



HI6321
**Advanced Conductivity
Benchtop Meter**

Dear Customer,

Thank you for choosing a Hanna Instruments® product.

Please read this instruction manual carefully before using this instrument as it provides the necessary information for correct use of this instrument, as well as a precise idea of its versatility.

If you need additional technical information, do not hesitate to e-mail us at tech@hannainst.com.

Visit www.hannainst.com for more information about Hanna Instruments and our products.

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1. PRELIMINARY EXAMINATION

The **HI6321** is Hanna Instruments® advanced conductivity meter with a large touch screen display and streamlined design.

Package contents

Each **HI6321** is supplied with:

- **HI7631233** EC and resistivity probe
- **HI764060** electrode holder with following accessories:
 - base plate (with integrated pivot pin) and screw (requires installation)
 - cable holder clip, attached
 - electrode holder with adapter, attached
- EC calibration starter kit consisting of:
 - 1413 $\mu\text{S}/\text{cm}$ standard solution (4 sachets)
 - 12880 $\mu\text{S}/\text{cm}$ standard solution (2 sachets)
 - 5000 $\mu\text{S}/\text{cm}$ standard solution (2 sachets)
- Electrode rinse solution (2 sachets)
- 24 VDC power adapter
- USB-C to USB-A cable
- Probe quality certificate
- Quick reference guide
- Instrument quality certificate

Note: Save all packing material until you are sure the instrument works correctly. Any damaged or defective item must be returned in its original packing material with the supplied accessories.

Ordering information

HI6321-01 US power plug

HI6321-02 EU power plug

2. SAFETY MEASURES

Handling & Usage Precautions

The unit, while not fragile, can be damaged by improper handling and usage.

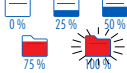
- Transport the unit with all cables removed.
- Keep the unit on a stable and even surface, away from contact with liquid.
- Avoid excessive dirt and dust.
- Protect the unit from contact with food, oils, and chemicals.
- If the device becomes wet, gently wipe the exterior with a clean, dry cloth.
- Keep away from direct sunlight.
- Use in a safe place that is appropriate to application requirements.
- Use attachments and accessories specified in this manual only.
- Operate the capacitive touchscreen and buttons without applying pressure.
- Do not puncture the capacitive touchscreen or drop the unit.
- Do not use the device near heat sources.
- Do not place objects on top of the device.
- Do not insert objects into the ports, spaces around keys, other than the intended cable, USB drive.

Battery safety

The coin-cell battery is replaceable by a professional service center only.

 WARNING	
• INGESTION HAZARD: This product contains a button cell or coin battery. • DEATH or serious injury can occur if digested. • A swallowed button cell or coin battery can cause Internal Chemical Burns in as little as 2 hours. • KEEP new and used batteries OUT OF REACH OF CHILDREN. • Seek immediate medical attention if a battery is suspected to be swallowed or inserted inside any part of the body.	
• Remove and immediately recycle or dispose of used batteries according to local regulations and keep away from children. Do NOT dispose of batteries in household trash or incinerate. • Even used batteries may cause severe injury or death. • Call a local poison control center for treatment information. • Coin-cell battery type CR2032 Nominal voltage 3.0 V • Non-rechargeable batteries are not to be recharged. • Do not force discharge, recharge, disassemble, heat above 85 °C (185 °F) or incinerate. Doing so may result in injury due to venting, leakage or explosion resulting in chemical burns. • Ensure the batteries are installed correctly according to polarity (+ and –). • Do not mix old and new batteries, different brands or types of batteries, such as alkaline, carbon-zinc, or rechargeable batteries. • Remove and immediately recycle or dispose of batteries from equipment not used for an extended period of time according to local regulations. • Always completely secure the battery compartment. If the battery compartment does not close securely, stop using the product, remove the batteries, and keep them away from children.	

3. USER INTERFACE – ICONS

Capacitive keys	Description
	Back – return to a previous hierarchical menu level
	Home – access to measurement screen
	Menu – access to the main menu
Main menu	Description
	Users – login and rights configuration; instrument accessibility
	System Settings – system configuration, connectivity, printing items
	Measurement Settings
	Log Recall – access logged data
	Help – access support
Measurement	Description
	Measurement Menu, accessed from measurement screen – logging, alarms, profiles
	EC and resistivity probe
	Warning on standby/active function
Logging	Description
	Start/Stop logging Current index, displayed above Time since log start, displayed below
	Manual logging Current index, displayed above
	Triggers log session, pending next stable measurement
	Autohold logging in progress
	Autohold applied
	Autohold, pending stable measurement
	Annotated text/Annotated text in use
	Used storage capacity (at full capacity, the icon is displayed blinking)

Log Recall		Description
		Table view — function active/not selected
		Graph view — function active/not selected
		Information view — function active/not selected
General		Description
		Measurement profile
		Background operation in progress
		Active alarm set
		Stability/Autohold indicator
Connectivity & Printing		Description
Ethernet		Connection established (tap for IP address)
		Connection in progress
		Connection error
Wi-Fi		Connection established (tap for IP address)
		Connection in progress
		Connection error
USB		USB-A or USB-C flash drive plugged in
		High-power consumption with the flash drive plugged in
PC		PC connection established through USB-C port
Printer		Printer connected — printing manual log option enabled
		Printer connected — printing manual log option disabled
		Printer not recognized or printing error

4. GENERAL DESCRIPTION & INTENDED USE

The **HI6321** is Hanna Instruments® advanced benchtop meter with a capacitive display, comprised of a housing and an integrated conductivity measurement module.

Compact and easy to operate, the meter is delivered with **HI7631233** EC and resistivity probe.

HI7631233 is a platinum, four-ring probe with an integral temperature sensor that adjusts the measured conductivity to a reference temperature by applying compensation algorithms:

- **linear**: when the temperature coefficient of variation has the same value for all measurement temperatures
- **standard**: for high-purity water measurements ($> 1 \text{ M}\Omega\text{-cm}$ resistivity) and documented in ASTM Standard D5391-14
- **natural**: for natural ground, well, or surface water (water with similar composition) as per ISO7888 standard

The result is reliable electrolytic conductivity, resistivity, TDS (Total Dissolved Solids), or Salinity (expressed in percent, PSU, or ppt units).

TDS is a calculated value based on the conductivity of the solution ($\text{TDS} = \text{factor} \times \text{EC}_{25}$).

A **TDS** factor is a conversion factor used to change an EC measurement to a ppm measurement.

Sal PSU: The practical salinity of seawater relates the ratio of electrical conductivity of a normal seawater sample at 15 °C and 1 atmosphere to a potassium chloride solution (KCl) with a mass of 32.4356 g/Kg water at the same temperature and pressure. Under these conditions the ratio is equal to 1 and $S=35$. The practical salinity scale may be applied to values 0 through 42.00 PSU at temperatures between 0 to 35 °C.

Sal ppt: measurements expressed in ppt are based on the Natural Seawater Scale that extends from 0.00 to 80.00 g/L and covers 10 to 31 °C temperature range. It determines the salinity based upon a conductivity ratio of sample to standard seawater at 15 °C and an approximate salinity value of 35 in seawater.

Sal %: in this scale 100 % salinity is equivalent to roughly 10 % solids.

This system responds to a complex range of measurement and monitoring requirements, providing accuracy, reproducibility, and reliability.

HI6321 is supplied with an electrode holder that has a flexible arm.

The holder can be mounted quickly and provides secure support for electrodes while taking measurements in sample containers.

The user can select between five different views.

- Basic measurement configuration
- Simple GLP with calibration information
- Full GLP with probe status and calibration point details
- Live updated, interactive graph
- Tabulated data with date, time, and notes

Capacitive touch screen with multi-touch support

The benchtop unit has a 7-inch color display with resolution of 800×480 .

The capacitive, multi-touch screen supports video playback and data plotting.

Main Features

Calibration & Measurement

- Measure
 - › **Conductivity**
expressed as $\mu\text{S}/\text{cm}$ or mS/cm
 - › **Resistivity**
expressed as $\Omega\cdot\text{cm}$, $\text{k}\Omega\cdot\text{cm}$, $\text{M}\Omega\cdot\text{cm}$
 - › **TDS**
expressed as ppm or ppt
 - › **Salinity**
expressed as ppt, PSU, %
- Application-specific profiles for quick and direct measurement without the need to update the sensor and system settings
- Active log during measurement
- Measurement stability indicator (using the Stability Criteria setting)
- Reading modes: direct and direct/autohold
- Temperature source (Automatic or set manually)
- Audible and/or alarm messages for measurements outside threshold limits
- Galvanic isolation for conductivity measurement module
- Standard (up to) **four-point conductivity** calibration with standards for cell factor determination and $0\ \mu\text{S}/\text{cm}$ for offset:
 - › $84\ \mu\text{S}/\text{cm}$, $1413\ \mu\text{S}/\text{cm}$, $5.0\ \text{mS}/\text{cm}$, $12.88\ \text{mS}/\text{cm}$ for the **0.1/cm cell**
 - › $80.0\ \text{mS}/\text{cm}$, $111.8\ \text{mS}/\text{cm}$ additional standards for the **1.0/cm cell**
- Standard **single point salinity** calibration in 100 % salinity standard, with Salinity **scale** set to %
- Non-volatile memory saves data and settings

Logging

- Active log during measurement
- Log collection of up to 255 MB of data points (with time and date stamp)
- Logging types: manual, automatic, autohold
- Sample ID for manual and Autohold data

Connectivity features & services

- Transfer logged data to a USB thumb drive
- Log files that include measurements and calibration data (as .CSV file)
- FTP and email for log export via Ethernet and Wi-Fi connection
- Download logs using the benchtop's embedded web server
- USB type A for USB stick, printer, keyboard
- USB type C for USB stick and PC connection

User-support feature

- Help section — brief overview of instrument's main functionalities and features

5. SPECIFICATIONS

5.1. INSTRUMENT

Conductivity	Range	0.000 to 9.999 $\mu\text{S}/\text{cm}$ 10.00 to 99.99 $\mu\text{S}/\text{cm}$ 100.0 to 999.9 $\mu\text{S}/\text{cm}$ 1.000 to 9.999 mS/cm 10.00 to 99.99 mS/cm 100.0 to 1000.0 mS/cm
	Resolution	0.001 $\mu\text{S}/\text{cm}$ 0.01 $\mu\text{S}/\text{cm}$ 0.1 $\mu\text{S}/\text{cm}$ 0.001 mS/cm 0.01 mS/cm 0.1 mS/cm
	Accuracy	$\pm 1\%$ of reading or $\pm 0.010 \mu\text{S}/\text{cm}$, whichever is greater
	Cell constant	0.0500 to 200.0000 /cm
	Calibration type	Automatic Manual
	Calibration points	Single Multiple
	Calibration solutions	84.00 $\mu\text{S}/\text{cm}$ 1.413 mS/cm 5.000 mS/cm 12.88 mS/cm 80.00 mS/cm 111.8 mS/cm
	Calibration reminder	Disabled Daily: 0 min. to 23 hours and 59 min. Periodic: 1 min. to 30 days, 23 hours and 59 min.
	Temperature compensation	Linear Natural Standard Disabled
	Reference temperature	Range 5.0 to 30.0 $^{\circ}\text{C}$ (41.0 to 86.0 $^{\circ}\text{F}$) Resolution 0.1 $^{\circ}\text{C}$ / 0.1 $^{\circ}\text{F}$
	Temperature coefficient	0.00 to 10.00 $\%/^{\circ}\text{C}$

Resistivity	Range	1.0 to 99.9 $\Omega \cdot \text{cm}$ 100 to 999 $\Omega \cdot \text{cm}$ 1.00 to 9.99 $\text{K}\Omega \cdot \text{cm}$ 10.0 to 99.9 $\text{K}\Omega \cdot \text{cm}$ 100 to 999 $\text{K}\Omega \cdot \text{cm}$ 1.00 to 9.99 $\text{M}\Omega \cdot \text{cm}$ 10.0 to 100.0 $\text{M}\Omega \cdot \text{cm}$
	Resolution	0.1 $\Omega \cdot \text{cm}$ 1 $\Omega \cdot \text{cm}$ 0.01 $\text{K}\Omega \cdot \text{cm}$ 0.1 $\text{K}\Omega \cdot \text{cm}$ 1 $\text{K}\Omega \cdot \text{cm}$ 0.01 $\text{M}\Omega \cdot \text{cm}$ 0.1 $\text{M}\Omega \cdot \text{cm}$
	Accuracy	$\pm 1\%$ of reading or $\pm 1 \Omega \cdot \text{cm}$, whichever is greater
Total Dissolved Solids (TDS)	Range	0.000 to 9.999 ppm 10.00 to 99.99 ppm 100.0 to 999.9 ppm 1.000 to 9.999 ppt 10.00 to 99.99 ppt 100.0 to 400.0 ppt actual TDS (with 1.00 factor)
	Resolution	0.001 ppm 0.01 ppm 0.1 ppm 0.001 ppt 0.01 ppt 0.1 ppt
	Accuracy	$\pm 1\%$ of reading or ± 0.01 ppm, whichever is greater
Salinity	Range	0.00 to 42.00 PSU - Practical Scale 0.00 to 80.00 ppt - Natural Sea Water 0.0 to 400.0 % - Percent Scale
	Resolution	0.01 for Practical Scale / Natural Sea Water 0.1 % for Percent Scale
	Accuracy	$\pm 1\%$ of reading
	Calibration	1 point for percent scale, using 100 % salinity calibration solution

Temperature	Range	−20.0 to 120.0 °C / −4.0 to 248.0 °F / 253.2 to 393.2 K	
	Resolution	0.1 °C / 0.1 °F / 0.1 K	
	Accuracy	±0.2 °C / ±0.4 °F / ±0.2 K	
	Calibration	Single point, adjustable	
Reading	Modes	Direct Direct/Autohold	
	Stability criteria	Accurate Medium Fast	
Views	Basic	Conductivity, Resistivity, TDS, Salinity, Temperature measurement data Measurement profile (if enabled) Stability status	
	Simple GLP	Basic view information Last calibration date and offset	
	Full GLP Conductivity & Salinity	Simple GLP information and calibration point details Cell constant, reference and source temperature	
	Graph (Plot)	Measurement versus time graph (panned or zoomed)	
	Table	Measurements updated every second (displayed in table)	
Logging	Type	Automatic, Manual, Autohold	
	Number of records	50 000 maximum per file Stores at least 1 000 000 data points per user	
	Automatic interval	1, 2, 5, 10, 30 seconds 1, 2, 5, 10, 15, 30, 60, 120, 150, 180 minutes	
	Sample ID	Incremental mode or manual	
	Export option	.CSV file format	
Users		Up to 9 users and the default administrator account	
Connectivity	USB-A	2 ports for keyboard and/or printer input or USB thumb drive	
	USB-C	1 port for PC connectivity, USB-C type thumb drive and printer	
	Wi-Fi & Ethernet	FTP Web server Email	Log transfer and download
	RS232	Connecting peripherals	
Power supply		DC adapter 100-240 VAC to 24 VDC 2 A	
Environment		0 -50 °C / 32 - 122 °F / 273 - 323 K Maximum 95% RH non-condensing	
Dimensions		205×160×77 mm (8.0×6.2×3.0")	
Weight		Approximately 1.2 kg (26.5 lbs.)	

