HI6321

Advanced Conductivity Benchtop Meter

Conductivity/Resistivity/TDS/Salinity/Temperature

HANNA® instruments

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

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Conductivity/Resistivity/TDS/Salinity/ Temperature

HI6321 is a streamlined benchtop meter with a large touch screen display, comprised of a housing and an integrated conductivity measurement module.

Compact and easy to operate, the HI6321 includes Hanna's HI7631233 four-ring conductivity/ resistivity/TDS/salinity probe.

Recommended for a wide range of industrial process water applications, HI7631233 provides stable measurements over a wide measurement range and does not require frequent calibrations. An integral temperature sensor measures the process temperature and adjusts the measured conductivity to a reference temperature by applying specialized compensation algorithms:

- Linear: appropriate when it is assumed that the temperature coefficient of variation has the same value for all measurement temperatures.
- Standard: appropriate for high-purity water measurements and documented in ASTM Standard D5391-14. This setting should be used for >1Mohm.cm resistivity measurements.
- Natural: appropriate for natural ground, well, or surface water (or water with similar composition) in accordance with ISO7888 standard.

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

TDS is a calculated value based on the conductivity of the solution (TDS = factor x 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.

User interface

- 7-inch capacitive touch screen with multi-touch support
- Capacitive touch back, home and system menu keys
- User-friendly icons and symbols allow users to easily navigate and interpret the instrument functions.
- The user can select between five different views:
  - Basic measurement configuration
  - Simple GLP with calibration information
  - Full GLP with electrode status and calibration point details
  - Live updated, interactive graph
  - Tabulated data with date, time, and notes

Measurement

- Measure µS/cm, mS/cm (Conductivity); Ω·cm, kΩ·cm, MΩ·cm (Resistivity); ppm, ppt (TDS); ppt, PSU, % (Salinity) with temperature
- Application-specific profiles allow 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 compensation can be Automatic or set manually
- Audible and/or alarm messages for measurements outside of predefined limits
- Galvanic isolation for conductivity measurement

Calibration

- Standard single point salinity calibration in 100% salinity standard, with the reading salinity scale set to %
- Standard single or multiple conductivity calibration with standards
- Non-volatile memory saves data and settings

Logging

- Data log collection of at least 1,000,000 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
- USB type A for USB stick, keyboard, and printer
- USB type C for USB stick and PC connection

Help section for meter guidance

- Video support presentation of main functionalities

Front Panel Features

1. Capacitive touch screen with multi-touch support

The benchtop unit has a 7-inch color display with 800 x 480p resolution. The capacitive, multi-touch screen supports video playback and data plotting.

2. Back key

3. Home key

4. System Menu key

This key will enter the system menu where User Accounts, System Settings, and Logging can be configured. The Help menu is also accessed on the system menu screen.

5. Stability indicator

6. Current date

7. Current time

8. Main reading

9. Probe icon

10. Calibration information: Electrode condition, Offset, Slope, Date and Time

11. Buffer trays

12. Temp. reading

13. Measurement setup menu

Opens sensor setup parameters.

14. User name (default shown)

15. Direct/Autohold readings

When Direct/Autohold is selected, measurement reading is held on display when measurement stability is reached. This option removes the subjective nature of stability as a measurement that has not reached equilibrium will not be used.

When not selected, sample measurements are displayed continuously.

16. Logging space availability

17. Logging start

18. USB connection status

19. Peripheral connection status

20. Wireless network connection status

System Menu

System menu overview

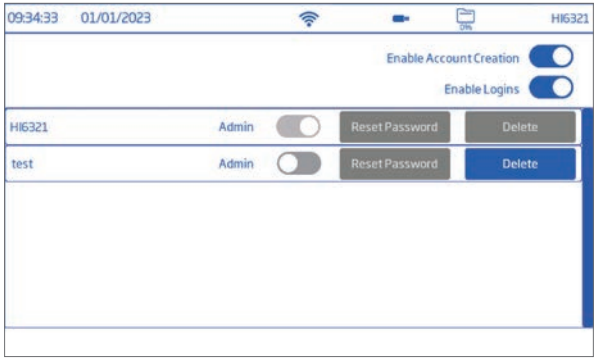
Through the System Menu (☰), control user accessibility, system and connectivity configuration, access logged data and video-supported help.

