140°F
Resolution	pH: 0.01; EC: 1 µS/cm; TDS: 1 ppm; Temp.: 0.1°C or 0.1°F
Accuracy	pH: ±0.01; EC/TDS: ±2% F.S.; Temp.: ±0.5°C or ±1.0°F
Temp. Comp	pH: Automatic; EC/TDS: Automatic with a BETA factor 0.0-2.4%
Battery Life	approx 500 hours continuous use.
Dimensions	143 x 80 x 38 mm (5.6 x 3.1 x 1.5")
Weight	320 g (11.3 oz.)

ORDERING INFORMATION

HI 991300 is supplied with HI 1288 pH/EC/TDS/°C probe, (4) 1.5V batteries and instruction manual in a hard carrying case.

pH/EC and pH/TDS Monitors

Featuring pH and EC Simultaneous Display

These monitors are ideal for agricultural, horticultural and hydroponics applications where pH and EC levels need to be continuously monitored for optimal plant growth. These wall-mount monitors feature a large, easy-to-read LCD that displays pH and EC readings simultaneously.

SPECIFICATIONS HI 981404N

Range	0.0 to 14.0 pH
Resolution	0.1 pH; 10 mg/L (ppm) TDS
Accuracy	±0.2 pH; ±2% F.S. TDS
Temp. Comp.	Automatic
Power supply	External 12 VDC (included)
Dimensions	65x110x35 mm (6.5x4.3x1.3")
Weight	300 g (10.6 oz.)

- Continuous Monitoring
- Displays Both pH and EC
- Adjustable Setpoints

ORDERING INFORMATION

HI 981404N is supplied with HI 1286 pH electrode, HI 7634 TDS probe, HI 1283 grounding bar, cal. solutions, calibration screwdriver, 12 VDC adapter and instructions.



pH/TDS/Temperature Monitor

with Simultaneous Parameter Display

- Extra-large Simultaneous Displays
- 3 Backlit LCDs
- °C or °F measurement
- 12 VDC Power Supply

Designed for continuous monitoring of pH, TDS and temperature, the HI 981504 is simple to install and can be placed above the sample to be tested. pH, TDS and temperature measurements are simultaneously displayed on 3 backlit LCDs which can be easily viewed at a distance-even in low light.

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

ORDERING INFORMATION

HI 981504/5 (with 0.5 TDS factor) and HI 981504/7 (with 0.7 TDS factor) is supplied with HI 1286 pH electrode, HI 7634 TDS probe, temperature probe, TDS sachet, (2) cleaning solution sachets, screwdriver, 12 VDC power adapter and instructions.

SPECIFICATIONS

HI 981504

Range	pH: 0.0 to 14.0; TDS: 0 to 1990 ppm; Temperature: -10.0 to 60.0°C or -14.0 to 140.0°F
Resolution	pH: 0.1; TDS: 10 ppm; Temperature: 0.1°C or 0.1°F
Accuracy	pH: ±0.2; TDS: ±2% F.S.; Temperature: ±0.3°C or ±0.5°F
pH Calibration	manual 2 points through trimmers
TDS Calibration	manual 1 point through trimmer
TDS Factor	0.5 (HI 981504/5) or 0.7 (HI 981504/7)
Probes	pH: HI 1286 (included); TDS: HI 7634 (fixed); Temp.: Stainless steel, 2 m cable (fixed)
Temp. Compensation	automatic, 5 to 50°C (41 to 122°F), for TDS readings only
Power Supply	12 VDC power 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 lb.)



Relative Humidity

HYGROCHECK® *Relative Humidity Tester*

Housed in rugged ABS plastic, the **Hygrocheck®** uses HANNA instruments® Thin Film Polymer Capacitor Sensor. Now growers can have accurate readings in a pocket sized tester! The **Hygrocheck's** large LCD can be seen from any angle.

- **Large LCD**
- **Pocket sized**
- **Common sense construction**
- **No conversions necessary**

ORDERING INFORMATION

HI 98601 (Hygrocheck®) is supplied with protective cap, batteries, soft carrying case and instructions.