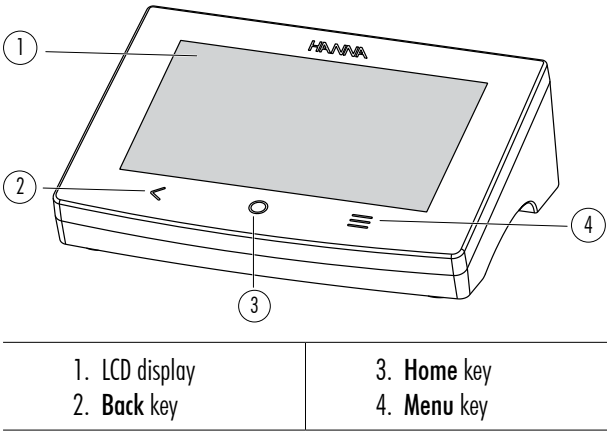
5.2. HI7631233 PROBE

Range	0 to 1000 mS/cm
Recommended operating temperature	–5 to 100 °C (23 to 212 °F)
Temperature sensor	Built-in
Cell constant	1 ± 15 %
Cell type	Four-ring, platinum on glass
Body	Polyetherimide (PEI)
Wetted parts	Sensor body PVDF O-ring NBR
Sensor diameter	Ø 12.0 mm
Connection	DIN
Cable length	1 m (3.3')

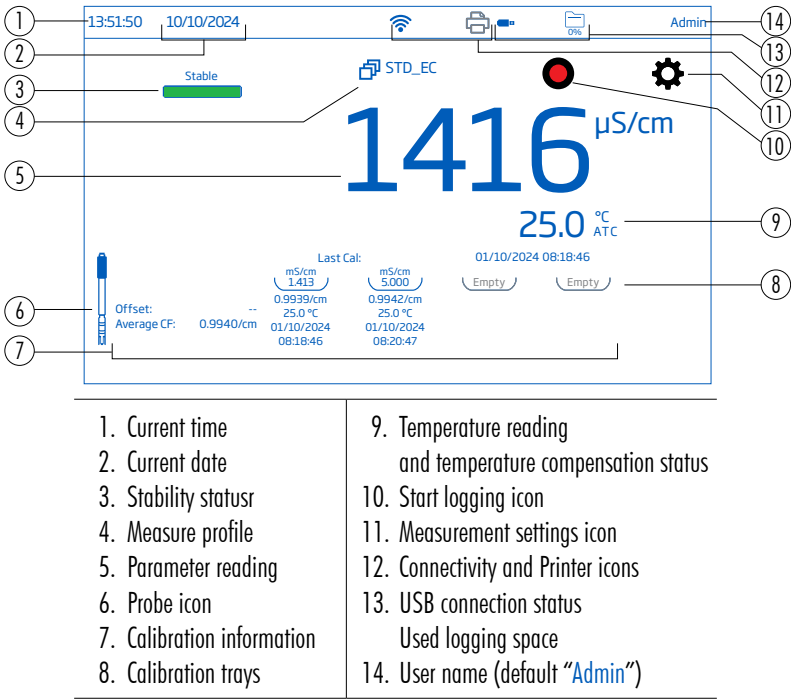
6. FUNCTIONAL & LCD DESCRIPTION

6.1. MAIN UNIT

Front View



LCD Description



Status Area



Continuously displayed after powering the unit, status area runs horizontally across the top of the LCD screen.

1. Current time and date

2. Network and device connectivity
3. Used storage capacity

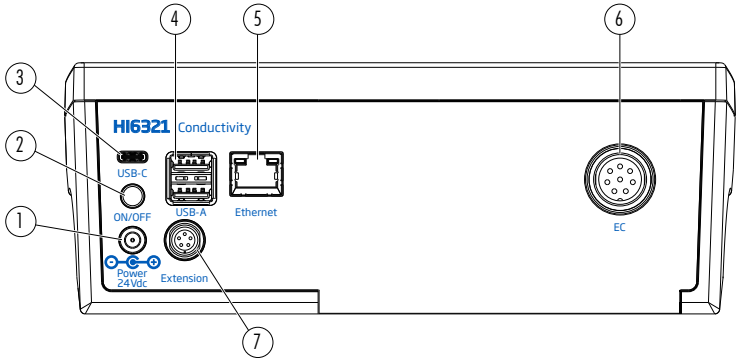
4. User name

Tap on the status icons to view network details () and used storage space (0%).

Direct Keys

Icon	Name	Function
	Back	• returns the user to previous hierarchical menu level • exit or escape function
	Home	• access to measurement screen • exit or escape function
	Menu	• access to Users, System Settings, Measurement Settings, Log Recall, Help

Rear View

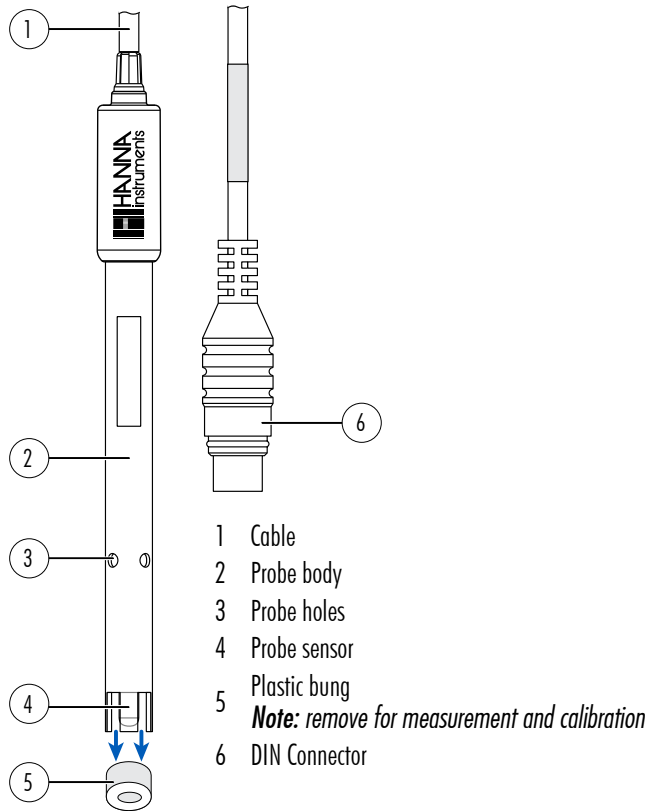


1. Input for power cable
2. Power button
3. Input for USB-C flash drive or PC cable
4. Input for USB-A flash drive (x2) or keyboard/printer
5. Ethernet port
6. Probe connection port
7. Peripherals port

6.2. PROBE

The [HI7631233](#) four-ring conductivity probe provides stable measurements over a wide measure range and does not require frequent calibrations.

An integral temperature sensor measures temperature and adjusts the measured conductivity to a reference temperature by applying compensation standards.

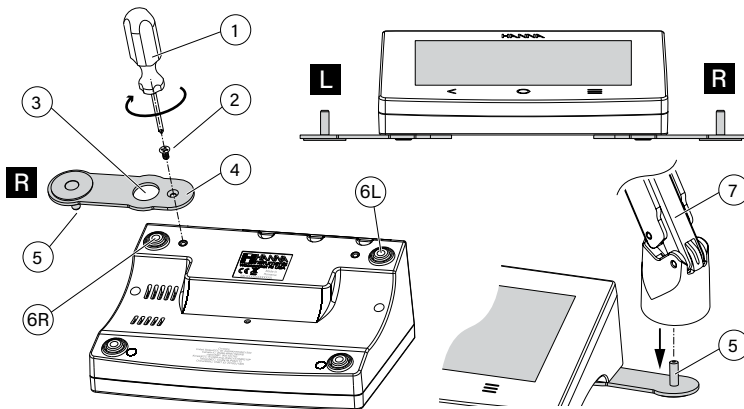


7. GETTING STARTED

7.1. INSTALLING THE HOLDER

Attaching the electrode holder base plate

- Take the **HI764060** holder from the box.
- Identify the metal base plate (4) with the integrated pivot pin (5) and the screw (2).
The plate may be attached to either side of the meter, left (L) or right (R).
- Place the meter face down on a clean, dry surface.
- Align the hole on the base plate (3) over the rubber foot (6R or 6L). The pivot pin (5) should be facing downward.
- Use a screwdriver (1) to tighten the screw (2) and attach the base plate to the meter.
- Position the meter with the display facing up.
- Slide the electrode holder (7) over the pivot pin (5). A “slide in” motion is required to lock the arm into position.
- For increased arm rigidity, tighten the metal knobs on both sides of the holder.

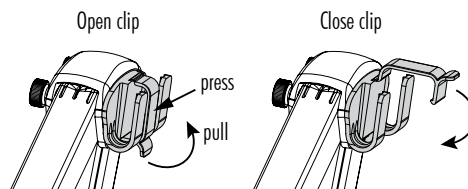


Cable holder clip

The holder is delivered with a cable clip (attached) that secures several cables whilst allowing them to move freely with the arm motion.

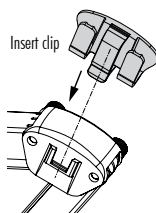
1. To open the latch, press the clip inward while pulling up the latch.
2. To close the latch, lower latch over cable and snap closed.

The latch snaps in position and secures the cables inside.



Reattach the cable holder clip onto the electrode arm:

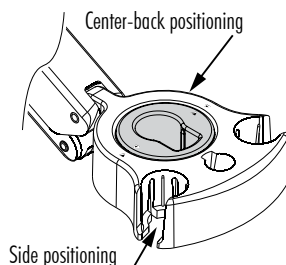
1. Align the clip's dovetail over the slot.
2. Gently push down to slide in position.



Using the adapter

The electrode arm ends with an electrode holder fitted with an adapter with three different-sized apertures:

- center-front (temperature probe only)
- center-back (adapter for conductivity probe)
- left and right (conductivity probe)



7.2. USING THE HOLDER

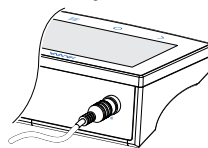
Use the holder for probe support and easy movement in and out of beakers and containers during calibration and sample measurement.

7.3. CONNECTING THE PROBE, KEYBOARD, PRINTER

Connecting the probe

The [HI7631233](#) probe is connected to the meter through a DIN connector, which makes attaching and removing the probe an easy process.

- Connect the probe to the DIN connection port, on the back of the meter.
- Align the pins and key then push the plug into the socket.
- Place the probe into the holder and secure the cable in the cable holder clip.



Note: Connector and plug must be connected firmly for the system to work correctly.

Connecting a USB-A keyboard

Connect a USB's keyboard plug into the USB-A input on the back of the unit.

Once connected the keyboard is automatically detected.

Use the keyboard to input user details, type passwords, and enter sample information.

Connecting a printer

Hanna® aims to ensure meter compatibility with USB printers but can not ensure compatibility with all models.

[HI6321](#) can print directly to certain models of USB-dedicated printers with PCL printer language capability.

Printer components and requirements

- Printer, PCL driver compatible
- Power cable
- USB connector cable with two ends:
 - › type B connector (plugs into printer)
 - › type A connector (plugs into the USB port on the meter)

Note: Meter must be correctly plugged in to power supply.

7.4. POWERING THE UNIT & SELECTING OPERATING LANGUAGE AND REGIONAL PREFERENCES

1. Connect the power adapter to the rear panel of the meter.
2. Connect the power plug into the 24V power socket.
3. Press the black ON/OFF power button.
At start up, the meter briefly displays the initialization screen.
4. The instrument launches into a startup Tutorial. By default English is selected.
Use the language window (A) to select operating language.
5. Use the left and right arrow keys (D) to view the startup tutorial.
Alternatively tap  (B) to return to measurement.
By default the user is logged in as an administrator. See [Users](#) for a more detailed description.
6. Use the slider icon (C) to disable the start up tutorial.



Note: Remove the transparent film that protects the capacitive touchscreen prior to operating the meter.

To configure regional preferences, from Tutorial screen:

- Tap  key (direct **Menu**) twice to access System Menu screen.
- Tap  icon (System Settings) and select System tab.
Users can change the date, time, and region settings, as well as language preferences.

7.5. BASIC OPERATIONS

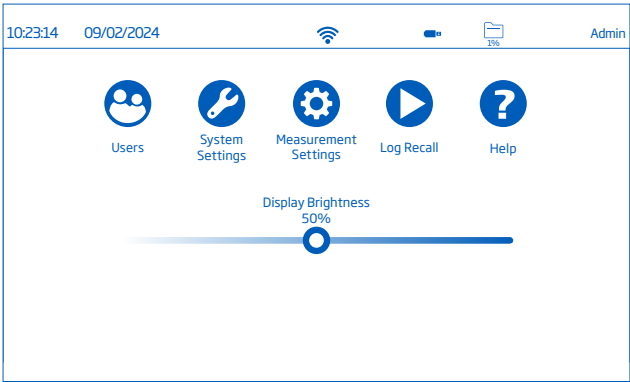
General operating modes are setup, measurement, logging, and data sharing.

- Tap  key (direct **Menu**) to access:
 -  User settings
 -  System settings
 -  Measurement settings
 -  Log recall files and file management
User can view a single sample or an interval log session. See [Logging](#) section for detailed description.
 -  Help for text and video support
- Tap  key (direct **Home**) to return to measurement.
- Tap  icon (Measurement Menu) to access sensor-related functions.

8. SYSTEM MENU ITEMS

Tap  key (**Menu**) to access System Menu screen.

Note: In order to access the system menu a user must be logged in.



Symbol	Name	Functionality
	Users	Login and rights configuration Instrument accessibility
	System Settings	System configuration, connectivity and printing items
	Measurement Settings	Configure sensor-related functions
	Log Recall	Access logged measurement data
	Help	Access video-supported outline of main instrument functionalities

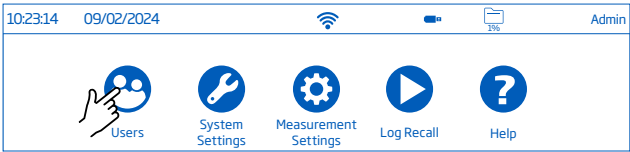
Brightness control bar



Drag the slider along the control bar to adjust brightness.

