



edge^{blu}

pH Meter and Electrode with
Bluetooth® Smart Technology

 **HANNA**[®]
instruments

edge^{blu}

First pH meter in the world with a Bluetooth® Smart pH electrode

Free yourself from wires when performing pH measurements. Hanna Instruments is proud to introduce edge®blu, a pH meter that uses HALO® pH electrodes with Bluetooth® Smart technology (Bluetooth 4.0). Bluetooth® Smart technology is energy efficient, allowing for low power consumption to maximize the life of the replaceable battery used in the pH electrode.

HALO electrodes can also connect to a compatible smart phone or tablet running the Hanna Lab App.



edge blu technical features



- **Two USB ports**
 - edge blu includes one standard USB for exporting data to a flash drive. edge blu also includes one micro USB port for exporting files to your computer as well as for charging when the cradle is not available.



- **Data logging**
 - edge blu allows you to store up to 1000 log records of data. Data sets include readings with date and time and GLP data.



- **GLP**
 - Data of the last calibration you perform is stored in the sensor including the date, time, and buffers used. When the sensor is connected to edge blu, GLP data is automatically transferred.

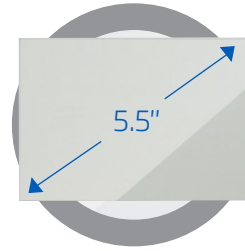


- **CAL Check™**
 - edge blu features Hanna's exclusive CAL Check technology to warn you if the electrode bulb is not clean or if the buffers are contaminated during calibration.

edge blu design features



- **Capacitive touch keypad**
 - edge blu features a capacitive touch keypad that gives a distinctive, modern look. Since the keypad is part of the screen, your buttons can never get clogged with sample residue.



- **Easy to read LCD**
 - edge blu features a 5.5" (14 cm) LCD display that you can clearly view from over 5 m (16.4'). The large display, with its wide 150° viewing angle, provides one of the easiest to read LCDs in the industry.



- **Zero footprint**
 - Using the wall mount cradle (included), edge blu can be placed on a wall, leaving zero footprint on the benchtop space. The cradle has a built-in connector to power and charge the batteries.



- **Sleek design**
 - Incredibly thin and lightweight, edge blu measures just 0.5" (12 mm) thick and weighs just 8.8 ounces (250 g).

edge blu additional features

- Utilizes Bluetooth® Smart technology
- Resolution selectable from 0.01 and 0.001 pH
- Range -2.000 to 16.000 pH
- Accuracy ± 0.002 pH for 0.001 pH resolution; ± 0.01 for 0.01 resolution
- **Data logging**
 - Manual log-on-demand
 - Manual log-on-stability
 - Interval logging
- Temperature readout (°C or °F)
- Automatic Temperature Compensation (ATC)

- **CAL Check Indicators:**
 - Probe condition
 - Response time
 - Check buffer
 - Clean electrode
- **GLP data**
 - Records date, time, offset, slope, and buffers used during calibration
- **Five-point calibration**
 - A choice of seven pre-programmed buffers plus two custom buffers
- **Calibration tag on screen**
 - Identifies buffers used for current calibration

- **Calibration expiration warning**
- **Basic mode**
 - You can use edge blu Basic Mode—ideal for routine measurements by displaying a simplified screen and features
- **Standby mode**
 - HALO can be switched between standby and measurement mode by edge blu. When measurement is resumed, HALO is automatically recognized. Standby mode is ideal for applications such as aquariums when only periodic measurements are needed in the same sample.



A hybrid meter that can be used in portable, wall-mount, and benchtop configurations

The versatile design of edge blu enables it to be used as a portable, wall-mount, or benchtop meter. edge blu simplifies measurement, wirelessly using compatible HALO pH electrodes with Bluetooth® Smart technology.



• Portable field unit

- edge blu is ideal for field use due to its light weight, large screen, and thin design. It can easily be slipped into a backpack or messenger bag. The battery life lasts up to 8 hours when used as a portable device.



• Wall-mount cradle

- The included wall-mount cradle makes it easy to conserve space on the benchtop while also charging edge blu with the AC adapter. The cradle is ideal for continuous monitoring applications.



• Electrode holder with built-in cradle

- The electrode holder features a swivel, adjustable arm with a built-in cradle to hold edge blu securely in place at the optimum viewing angle.