SPECIFICATIONS	HI 98601 (Hygrocheck®)
Range	10.0 to 90.0% RH
Resolution	0.1% RH
Accuracy (@20 °C/68 °F)	±3% F.S
Battery Type/Life	(3) 1.5V/Approx 100 hours continuous use
Environment	0 to 50 °C (32 to 122 °F); 95% RH
Dimensions	175 x 41 x 23 mm (7.9 x 1.6 x 0.8")
Weight	78 g (2.7 oz.)



Lux

Lux Meter

Portable Lux Meter for Rapid Light Measurements in a Waterproof Case

The HI 97500 portable Lux Meter from HANNA instruments® has been designed for simplicity of use in taking rapid light measurements.

Monitoring the light a plant is subjected to is critical for optimal plant growth. This portable instrument can be taken with you for spot measurements around your greenhouse.

This meters offers 3 different ranges to cover all applications

SPECIFICATIONS	HI 97500
Range	0.001 to 1.999 Klux; 0.01 to 19.99 Klux; 0.1 to 199.9 Klux
Resolution	0.001 Klux; 0.01 Klux; 0.1 Klux
Accuracy	±6% of reading ±2 digits
Sensor	human-eye-response silicon photodiode with 1.5 m coaxial cable (fixed)
Battery Type/Life	9V AA/approx 200 hours of continuous use; Auto-off after 7 minutes of non-use
Environment	0 to 50 °C (32 to 122 °F); 100% RH
Dimensions	164 x 76 x 45 mm (6.5 x 3.0 x 1.8")
Weight	180 g (6.3 oz.)

ORDERING INFORMATION
HI 97500 is supplied with (1) 9V battery and instruction manual.



- **Three measurement ranges**
- **Light sensor attached to 1.5 meter coaxial cable**
- **Rugged, waterproof case**

Light Intensity

Luminous intensity is measured and reported in foot-candles (ft-c) or in lux (lx). Light meters are commonly referred to as lux meters. One lux is equal to one lumen per square meter and one foot-candle is equal to one lumen per square foot.

To convert measurements use the following formulae:

$$\text{foot-candle} = \text{lux} \times 0.0929$$

$$\text{lux} = \text{foot-candle} \times 10.764$$

HANNA's light measuring sensor is a photo diode that converts incident light into an electronic signal that is read and displayed on the meters LCD as Klx which is 1,000 lx. So multiply the reading by 92.9 to get the measurement in foot candles.

Common examples of light Intensities

Full Moon	.001 Klx	1 lx	.0929 ft-c
Street Lighting	.01 Klx	10 lx	.929 ft-c
Workspace Lighting	1 - 1 Klx	100 - 1,000 lx	9.29 - 92.9 ft-c
Surgery Lighting	10 Klx	10,000 lx	929 ft-c
Sunshine	100 Klx	100,000 lx	9,290 ft-c

Plant Light Requirements

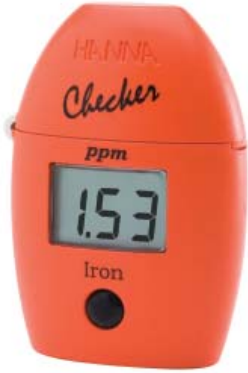
Light provides the energy source needed for plants to manufacture food (photosynthesis). The amount of light is commonly measured in foot-candles (ft-c) or lux. Plants differ greatly in their light intensity requirements. Indoor plants are often classified by the amount of light necessary for growth:

- **Low (minimum 1.1 Klx, .8 to 2.1 preferred for good growth)**
- **Medium (minimum 1.1 to 1.6 Klx, 2.1 to 5.4 preferred)**
- **High (minimum 1.6 to 10.8 Klx, 5.4 to 10.8 preferred)**

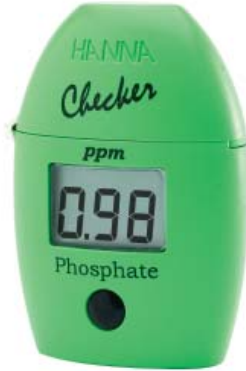
- **Very high (minimum 10.8 Klx, 10.8+ preferred)**

About 1.1 Klx for 12 hours per day are necessary simply to maintain plant quality for one year and at least 2.1 Klx for 12 hours per day are necessary for foliage plants to manifest any benefit from fertilization.