- Add and delete user accounts through Users (👤).
- Access Network Connectivity, System and Info tabs through Settings (⚙)
- Log Recall (▶) recalls stored log sessions (Automatic continuous logging, Manual, or Autohold).
- Help (?) guides users with video-supported help.

Users

Custom Users

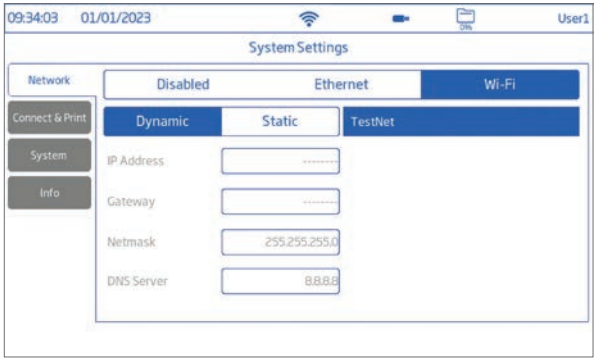
New administrator or standard user accounts can be created. Standard accounts can be configured for specific accessibility.



User Account Management

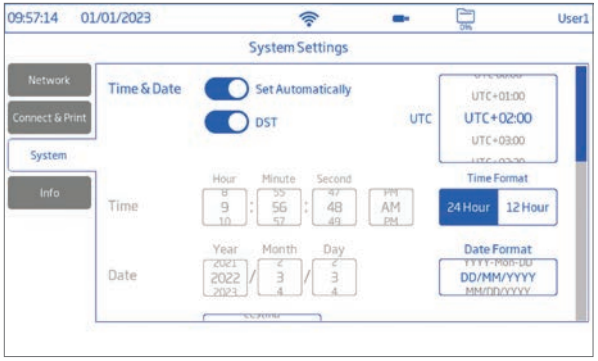
Administrators can create and manage accounts from the Account Management Screen.

Settings



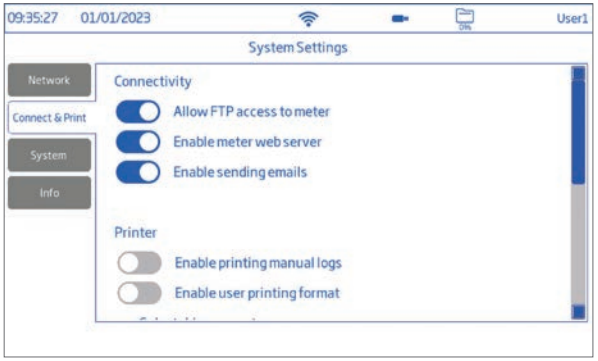
Network Screen

Determine how measurement logs are shared though network settings. Users can select network to be connected via Ethernet or Wi-Fi, or Disabled.



System Screen

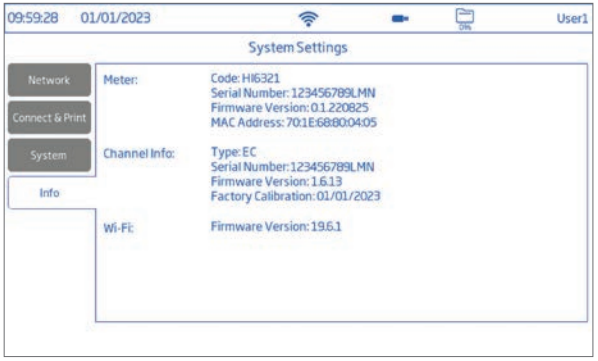
The system screen enables users to configure options such as: Time, Date, Language, Meter ID, Decimal Separator, Backlight Saver, Audible signals, Startup Tutorial, and Factory Settings restore.



Connect and Print Screen

Activate connectivity options to allow the meter to connect to other devices.

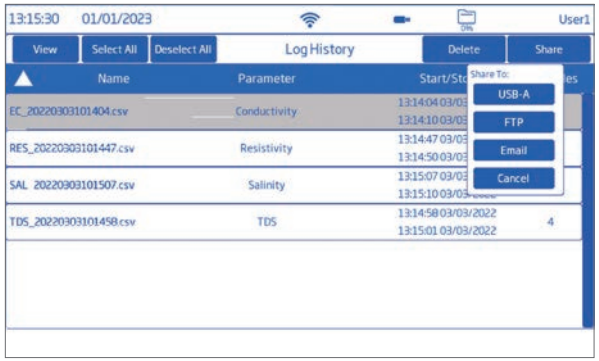
- FTP access to meter, permits log file transfer to a FTP site and to connect the meter FTP server to a client for log download.
- Meter web server, permits log file download to a web client.
- Sending emails, permits log files to be transferred by email.



