HANNA instruments

HI6000 Series

Multiparameter Modular System

pH/ORP, pH/ORP/ISE, EC and DO

Go Modular.


HI6000
USB-C
ON/OFF
USB-A
Ethernet
Power
24Vdc
Extension
Right
Stirrer
Left
Stirrer
Module 3
Dissolved Oxygen
HI6000-4
Module 2
Conductivity
HI6000-3
Module 1
Temp.
pH/ORP
Ref.
HI6000-1

HI6000 Series

Multiparameter Modular System

pH/ORP, pH/ORP/ISE, EC and DO

The HI6000 multiparameter modular system is a totally flexible benchtop meter platform that is customizable to a user's laboratory measurement and application needs.

Hanna offers four different measurement modules for pH/ORP, pH/ORP/ISE, DO, and EC. Together with appropriate sensors, the meter provides quick and reliable measurement displayed on the large touch screen display.

Measure

- HI6000-1 module
  - Parameters are: pH, mV
- HI6000-2 module
  - Parameters are: pH, mV, Rel. mV, ISE
  - Modes are: Direct, Direct/Autohold, Known Addition, Known Subtraction, Analyte Addition, and Analyte Subtraction
- HI6000-3 module
  - Parameters are: Conductivity – µS/cm or mS/cm, Resistivity – Ω•cm, kΩ•cm, MΩ•cm, TDS – ppm or ppt, Salinity – ppt, PSU, %,
  - Modes are: Direct, Direct/Autohold, and Direct/USP
- HI6000-4 module
  - Modes are: Direct – % Sat, mg/L, ppm
  - Autohold BOD- ppm, mg/L, OUR- mg/L ppm SOUR-mg/L, ppm
- 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 or module specific application modes: direct and direct/autohold
- Temperature compensation can be automatic (using temperature probe or integral temperature sensor within probe) or set manually
- Audible and/or alarm messages for measurements outside predefined limits
- Galvanic isolation for measurement modules
- Non-volatile memory saves data and settings

Logging

- User controlled 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

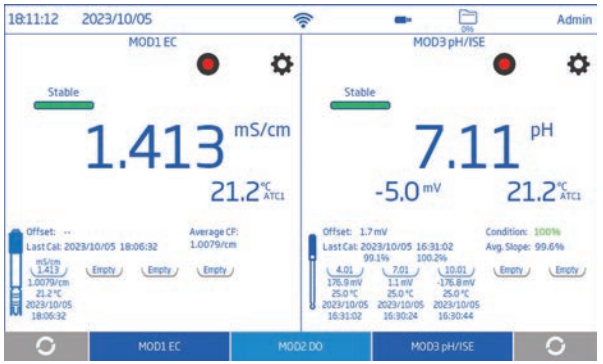
Connectivity features and services

- Transfer logged data to a USB thumb drive
- Log files 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 drive, printer, and keyboard
- USB type C for USB drive and PC connection

Multiple screen configurations

Up to 3 measurements can be shown on screen simultaneously. Views can be mixed and matched.

Single-parameter screen



Dual-parameter screen

Triple-parameter screen

Flexibility and expandability

Easily install and swap modules. Any combination of 1 to 3 modules can be used for total flexibility in measurements.

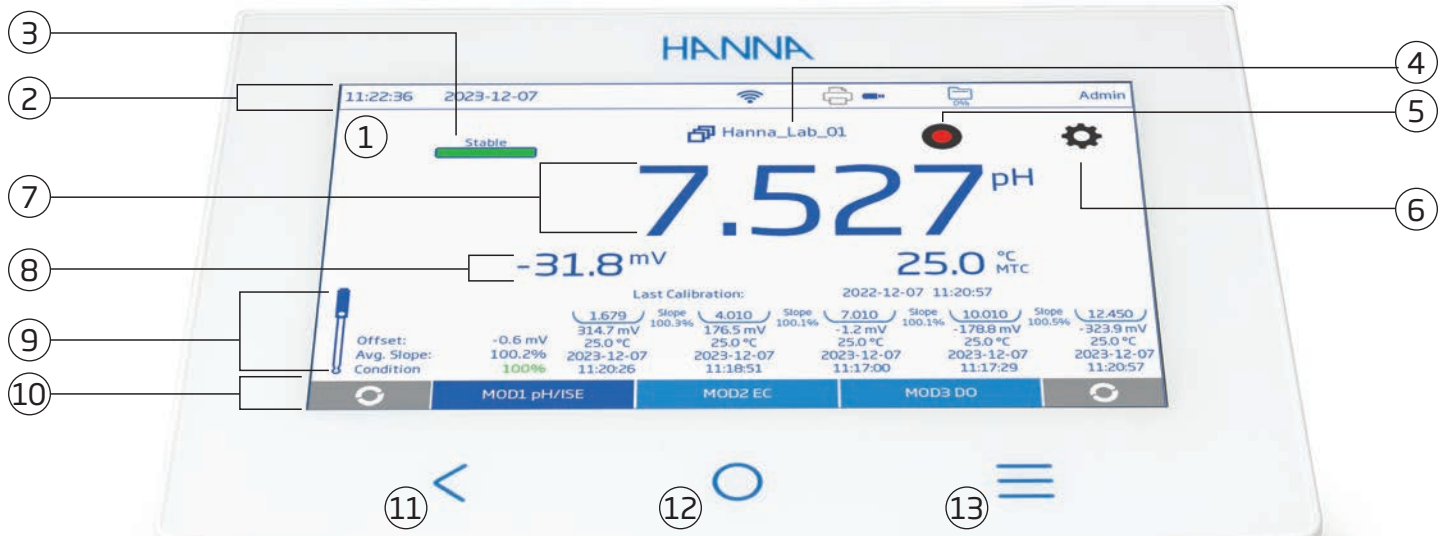
- Multiparameter measurement flexibility
  - Plug-and-play design
  - Effortless installation

Module options (sensors purchased separately)

Up to three measurement modules maybe easily installed into the HI6000 housing. This can be any combination of the available modules.