8.1. USERS

Users is the first item under the System Menu and enables logins and account creation.



On first access, “Admin” is default user name and no password is required. Default options are updated from the Users menu.

Function	Administrator Rights	Standard User
Enable account creation	✓	—
Reset password	✓	—
Delete account	✓	—
Factory settings reset	✓	—
Customize settings	✓	✓
Add FTP information	✓	✓
Change password	✓	✓
View and delete log files	✓	✓

Account Management

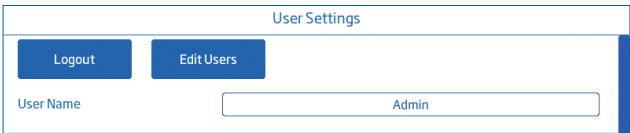
1. Log in to the Administrator account.
2. Tap **Edit Users** to enter the Account Management screen.

The administrator can:

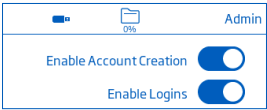
- Enable Account Creation
- Enable Logins
- Each power up requires user selection before the instrument enters measurement mode.
- Reset password for user accounts
- Delete user accounts

Log in & Create New Account

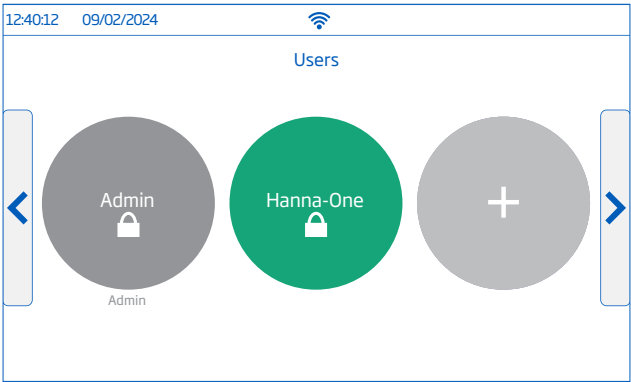
1. Tap followed by .
2. Tap **Edit Users** to enter Account Management.



- 3. Tap  to enable Account Creation and Logins.
Tap  to return.



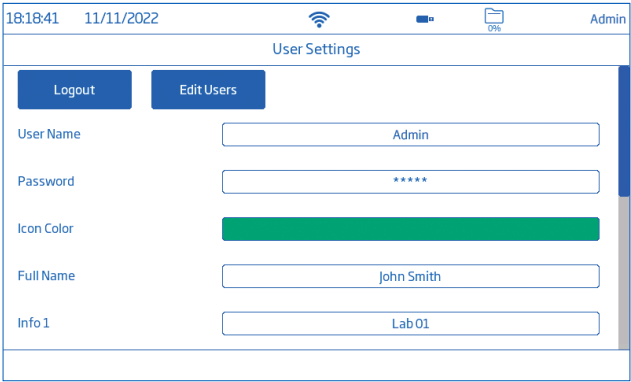
- 4. Tap **Logout** to enter Users screen. “Admin” account is automatically created.
- 5. Tap the **plus** symbol avatar.
- 6. Input user name and tap .
- 7. Enter password and tap .
- To bypass the password function, leave the field empty and tap  on this screen.
Reenter password to confirm.



Configure User Settings

Options: **Name, Password, Icon Color, Full Name, Information Fields, FTP-dedicated fields, Email Address**

- To edit option, tap field and use the on-screen keypad to input information.
- Use the FTP dedicated fields and email address for file transfer of logged data.

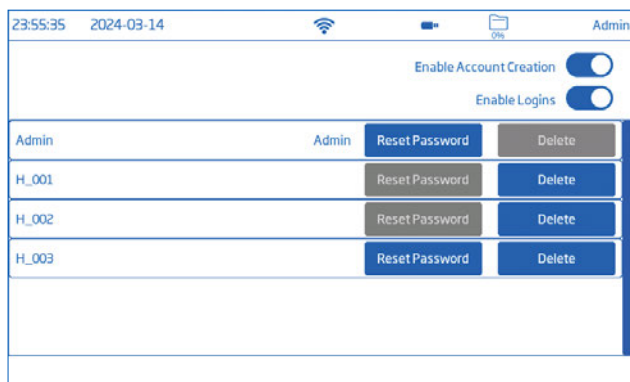


Log Out & Switch User

1. Tap  followed by **Logout**.
2. Tap on user's account avatar.
3. Input password (if enabled).

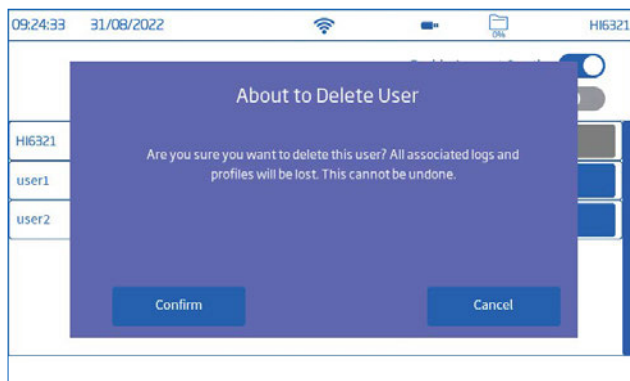
Reset Password

1. Select user name from users list.
2. Tap **Reset Password**. The password is removed.
User will be prompted to enter a new password when selected from the log-in screen.



Delete Users

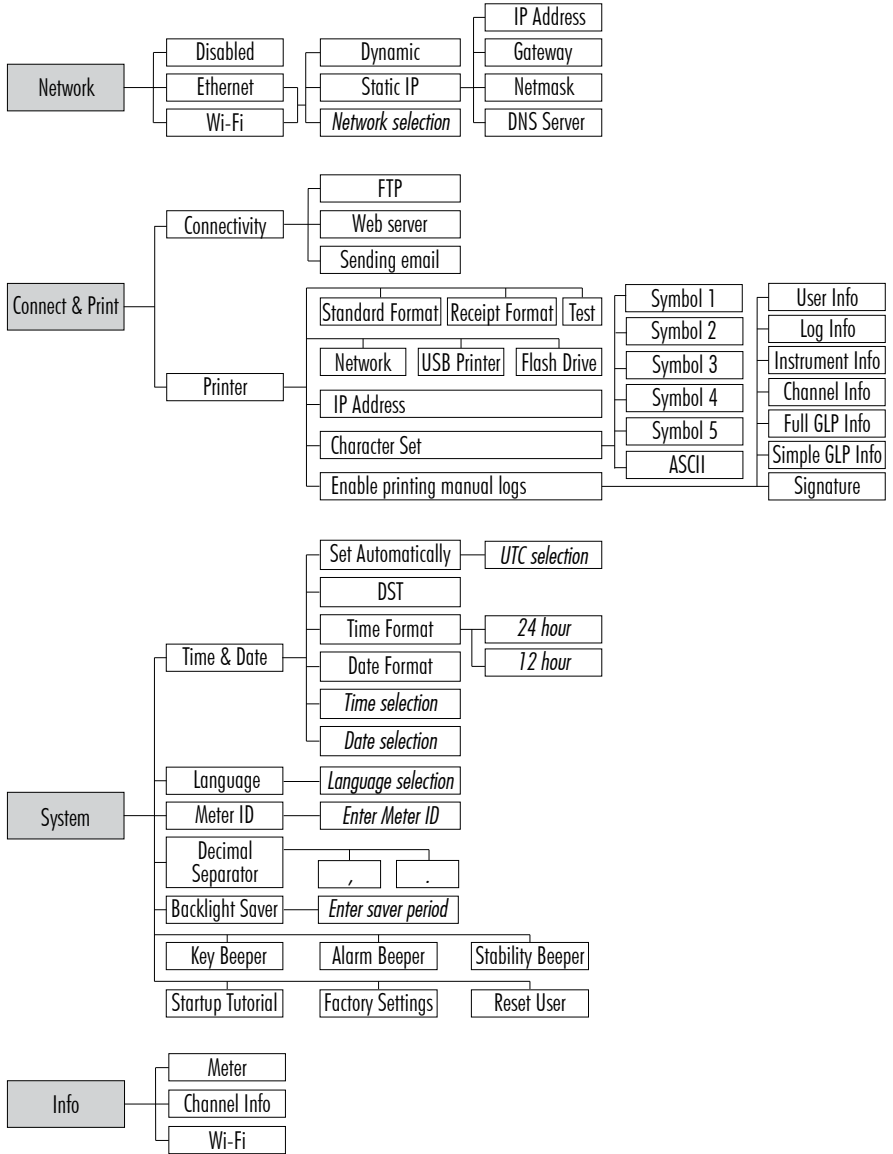
Select user name and tap **Delete**. The instrument prompts for confirmation.



8.2. SYSTEM SETTINGS

System Settings is the second item under the System Menu.

Network, Connect & Print, System tabs permit users to navigate system settings and operations, configure network connection and architecture, connectivity and printing services, change system settings, and view meter information.



Network

Data sharing options: **Ethernet, Wi-Fi, Disabled**

With connection established, IP assignment can be set as:

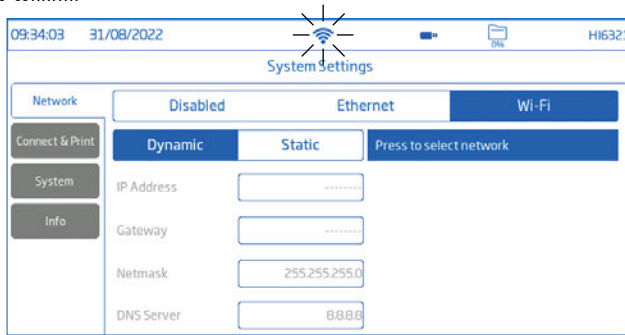
- Dynamic › IP Address, Gateway, Netmask, DNS Server are auto assigned
- Static › network details are filled in manually

Fill in network information:

- Tap **IP Address** field then input address and tap .

Wi-Fi connectivity

1. Tap **Wi-Fi** then select the IP address type (Dynamic or Static).
2. Tap **Press to select network**.
3. Scan options and select preferred network.
Enter password if prompted.
4. Tap  to confirm.



Note: With connection established, tap  or  to check IP address or verify connection status.
When attempting to connect,  icon will blink until the connection is established.

Connect & Print

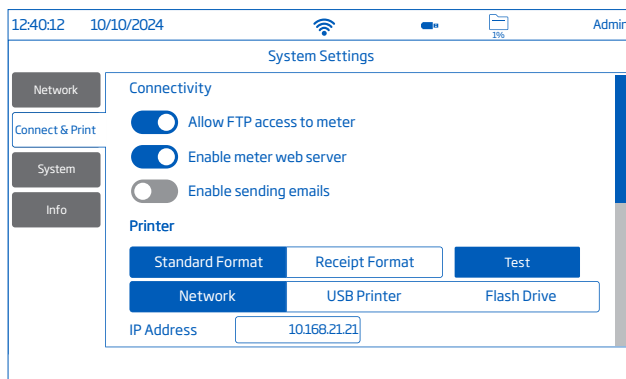
Options: **Connectivity, Printer, Character Set**

Connectivity

Tap  to enable (disable) **connectivity** options:

- FTP access to meter
 - › log file transfer to an FTP site and meter FTP server connection to client (log download)
- Meter web server
 - › log file download to a web client
- Sending emails
 - › log file transfer via email

A valid e-mail address is required for file sharing. See [Users](#), [Configure User Settings](#).



Printer

Options: **Standard Format**, **Receipt Format**, **Test**

- Select **Standard Format** to print the delimited text file.
- Select **Receipt Format** to print data as individual points.
- Select **Test** to verify connected printer is correctly configured and produces output correctly.
Refer to printer manual for printer configuration options.

Note: *Receipt format can be used on standard sized paper.*

Options: **Network**, **USB Printer**, **Flash Drive**

- Select **Network** to connect a printer in the same network. Tap to enter IP address.
- Select **USB Printer** to connect a printer via USB-A port.
- Select **Flash Drive** to export log files directly to USB flash drive.

Character Set

Options: **Symbol 1** (character set CP-437), **Symbol 2** (character set CP-1252), **Symbol 3** (character set Roman-8), **Symbol 4** (character set CP-1257), **Symbol 5** (character set CP-1250), **ASCII**

- Select **Symbol 1** to print all ASCII characters as well as some accented letters and Greek letters.
- Select **Symbol 2** to print in any Western European language.
- Select **Symbol 3** to print in Latin-based European languages.
- Select **Symbol 4** to print in Baltic languages
- Select **Symbol 5** to print in Central and Eastern European languages
- Select **ASCII** (American Standard Code for Information Interchange) to print in English language.

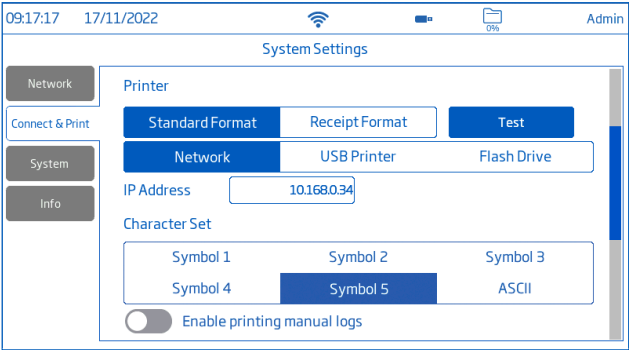
Note: *Selected character set must be supported by the printer.*

- Tap **Enable printing manual logs**.

When enabled, individual data points and enabled fields will be printed every time **M** is pressed.

- Tap to enable for printing: User, Log, Instrument, and Channel information; Full GLP, Simple GLP, Signature.

Note: *The connection to the printer must be made prior to enabling printing manual logs and fields to be printed.*



System

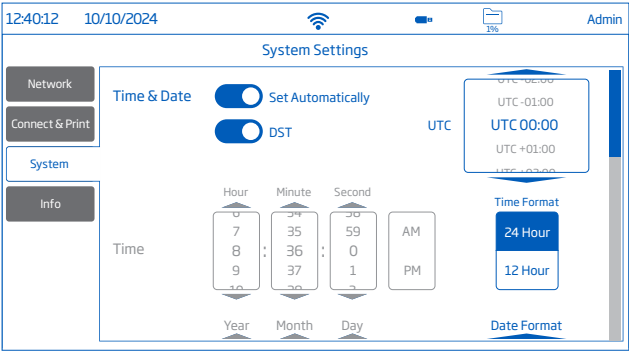
Options: Time, Date, Language, Meter ID, Decimal Separator, Backlight Saver, Beepers, Startup Tutorial, Factory Settings, Reset User

Note: Use the scroll bar to view or select from entire settings list.