Info Screen

Displays information on meter, channel serial number, and Wi-Fi firmware version.

Log Recall



Log History and Sharing

The item allows users access and management (selection, deletion, and sharing) of measurement data. Only the user who generated the data has access to the logs created by that user.

Data can be viewed tabulated (complete with date, time, and notes), or plotted (as graph).

Log files can be shared via USB, FTP, web server and email.

Graph View

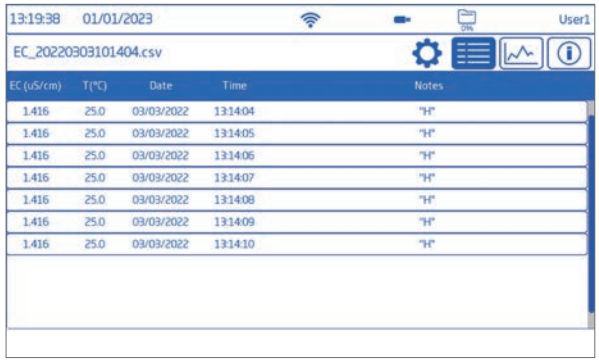
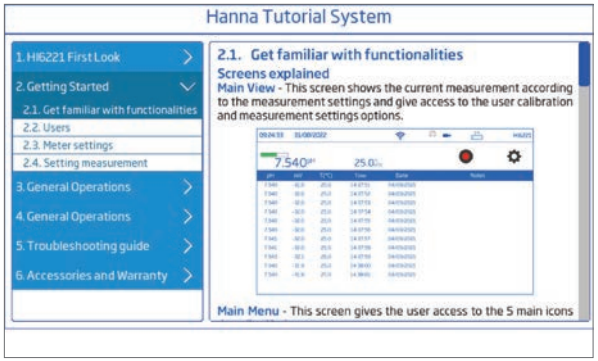


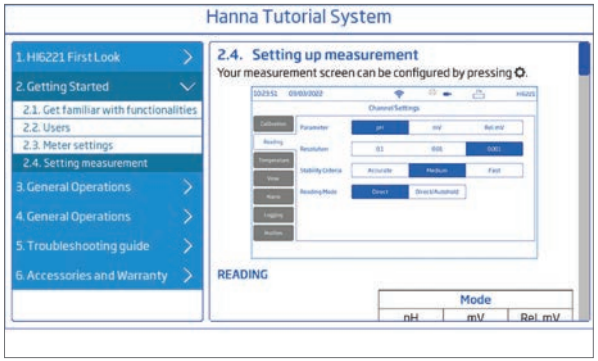
Table View

Log Detail

Tapping the information icon displays log details such as user and profile name, instrument name and serial number, channel, lot information, as well as GLP data.

Help

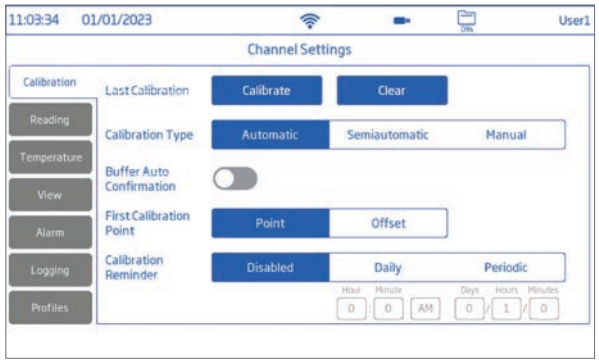




On-board Help

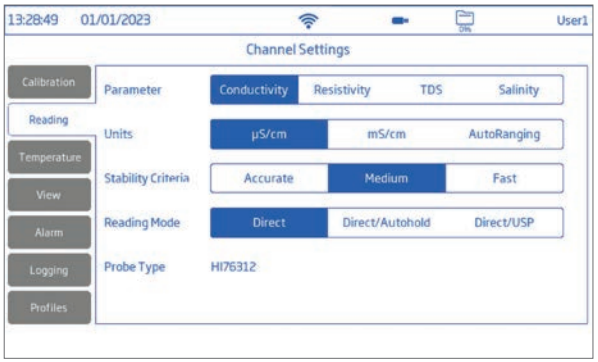
The HELP menu supports users with a brief overview of the system's main functionalities through text and video tutorials.