Specifications

edge blu*

pH	Range**	-2.00 to 16.00 pH; -2.000 to 16.000 pH†
	Resolution	0.01 pH; 0.001 pH†
	Accuracy (@25°C/77°F)	±0.01 pH; ±0.002 pH†
	Calibration†	automatic, up to five-point calibration with seven standard buffers available (1.68, 3.00 or 4.01, 6.86, 7.01, 9.18, 10.01, 12.45) and two custom buffers
	Temperature Compensation**	automatic, -5.0 to 100.0°C (23.0 to 212.0°F) (using integral temperature sensor)
	Electrode Diagnostics	standard mode: probe condition, response time, and out of calibration range
mV pH	Range	±1000 mV
	Resolution	0.1 mV
	Accuracy (@25°C/77°F)	±0.2 mV
Temperature	Range**	-20.0 to 120.0°C; -4.0 to 248.0°F
	Resolution	0.1°C; 0.1°F
	Accuracy	±0.5°C; ±0.9°F
Additional Specifications	Probe	HI11102 HALO glass body, gel filled pH electrode with Bluetooth® Smart technology
	Logging	up to 1000† (400 for basic mode) records organized in: manual log-on-demand (max. 200 logs), manual log-on-stability (max. 200 logs), interval logging† (max. 600 samples; 100 lots)
	Connectivity	1 USB port for storage; 1 micro USB port for charging and PC connectivity
	Environment	0 to 50°C (32 to 122°F); RH max 95% non-condensing
	Power Supply	5 VDC adapter (included)
	Dimensions	202 x 140 x 12 mm (7.9" x 5.5" x 0.5")
	Weight	250 g (8.82 oz.)

Hanna Lab App

pH Meter Application for use with HALO

The Hanna Lab App turns compatible smart phone or tablet into a full-featured pH meter when used with a HALO pH probe via Bluetooth® Smart technology. Functions include calibration, measurement, data logging, graphing, and data sharing. Measurement and logging of pH and temperature at one second intervals start as soon as the probe is connected. Measurements can be displayed alone on the display, with tabulated data or as a graph. The graph can be panned and zoomed with pinch-to-zoom technology for enhanced viewing.



- Connects via Bluetooth® 4.0
- Calibration reminder
- Real-time data
 - Displays updated pH and temperature updated every second
- Basic GLP
 - Displays date and time of current calibration along with probe offset and average slope
- Full GLP
 - Displays date and time of current calibration, probe offset, and average slope along with calibrated buffers, mV values, temperature and slopes between each buffer
- Measurement alarms
 - Alerts users if the measurement threshold is exceeded
- Fluid, dynamic graphing
 - Measurement can be displayed with tabulated data or as a graph
- One button sample tagging
- Data-logging with custom annotations
 - Data is automatically saved every hour
 - Saved log files may be annotated with measurement specific information
- Four ways to save and share data:
 - All data since last auto save
 - Annotations only
 - All data within a timed interval
 - Annotations within a timed interval
- Share data via email in CSV format
- Help and tutorials

Hanna Lab App Specifications*

Range**	-2.000 to 16.000 pH ±800 mV -20.0 to 120.0°C (-4.0 to 248.0°F)
Resolution	0.1; 0.01; 0.001 pH 1; 0.1 mV 0.1°C (0.1°F)
Accuracy (@25°C/77°F)	±0.005 pH ±0.3 mV ±0.5°C (±1.0°F)
Calibration Points	up to five-point calibration with seven standard buffers (1.68, 3.00 or 4.01, 6.86, 7.01, 9.18, 10.01, 12.45 pH)
Temperature Compensation**	automatic from -5.0 to 100.0 °C; 23.0 to 212.0 °F
Compatibility/System Requirements	see www.hannainst.com for latest compatibility requirements

Download
Information



** Limits will be reduced to actual probe/sensor limits.

* HALO required for measurement use.