Module	**HI6000-1**	**HI6000-2**	**HI6000-3**	**HI6000-4**
Sensor	pH/ORP	pH/ORP/ISE	EC	DO
Details	For ORP (redox) measurements a separate sensor is required.	Features Incremental Methods for Ion Selective Electrode (ISE) applications.	Supports the measurement of high purity water used in the pharmaceutical industry. The application includes meter verification, cell validation applications and the module is programmed for the three stages of the USP <645> bulk water analysis. Once a stage is met a report can be generated and saved.	Supports dissolved oxygen applications for batch analysis of multiple samples: • Oxygen Uptake Rate (OUR) • Specific Oxygen Uptake Rate (SOUR) • Biological Oxygen Demand (BOD) Reports are available for analysis records.
Recommended Probes	**HI1131B** Recommended Refillable combination pH electrode **HI7662-TW** Recommended Stainless steel Temperature probe	**HI1131B** Recommended Refillable combination pH electrode **HI7662-TW** Recommended Stainless steel Temperature probe Hanna Ion Selective Electrodes	**HI7631233** Recommended EC and resistivity probe	**HI7641133** Recommended Optical DO probe **HI764833** Recommended Polarographic DO probe

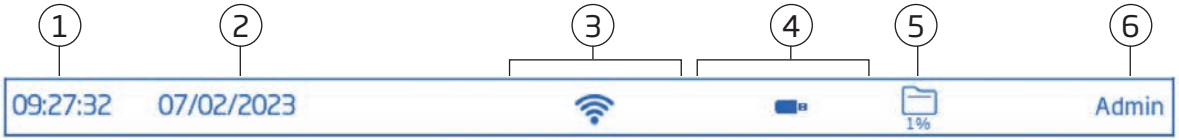
LCD description



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. Status area (see below)
3. Stability indicator
4. Active measurement profile
5. Logging status icons
6. Access module measurement settings
7. Meaurement reading
8. Additional measurements
9. Probe and calibration info
10. Active modules status
11. Back key
12. Home key
13. System menu key

Status Area

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



1. Current time
2. Current date
3. Network connectivity
4. Devices connectivity
5. Storage space availability
6. Current logged in user

System menu

System menu overview

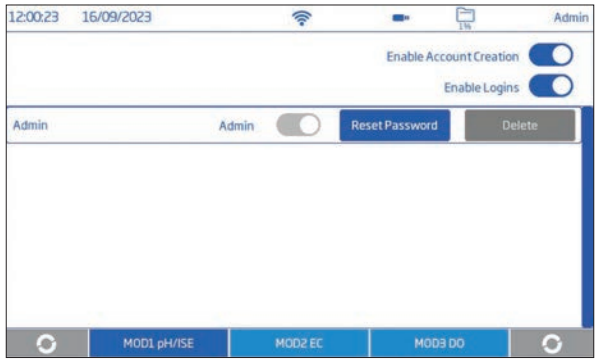
Through the System Menu (☰), control user accessibility, system and connectivity configuration, access logged data, reports, and video-supported help.

- Users (👤):Login and rights configuration & instrument accessibility.
- System Settings (🔧):System configuration, connectivity, and printing items
- Log Recall (▶): Access logged measurement data
- Reports; Application reports (📄)
- Help (?): Access video-supported outline of main instrument functionalities

Users

Custom users

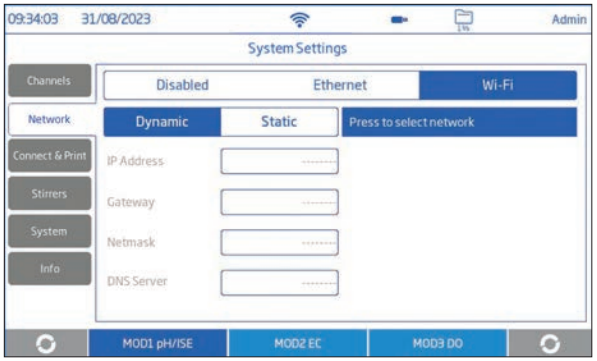
Standard user accounts can be created. Standard accounts can be configured for specific accessibility.



User account management

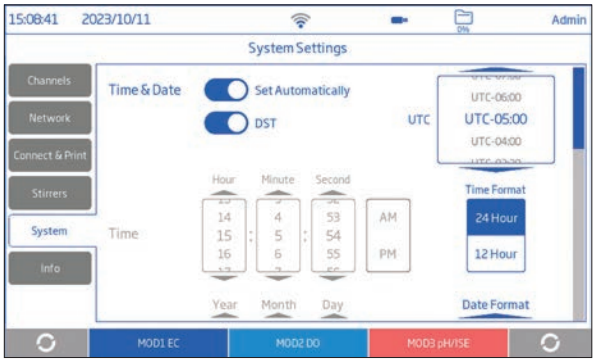
Administrator can create and manage accounts from the Account Management Screen.

System settings



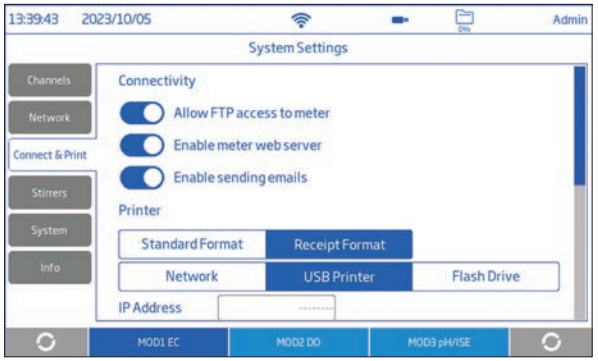
Network screen

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

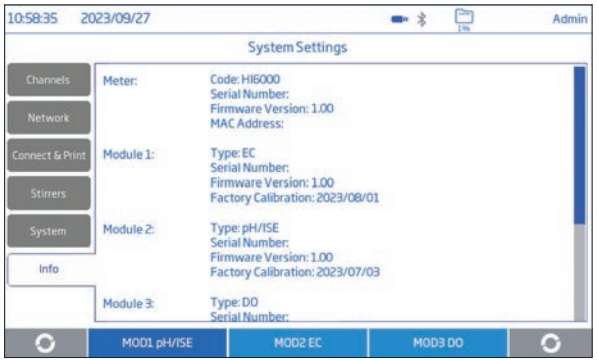
The system screen enables users to configure options such as: Time, Date, Language, Meter ID, Decimal Separator, Backlight Saver, Audible signals, Startup Tutorial, Reset User, and Factory Settings restore (admin function only).



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 me ter 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 recall and sharing

The function 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

Tapping the plot icon displays log plotted as graph.