Time & Date

Tap to enable (disable):

- **Set Automatically** (meter must be connected to the internet)
 - ▶ Direct selection from scrollable list of options
 - ▶ UTC options:
 - from UTC 00:00 to UTC + 14:00
 - from UTC 00:00 to UTC -12:00
- **DST** (Daylight Savings Time) seasonal time change is used in some locations that advances clocks (typically by one hour) during warmer months.



Time: Hour, Minute, Second

Date: Year, Month, Day

Note: Set Automatically use must be disabled to set the time and date manually.

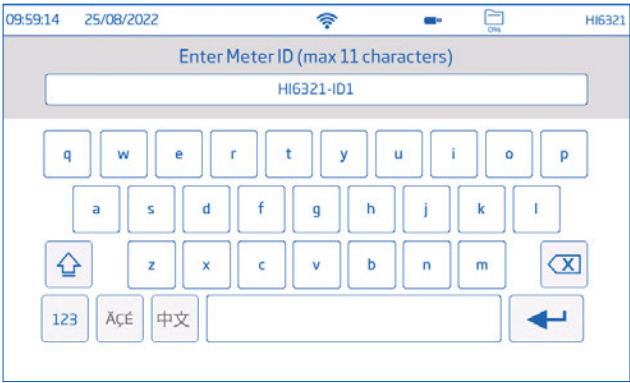
Time Format: 24-Hour, 12-Hour (AM/PM)

Date Format: DD-Mon-YYYY; YYYY-Mon-DD; DD/MM/YYYY; MM/DD/YYYY; YYYY/MM/DD; YYYY-MM-DD; Mon DD, YYYY

Language: select from list of supported options to change meter’s interface language

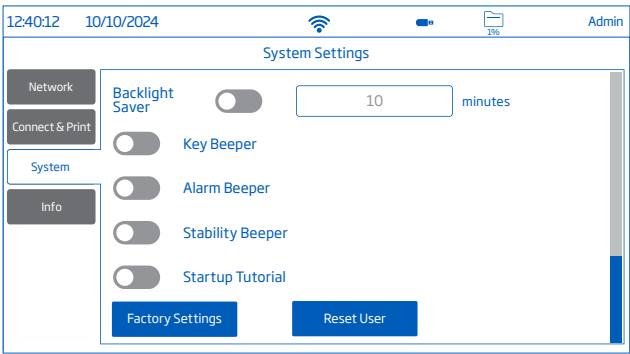
Meter ID (Admin only)

- Name the meter with a discrete name, location, or number.
- Tap  to save.



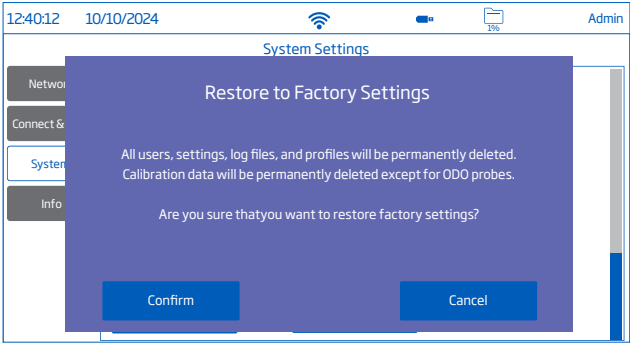
Tap  or corresponding tab to configure following settings:

- **Decimal Separator:** comma or period
- **Backlight Saver:** enabled or disabled, 1 to 60 minutes
If the backlight turns off after the set period of time, tap to turn it back on.
- **Beeper:** Key, Alarm, Stability
When enabled, an audible signal alerts users in the event of a wrong key press, an alarm condition, or the stability threshold being exceeded.
- **Startup Tutorial:** enabled or disabled
If disabled, the meter does not launch the tutorial at start-up.



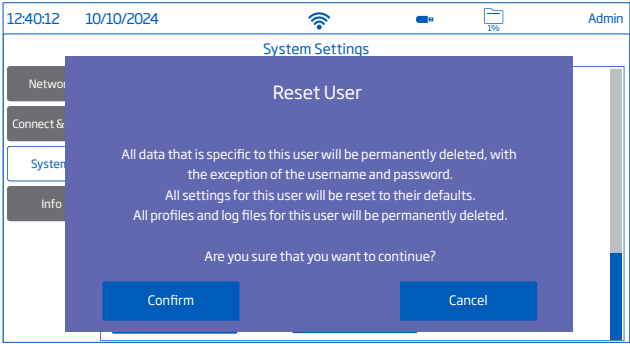
Factory Settings (Admin only)

Option restores system settings e.g. resolution for measured data, temperature unit, view mode, and alarms to original factory values. Restoring factory settings deletes all user information, calibrations, logs, or configured measurement profiles. When option invoked, the instrument asks for confirmation.



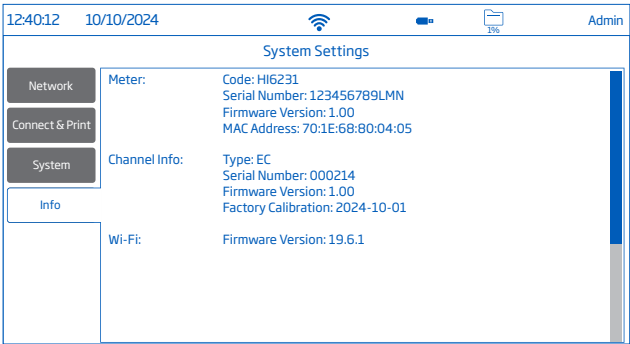
Reset User

Option restores default settings for this user. All data (including profiles and log files) specific to this user will be permanently deleted, except for the username, password, and calibrations. When option invoked, the instrument asks for confirmation.



Info

Info displays meter, channel, and Wi-Fi information.



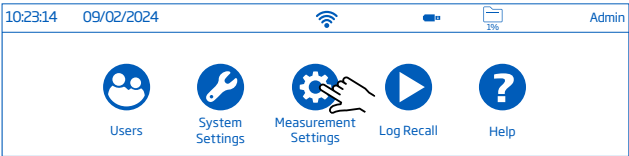
8.3. MEASUREMENT SETTINGS

Measurement Settings is the third item under the System Menu.

Tap  icon to access Measurement Settings screen.

Measurement Settings has the following tabs to help the user navigate through all the measurement operations:

Calibration, Reading, Temperature, View, Alarms, Logging, Profiles.



Calibration

	Conductivity	Resistivity	TDS	Salinity	
				%	ppt, PSU
Last Calibration	Calibrate Clear	Based on conductivity or salinity calibration	Based on conductivity calibration	Calibrate Clear	Based on conductivity
Standard Entry Type	Automatic, Manual				
Calibration Reminder	Disabled Daily Periodic	—	—	Disabled Daily Periodic	—
Cell Constant	0.0500 to 200.0000	—	—	—	
Calibration Points	Single Point Multiple Points	—	—	—	

Reading

	Conductivity	Resistivity	TDS	Salinity
Unit Salinity Scale	$\mu\text{S}/\text{cm}$ mS/cm AutoRanging	$\Omega \cdot \text{cm}$ $\text{k}\Omega \cdot \text{cm}$ $\text{m}\Omega \cdot \text{cm}$ AutoRanging	ppm ppt AutoRanging	ppt PSU %
TDS Factor	—	—	0.40 to 1.00	—
Stability Criteria	Accurate, Medium, Fast			
Reading Mode	Direct, Direct/Autohold			
Probe Type	Probe code			

Temperature

	Conductivity	Resistivity	TDS	Salinity
Temperature Source	Automatic, Manual			
Temperature Unit	°C, °F, K			
Temperature Compensation	Linear, Natural, Standard, Disabled			
Manual	-20.0 °C to 120.0 °C			
Reference Temperature	5.0 °C to 30.0 °C, (when temperature compensation option is not disabled)			
Temperature Coefficient	0.00 to 10.00 %/°C, (with Linear temperature compensation option only)			
User Temperature Calibration	Calibrate, Clear			

View

	Conductivity	Resistivity	TDS	Salinity	
				%	ppt, PSU
View Type	Basic Simple GLP Full GLP Graph Table	Basic Simple GLP Graph Table	Basic Simple GLP Graph Table	Basic Simple GLP Full GLP Graph Table	Basic Graph Table

Alarms

	Conductivity	Resistivity	TDS	Salinity
High / Low	0.000 to 1.100E+3 mS/cm	1.000 to 1100E+8 Ω•cm	0.000 to 4.000E+5 ppm	0.000 to 8.000E+1 ppt 0.00 to 42.00 PSU 0.0 to 400.0%
High / Low Temperature	-20.0 to 120.0 °C -4.0 to 248.0 °F 253.2 to 393.2 K			

Logging

	Conductivity	Resistivity	TDS	Salinity
Logging Type	Automatic, Manual, Autohold (Direct/Autohold mode only)			
Sampling Period	1, 2, 5, 10, 30 sec.; 1, 2, 5, 10, 15, 30, 60, 120, 150, 180 min. (Automatic logging)			
File Name	Create (Manual logging type only)			
Log Note	User input			
Log Info 1 through to 4	User input			
Sample ID	None, Increment, Manual			

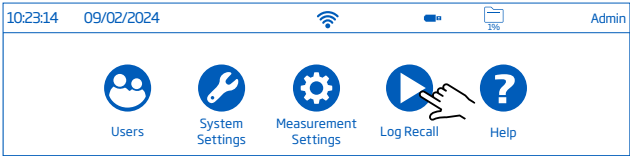
Profiles

	Conductivity	Resistivity	TDS	Salinity
Profile Feature	Enable, Disable			
Current Profile	Save As, Save, Delete			
Load Profile	Configured profiles			

8.4. LOG RECALL

Log Recall is the fourth item under the System's Menu.

Data selection, data viewing, data sharing, deletion of log files are available when accessing Log Recall.



- Logged data is retrieved by the user that has logged the measurement.
- Data is stored in parameter-specific .CSV files: conductivity, resistivity, TDS, salinity.
- Storage location is independent and organized in lots.
- A lot (file) can store 1 to 50 000 data points.
- One user can store up to 255 MB of data points.

View

From the System Menu screen:

1. Tap  followed by  to display the Log Recall screen.
The log files can be sorted by name or start time.
Tap on the corresponding table header, then tap the  icon to reverse the order.
2. Tap to select .CSV file.
3. Tap **View** to open the file.

04:21:34	11/11/2022				H16321
View	Select All	Deselect All	Log Recall	Delete	Share
▲	Name	Parameter	Start/Stop	#Samples	
	20221110_122913-ec_auto.csv	Conductivity	15:29:13 10/11/2022 15:29:19 10/11/2022	7	
	20221110_122932-res_auto.csv	Resistivity	15:29:33 10/11/2022 15:29:46 10/11/2022	14	
	20221110_123021-tds_auto.csv	TDS	15:30:21 10/11/2022 15:30:31 10/11/2022	11	
	20221110_123043-sal_auto.csv	Salinity	15:30:43 10/11/2022 15:30:50 10/11/2022	8	
	20221110_123106-ec_002.csv	Conductivity	15:31:06 10/11/2022 15:31:24 10/11/2022	10	
	20221110_123157-ec_Lab02_003.csv	Conductivity	15:31:57 10/11/2022 15:32:11 10/11/2022	9	
			15:33:13 10/11/2022		

Log Recall

- Tap  or  to have logged data displayed in tabulated form or plotted.
- Tap  to view additional information about the log file including user information, log information, meter information, and GLP data.

04:22:4711/11/2022

20221110_122913-ec_auto.csv



Index	Date	Time	EC	Unit	EC abs	Unit	T[*C] ATC	Notes
1	10/11/2022	15:29:13	0.000	µS/cm	0	µS/cm	25.0	"H"
2	10/11/2022	15:29:14	0.000	µS/cm	0	µS/cm	25.0	"H"
3	10/11/2022	15:29:15	0.000	µS/cm	0	µS/cm	25.0	"H"
4	10/11/2022	15:29:16	0.000	µS/cm	0	µS/cm	25.0	"H"
5	10/11/2022	15:29:17	0.000	µS/cm	0	µS/cm	25.0	OK
6	10/11/2022	15:29:18	0.000	µS/cm	0	µS/cm	25.0	OK
7	10/11/2022	15:29:19	0.000	µS/cm	0	µS/cm	25.0	OK

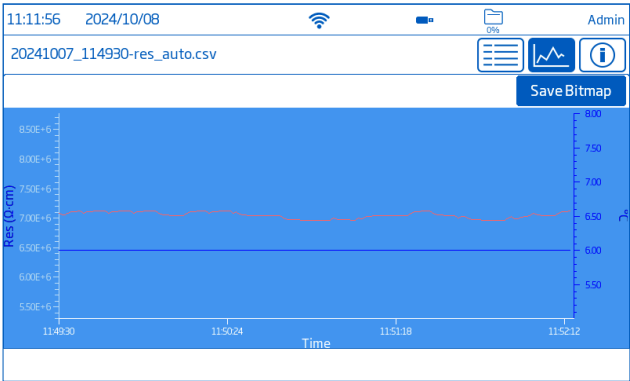
04:24:0011/11/2022

20221110_122913-ec_auto.csv



LOG INFO
Log Note:
Log Info 1:
Log Info 2:
Log Info 3:
Log Info 4:
Log Type: Automatic
Number Of Samples: 000000007
Start Date and Time: 15:29:13 10/11/2020
Sampling Period: 1 seconds
Temperature Compensation: Linear
Reference Temperature: 25.0°C
Linear Compensation Coefficient: ---

- With USB flash drive connected, tap **Save Bitmap** to save plotted data as image.



Delete

Deleting logs frees up log space for additional log files.

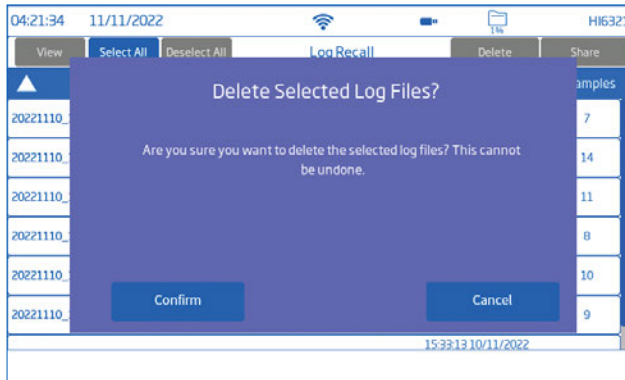
1. Select the log files to be deleted.

Multiple files can be selected individually or all files can be selected using **Select All**.

2. Tap **Delete**.

The instrument prompts for confirmation. Deleted files can not be recovered.

If all of the files have been deleted the log recall screen will be blank.



Share

Options: **USB, FTP, Email, Print, Web Server**

USB

1. Plug the USB-A or USB-C flash drive into the USB port located on the back.
2. Select the log files to be shared.
Multiple files can be selected individually or all files can be selected using **Select All**.
3. Tap **Share**.
4. Tap to select USB-A or USB-C.

 is displayed during data transfer.