† Standard mode only

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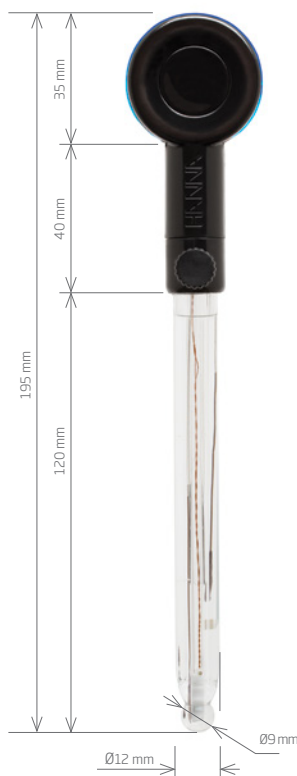
HALO is a Bluetooth® Smart (Bluetooth 4.0) pH and temperature electrode that turns edge blu or a compatible smart phone or tablet running the Hanna Lab App¹ into a professional pH meter.

Hanna's HALO pH electrodes have many advanced features including:

- One button sample tagging
- Integrated temperature sensor
- Stored calibration data
- LED status indicator
- Long battery life
- Application-specific design

Choose from any of our five models of HALO pH electrodes to experience the next generation in pH measurement technology.

Compatible with:
edge blu
iOS
Android™



HI11312

HALO Refillable pH Electrode

This refillable, glass body electrode has many features that make it ideal for use in a wide variety of applications. These features include high temperature (HT) glass, spheric bulb, integrated temperature sensor, glass body, and double junction reference with silver-free electrolyte.



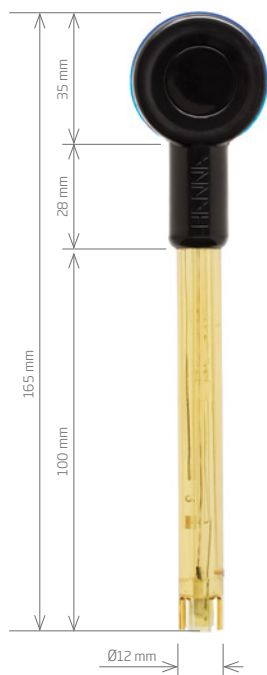
HI11102

HALO Gel Filled pH Electrode

This gel filled, glass body electrode has many features that make it ideal for laboratory use. These features include low temperature (LT) glass, spheric bulb, integrated temperature sensor, and double junction reference.

HALO Specifications

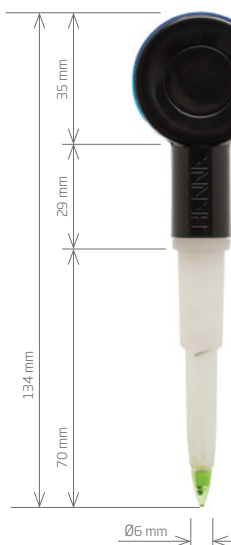
HALO Specifications	HI11312	HI11102
Reference	double, Ag/AgCl	double, Ag/AgCl
Junction	ceramic	ceramic
Electrolyte	KCl 3.5M (refillable)	gel
Range	0.00 to 13.00 pH	0.00 to 12.00 pH
Bulb Shape	spheric	spheric
Outer Diameter (glass)	12 mm (glass)	12 mm (glass)
Overall Length	195 mm	183 mm
Solution Temperature	-5.0 to 80.0°C (23.0 to 176.0°F)	-5.0 to 80.0°C (23.0 to 176.0°F)
Body Material	glass	glass
Environment	0.0 to 50.0°C (32.0 to 122.0°F), electronic module is not waterproof	
Temperature Sensor	integrated	
Connection	Bluetooth® Smart (Bluetooth® 4.0), 10 m (33') range	
Battery Type / Life	CR2032 3V lithium ion / approximately 500 hours	



HI12302

HALO PEI Body pH Electrode

This gel filled, PEI body electrode has many features that make it ideal for use in the field or on the production floor. These features include low temperature (LT) glass, dome bulb, integrated temperature sensor, and double junction reference.



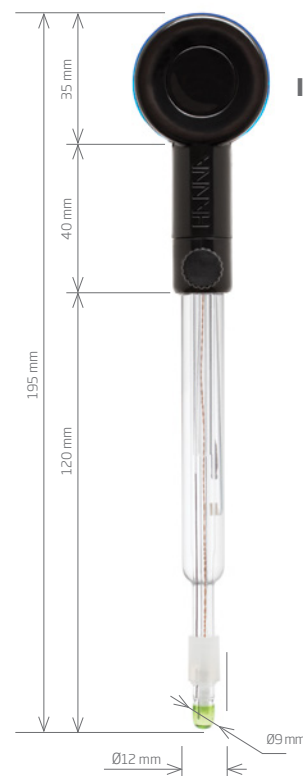
Ideal for food applications

FC2022

HALO Foodcare pH Electrode

This gel filled, PVDF body electrode has many features that make it ideal for measuring food related products. These features include: low temperature (LT) glass, conical bulb, integrated temperature sensor, and open junction with viscolene gel electrolyte.