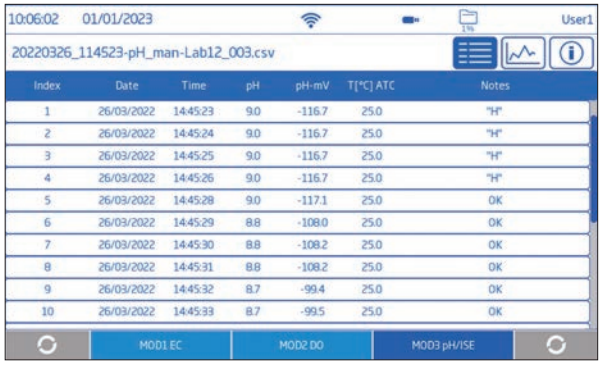
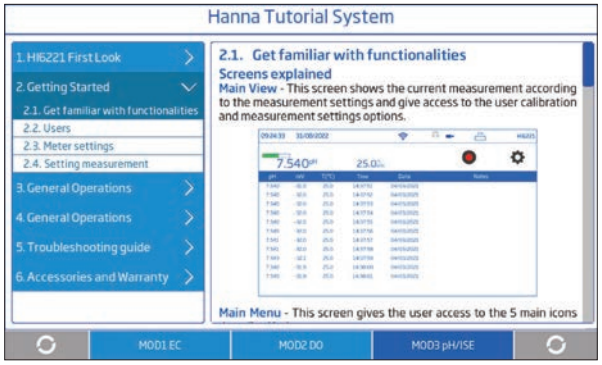


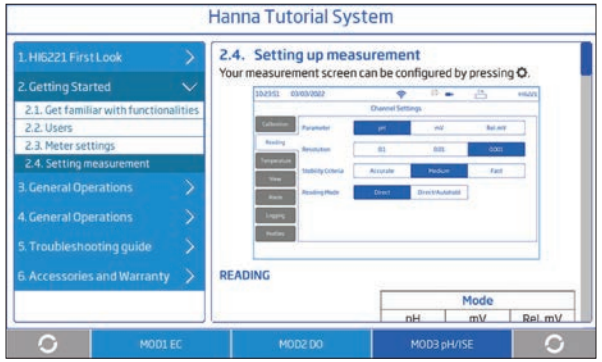
Table view

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

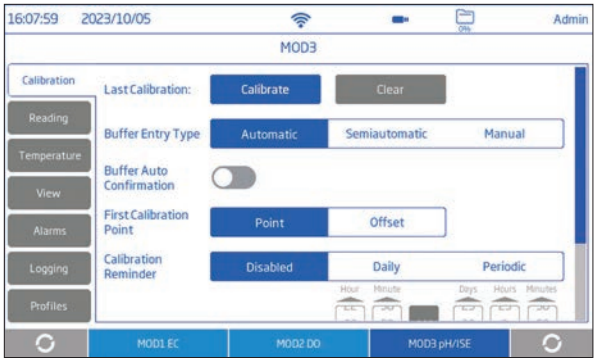




On-board help

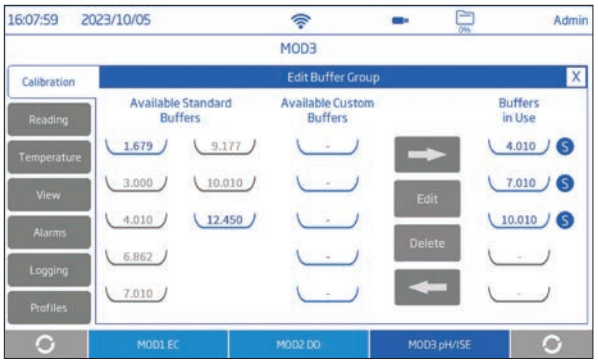
The HELP menu supports users with a brief overview of the system's main functionalities through text and video tutorials.

Measurement setup configuration



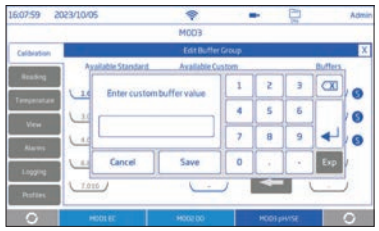
Calibration

Customize calibration options such as Last Calibration, Automatic, semi-automtic or manual calibration, First Calibration Point, daily or periodic Calibration Reminder, and buffer Groups.



Buffer groups

This option allows the user to select Buffers in Use for calibrating a pH electrode when using the Automatic calibration type.

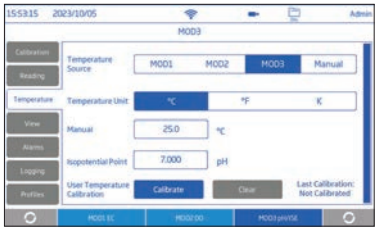


Custom buffers

Custom buffers can be created.

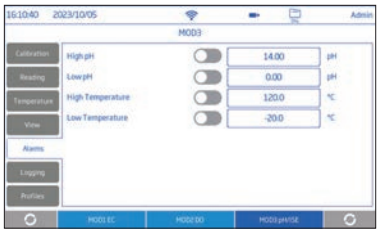
Reading

Customize measurement options such as Parameter, Resolution, Stability Criteria, Reading Mode



Temperature

Customize temperature options such as Automatic or manual temperature Source, °C, °F, or K temperature Unit, Manual Temperature input, Isopotential Point.

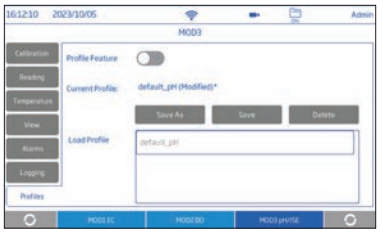


Alarm configuration

Alarm configuration allows users to set the high and low threshold limits for the measured parameters. When the parameter is enabled and the 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), File Name (Manual and Autohold), and Sample ID (Manual and Autohold) can be configured under this option menu.