Transfer completion is confirmed and the instrument returns to Log Recall screen.

FTP

HI6321 can act as an FTP server (host) or client.

Meter has to be connected to the internet and **Allow FTP access to meter** enabled.

See [System Settings > Connect & Print](#) section.

- Use meter's IP address and password to connect and view logged files.
- Enter in the FTP dedicated fields own server information, in order to export logged files to the FTP server.
- Configure FTP server information in the User menu () to use the meter as an FTP client and upload files to an FTP server.

Connect via FTP to meter server

1. On preferred FTP software, type the meter's IP address in the host field.
2. Enter the username and password of the user currently logged in.
3. Connect to view the files logged on the meter.



Connect the meter to an FTP server and share logs:

1. Select the log files to be shared.
Multiple files can be selected individually or all files can be selected using **Select All**.
2. Tap **Share**.
3. Tap to select FTP.
The files are being transferred in the root folder of the server. ⏳ is displayed during data transfer.
Transfer completion is confirmed and the instrument returns to Log Recall screen.

FTP server installation and configuration

- PC running Windows10 or later
- Password protected Windows account
- FTP server must be allowed through the Windows Firewall

Installation

1. Navigate to **Start > Control Panel > Administrative tools > Server Manager**.
2. Go to **Roles** and expand **Web Server**.
3. Right click on **Web Server** and then click on **Add Role Services**.
4. Go to **Role Services** and check **FTP Server**.
5. Ensure **IIS Manager** (Internet Information Services) is checked under **Management Tools**.
6. Click **Next** followed by **Install**.
7. Wait for installation to complete.

Configuration (PC must be running Windows10 or later)

1. Navigate to **Start > Control Panel > Administrative tools > IIS Manager** (Internet Information Services).
2. Double click to expand the **IIS Manager** console.
3. Right click on **Sites**, on the Connection pane.
4. Click on **Add FTP Site**, to select. Type the FTP server name and the path to be used for file transfer

Note: Select *Make New Folder to create a designated folder to store FTP files*.

5. Click **Next**.
6. In the Binding and SSL Settings window, keep all default settings but change the SSL option to **No SSL**.
7. Click **Next**.
8. When prompted to authenticate and authorize information, select **Basic and Specified** users.
9. Type local account name to gain access to the server.
10. Check both **Read** and **Write** options.
11. Click **Finish**.

Email

Meter has to be connected to the internet and sending emails is enabled.

See [System Settings > Connect & Print](#) section.

- 1. Enter email address in the User menu (👤) to share log files via email.

04:43:442024-03-14

0%

Admin

User Settings

Info 3

info text 3

Info 4

info text

Email Address

user.HI6321@email.com

*required for file sharing

FTP IP Address

10.168.19.10

FTP User Name

ftp-user-name

FTP Password

- 2. Select the log files to be shared.
Multiple files can be selected individually or all files can be selected using **Select All**.
- 3. Tap **Share**.
- 4. Select **Email**.
- 5. Tap to select email.

The files are being emailed. ⌚ is displayed during data transfer.

Transfer completion is confirmed and the instrument returns to Log Recall screen.

16:29:0302/04/2022

1%

HI6321

View

Select All

Deselect All

Log History

Delete

Share

Name	Parameter	Start/Sto	Share To:
20220402_132624-SAL_auto.csv	Salinity	16:26:24 02/04 16:26:42 02/04	USB-A
20220402_132605-TDS_auto.csv	TDS	16:26:05 02/04 16:26:19 02/04	FTP
20220402_132539-TDS_auto.csv	TDS	16:25:40 02/04 16:26:01 02/04	Email
20220402_132512-RES_auto.csv	Resistivity	16:25:12 02/04 16:25:33 02/04/2022	Print
20220402_132441-EC_auto.csv	Conductivity	16:24:42 02/04/2022 16:25:01 02/04/2022	Cancel
20200202_132032-SAL_auto.csv	Salinity	16:20:32 02/02/2020 16:20:44 02/02/2020	
		16:20:02 02/02/2020	

Print

- Connect either a printer (Network or USB) or plug-in a USB Flash Drive (see [System Settings, Connect & Print](#) section).
- Tap **Print** and follow on-screen instructions.

Web server

Any browser can be used to access the web server and download log files.

Meter has to be connected to the internet and meter web server enabled.

See [System Settings](#), [Connect & Print](#) section.

Note: Both the meter and the web have to be connected to the same network.

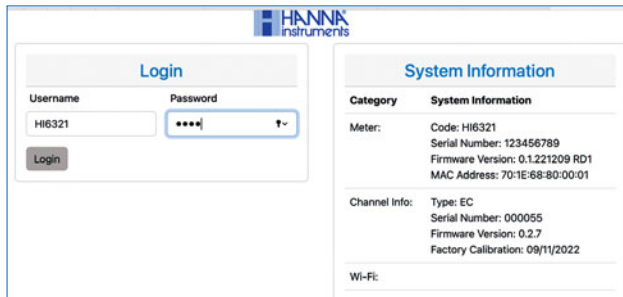
1. Tap  for IP address and type address in the browser.



10:07:11 03/03/2022    HI6321

IP Address: 192.168.13.177 Close

2. Enter the username and password of current user to gain access to logs and tags.
Click on file to download to the PC.



HANNA instruments

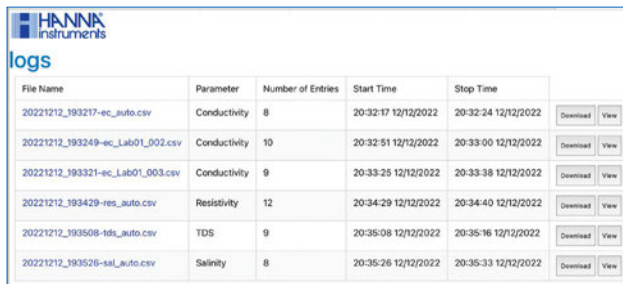
Login

Username: HI6321 Password: **** 

Login

System Information

Category	System Information
Meter:	Code: HI6321 Serial Number: 123456789 Firmware Version: 0.1.221209 RD1 MAC Address: 70:1E:68:80:00:01
Channel Info:	Type: EC Serial Number: 000055 Firmware Version: 0.2.7 Factory Calibration: 09/11/2022
Wi-Fi:	



HANNA instruments

logs

File Name	Parameter	Number of Entries	Start Time	Stop Time		
20221212_193217-ec_auto.csv	Conductivity	8	20:32:17 12/12/2022	20:32:24 12/12/2022	Download	View
20221212_193249-ec_Lab01_002.csv	Conductivity	10	20:32:51 12/12/2022	20:33:00 12/12/2022	Download	View
20221212_193321-ec_Lab01_003.csv	Conductivity	9	20:33:25 12/12/2022	20:33:38 12/12/2022	Download	View
20221212_193429-res_auto.csv	Resistivity	12	20:34:29 12/12/2022	20:34:40 12/12/2022	Download	View
20221212_193508-tds_auto.csv	TDS	9	20:35:08 12/12/2022	20:35:16 12/12/2022	Download	View
20221212_193526-sal_auto.csv	Salinity	8	20:35:26 12/12/2022	20:35:33 12/12/2022	Download	View

PC Connection

The logged data can be transferred from the meter to a PC.

1. Use the USB-C cable to connect the meter to the PC.

The meter appears as a flash drive on the computer.

2. Select the log files to be shared.

Multiple files can be selected individually or all files can be selected using **Select All**.

3. Tap **Share**.

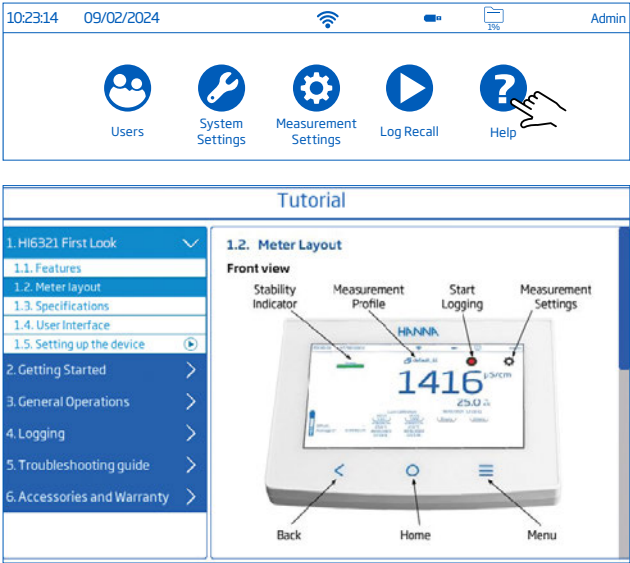
4. Save files to the PC.

All files will be listed as .CSV and may be opened with any text editor or spreadsheet application.

8.5. HELP

Help is the fifth item under the System Menu.

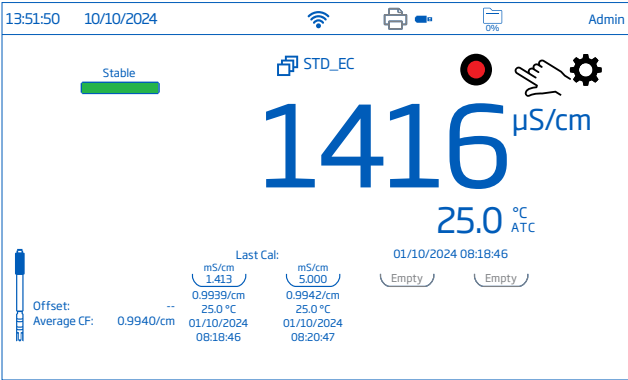
- Tap  to access support and navigate through an overview of system’s main functionalities.



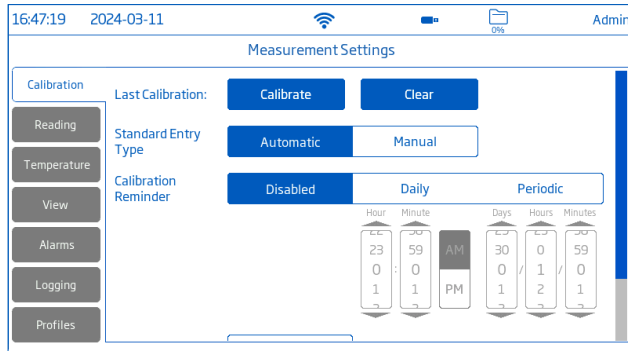
- Tap  to play video-supported segments.
- Drag the slider along the progress bar to fast forward or rewind the video.

9. MEASUREMENT & PROBE SETUP MENU

- Connect EC electrode to the connector on rear of meter.
 - Tap  icon to access Measurement Settings screen.
- Measurement Settings has the following tabs to help the user navigate through all the measurement operations: **Calibration, Reading, Temperature, View, Alarms, Logging, Profiles.**



9.1. CALIBRATION



Last Calibration

Options: **Calibrate, Clear**

- **Calibrate:** starts a new user calibration.
 - **Clear:** deletes the EC electrode calibration for the selected hardware module.
- A default calibration will replace the actual electrode calibration until a new calibration is made.

Standard Entry Type (Conductivity Only)

Options: **Automatic, Manual**

- **Automatic:** the meter selects the closest calibration standard to that of the sample being measured.
- **Manual:** the user manually enters the calibration standard to be used for calibration.

Calibration Reminder

Options: **Disabled, Daily, Periodic**

- **Daily:** set the time of day the calibration reminder needs to be displayed.
- **Periodic:** schedule time in days, hours and/or minutes after the last calibration for the calibration reminder to be displayed.

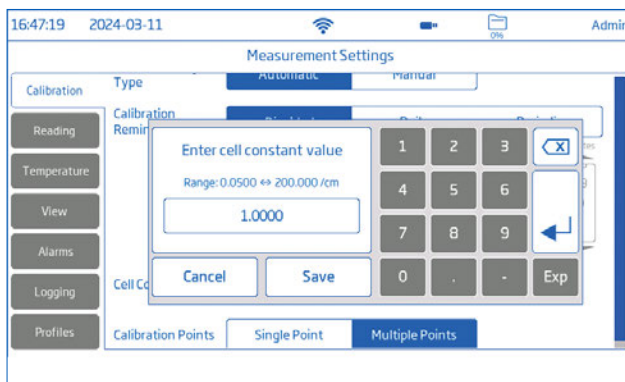
“Calibrate probe” message is displayed on the screen after the calibration reminder period has elapsed.

Cell Constant (Conductivity Only)

Options: **0.0500 to 200.0000**

Allows users to adjust cell constant to a published cell-factor value or a different cell factor from another model.

1. Tap the **Cell Constant** input field.
2. Delete existing cell-constant value in the box.
3. Enter new value.
4. Select **Save** or tap  to confirm.



Calibration Points (Conductivity Only)

Options: **Single Point, Multiple Points**

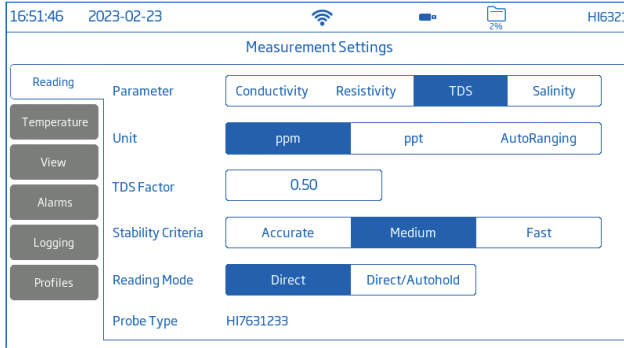
- **Single Point:** calibration is done at one point
- **Multiple Points:** calibration is done at $0 \mu\text{S}/\text{cm}$ to calibrate the offset and up to four additional standards for the cell factor.

9.2. READING

Parameter

Options: **Conductivity, Resistivity, TDS, Salinity**

Tap to select measurement configuration.



Unit

- **Conductivity**
 - › $\mu\text{S}/\text{cm}$, mS/cm , AutoRanging
- **Resistivity**
 - › $\Omega\cdot\text{cm}$, $\text{k}\Omega\cdot\text{cm}$, $\text{M}\Omega\cdot\text{cm}$, AutoRanging
- **TDS**
 - › ppm, ppt, AutoRanging

Scale (Salinity only)

Options: **ppt** (Natural Sea Water Scale 1966), **PSU** (Practical Salinity Scale 1978), **%** (Hanna® Percent Scale)

Note: When AutoRanging is selected, the meter automatically selects the unit to optimize the measurement.

After choosing Salinity, the salinity scale must be chosen.