The open junction design resists clogging from solids for fast, stable readings and the probe's conical tip easily penetrates food products including dairy, dough, ground meats, and other semi-solid food samples.



Ideal for wine applications

CPS™
(Clogging Prevention System)

HI10482

HALO pH Electrode with CPS Technology

This refillable, glass body electrode has many features that make it ideal for use in the food and beverage industries including wine. These features include low temperature (LT) glass, dome bulb, integrated temperature sensor, and CPS (Clogging Prevention System) technology.

CPS technology utilizes ground glass coupled with a PTFE sleeve to prevent clogging of the junction. The ground glass allows proper flow of electrolyte, while the PTFE sleeve repels solids in the sample.

HI12302

double, Ag/AgCl

ceramic

gel

0.00 to 12.00 pH

dome

12 mm (plastic)

165 mm

-5.0 to 70.0°C (23.0 to 158.0°F)

PEI

FC2022

double, Ag/AgCl

open junction

viscolene

0.00 to 12.00 pH

conical

12 mm to 8 mm taper (plastic)

134 mm

0.0 to 60.0°C (32.0 to 140.0°F)

PVDF

HI10482

double, Ag/AgCl

open, CPS

KCl 3.5M (refillable)

0.00 to 12.00 pH

dome

8 mm

195 mm

0.0 to 80.0°C (32.0 to 176.0°F)

glass

HI181 • HI180

Compact Magnetic Mini-Stirrers

Available With and Without
Detachable Electrode Holder

- **Electrode holder**
 - The HI181 series features an electrode holder that fits into the base of the stirrer
- **Round edge**
- **Dynamic design**
 - Easy to handle, these lightweight and compact stirrers need little room and are quickly recognizable on busy benches
- **Built to last**
 - Chemical resistant housing withstands damage by accidental spills

Common stirrers are manufactured with steel and aluminum components. These units are often too large and heavy to fit in the limited space of a laboratory. Hanna HI181 and HI180 models are compact, lightweight, and inexpensive.

Often in the lab, a sample is removed from a stirrer before reducing the speed. Normally, this would cause the motor to accelerate until it is destroyed. Hanna stirrers incorporate electronic controls that allow the user to regulate the speed with greater precision. In addition to speed control, the Speedsafe™ mechanism will assure that the maximum speed is never exceeded. Both models of mini-stirrers are available in eleven colors. The various colors can allow easy sample identification at a distance.

Speedsafe™



Specifications	HI181 • HI180
Maximum Stirring Capacity	1 liter (0.26 gallons)
Min. Speed Range	100 rpm
Max. Speed Range	1000 rpm
Power Supply	110/115 VAC or 220/240 VAC, 50/60 Hz
Installation Category	II
Cover Material	ABS plastic
Environment	0 to 50°C (32 to 122°F); RH max 95%
Dimensions	137 mm (dia) x 51 mm (h)
Weight	640 g (1.4 lbs.)
Accessories	HI731319 Magnetic micro stir bar (10)

HI181 Ordering Information

All models include detachable electrode holder, micro stir bar and instructions.



HI181-1 Black
mini-stirrer (115V)

HI181-2 Black
mini-stirrer (230V)



HI181W-1 Arctic white
mini-stirrer (115V)

HI181W-2 Arctic white
mini-stirrer (230V)



HI181F-1 Blue
mini-stirrer (115V)

HI181F-2 Blue
mini-stirrer (230V)



HI181M-1 Moss green
mini-stirrer (115V)

HI181M-2 Moss green
mini-stirrer (230V)



HI181K-1 Orange
mini-stirrer (115V)

HI181K-2 Orange
mini-stirrer (230V)



HI181L-1 Lavender
mini-stirrer (115V)

HI181L-2 Lavender
mini-stirrer (230V)



HI181J-1 Charcoal
mini-stirrer (115V)

HI181J-2 Charcoal
mini-stirrer (230V)



HI181I-1 Ivory
mini-stirrer (115V)

HI181I-2 Ivory
mini-stirrer (230V)



HI181C-1 Glacier blue
mini-stirrer (115V)

HI181C-2 Glacier blue
mini-stirrer (230V)



HI181E-1 Green
mini-stirrer (115V)

HI181E-2 Green
mini-stirrer (230V)



HI181A-1 Yellow
mini-stirrer (115V)

HI181A-2 Yellow
mini-stirrer (230V)

HI180 Ordering Information

All models include micro stir bar and instructions.