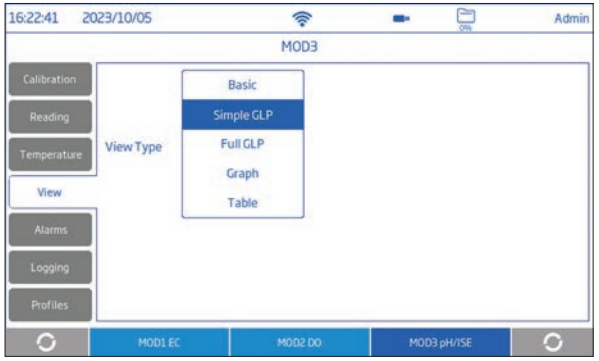


Profiles

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

This screen allows users to select the preferred display configuration.

pH options: Basic, Simple GLP, Full GLP, Graph, Table
mV options: Basic, Graph, Table
Rel. mV options: Simple GLP, Basic, Graph, Table

Basic view

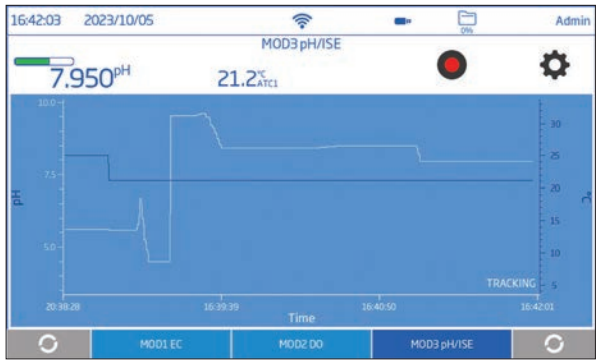
Basic screen displays the measured value, measurement unit as well as temperature source.

Simple GLP view

In addition to data displayed when Basic option is selected, Simple GLP screen also displays: last calibration date and time, Offset value, average slope (Avg. Slope), and electrode condition (Condition).

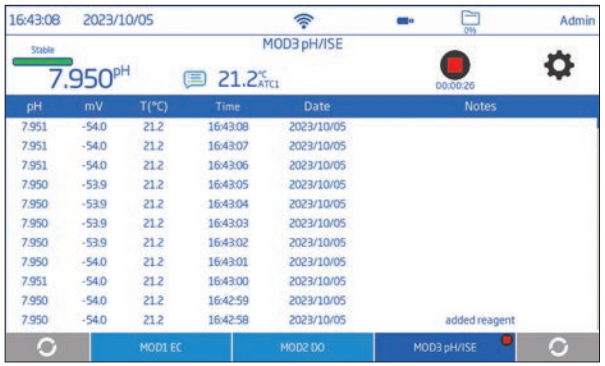
Full GLP view

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



Graph view

When Graph is selected, the measured value is plotted as a graph and all graph details can be viewed by using zoom and pan options for both axes and parameters.



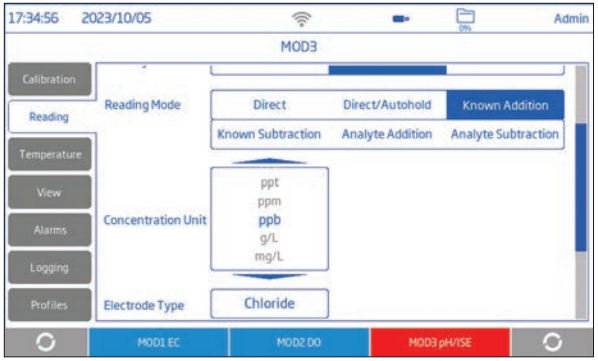
Table

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.

HI6000-1 • HI6000-2

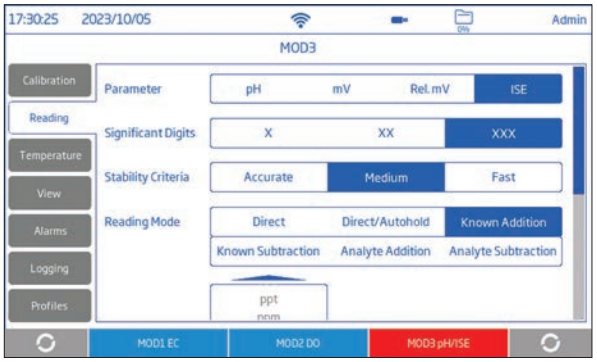
pH/ORP and pH/ORP/ISE Modules

HI6000-1 (pH/ORP) and HI6000-2 (pH/ORP/ISE) modules are designed to be used with the HI6000 Multiparameter Modular System.



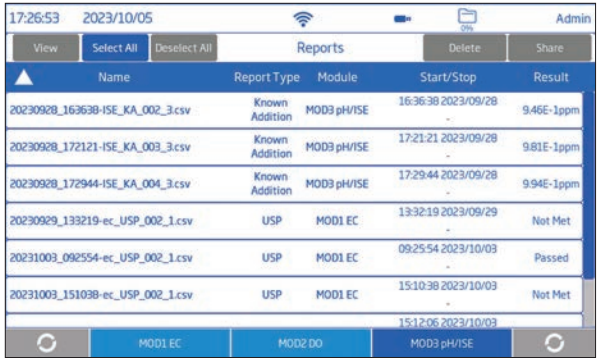
ISE measurement with choice of concentration units (HI6000-2 module)

The HI6000 allows for calibration and readings in choice of concentration units. The choices of concentration units include ppt, g/L, mg/mL, ppm, mg/L, µg/L, ppb, µg/mL, mg/mL, M, mol/L, mmol/L, %w/v and a user-defined unit.



ISE measurement with incremental methods (HI6000-2 module)

In addition to pH or ORP measurement, HI6000-2 module also features ISE measurement and Incremental Methods for Ion Selective Electrode applications. Known Addition, Known subtraction, Analyte Addition and Analyte Subtraction are versatile methods for the measurement of ions in aqueous samples from environmental, agricultural, industrial, biotechnical, pharmaceutical, food, wastewater, drinking water. These methods offer stepwise guidance for ion analysis and are great for complex or high ionic strength samples as the electrodes remain immersed throughout the process, so analysis is faster and more accurate.



Reports

Reports of each analysis are recorded for download

HI1131B pH electrode

Recommended probes

For pH measurements, Hanna recommends the HI1131B double junction combination pH electrode, together with HI7662-TW temperature probe for use with this module.

HI1131B is a glass body, double junction, refillable pH electrode with an indicating sensor made of High Temperature (HT) glass. The double junction reference and HT glass design allow the HI1131B to be used in a wide variety of applications including samples with metals and elevated temperatures.

Probe connection to the unit is secured through a galvanically isolated BNC connection.

HI7662-TW stainless steel temperature probe allows the meter to automatically temperature compensate (ATC) pH measurements.