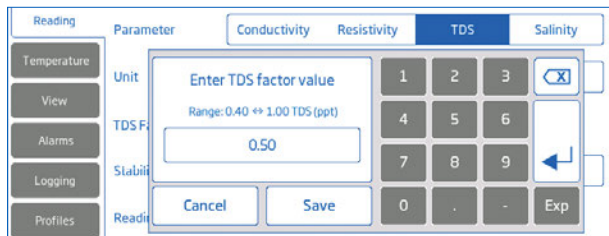
TDS Factor (TDS only)

Options: **0.40** to **1.00**

TDS factor is a conversion factor used to change an EC measurement to a TDS measurement.

To set the TDS factor:

1. Tap the **TDS factor** input field.
2. Enter the TDS factor.
3. Tap  to confirm.



Stability Criteria

Options: **Accurate, Medium, Fast**

- **Accurate:** for applications where high accuracy is required.
A measurement is recognized as stable using more critical criteria evaluating measurement fluctuations.
- **Medium:** for applications where average accuracy is accepted.
A measurement is recognized as stable using less critical criteria evaluating measurement fluctuations.
The measurement may still change after registering stable.
- **Fast:** for applications where speed of delivery has priority.

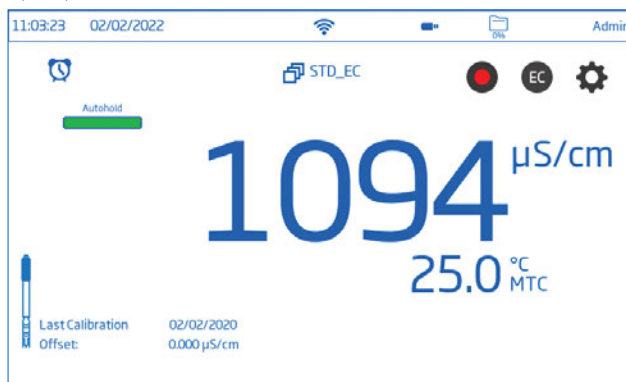
While the measurement is changing, the stability indicator is shown partially ().

When the criteria is reached, the indicator is displayed as a full green bar ().

Reading Mode

Options: **Direct, Direct/Autohold**

- **Direct:** as measurement changes, measurement stability is continuously evaluated.
“Unstable” (blinking) or “Stable” is displayed above the stability indicator.
- **Direct/Autohold:** measurements are initiated using the  icon.
When the measurement is stable, it is frozen on the display.
Tap , , , or  to release the autohold reading.



9.3. TEMPERATURE

The screenshot shows the 'Measurement Settings' interface for a HI6321 device. The top status bar displays the time '06:21:28', date '11/11/2022', signal strength, battery level, and the device ID 'HI6321'. The sidebar on the left contains buttons for 'Calibration', 'Reading', 'Temperature', 'View', 'Alarms', 'Logging', and 'Profiles'. The main content area is titled 'Measurement Settings' and contains the following options:

- Temperature Source:** A toggle between 'Automatic' (selected) and 'Manual'.
- Temperature Unit:** A toggle between '°C' (selected), '°F', and 'K'.
- Temperature Compensation:** A toggle between 'Linear' (selected), 'Natural', 'Standard', and 'Disabled'.
- Manual:** A text input field showing '25.0' with a '°C' unit indicator.
- Reference Temperature:** A text input field showing '25.0' with a '°C' unit indicator.

Temperature Source

Options: **Automatic**, **Manual**

Users can select between physical temperature input source (Automatic) and entering sample temperature value manually.

- **Automatic:** built-in temperature sensor adjusts the measured conductivity to a reference temperature. ATC is displayed indicating temperature compensation status.
- **Manual:** sample temperature is entered manually. MTC is displayed indicating temperature compensation status.

Temperature Unit

Options: °C, °F, K

Users can select the temperature unit.

Temperature Compensation (Conductivity, Resistivity, TDS)

Options: **Linear**, **Natural**, **Standard**, **Disabled**

- **Linear**
Used when it is assumed that the temperature coefficient of variation has the same value for all measurement temperatures.
- **Natural**
Used for natural ground, well, or surface water (or water with similar composition) and covers 60 to 1000 $\mu\text{S}/\text{cm}$ from 0 to 35 °C in accordance with ISO7888 standard.
- **Standard**
Used for high-purity water measurements ($> 1 \text{ M}\Omega \cdot \text{cm}$ resistivity) and documented in ASTM Standard D5391-14.

Temperature Compensation (Salinity)

The temperature compensation is applied in accordance to the selected scale.

- **ppt**
applied according to the Natural Sea Water Scale 1966
- **PSU**
applied according to the Practical Scale 1978
- **%**
applied according to the Hanna® Percent Scale

Manual

Options: **-20.0 to 120 °C (-4.0 to 248.0 °F, 253.2 to 393.2 K)**

To manually input the temperature value:

1. Select the temperature unit.
2. Tap the Manual input field.
3. Enter temperature value.
4. Tap  to confirm.

Reference Temperature (Conductivity, Resistivity, TDS)

Options: **5.0 to 30 °C (41.0 to 86.0 °F, 278.2 to 303.2 K)**

Value used for temperature-compensated conductivity.

All conductivity measurements will be referenced to the conductivity of a sample at this temperature.

To manually input the reference temperature value:

1. Select the temperature unit.
2. Tap the **Reference Temperature** input field.
3. Enter temperature value.
4. Tap  to confirm.

Temperature Coefficient (Conductivity, Resistivity, TDS)

Options: **0.00 to 10.00 %/°C**

Temperature coefficient is a function of the solution being measured.

When the actual temperature coefficient of the sample is known:

1. Tap the **Temperature Coefficient** input field.
2. Enter temperature coefficient value.
3. Tap  to confirm.

User Temperature Calibration

Options: **Calibrate**, **Clear**

Calibrate: starts a new user calibration.

Clear: deletes the temperature calibration for the selected hardware module.

To perform a new calibration:

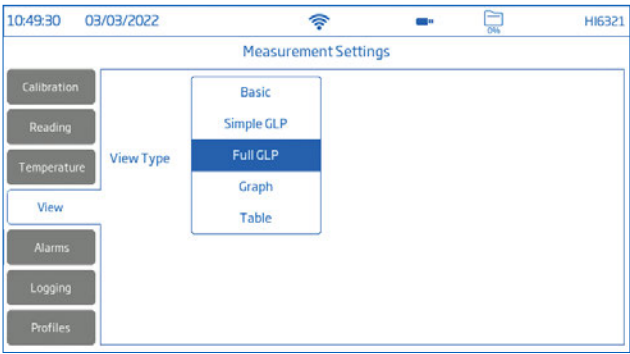
1. Tap **Calibrate**.
2. Place the probe and a reference thermometer with 0.1 resolution into a stirred container of water. Allow reading to stabilize.
3. If the displayed value is different than the reference thermometer reading, tap **Calibrated Temperature**. Use the on-screen keypad to enter the value.
4. Tap **Save** to confirm and save data.

The screenshot shows the 'Measurement Settings' screen. At the top, the status bar displays '06:21:40', '11/11/2022', a Wi-Fi icon, a battery icon, and 'HI6321'. The 'Calibration' section is active, showing 'Temperature Compensation' with tabs for 'Linear', 'Natural', 'Standard', and 'Disabled'. The 'Manual' tab is selected, with input fields for 'Manual' (25.0 °C), 'Reference Temperature' (25.0 °C), and 'Temperature Coefficient' (1.90 %/°C). At the bottom, there are 'Calibrate' and 'Clear' buttons, and a 'Last Calibration' timestamp of '11/11/2022'. A left sidebar contains buttons for 'Calibration', 'Reading', 'Temperature', 'View', 'Alarms', 'Logging', and 'Profiles'.

The screenshot shows the 'Calibrate temperature' screen. At the top, the status bar displays '22:39:35', '11/11/2022', a Wi-Fi icon, a battery icon, and 'HI6321'. The screen has two input fields: 'Measured Temperature' (25.0 °C) and 'Calibrated Temperature' (25.0 °C). Below these is a text box with instructions: 'Check if the displayed value is different than the reference thermometer reading. Touch the Calibrated Temperature value to edit value to reference temperature. Press 'Save' to complete calibration.' At the bottom are three buttons: 'Clear Calibration', 'Cancel', and 'Save'.

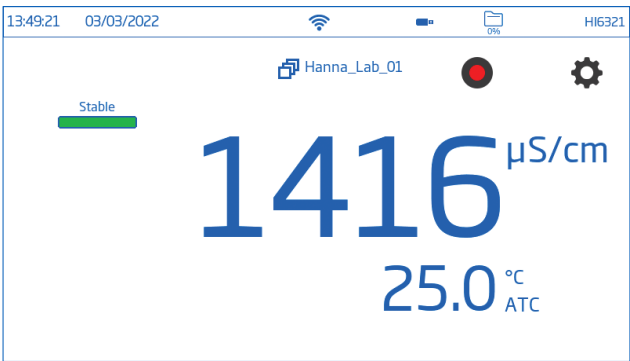
9.4. VIEW

Options: Basic, Simple GLP, Full GLP (Conductivity, Salinity %), Graph, Table



Basic

Screen displays the measured value, measurement unit, stability and temperature compensation status and source.



Simple GLP

Screen displays the last calibration date and time, and basic calibration information.

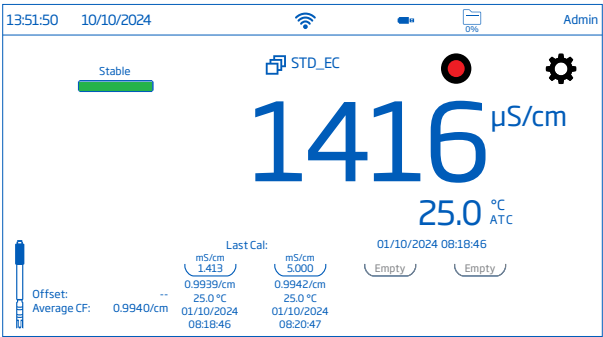
Note: If the calibration is not available, "Not Calibrated" is displayed.



Full GLP

Screen displays the last calibration date and time, and full calibration information.

Note: If the calibration is not available, “Not Calibrated” is displayed.

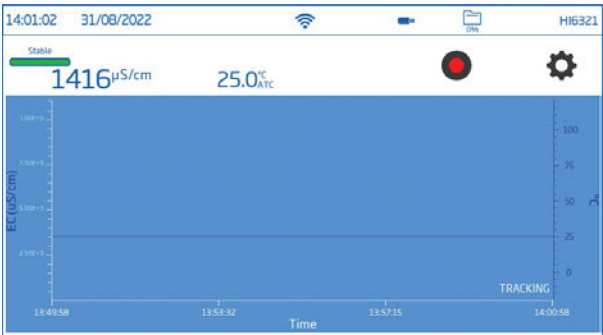


Graph

Measured values are plotted as a graph that can be zoomed and panned.

To zoom in on the graph, select the time or parameter axis and pinch on the display.

Once zoomed the graph position can be adjusted by dragging on the display.



Table

When Table is selected, the measured values are displayed tabulated with date, time, notes made during logging.

The newest data is displayed at the top of the table.

14:01:38	31/08/2022				HI6321
Stable	1416 μS/cm	25.0 °C ATC			
EC (μS/cm)	T (°C)	Time	Date	Notes	
1416	25.0	14:01:37	31/08/2022		
1416	25.0	14:01:36	31/08/2022		
1416	25.0	14:01:35	31/08/2022		
1416	25.0	14:01:34	31/08/2022		
1416	25.0	14:01:33	31/08/2022		
1416	25.0	14:01:32	31/08/2022		
1416	25.0	14:01:31	31/08/2022		
1416	25.0	14:01:30	31/08/2022		
1416	25.0	14:01:29	31/08/2022		
1416	25.0	14:01:28	31/08/2022		
1416	25.0	14:01:27	31/08/2022		

9.5. ALARMS

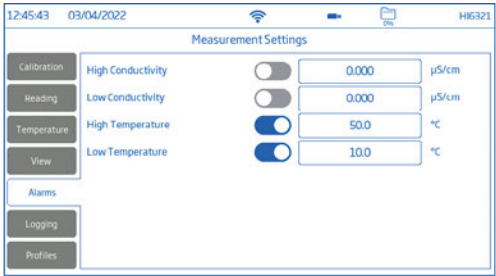
Options: **High / Low** threshold limits

Users can set the threshold limits for the measured parameters.

When enabled, the measurement exceeds the high-threshold value or drops below the low-threshold value, the alarm is triggered, and an alarm message is displayed.

If the alarm beeper is enabled, an audible beep will be heard.

Select the **Alarms** tab to configure module-specific alarm options.



To set an alarm limit:

1. Tap  to enable high or low alarm.
2. Use the on-screen keypad to enter the value.
Alarm values cannot exceed the corresponding high or low alarm.
3. Tap **Save** to confirm.
Alternatively, tap **Cancel** to exit and return to measurement settings.

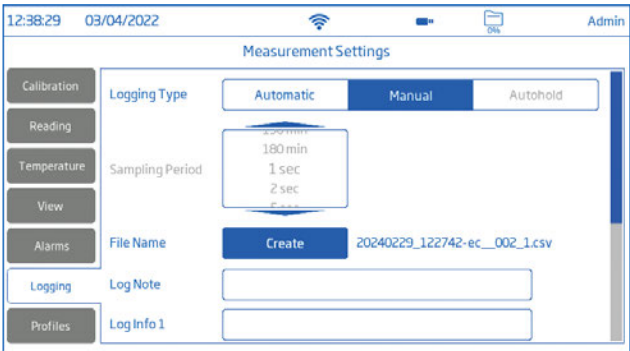
9.6. LOGGING

A complete set of GLP information including date, time, mode selection, temperature reading, and calibration information is stored with each log.

User and log information (e.g. company address or sample details) are included on the .CSV file.

Company information may be entered on the Logging tab in the measurement settings.

User information is entered in the User menu in the system menu.



Logging Type & Log Naming Convention

Options: **Automatic**, **Manual**, **Autohold**

Automatic

- Readings are logged at predefined time intervals, from 1 second to 180 minutes.
Tap  to start.
- Records are continuously added to the log until the session stops.
Tap  to stop.
- For each automatic logging session, a new log file is created.
A file name is automatically generated, with the year, month, date and log starting time.
Files are identified by parameter.
 - EC 20220329_085101-**ec**_auto
 - Resistivity 20220309_095704-**res**_auto
 - Salinity 20220331_101507-**sal**_auto
 - TDS 20220331_101458-**tds**_auto

Manual

- Readings are logged every time  is tapped.
- All manual readings are stored in a single log (e.g. records made on different days share the same log).
- A file name is automatically generated with the year, month, date and log starting time.
Files are identified by parameter.
- Tap **Create** to name a manual log file with a custom suffix, e.g. 20220329_085101-tds_001.