HI180-1 Black
mini-stirrer (115V)

HI180-2 Black
mini-stirrer (230V)



HI180W-1 Arctic white
mini-stirrer (115V)

HI180W-2 Arctic white
mini-stirrer (230V)



HI180F-1 Blue
mini-stirrer (115V)

HI180F-2 Blue
mini-stirrer (230V)



HI180M-1 Moss green
mini-stirrer (115V)

HI180M-2 Moss green
mini-stirrer (230V)



HI180K-1 Orange
mini-stirrer (115V)

HI180K-2 Orange
mini-stirrer (230V)



HI180L-1 Lavender
mini-stirrer (115V)

HI180L-2 Lavender
mini-stirrer (230V)



HI180J-1 Charcoal
mini-stirrer (115V)

HI180J-2 Charcoal
mini-stirrer (230V)



HI180I-1 Ivory
mini-stirrer (115V)

HI180I-2 Ivory
mini-stirrer (230V)



HI180C-1 Glacier blue
mini-stirrer (115V)

HI180C-2 Glacier blue
mini-stirrer (230V)



HI180E-1 Green
mini-stirrer (115V)

HI180E-2 Green
mini-stirrer (230V)



HI180A-1 Yellow
mini-stirrer (115V)

HI180A-2 Yellow
mini-stirrer (230V)

Cleaning, Storage and Refilling Solutions

General and Specific Use Electrode Cleaning Solutions

Clean the sensing portion of your electrodes weekly to prevent fouling and to maintain accuracy. Immerse the electrode in the proper cleaning solution for at least 15 to 20 minutes and rehydrate in storage solution before use.

General Use Electrode Cleaning Solutions

Code	Application	Package
HI70000P	rinsing	20 mL sachet (25)
HI7061L	general purpose	500 mL bottle
HI7073L	proteins	500 mL bottle
HI7074L	inorganic substances	500 mL bottle
HI7077L	oil and fats	500 mL bottle
HI8061L	general purpose	500 mL FDA bottle
HI8073L	proteins	500 mL FDA bottle
HI8077L	oil and fats	500 mL FDA bottle

Specific Electrode Cleaning Solutions - Bottles

Code	Description	Size
HI70630L	acid cleaning solution for meat grease and fats	500 mL
HI70631L	alkaline cleaning solution for meat grease and fats	500 mL
HI70632L	cleaning and disinfection solution for blood products	500 mL
HI70635L	cleaning solution for wine deposits	500 mL
HI70636L	cleaning solution for wine stains	500 mL
HI70640L	cleaning solution for milk deposits	500 mL
HI70641L	cleaning and disinfection solution for dairy products	500 mL
HI70642L	cleaning solution for cheese residues	500 mL
HI70643L	cleaning and disinfection solution for yogurt products	500 mL
HI70663L	cleaning solution for soil deposits	500 mL
HI70664L	cleaning solution for humus deposits	500 mL
HI70670L	cleaning solution for salt deposits (industrial processes)	500 mL
HI70671L	cleaning and disinfection solution for algae, fungi and bacteria (industrial processes)	500 mL
HI70681L	cleaning solution for ink stains	500 mL



Specific Electrode Cleaning Solutions - Sachets

Code	Description	Qty/Size
HI700601P	general purpose cleaning solution for laboratories	20 mL (25)
HI700630P	acid cleaning solution for meat grease and fats	20 mL (25)
HI700635P	cleaning solution for wine deposits	20 mL (25)
HI700636P	cleaning solution for wine stains	20 mL (25)
HI700640P	cleaning solution for milk deposits	20 mL (25)
HI700641P	cleaning and disinfection solution for dairy products	20 mL (25)
HI700642P	cleaning solution for cheese residues	20 mL (25)
HI700643P	cleaning and disinfection solution for yogurt products	20 mL (25)
HI700661P	general purpose cleaning solution for agriculture	20 mL (25)
HI700663P	cleaning solution for soil deposits	20 mL (25)
HI700664P	cleaning solution for humus deposits	20 mL (25)
HI700670P	cleaning solution for salt deposits (industrial processes)	20 mL (25)

Electrode Storage Solutions

To minimize junction clogging and ensure fast response time, always keep the glass bulb and the junction of your pH electrode moist. Store the electrode with a few drops of HI70300 or HI80300 storage solution in the protective cap.