Measurement Setup Configuration



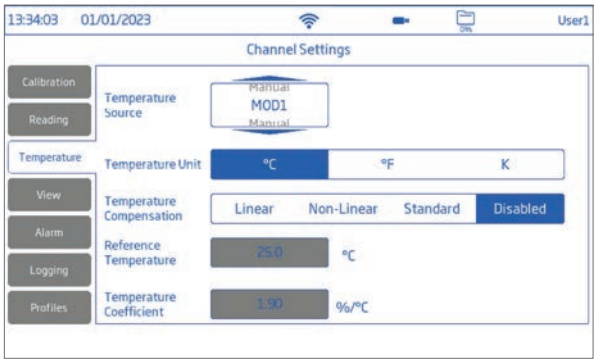
Calibration

Customize calibration options such as Last Calibration, Calibration Type (Automatic, Manual), Calibration Reminder (Disabled, Daily, Periodic), Cell Constant, Calibration Points.



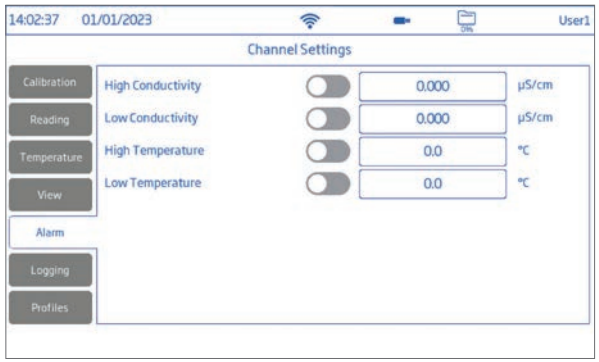
Reading

Customize measurement options such as Parameter, Units, Stability Criteria, Reading Mode.



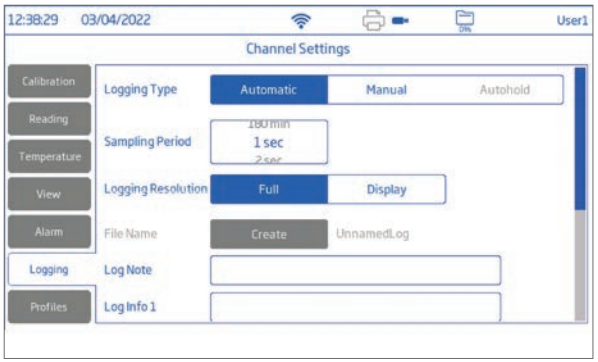
Temperature

Customize temperature options such as Source, Unit (Celsius, Fahrenheit, Kelvin), compensation algorithm (Linear, Non-Linear, Standard, or Disabled), Reference Temperature, and Temperature Coefficient.



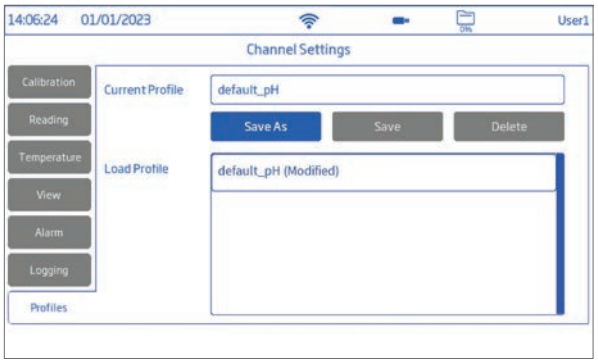
Alarm configuration

Alarm configuration allows users to set the high and low threshold limits for the measured parameters. When the parameter is enabled and the the measurement exceeds the high-limit value or drops below the low-limit value, the alarm is triggered and will appear on the message banner along with an audible alarm (if Alarm Beepers is enabled).



Logging

Logging Type (automatic, manual or autohold), Sampling Period (Automatic), Logging Resolution, File Name (with Manual type selected), Log Note and Info, Sample ID (Increment or Manual) can be configured under this option menu.