Autohold

- Available with Direct/Autohold reading mode only.
- Readings are logged each time  is tapped and configured stability criteria is reached.
- A file name is automatically generated, with the year, month, date and log starting time.
- Tap **Create** to name a manual log file with a custom suffix, e.g. 20220329_085101-ec_002.

Notes:

- *Manual and Autohold records are stored in the same log file, e.g. data logged on different days is stored in the same file. Automatic records are stored separately.*
- *Data logged with Automatic option selected have **_auto** in the name.*
- *Data logged with Autohold option selected is identified by “H” in the Notes column.*
- *Data logged with Manual option selected may have a custom name added.*

Sampling Period

Options: 1, 2, 5, 10, 30 sec., 1, 2, 5, 10, 15, 30, 60, 120, 150, 180 min.

Option available with **Automatic** logging type only.

Time-interval option is from scrollable list.

File Name

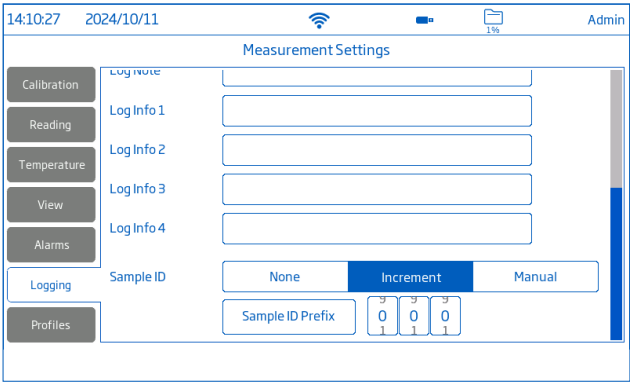
Option available with **Manual** and **Autohold** logging type only.

To create a file name, from Logging screen:

- 1. Tap **Create**.
- 2. Use the keypad and enter file name (maximum 13 characters).
- 3. Tap  to confirm.

Log Note & Log Info

Notes on measured data are saved together with logged data.



Sample ID

Manual and autohold samples can be labeled with a text label and numerical ID.

With **Increment** selected:

- 1. Tap **Sample ID Prefix**.
- 2. Use the on-screen keypad to enter a text prefix to the sample name (maximum 15 characters).
- 3. Tap  to confirm.
- 4. Select ID number from scrollable list.

The ID number will increment with each new sample logged.

With **Manual** selected:

- 1. Tap **Sample ID Prefix**.
- 2. Use the on-screen keypad to enter a text prefix to the sample name (maximum 15 characters).
- 3. Tap  to confirm.

When the measurement is logged, a pop up is displayed and the sample ID can be modified.

9.7. PROFILES

A profile is a sensor setup complete with required measurement unit, temperature unit, display preference, and alarm threshold options. Once saved the profile can be loaded for applications that require similar configurations. Saved profiles are only accessible by the user who created it.

Select **Profiles** tab to configure measurement profiles.

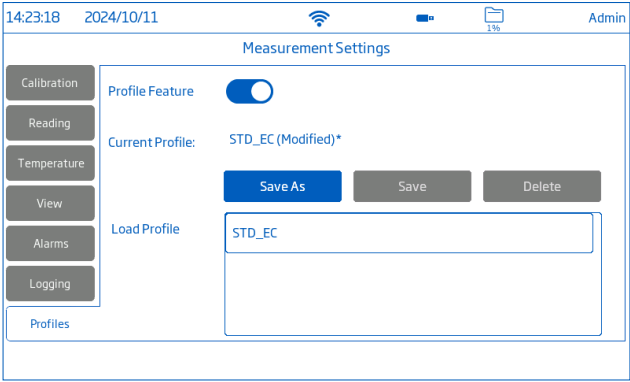
Profile Feature

Tap  to enable or tap  to disable the option.

With option enabled, profile operations are active.

The default profile is always available with the factory settings.

After any modification to Calibration, Reading, Temperature, View, or Alarms tabs, the name of the current profile is indicated with **(Modified)***.



The profile name is displayed next to the  icon (Profile icon).



To save a profile, having previously configured all other application-specific options from the measurement settings:

1. Tap **Profiles** tab.
2. Tap **Save As** and use the keypad to enter profile name (maximum 20 characters).
3. Tap  to confirm.
4. Once saved, profile name is added to the Load Profile list.

Load Profile

- Tap to select a configured profile from the Load Profile list.
- Profile name is automatically entered in the Current Profile field.

10. CALIBRATION

10.1. CONDUCTIVITY CALIBRATION

HI6321 meter allows two types of conductivity calibrations:

- Conductivity calibration to calculate offset and slope (up to 4 points):
 - Offset: $0\ \mu\text{S}/\text{cm}$
 - Slope: $84\ \mu\text{S}/\text{cm}$, $1413\ \mu\text{S}/\text{cm}$, $5.0\ \text{mS}/\text{cm}$, $12.88\ \text{mS}/\text{cm}$ ($0.1/\text{cm}$ cell)
 - Slope: $80.0\ \text{mS}/\text{cm}$, $111.8\ \text{mS}/\text{cm}$ ($1.0/\text{cm}$ cell)
- Salinity calibration using 100 % salinity standard.

Note: Conductivity calibration is only available when conductivity is selected on the reading tab. Salinity calibration is only available when salinity and % is selected on the reading tab.

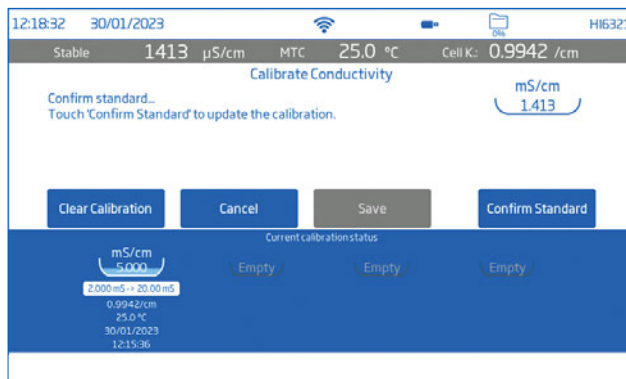
Calibration Guidelines

- Remove plastic bung prior to calibration.
- Clean the probe in distilled water, shake off water droplets, and allow to dry prior to calibration.
- Use a calibration standard with a value that is close to that of the sample.
- Inspect the probe for debris or blockages.
- Ensure the vent holes are completely submerged.
- Tap the probe to remove any air bubbles that may be trapped inside the sleeve.
- To minimize cross-contamination, when a two-point calibration is required, use two beakers: one for rinsing the probe and the other for calibration.
- For measurements across a temperature gradient (when water temperature is drastically different from the standards), allow the probe to reach thermal equilibrium before conducting calibrations or making measurements.

10.2. PROCEDURE

Automatic Calibration

With option selected, the HI6321 automatically selects the closest standard to the value being measured.



Connect the probe to the meter.

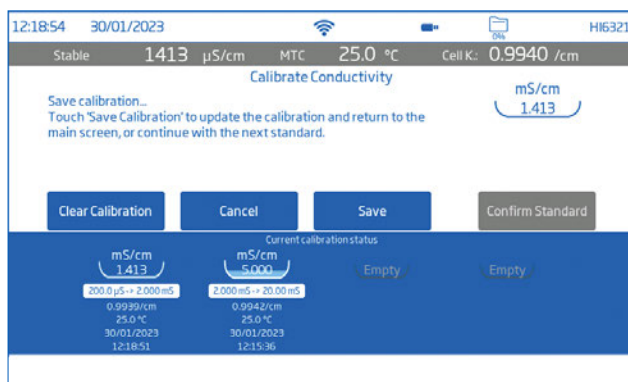
To calibrate the **offset**:

1. From Measurement screen, tap  icon.
2. Tap **Temperature** tab.
3. Configure **Temperature Source**.
4. Tap **Calibration** tab.
5. Configure Standard Entry Type as **Automatic**.
6. Select number of calibration points.
7. Tap **Calibrate** to start the process.
8. Tap **Clear Calibration** to start a fresh calibration and clear all previously used standards.
If using a new conductivity probe, it is recommended to clear all standards and start new.
9. Suspend the probe in the air.
Allow for the reading to stabilize.
The standard value is automatically recognized.
10. After the reading has stabilized, tap **Confirm Standard**. The calibration point is added to the tray.
Tap **Save** to have first calibration point accepted and saved.
Meter returns to measurement screen.

To calibrate the **cell factor**:

Use two beakers, one for rinse and one for measurement.

1. Raise and lower the probe in rinse beaker of standard.
Discard rinse standard.
2. Immerse the sensor in standard.
The standard value is automatically recognized.
3. Allow reading to stabilize then tap **Confirm Standard**.
4. Repeat procedure for a total of four calibration points.
5. Tap **Save** to update the calibration and return to calibration settings.
6. Tap  or  to return to measurement.



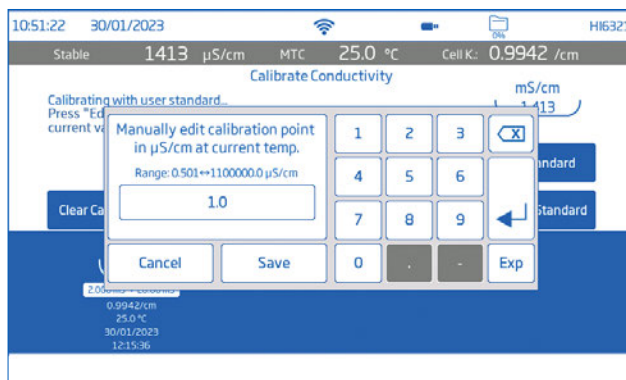
Manual Calibration

With option selected, users have to option to edit calibration point values.

1. Follow Automatic Calibration procedure up to step 9 **but** configure **Standard Entry Type** (Step 5) as **Manual**.
2. Suspend the probe in the air.
Allow for the reading to stabilize.
3. Tap **Edit Standard** to modify the calibration point. Input value and tap **Save**.
4. After the reading has stabilized, tap **Confirm Standard**.
The calibration point is added to the tray.
5. Tap **Save** to update the calibration and save a single point calibration and return to the measurement screen.

To calibrate **the cell factor**

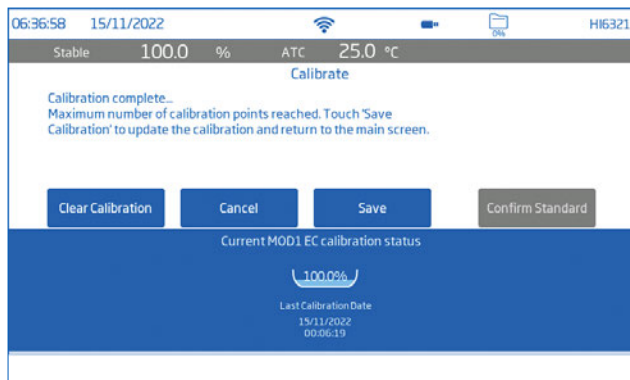
1. Raise and lower the probe in next rinse standard.
Discard rinse standard.
2. Immerse the sensor in calibration standard. Tap **Edit Standards**.
3. Input value and tap **Save**.
4. After the reading has stabilized, tap **Confirm Standard**.
The calibration point is added to the tray.
5. Tap **Save** to update the calibration and return to the measurement screen.
6. Continue with up to two more standards.



10.3. SALINITY CALIBRATION

Salinity calibration can be performed with the parameter reading set to Salinity and Salinity Scale set to %.

1. From Measurement screen, tap  icon.
2. Tap **Reading** tab.
3. Tap to configure reading Parameter to **Salinity**.
4. Set Salinity Scale to %.
5. Tap **Calibration** tab.
6. Tap **Calibrate** to start the process.
7. Tap **Clear Calibration** to start a fresh calibration.
If using a new conductivity probe, it is recommended to clear and start new.
8. Raise and lower conductivity cell in rinse beaker of salinity standard then discard rinse standard.
9. Immerse the sensor in salinity standard.
Ensure the vent holes are completely submerged.
The meter automatically recognizes the standard.
10. Allow the reading to stabilize then tap **Confirm Standard**.
The standard is recognized and added to the tray.
11. Tap **Save** to update the calibration and return to calibration setting screen.



11. MEASUREMENT

When to measure conductivity instead of resistivity

Resistivity is the reciprocal of conductivity and their scales emphasize different areas of the measurement range. Resistivity is commonly used in ultrapure water.

Conductivity is suitable for measuring larger amounts of contaminants.

Users can subsequently change parameter to Resistivity to measure in resistivity units ($M\Omega \cdot cm$).

Recommended temperature compensation setting for these type of measurements is **Standard**.

11.1. MEASUREMENT TIPS

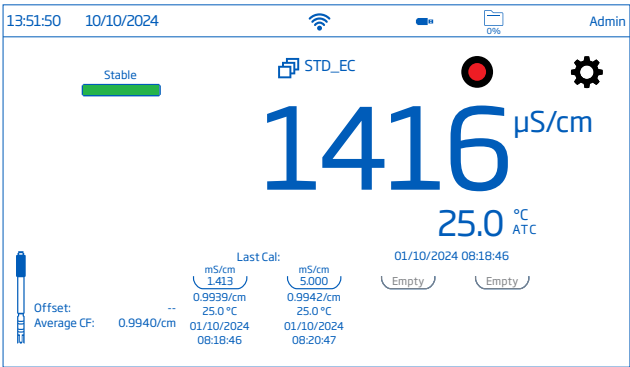
- Connect the probe to the meter.
- Make sure the electrode has been recently calibrated and is working correctly.
- Use the [HI764060](#) electrode holder for easy transfer in and out of containers during calibration and sample measurement; and for storage.
- Ensure plastic bung is removed prior to taking measurements.
- To limit sample contamination, pour two beakers of calibration standards. Use one beaker to rinse the sensor and another one for measurement.

Note: Use the same size beaker and immersion depth for samples and calibration standards.

- Ensure the vent holes are completely submerged.
- Tap the probe to remove any air bubbles that may be trapped inside the sleeve.
- If measuring across a temperature gradient, allow the sensor to reach temperature equilibrium. If using manual temperature compensation, input the sample temperature.
- Once the reading indicates “Stable”, record measurement data.

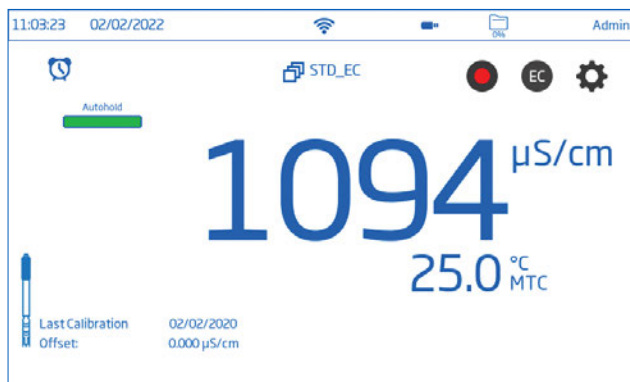
11.2. DIRECT READINGS

- Place the probe into the sample to be measured. Ensure the vent holes are completely submerged. Allow time for the reading to stabilize.
- Unstable status is indicated on the screen until measurement is stabilized.
- The measured value is displayed on the LCD.