Code	Description	Package
HI70300L	electrode storage solution	500 mL bottle
HI80300L	electrode storage solution	500 mL FDA bottle

Electrode Fill Solutions

The electrolyte level in refillable electrodes should be checked before performing any measurement. If the level is low, refill with the proper electrolyte solution to ensure the correct electrode performance. This simple maintenance helps guarantee adequate head pressure to keep the liquid junction flowing.



Code	Description	Package
HI7082L	electrolyte solution, 3.5M KCl	500 mL bottle
HI8082	electrolyte solution, 3.5M KCl	30 mL FDA bottle (4)

Calibration Solutions

pH Technical Calibration Solutions

To obtain precise and valid pH measurements, the pH meter and electrode must be calibrated at a minimum of two different points, close to the value of the sample to be tested. These solutions are dedicated to applications that require extremely accurate pH monitoring, and come with a certificate of analysis prepared by comparison against NIST standards.

Bottles

pH Value @25°C	Code	Package
1.68	HI5016	500 mL
3.00	HI5003	500 mL
4.01	HI5004	500 mL
6.86	HI5068	500 mL
7.01	HI5007	500 mL
9.18	HI5091	500 mL
10.01	HI5010	500 mL
12.45	HI5124	500 mL

Sachets

pH Value @25°C	Code	Package
1.68	HI50016-02	20 mL (25)
3.00	HI50003-02	20 mL (25)
4.01	HI50004-02	20 mL (25)
6.86	HI50068-02	20 mL (25)
7.01	HI50007-02	20 mL (25)
9.18	HI50091-02	20 mL (25)
10.01	HI50010-02	20 mL (25)
12.45	HI50124-02	20 mL (25)

±0.002 pH Millesimal Calibration Solutions

The millesimal accuracy line of buffers has been prepared to meet the increasing need for assured accuracy in pH measurements. Each bottle in the line is provided with a certificate of analysis, prepared by comparison with NIST standards.

Bottles

pH Value @25°C	Code	Package
1.679	HI6016	500 mL
3.000	HI6003	500 mL
4.010	HI6004	500 mL
6.862	HI6068	500 mL
7.010	HI6007	500 mL
9.177	HI6091	500 mL
10.010	HI6010	500 mL
12.450	HI6124	500 mL

Sachets

pH Value @25°C	Code	Package
1.679	HI60016-02	20 mL (25)
4.010	HI60004-02	20 mL (25)
7.010	HI60007-02	20 mL (25)
10.010	HI60010-02	20 mL (25)

Standard Calibration Solutions

Hanna standard pH buffers are carefully prepared and are standardized with high precision meters calibrated to NIST references.

Bottles

pH Value @25°C	Code	Package
1.68	HI7001L	500 mL
4.01	HI7004L	500 mL
4.01	HI8004L	500 mL FDA bottle
6.86	HI7006L	500 mL
6.86	HI8006L	500 mL FDA bottle
7.01	HI7007L	500 mL
7.01	HI8007L	500 mL FDA bottle
9.18	HI7009L	500 mL
9.18	HI8009L	500 mL FDA bottle
10.01	HI7010L	500 mL
10.01	HI8010L	500 mL FDA bottle

Sachets

pH Value @25°C	Code	Package
4.01	HI70004P	20 mL (25)
6.86	HI70006P	20 mL (25)
7.01	HI70007P	20 mL (25)
9.18	HI70009P	20 mL (25)
10.01	HI70010P	20 mL (25)

HI2202 edge blu Includes:



HI1102 HALO
glass body,
gel filled pH
electrode with
Bluetooth®
Smart
technology

benchtop
docking station
with electrode
holder

wall-mount
cradle

pH 7.01 buffer
solution sachets

pH 4.01 buffer
solution sachets

pH 10.01 buffer
solution sachets

electrode
cleaning
solution sachets

battery for
HALO

USB cable

5 VDC power
adapter

edge blu
and electrode
quality
certificates

instructions



Hanna Lab App