Measurement

- Measure pH or mV with temperature (HI6000-1); Measure pH, mV, or ISE with temperature (HI6000-2)
- 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
  - Known Addition, Known Subtraction, Analyte Addiiton, Analyte Subtration (HI6000-2)
- Temperature compensation can be Automatic (using temperature probe) or set manually
- Audible and/or alarm messages for measurements outside of predefined limits
- Galvanic isolation for pH/ORP measurement

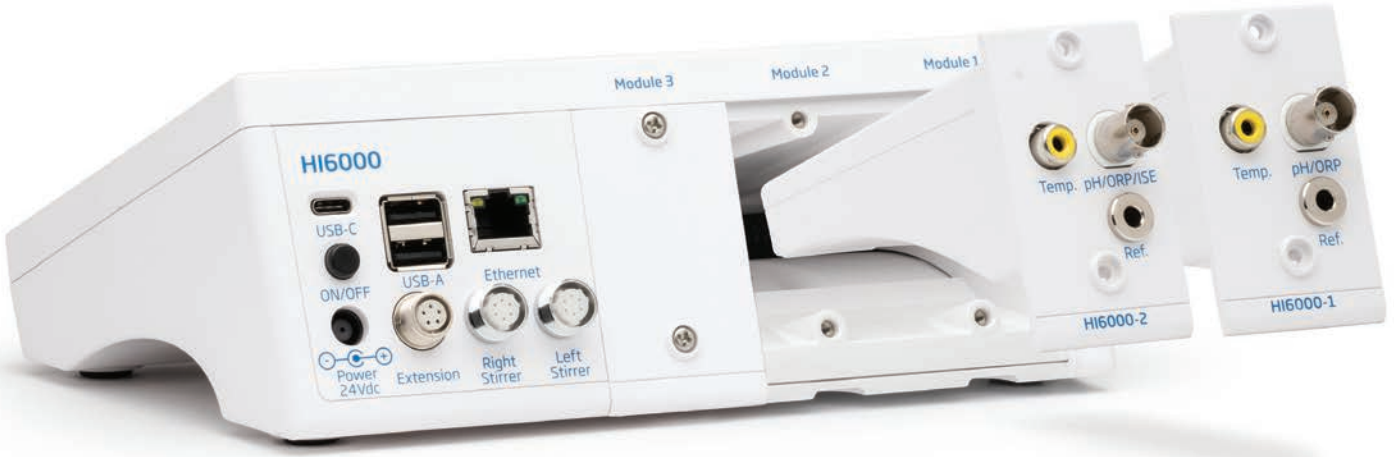
Calibration

- 5-point pH calibration with automatic recognition for standard buffers (Hanna and NIST buffers)
- 5-point ISE calibration (HI6000-2)
- Choice of standard or custom buffers for calibration
- Non-volatile memory saves data and settings

Specifications

		HI6000 with HI6000-1 pH/ORP Module	HI6000 with HI6000-2 pH/ORP/ISE Module
pH	Range*	-2.0 to 20.0 pH; -2.00 to 20.00 pH; -2.000 to 20.000 pH	
	Resolution	0.1 pH; 0.01 pH; 0.001 pH	
	Accuracy	±0.1 pH; ±0.01 pH; ±0.002 pH (±1 last significant digit)	
	Temperature compensation	Automatic or manual	
mV	Range	−2000.0 mV to 2000.0 mV	
	Resolution	1 mV; 0.1 mV	
	Accuracy	±0.2 mV ±1 last significant digit	
ISE (HI6000-2 module only)	Range	–	1×10^{-6} to 9.99×10^{10} concentration
	Resolution	–	1; 0.1; 0.01; 0.001 concentration
	Accuracy	–	±0.5% (monovalent ions); ±1% (divalent ions)
	Calibration	–	Automatic, up to five-point calibration, seven fixed standard solutions available for each measurement unit, and five user defined standards
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	
Relative mV offset range		±2000.0 mV	
pH calibration	Calibration points	up to 5	
	Type	Automatic; Semiautomatic; Manual	
	Standard buffers	Hanna and NIST pH 1.68, 3.00, 4.01, 6.86, 7.01, 9.18, 10.01, 12.45	
	Custom buffers	Up to 5	
	Custom group	Up to 5	
	1st calibration point	Offset or Points (user setting)	
Temperature user calibration		Single point, adjustable; Isopotential point: -2.000 to 20.000 pH	

* The range may be limited by the probe's limits.



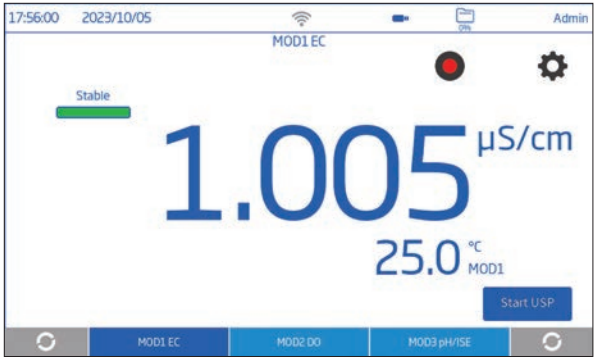
HI6000-3

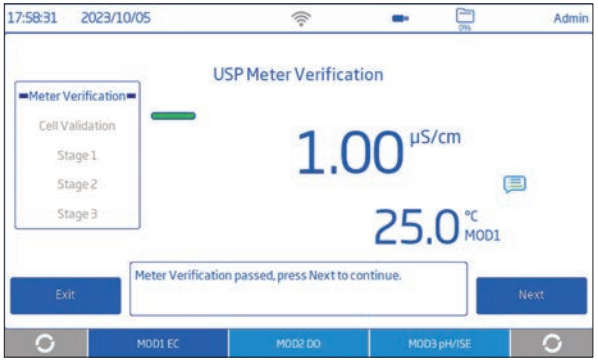
Conductivity Module

HI6000-3 Conductivity module is designed to be used with the HI6000 Multiparameter Modular System.

The HI6000-3 module also supports the measurement of high purity water used in the pharmaceutical industry, The application includes meter verification, cell validation applications and the HI6000-3 module is programmed for the three stages of the USP <645> bulk water analysis. The meter guides you through the measurement steps and notifies you when a measurement is out of specification. Reports can be generated and saved.