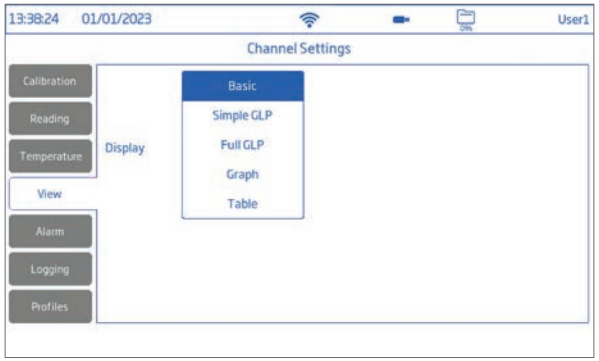


Profiles

A profile is a sensor setup complete with required measurement unit, temperature unit, display preference, and alarm threshold options.

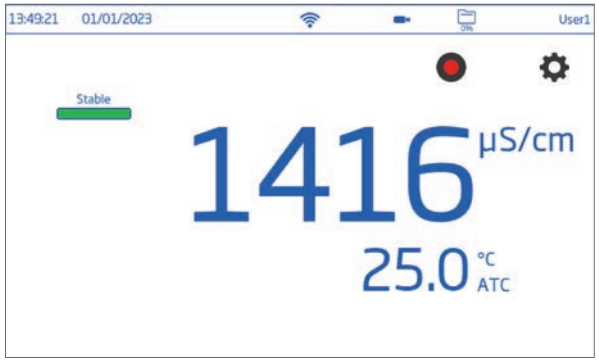
Once saved the profile can be loaded for applications that require similar configurations.

Views



View Configuration

Select the preferred display from the view screen. Option to select between: Basic, Simple GLP, Full GLP, Graph, Table.



Basic View

Basic screen displays the measured value, measurement unit as well as temperature source.

Simple GLP View

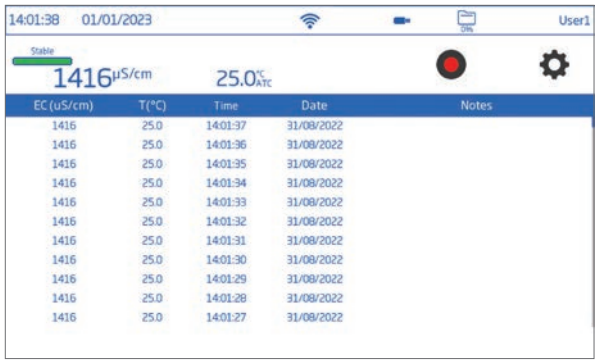
In addition to data displayed when Basic option is selected, screen also displays: last calibration date and time and offset value.

Full GLP View

In addition to data displayed when Simple GLP option is selected, screen also displays: electrode symbol, used buffers trays together with calibration date and time.

Graph View

When Graph is selected, the measured value is plotted as a graph.



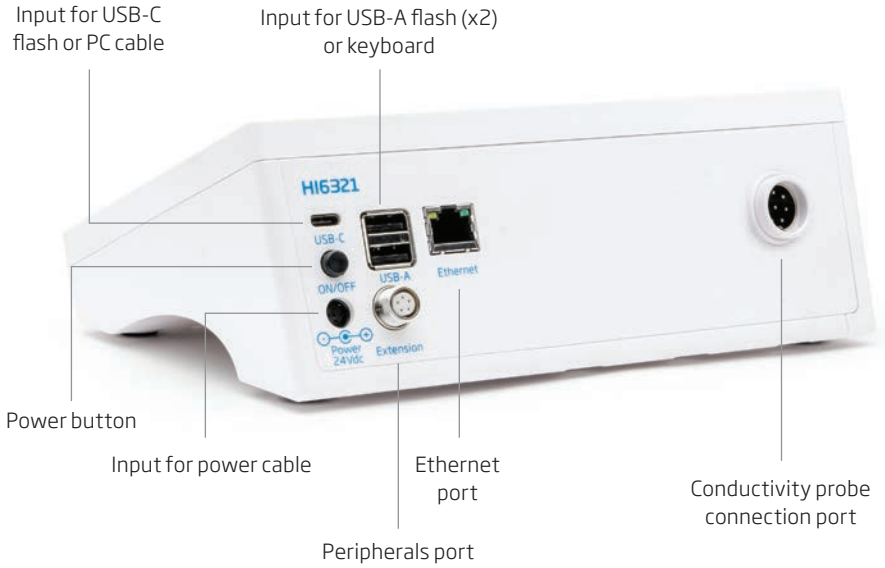
Table

When Table is selected, the measured values are displayed tabulated (complete with date, time, and notes made during logging). The newest data is displayed on the top of the table.