While lack of sufficient light results in poor plant growth, too much light can also be harmful. Shade plants cannot tolerate excessively high light levels. When a plant receives too much direct light, the leaves bleach or scald, sometimes dying. This often happens after moving a plant outdoors in direct light. Any changes in light intensity should be gradual.



SPECIFICATIONS	HI 721 (Iron)
Range	0.00 to 5.00 ppm (mg/L)
Resolution	0.01 ppm (mg/L)
Precision	2% of reading ±0.04 ppm (mg/L)



SPECIFICATIONS	HI 713 (Phosphate)
Range	0.00 to 2.5 ppm (mg/L)
Resolution	0.01 ppm (mg/L)
Precision	4% of reading ±0.04 ppm (mg/L)



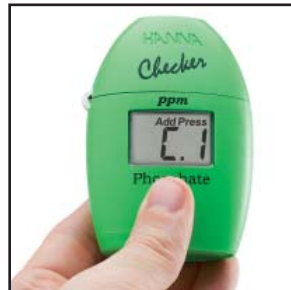
SPECIFICATIONS	HI 701 (Free Chlorine)
Range	0.00 to 2.50 ppm (mg/L)
Resolution	0.01 ppm (mg/L)
Precision	3% of reading ±0.03 ppm (mg/L)



SPECIFICATIONS	HI 711 (Total Chlorine)
Range	0.00 to 3.50 ppm (mg/L)
Resolution	0.01 ppm (mg/L)
Precision	3% of reading ±0.03 ppm (mg/L)

Affordable • Easy to use • Small Size (3.0 x 2.4 x 1.5") • Large, easy to read digits

It's easy to measure samples with the **Checker® HC**



"Zero" the Checker®HC with your unreacted water sample



Add reagent to your water sample



Place the vial into your checker®HC



Press the button and read the results. it's that easy!

HI 83215/ HI 83225 Grow Master for Nutrient Analyses Kit

Nitrogen, Phosphorus, Potassium and Ammonia Meter

HI 83215 & HI 83225 are designed for the hydroponics industry to measure 7 nutrients commonly present in fertilizer enriched solutions. Ammonia, phosphorus, nitrate and potassium can be measured in three distinct ranges of low, medium and high concentrations. This way accuracy is maximized for each nutrient and for every concentration. Due to simplicity of operation, you no longer need to send off your samples and then wait for the results to come back. With the HI 83215 and HI 83225, you can test the presence and strength of nutrients right on the spot. This can translate itself into a substantial saving and improved yield over a period of time.



Don't Wait for lab Results!

- **Accurate**
- **Easy to use**
- **Economical Tests**

HI 83215
12
Methods

Parameter	Range	Method	Reagent Code
Ammonia HR	0 to 100 mg/L	Nessler	HI 93715-01
Ammonia LR	0.0 to 10.0 mg/L	Nessler	HI 93715-01
Ammonia MR	0.0 to 50.0 mg/L	Nessler	HI 93715-01
Nitrate HR	0 to 300 mg/L	Cadmium Reduction	HI 93728-01
Nitrate LR	0.0 to 30.0 mg/L	Cadmium Reduction	HI 93728-01
Nitrate MR	0 to 150 mg/L	Cadmium Reduction	HI 93728-01
Phosphorus HR	0 to 100 mg/L	Amino Acid	HI 93706-01
Phosphorus LR	0.0 to 10.0 mg/L	Amino Acid	HI 93706-01
Phosphorus MR	0.0 to 50.0 mg/L	Amino Acid	HI 93706-01
Potassium HR	20 to 200 mg/L	Turbidimetric	HI 93750-01
Potassium LR	0.0 to 20.0 mg/L	Turbidimetric	HI 93750-01
Potassium MR	10 to 100 mg/L	Turbidimetric	HI 93750-01