- Multiparameter measurement flexibility
- Plug-and-play design
- Effortless installation
- Application-specific solution without heavy customization





EC USP mode

The HI6000 Multiparameter Modular System used in conjunction with HI6000-3 EC module and EC probes can be used for conductivity measurements required to prepare water for injection (WFI) according to USP <645>.

The HI6000 provides clear instructions on how to perform each stage and automatically checks that the temperature, conductivity, and stability are within USP limits.

The Direct/USP mode, is a special mode with specific measurement settings defined by the United States Pharmacopoeia Regulations and European Pharmacopoeia. The mode allows the instrument to measure and qualify water according to these guidelines. The process involves three parts: Meter Validation with precision resistors, Cell Verification with conductivity standard, and Stage 1, 2, and 3 water tests. The results of each test are recorded in a report that includes information such as company name, date & time, instrument ID, operator ID, sample ID, module types used (EC or pH), calibration details, and test results.

Recommended Probe

Hanna recommends the HI7631233 four-ring conductivity/resistivity/TDS/ salinity probe for use with this module.

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.

HI7631233 four-ring conductivity/ resistivity/TDS/ salinity probe

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.

Salinity 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.

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

Specifications

		HI6000 with HI6000-3 EC Module
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 or ±0.010 µS/cm, whichever is greater
	Cell Constant	0.0500 to 200.00 /cm
	Calibration Type	Automatic; manual
	Calibration Points	Single; Multiple
	Calibration 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
	Temperature Compensation	linear; natural; standard; disabled
	Reference Temperature	Range 5.0 to 30.0 °C (41.0 to 86.0 °F) Resolution 0.1 °C / 0.1 °F
	Temperature Coefficient	0.00 to 10.00 %/°C
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 or ±1 Ω•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	±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	±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
	Calilbration	Single point, adjustable

* The range may be limited by the probe's limits.

HI6000-4

Dissolved Oxygen Module

HI6000-4 Dissolved Oxygen module is designed to be used with the HI6000 Multiparameter Modular System for fresh and saltwater measurements of dissolved oxygen.

The HI6000-4 module supports the dissolved oxygen applications of Oxygen Uptake Rate (OUR), Specific Oxygen Uptake Rate (SOUR), and Biological Oxygen Demand (BOD) for batch analysis of multiple samples of municipal and industrial wastewaters. The meter efficiently guides the user through the procedures adhering to Standard methods guidelines and is designed to simplify measurement and calculations. Reports are saved for analysis records.

HI764113-1 Smart Cap

Smart Cap with RFID communication stores factory calibration coefficients.

The domed surface helps repel surface bubbles and provides increased luminophore surface area for better measurement sensitivity.

HI7641133
Optical DO Probe

HI76483A/P Easy, Screw Cap DO Membranes

HI764833
Polarographic
DO Probe

Recommended probes

Hanna recommends a choice of 2 dissolved oxygen probes for use with this module: HI7641133 optical dissolved oxygen probe (opdo®) and HI764833 polarographic probe.

HI7641133 optical dissolved oxygen probe (opdo®) is based on the principle of fluorescence quenching. An immobilized Pt-based luminophore is excited by the light of a blue LED and emits a red light. As oxygen interacts with the luminophore it reduces the intensity and lifetime of the luminescence. The lifetime of the luminescence is measured by a photodetector and is used to calculate the dissolved oxygen concentration.

The probe is fitted with easy to use Smart Caps (HI764113-1) which lock in place and contain pre-loaded calibration coefficients that are automatically transmitted to the probe. The Smart Cap features an immobilized O_2 sensitive luminophore with rugged insoluble black oxygen permeable protective layer.

Over time, the sensor's optical components can age but are compensated for by using the reference signal to compensate the measuring path. As a result, the sensor provides accurate DO measurements over long periods of time without the need for frequent calibration.

The slim and versatile HI764833 polarographic probe covers a wide range of dissolved oxygen and has a built-in thermistor temperature sensor that compensates for temperature variations. The slim design allows for convenient measurement in test tubes and Biological Oxygen Demand (BOD) bottles.

Durable and robust, the probe features a platinum cathode and Ag/AgCl anode assembly. Accurate and with a fast response time.

The probe is fitted with durable (PTFE), oxygen permeable, screw on membrane caps. Caps are filled with electrolyte and easily install on the probe.

Concentration measurements are automatically compensated for barometric pressure, temperature, and salinity. Barometric pressure and temperature are automatically measured and compensated. Salinity is automatically compensated by setting manually the salinity concentration of the water being measured.

Additional features include built-in methods and calculations for the measurement of BOD (Biological Oxygen Demand), OUR (Oxygen Uptake Rate), and SOUR (Specific Oxygen Uptake Rate)

Pressure compensation is done automatically (built-in barometer) or users have the option to manually enter required value. Pressure is displayed in user-configurable units: mmHg, mbar, kPa, inHg, psi, atm.

Measurement

- Measure %Sat, mg/L, ppm (DO); mg/L, ppm (BOD), mg/L (OUR), ppm, mg/L (SOUR)
- 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; BOD, OUR, SOUR
- Temperature compensation can be Automatic or set manually
- Audible and/or alarm messages for measurements outside of predefined limits
- Galvanic isolation for measurement