11.3. DIRECT / AUTOHOLD READINGS

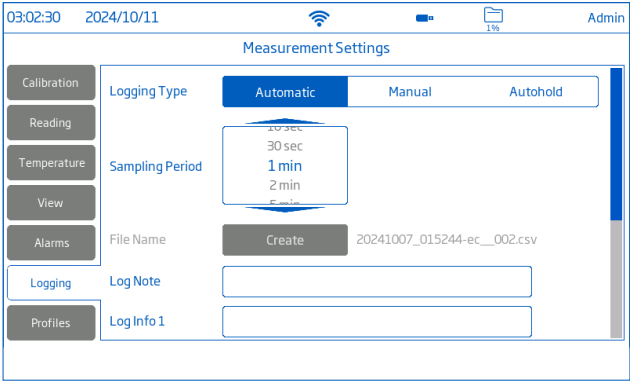
- Place the probe into the sample to be tested. Ensure the vent holes are completely submerged.
- Tap  to enable the autohold reading mode.
- Measured value is displayed on the LCD.  is displayed blinking.
- Once the stability criteria is reached, the measured value is frozen on the display and  stops blinking.
- To release the autohold and return to direct reading mode, tap , , , or .



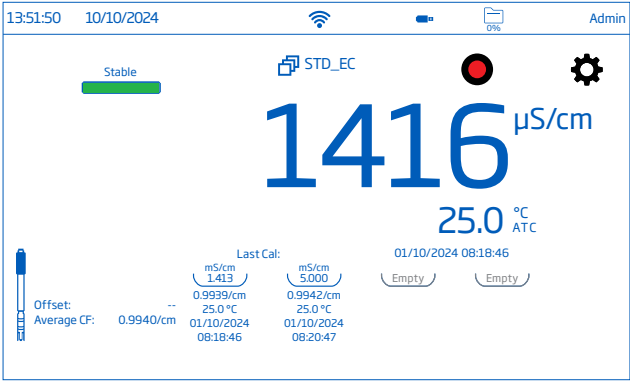
12. LOGGING

12.1. AUTOMATIC LOGGING

1. From Measurement screen, tap .
2. Tap **Logging** tab and then select **Automatic** logging type.
3. Scroll to select Sampling Period.



4. Log Note and Log Information can be entered. See section [Log Note & Log Info](#) for more details.
5. Tap  to return to the measurement screen.
6. Tap  to start logging.



7. During active logging, users can add a note to the logged sample. Notes are visible in log recall and .CSV files.
 - Tap  to add note to the sample.
 - Use on-screen keypad to enter text.
 - Tap  to save entered note.
8. Tap  to stop the log.

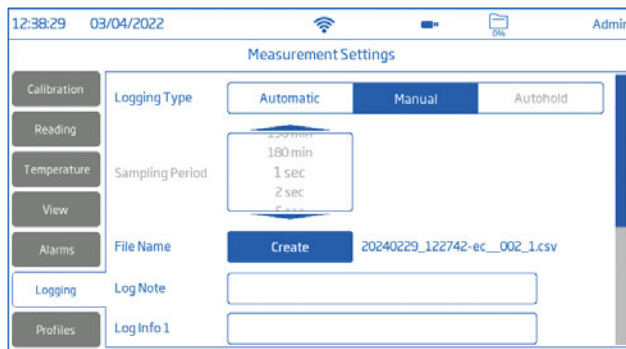
Automatic logging with Autohold

1. Tap **Reading** tab and then select **Direct/Autohold** reading mode.

2. Tap **Logging** tab and then select **Automatic** logging type.
3. Tap to return to the measurement screen.
 - The log will be started as soon as is tapped. All data will be added to the log at the selected sampling period.
 - Tap the to initiate an autohold reading.
Once the stability criteria has been met, the value will be held on the screen and the is displayed.
At the selected sampling period this value will be saved to the log. In the log file a "H" is displayed in the notes column. The reading being held on the screen, will continue to be saved at the selected sampling interval.
4. Users can add a note to the logged sample. Notes are visible in log recall and .CSV files.
 - Tap to add a note to the sample.
 - Use on-screen keypad to enter text.
 - Tap to save entered note.
5. Tap a parameter icon — , , , — to release the autohold reading and continue logging at the selected sampling period. Additional autohold reading can be initiated by tapping the icon.
6. Tap to stop the log.

12.2. MANUAL LOGGING

1. From Measurement screen, tap .
2. Tap **Logging** tab and then select **Manual** logging type.
3. Tap **Create** to enter a file name.



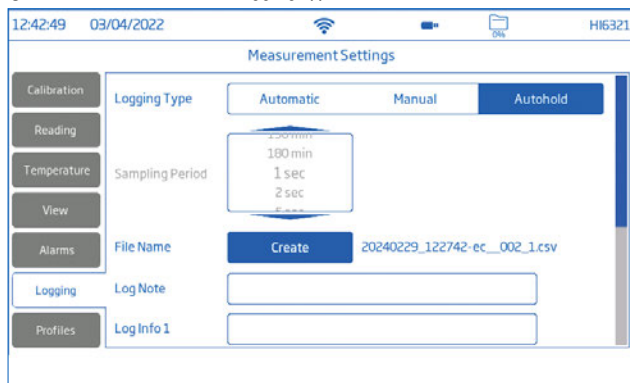
4. Tap **Increment** to set a sample name (prefix and sample ID).
5. Tap  to return to the measurement screen.
6. Tap  to log data. Data is logged every time symbol is tapped.
If Manual sample ID was selected, use the on-screen keypad to enter the sample ID and notes on the pop-up.
7. Users can add a note to the logged sample. Notes are visible in log recall and .CSV files.
 - Tap  to add a note to the sample.
 - Use on-screen keypad to enter text.
 - Tap  to save entered note.

Manual logging with Autohold

1. From Measurement screen, tap .
2. Tap **Reading** tab and then select **Direct/Autohold** reading mode.
3. Tap **Logging** tab and then select **Manual** logging type.
4. Tap **Create** to enter a file name.
5. Tap **Increment** to set a sample name (prefix and sample ID).
6. Tap  to return to the measurement screen.
7. Tap  to save a reading to the log file.
8. Tap  to initiate autohold.
Once the stability criteria has been met, the value will be held on the screen and the  is displayed.
9. Tap  to save the autohold reading to the log file.
In the log file a "H" is displayed in the notes column.
10. Tap a measure parameter icon — , , ,  — to release the autohold reading.
Additional autohold reading can be initiated by tapping the .

12.3. AUTOHOLD LOGGING

1. From Measurement screen, tap .
2. Tap **Reading** tab to select stability criteria.
Option to select between Accurate, Medium, or Fast.
- Note:** Autohold logging uses this criteria for logging. Setting this will affect when data is recorded.
3. Tap to select **Direct/Autohold** reading mode.
4. Tap **Logging** tab and select **Autohold** logging type.



5. Tap **Create** to enter a file name.
6. Tap **Increment** to set a sample name (prefix and sample ID).
7. Tap  to return to the measurement screen.
8. Tap  and . Once the stability criteria is met, the value will be held on the screen and the  is displayed and the meter stores the data point in the log file.
9. Tap a measure parameter icon — , , ,  — to release the autohold reading.
Additional autohold reading can be initiated by tapping the .
10. Tap  to manually save data point to the log file.
11. Tap  to initiate a new Autohold data point.

Note: Autohold logging and Autohold are enabled together, the user will only see one log point added to the data file.

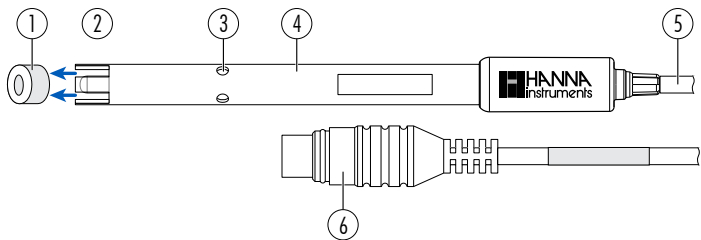
13. MAINTENANCE

Meter

The following steps outline the process to ensure users keep the benchtop clean and disinfected while limiting the risk of damage from unsuitable cleaners.

- Disinfect the screen using commercially available non-ammonia glass or disinfectant cleaner.
- Apply a small amount of cleaner directly to a microfiber or lint-free disposable cloth. Make sure the cloth is damp and not wet.
- Wipe the glass touch screen clean with the cloth. Do not apply cleaner directly to the interface.

Probe



1. Plastic bung (remove for measurement and calibration)	4. Probe body
2. Probe sensor	5. Cable
3. Probe holes	6. DIN connector

Maintenance

Rinse the probe thoroughly as water residue may not be visible.

Cleaning

Dirty or improperly cleaned probes can result in erratic and inaccurate readings.

- Clean off the external sheath with a soft cloth and surfactant solution.
- Rinse the probe under a stream of running tap water to remove salt or minerals. Jet the tap water stream through the opening to dislodge any debris.
- Only if strictly necessary, carefully remove the outer plastic sheath to disassemble the probe. Clean off with a warm water (surfactant) mixture and follow with a through rinsing with purified water. Allow pieces to dry and reassemble.

Calibrate the probe with the appropriate standard solution for the intended application.

Storage

- Store the probe dry, after cleaning in distilled water.
- Clean the probe and calibrate after long-term storage.

14. ERROR MESSAGES

The system gives warning messages:

- when erroneous conditions appear
- while logging
- when measured values are outside the expected range
- invalid high/low temperature alarm value
- invalid low/high mV Alarm value, isopotential point

Note: See notifications area at the bottom of the screen.

The information below provides an explanation of the errors and warnings, and recommended action to be taken.

Displayed Message	Explanation & Recommended Action
"Temperature under/over range"	Temperature outside specified range. Replace probe if necessary.
"Under/over compensation range"	During conductivity calibration, the temperature is under/over the conductivity calibration solution compensation limit.
"EC under/over range"	Outside range in the corresponding scale. Ensure the vent holes are completely submerged and the sample is within specified range.
"Broken electrode"	The meter fails to calibrate or gives faulty readings. Replace the probe.
"EC out of calibration range"	Displayed when the measured value is outside calibration range.
"Factory calibration expired"	Contact the Hanna technical support for the periodic factory calibration.

15. SOFTWARE UPDATE

To introduce new features and/or performance improvements, Hanna Instruments® releases updated firmware versions. To check for new releases, scan the QR code or go to: <https://software.hannainst.com>.

Requirements

- USB-A drive (FAT32 format)



Steps

1. Scroll down the software downloads page to find the **Instrument Firmware** list.
2. Connect the USB-A drive to PC.
3. Find the Firmware Version needed for download, then click **DOWNLOAD NOW**.
4. Wait for *.hiup file download to complete.
5. Copy file to flash drive.
6. With the meter turned off plug the flash drive into the USB-A port then turn the meter on.



7. Wait for update to complete.
Update will take about 1 hour to complete.
During this time do not turn off the meter or disconnect the power.



8. Once the update is complete the meter will cycle power automatically.
9. Turn off the meter and remove the flash drive.
10. Turn on the meter.

16. ACCESSORIES

CONDUCTIVITY SOLUTIONS

HI7030M or HI7030L	12880 $\mu\text{S}/\text{cm}$ standard solution, 250 or 500 mL
HI7031M or HI7031L	1413 $\mu\text{S}/\text{cm}$ standard solution, 230 or 500 mL
HI7033M or HI7033L	84 $\mu\text{S}/\text{cm}$ standard solution, 230 or 500 mL
HI7034M or HI7034L	80000 $\mu\text{S}/\text{cm}$ standard solution, 250 or 500 mL
HI7035M or HI7035L	111800 $\mu\text{S}/\text{cm}$ standard solution, 230 or 500 mL
HI7037M or HI7037L	100 % NaCl seawater salinity standard solution, 250 or 500 mL
HI7039M or HI7039L	5000 $\mu\text{S}/\text{cm}$ standard solution, 250 or 500 mL

OTHER ACCESSORIES

HI740036P	100 mL beaker (10 pcs.)
HI764060	Electrode holder
HI900946	115 Vac to 24 Vdc power adapter, US plug
HI900947	230 Vac to 24 Vdc power adapter, European plug
HI920016	USB type A to C cable

CERTIFICATION

All Hanna® instruments conform to the CE European Directives.



RoHS
compliant



Disposal of Electrical & Electronic Equipment. The product should not be treated as household waste. Instead hand it over to the appropriate collection point for the recycling of electrical and electronic equipment which will conserve natural resources.

Ensuring proper product disposal prevents potential negative consequences for the environment and human health. For more information, contact your city, your local household waste disposal service, or the place of purchase.

RECOMMENDATIONS FOR USERS

Before using this product, make sure it is entirely suitable for your specific application and for the environment in which it is used. Any variation introduced by the user to the supplied equipment may degrade the meter's performance. For yours and the meter's safety do not use or store the meter in hazardous environments.

WARRANTY

HI6321 is warranted for two years against defects in workmanship and materials when used for its intended purpose and maintained according to instructions. Electrodes and probes are warranted for a period of six months. This warranty is limited to repair or replacement free of charge. Damage due to accidents, misuse, tampering or lack of prescribed maintenance is not covered.

If service is required, contact your local Hanna Instruments office. If under warranty, report the model number, date of purchase, serial number (see engraved on the bottom of the meter) and the nature of the problem. If the repair is not covered by the warranty, you will be notified of the charges incurred. If the meter is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization number from the Technical Service department and then send it with shipping costs prepaid. When shipping any meter, make sure it is properly packed for complete protection.

REGULATORY NOTICES FOR THE WI-FI MODULE

United States (FCC) FCC ID: 2ADHKATWINC1500.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canada (ISED) IC: 20266-WINC1500PB

HVIN: ATWINC1500-MR210PB

PMN: ATWINC1500-MR210PB

This device complies with Industry Canada's license exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication. Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Japan (MIC) 005-101762

South Korea (KCC) R-CRM-mcp-WINC1510MR210P

Taiwan (NCC) CCAN18LP0321T2

注意！依據 低功率電波輻射性電機管理辦法 第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信規定作業之無線電信。低功率射頻電機須忍受合法通信或工業、科學及醫療用 電波輻射性 電機設備之干擾。

China (SRRC) CMIIT ID: 2018DJ1305

ANATEL 08497-18-08759

Note: FCC information is marked on the back of the device.