HI 83225
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Methods

Parameter	Range	Method	Reagent Code
Ammonia LR	0.0 to 10.0 mg/L	Nessler	HI 93715-01
Ammonia MR	0.0 to 50.0 mg/L	Nessler	HI 93715-01
Ammonia HR	0 to 100 mg/L	Nessler	HI 93715-01
Nitrate LR	0.0 to 30.0 mg/L	Cadmium Reduction	HI 93728-01
Nitrate MR	0 to 150 mg/L	Cadmium Reduction	HI 93728-01
Nitrate HR	0 to 300 mg/L	Cadmium Reduction	HI 93728-01
Phosphorus LR	0.0 to 10.0 mg/L	Amino Acid	HI 93706-01
Phosphorus MR	0.0 to 50.0 mg/L	Amino Acid	HI 93706-01
Phosphorus HR	0 to 100 mg/L	Amino Acid	HI 93706-01
Potassium LR	0.0 to 20.0 mg/L	Turbidimetric	HI 93750-01
Potassium MR	10 to 100 mg/L	Turbidimetric	HI 93750-01
Potassium HR	20 to 200 mg/L	Turbidimetric	HI 93750-01
Calcium	0 to 400 mg/L	Oxalate	HI 937521-01
Magnesium	0 to 150 mg/L	Calmagite	HI 937520-01
Sulfate	0 to 150 mg/L	Turbidimetric	HI 93751-01

ORDERING INFORMATION

HI 83215 & HI 83225 are supplied with measuring cuvetts (4), batteries, 12 Vdc adapter and instructions. HI 83215K kit and HI 83225K kit versions include accessories comprised of: rugged carrying case, 100 mL and 170 mL beaker, 60 mL and 5 mL syringes, 1 filter-holder and 25 filters, 100 mL cylinder, demineralizer bottle, 2 pipettes, 1.5 mL spoon and active carbon for 50 tests.

Plant Nutrition

The three elements that are most needed by plants are nitrogen (N), phosphorus (P) and potassium (K). This is the reason why they are called macronutrients and should be given to plants.

Nitrogen is indispensable for the plant's life and is a key factor in fertilization. Nitrogen allows the development of the vegetative activity of the plant, in particular, causes lengthening of trunks and sprouts and increases the production of foliage and fruits. An excess of nitrogen weakens the plants' structure creating an unbalanced relationship between the leaves and the stalks. In addition, the plant becomes less resistant to diseases.

Phosphorus is an important element in the composition of DNA and RNA, the regulators of the energetic exchange (ATP & ADP), as well as the reserve substances in seeds and bulbs. It contributes to the formation of buds, roots, blooming, and lignification. A lack of phosphorus results in: stiling of plant, slow growth, a reduction of production, smaller fruits and a lower expansion of the roots.

Even if **Potassium** is not a constituent of important compounds, it plays a remarkable role in many physiological activities like the control of cellular turgor and the accumulation of carbohydrates. It increases the size of fruits, their flavor, as well as yielding a positive effect on the color and fragrance of flowers. Potassium also makes plants more resistant to disease.

Digital Brix Refractometer

Take Your Measurements to the Next Level

HANNA Digital Refractometers are rugged portable, water resistant devices that benefit from **HANNA**'s years of experience as a manufacturer of analytical instruments. The measurement of refractive index is simple and quick. Samples are measured after a simple user calibration with deionized or distilled water. Within seconds the instrument measures the refractive index of the sample and converts it to % Brix concentration units.

Temperature (in °C or °F) is displayed simultaneously with measurement on the large, dual level display along with other helpful message codes.

A crop with a higher Brix level results in a better tasting, more notorious yield. You can test the Brix of leaves to check nutrients balance before harvest. If the Brix is low, the nutrients are not being dosed in sufficient quantity and/or correct proportion.