Calibration

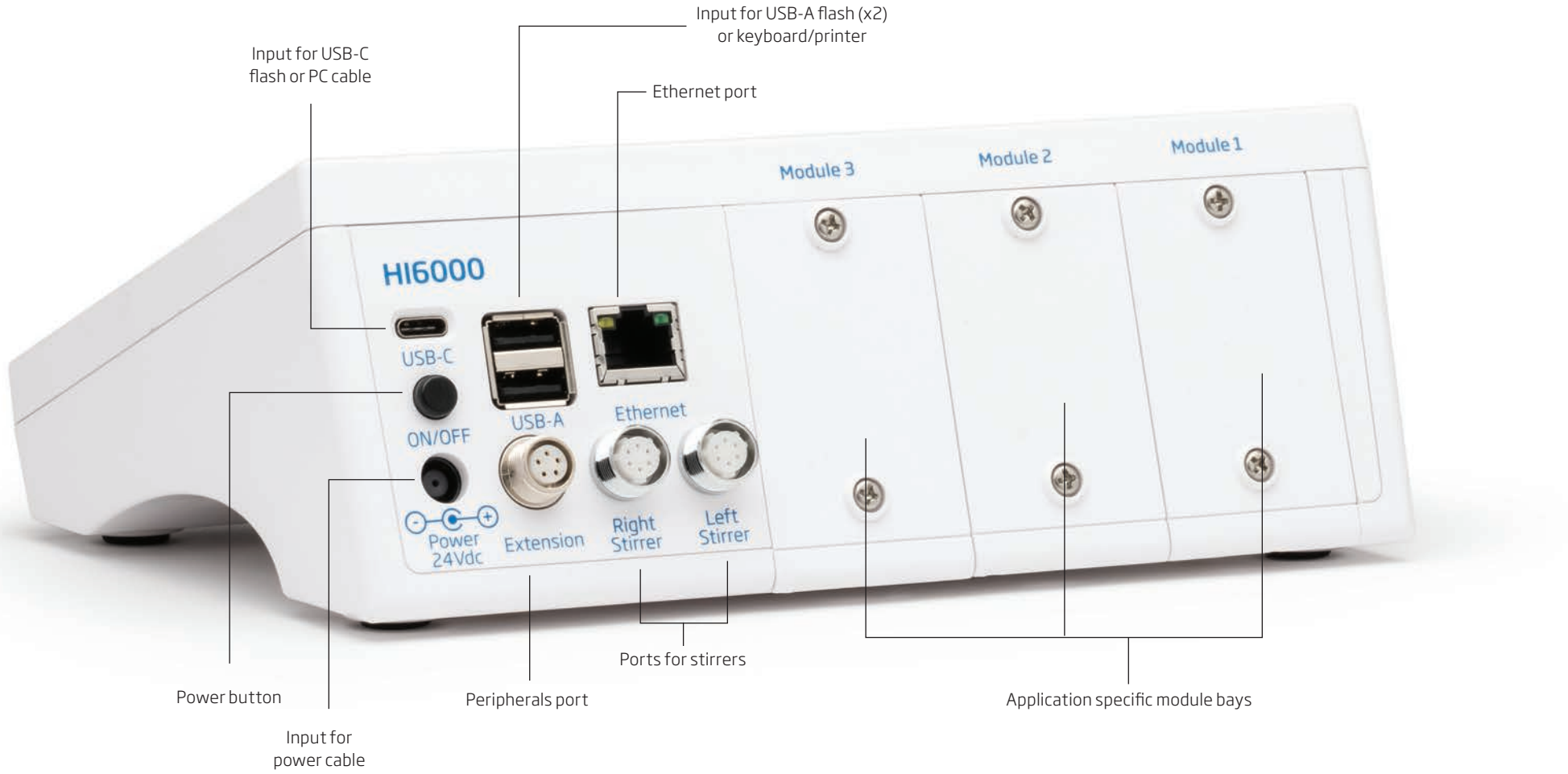
- One or two points calibration at 0% and/or 100% saturation
- Single point manual calibration in mg/L or % saturation using a reference method
- Non-volatile memory saves data and settings

Specifications

		HI6000 with HI6000-4 DO Module
DO	Range*	0.0 to 600.0 % saturation; 0.00 to 90.00 mg/L (ppm) concentration
	Resolution	0.1 % saturation; 0.01 mg/L (ppm)
	Accuracy	Refer to probe used
Barometric pressure	Range	450.0 to 850.0 mmHg / 600.0 to 1133.2 mbar / 60.00 to 113.32 kPa / 17.72 to 33.46 inHg / 8.702 to 16.436 psi / 0.5921 to 1.1184 atm
	Resolution	0.1 mmHg / 0.1 mBar / 0.01 kPa / 0.01 inHg / 0.001 psi / 0.0001 atm
	Accuracy	±3 mmHg within ±15 % from the calibration point; ±3 mmHg ±1, least significant digit
	Compensation	Automatic (meter-integrated barometer) or Manual
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	Refer to probe used
	Compensation	Automatic or manual
DO calibration		One or two points at 100.0 % (8.26 mg/L) and 0.0 % (0.00 mg/L) Automatic; Manual (user entered value in % saturation, mg/L, or ppm)
Temperature user calibration		1 point, configurable
Salinity compensation		Manual; 0.00 to 45.00 psu or ppt; 0.0 to 130.0 %

* The range may be limited by the probe's limits.

Rear ports


Input for USB-A flash (x2)
or keyboard/printer
Input for USB-C
flash or PC cable
Ethernet port
Module 3
Module 2
Module 1
HI6000
USB-C
USB-A
Ethernet
ON/OFF
Power
24Vdc
Extension
Right
Stirrer
Left
Stirrer
Power button
Input for
power cable
Peripherals port
Ports for stirrers
Application specific module bays

Other specifications

Reading	Modes	Direct; Direct/Autohold and module specific applications
	Stability criteria	Accurate; medium; fast
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 s; 1, 2, 5, 10, 15, 30, 60, 120, 150, 180 min.
	Sample ID	Incremental mode or manual
	Export option	.CSV file format
Connectivity	USB-A	2 ports for keyboard and / or printer input or USB thumb drive
	USB-C	1 port for PC connectivity and USB-C type thumb drive
	Wi-Fi & ethernet	Log transfer and download (web server; email; FTP)
	RS232	Connecting peripherals
Calibration reminder		Daily: 0 min. to 23 hours and 59 min. Periodic: 1 min. to 30 days, 23 hours and 59 min. Disabled
Users		Up to 9 users and the default administrator account
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 x 160 x 77 mm (8.0 x 6.2 x 3.0 ")
Weight		Approximately 1.2 kg (26.5 lbs.)

Ordering information

Meter only

HI6000-01 (US power plug, main unit only) and **HI6000-02** (EU power plug, main unit only) is supplied with HI764060 electrode holder, 24 VDC power adapter (US or EU power plug option), USB-C to USB-A cable, instrument quality certificate, quick reference with QR code for manual download.