Electrode Holder

HI6321 is supplied with an electrode holder featuring a flexible arm. The holder can be mounted on either side quickly and provides secure support for electrodes while taking measurements in sample containers.

Rear Ports



Specifications

Conductivity	Range	0.000 to 9.999 µS/cm; 10.00 to 99.99 µS/cm; 100.0 to 999.9 µS/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 µS/cm; 0.01 µS/cm; 0.1 µS/cm; 0.001 mS/cm; 0.01 mS/cm; 0.1 mS/cm
	Accuracy	±1 % of reading (±0.01 µS/cm)
Resistivity	Range	1.0 to 99.9 Ω·cm; 100 to 999 Ω·cm; 1.00 to 9.99 KΩ·cm; 10.0 to 99.9 KΩ·cm; 100 to 999 KΩ·cm; 1.00 to 9.99 MΩ·cm; 10.0 to 100.0 MΩ·cm
	Resolution	0.1 Ω·cm; 1 Ω·cm; 0.01 KΩ·cm; 0.1 KΩ·cm; 1 KΩ·cm; 0.01 MΩ·cm; 0.1 MΩ·cm
	Accuracy	±1 % of reading (±1 Ω·cm)
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	±1 % of reading (±0.01 ppm)
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	±1 % of reading
Temperature	Range	−20.0 to 120.0 °C −4.0 to 248.0 °F 253.0 to 393.0 K
	Resolution	0.1 °C; 0.1 °F; 0.1 K
	Accuracy	±0.2 °C; ±0.4 °F; ±0.2 K
Conductivity Calibration	Calibration points	Auto standard recognition / User standard, Single Point / Multi Point calibration
	Standard solutions	84.00 µS/cm, 1.413 mS/cm, 5.000 mS/cm, 12.88 mS/cm, 80.00 mS/cm, 111.8 mS/cm
	Reminder	Disabled Daily: 0 min. to 23 hours and 59 min. Periodic: 1 min. to 500 days, 23 hours and 59 min.
Resistivity Calibration		Uses Conductivity
Salinity Calibration		1 point for Percent Scale
Temperature Compensation		Automatic or Manual
Reading	Modes	Direct Direct/Autohold
	Stability criteria	Accurate Medium Fast
	Sampling rate	1000 ms
EC Views	Basic	Measurement (EC, Resistivity, TDS, Salinity, Temperature) Stability status
	Simple GLP	Basic view information Last calibration date, offset
	Full GLP	Simple GLP information and calibration point details
	Table	Measurements updated every second are displayed in table
	Graph (Plot)	Measurement versus time graph can be panned or zoomed (pinch-to-zoom technology)

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
	Export option	.csv file format
Users		Up to 9 users and the default administrator account
Connectivity	USB-A	2 ports for keyboard input or USB thumb drive
	USB-C	1 port for PC connectivity and USB-C type thumb drive
	Wi-Fi & Ethernet	FTP Web server Log transfer and download Email
	RS232	Connecting peripherals
Power supply		DC adapter 100-240AC to 24VDC 2.5A
Environment		0 - 50 °C / 32 - 122 °F / 273 - 323 K maximum 95% RH non-condensing
Dimensions		205 x 160 x 77 mm (8.0 x 6.2 x 3.0 ")
Weight		Approximately 1.2 kg (26.5 lbs.)
Ordering Information	**HI6321** is supplied with HI7631233 probe; HI764060 electrode holder; capillary pipette; 24 VDC power adapter; USB-C to USB-A cable; probe quality certificate; quick reference guide with instrument quality certificate.	

Accessories:

HI7631233 EC probe

HI7031L 1413 µS/cm conductivity solution, 500 mL
HI7031M 1413 µS/cm conductivity solution, 230 mL

HI7030L 12880 µS/cm conductivity solution, 500 mL
HI7030M 12880 µS/cm conductivity solution, 250 mL

HI7039L 5000 µS/cm conductivity solution, 500 mL
HI7039M 5000 µS/cm conductivity solution, 250 mL

HI70000P Electrode rinse solution, 20 mL sachet (25 pcs.)

WolfLabs

Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct.
If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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