Battery life on display



Easy to clean stainless steel sample well



Powered by single 9V battery

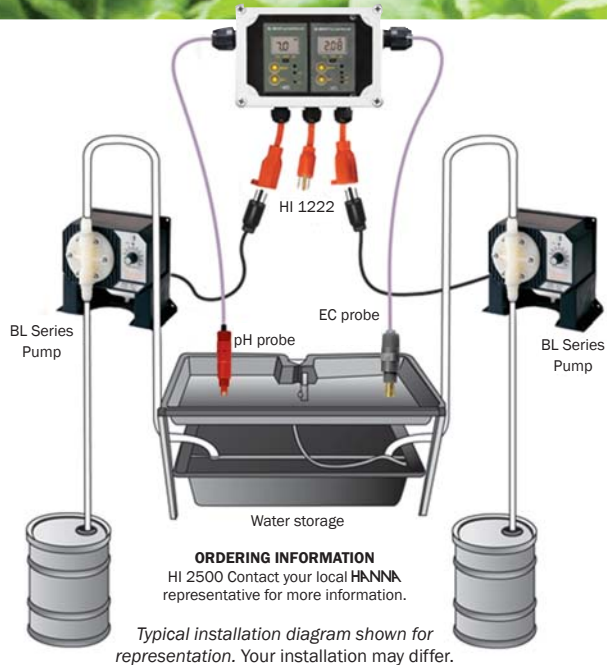
- Dual-level LCD
- Calibrate with water
- Easy measurement
- Battery operated
- Small sample size
- IP65 waterproof protection
- Stainless steel sample well
- Automatic shut-off

Specifications	96811	96801
Range	0 to 50% Brix	0 to 85% Brix
Resolution		0.1% Brix
Accuracy		±0.2% Brix
Battery Type / Life		(1) 9V / approximately 150 hours of continuous use
Dimensions/Weight	192x104x67 mm (7.6x4x2.06") / 420g	

Order Information:

HI 96801 and HI 96811 are supplied with (1) 9V battery and instructions.

Nutrient & Acid Control System



HI 2500

MINI CONTROLLER FERTIGATION SYSTEM

Automatically control acid and nutrients levels

- Easy installation
- Controls pH & EC or pH & TDS
- No peristaltic pumps
- Industrial grade probes
- Less maintenance stays in calibration longer
- Works with any type of hydroponic system

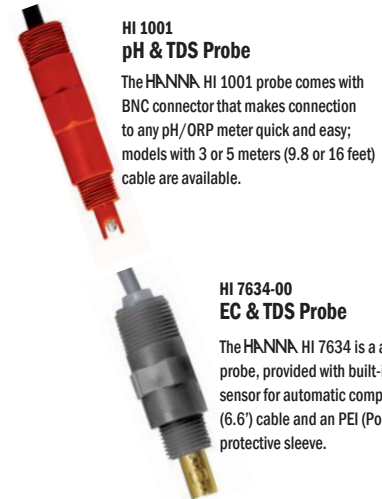
Includes:

pH controller and probe

EC & TDS controller and probe

Pumps (2) for acid and nutrient injection

Perfect for any size grower!