Kits

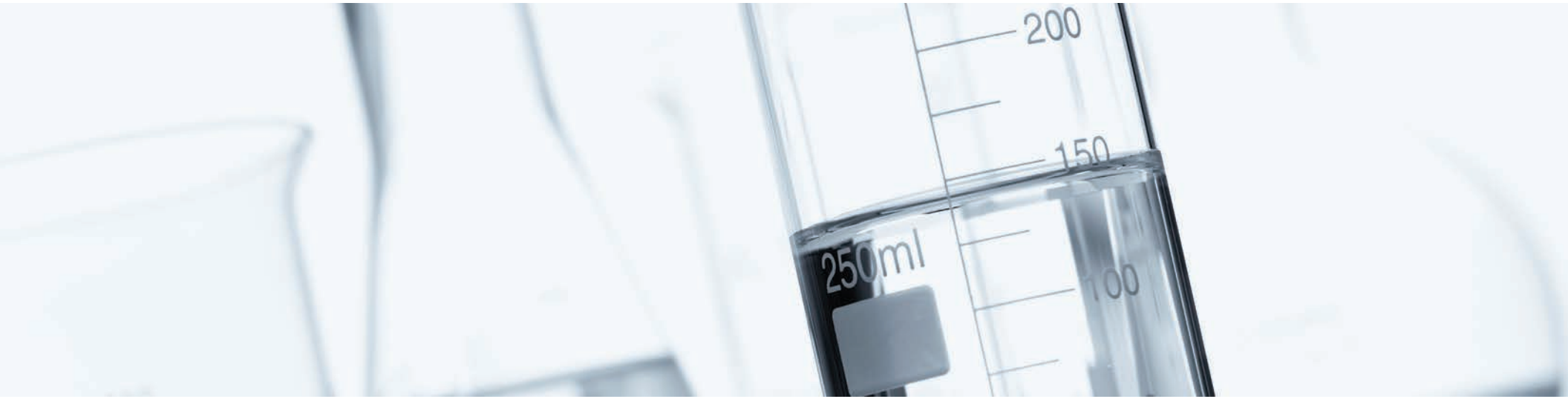
2 pH/ISE kit: **HI6222-01** (US power plug, main unit only) and **HI6222-02** (EU power plug, main unit only) is supplied with two HI6000-2 pH/ISE modules; HI1131B pH electrode; HI7662-TW temperature probe; pH calibration starter kit consisting of: pH 4.01 buffer solution (2 sachets), pH 7.01 buffer solution sachet (4 sachets), pH 10.01 buffer solution sachet (2 sachets); HI700601 electrode cleaning solution sachet (2 sachets); HI70300S storage solution for pH & ORP electrodes (25 mL); HI7082 3.5M KCl electrolyte solution (30 mL); HI764060 electrode holder with following accessories: base plate (integrated pivot pin) and screw (requires installation), cable holder clip (attached), electrode holder with adapter, attached, capillary pipette; 24 VDC power adapter; USB-C to USB-A cable; probe quality certificate; quick reference guide with instrument quality certificate.

1 pH/ISE, 1 EC kit: **HI6522-01** (US power plug, main unit only) and **HI6522-02** (EU power plug, main unit only) is supplied with one HI6000-2 pH/ISE module and one HI6000-3 EC module; HI1131B pH electrode; HI7662-TW temperature probe; pH calibration starter kit consisting of: pH 4.01 buffer solution (2 sachets), pH 7.01 buffer solution sachet (4 sachets), pH 10.01 buffer solution sachet (2 sachets); HI700601 electrode cleaning solution sachet (2 sachets); HI70300S storage solution for pH & ORP electrodes (25 mL); HI7082 3.5M KCl electrolyte solution (30 mL); HI7631233 EC and resistivity probe; EC calibration starter kit consisting of: 1413 µS/cm standard solution (4 sachets), 12880 µS/cm standard solution (2 sachets), 5000 µS/cm standard solution (2 sachets); electrode rinse solution (2 sachets); HI764060 electrode holder with following accessories: base plate (integrated pivot pin) and screw (requires installation), cable holder clip (attached), electrode holder with adapter, attached, capillary pipette; 24 VDC power adapter; USB-C to USB-A cable; probe quality certificate; quick reference guide with instrument quality certificate.

1 pH, 1 optical (opdo®) DO kit: **HI6542-01** (US power plug, main unit only) and **HI6542-02** (EU power plug, main unit only) is supplied with one HI6000-2 pH/ISE module and one HI6000-4 DO module; HI1131B pH electrode; HI7662-TW temperature probe; pH calibration starter kit consisting of: pH 4.01 buffer solution (2 sachets), pH 7.01 buffer solution sachet (4 sachets), pH 10.01 buffer solution sachet (2 sachets); HI700601 electrode cleaning solution sachet (2 sachets); HI70300S storage solution for pH & ORP electrodes (25 mL); HI7082 3.5M KCl electrolyte solution (30 mL); HI7641133 optical DO probe (opdo®); HI764113-1 Smart Cap™ with O-ring; calibration / storage vessel; syringe, lens wipe, silicone grease (6 g sachet); DO Smart Cap quality certificate; HI764060 electrode holder with following accessories: base plate (integrated pivot pin) and screw (requires installation), cable holder clip (attached), electrode holder with adapter, attached, capillary pipette; 24 VDC power adapter; USB-C to USB-A cable; probe quality certificate; quick reference guide with instrument quality certificate.

1 pH, 1 polarographic DO kit: **HI6542P-01** (US power plug, main unit only) and **HI6542P-02** (EU power plug, main unit only) is supplied with one HI6000-2 pH/ISE module and one HI6000-4 DO module; HI1131B pH electrode; HI7662-TW temperature probe; pH calibration starter kit consisting of: pH 4.01 buffer solution (2 sachets), pH 7.01 buffer solution sachet (4 sachets), pH 10.01 buffer solution sachet (2 sachets); HI700601 electrode cleaning solution sachet (2 sachets); HI70300S storage solution for pH & ORP electrodes (25 mL); HI7082 3.5M KCl electrolyte solution (30 mL); HI764833 polarographic DO probe; membrane cap with O-ring (2 pcs.); HI7041S electrolyte solution (30 mL); HI764060 electrode holder with following accessories: base plate (integrated pivot pin) and screw (requires installation), cable holder clip (attached), electrode holder with adapter, attached, capillary pipette; 24 VDC power adapter; USB-C to USB-A cable; probe quality certificate; quick reference guide with instrument quality certificate.

Modules (each HI6000 unit can house 3 modules):	Recommended Probes:
HI6000-1 pH/ORP module	HI1131B (pH) HI7662-TW (Temperature)
HI6000-2 pH/ORP/ISE module	HI1131B (pH) HI7662-TW (temperature) Hanna Ion Selective Electrodes
HI6000-3 EC module	HI7631233 (EC)
HI6000-4 DO module	HI7641133 (optical DO) HI764833 (polarographic DO)



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