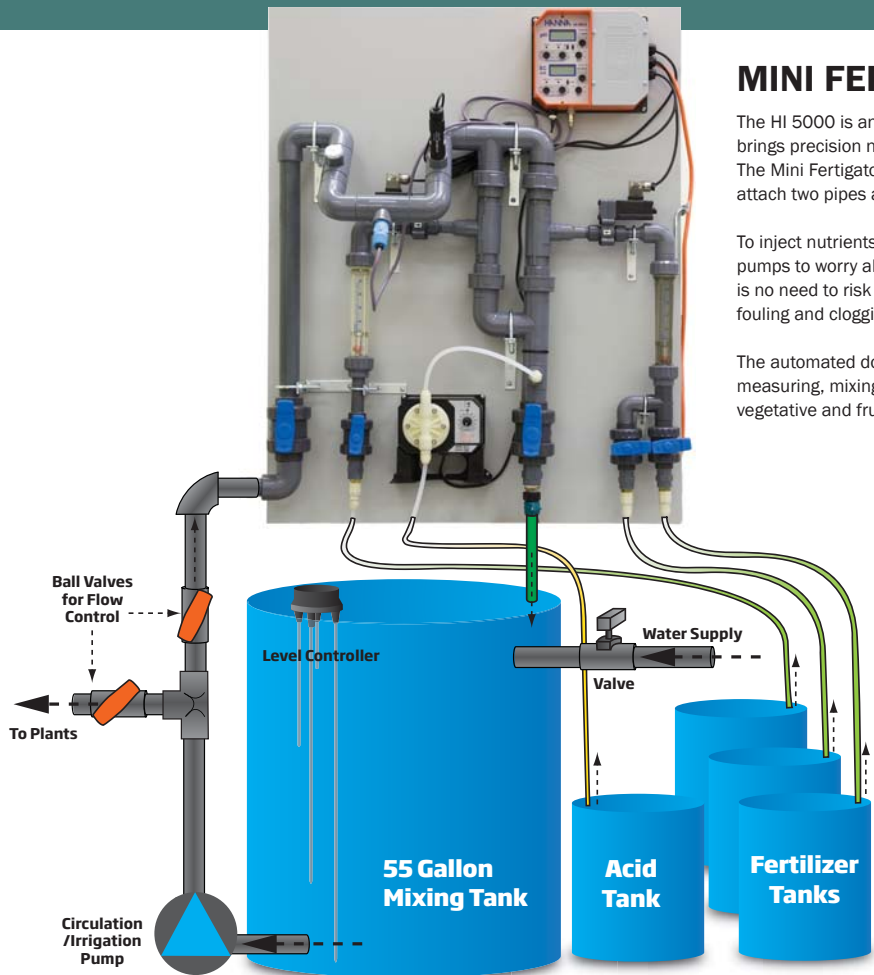
Fertigation System

MINI FERTIGATION SYSTEM

The HI 5000 is an all-in-one, ready to use control system. Compact and versatile, the Mini Fertigator brings precision nutrient and acid control to professional grower and advanced home grower alike. The Mini Fertigator is easy to install and comes completely pre-assembled. To install the unit, simply attach two pipes and plug into the power cord. No wiring and no assembly required!

To inject nutrients, the mini Fertigator uses a venturi so there are no high-maintenance peristaltic pumps to worry about. HANNA's included Blackstone pump can handle full-strength acid, so there is no need to risk an accident with dilution. HANNA's flat-tipped probes are also highly resistant to fouling and clogging.

The automated dosing feature allows growers to optimize growth without spending half the time measuring, mixing and dosing. The Mini Fertigator allows growers to set precision dosing during vegetative and fruiting stages, maximizing harvest and profit



- **0 – 25 GPM flow rate (w/55 gal mix tank)**

Higher flow rates are obtainable when utilizing a larger mix tank and pump.

- Supplied with 2 isolated electro-valve injectors and 3 fertilizer connections.

- Independent EC and pH control functions (see HI9913 and HI9935 instruction manuals for complete controller specifications).

- Supplied with 3 sets of suction tubing and foot valves for fertilizer connections.

- Supplied with Acid dosing pump connected directly to the system (no hook up required)

- Main input and output can be connected to hose fittings for quick “plug and play” assembly

- Equipped with a venturi injectors... no moving parts!

- Visual flow meters for easy fertilizer flow adjustments

- Customization available upon request

HI 5000 Typical Installation Diagram

- Mixing tank, level controller, fertilizer tanks, circulator pump and related plumbing not included.
- Circulation/Irrigation Pump Recommend 0.75HP end-suction centrifugal pump (pump size and power specifications are dependent on greenhouse requirements). Pump MUST be large enough to power injector. (MIN 0.75HP)



ISO CERTIFIED

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