HI5321

Research Grade Conductivity/TDS Meter

EC/TDS/Resistivity/Salinity and Temperature with USP <645>

The HI5321 is an advanced research grade benchtop EC/TDS/Salinity/Resistivity meter that is completely customizable with a large color LCD, capacitive touch keys, and USB port for computer connectivity.

Customizable User Interface

The user interface of the HI5321 allows the user to show measurements in various modes: basic measurement with or without GLP information, real-time graphing, and logging data. Calibration stability criteria can be adjusted from fast, moderate, and accurate. Programmable alarm limits can be set to inside or outside allowable limits.

Color Graphic LCD

The HI5321 features a color graphic LCD with on-screen help, graphic, and custom color configurations. The display allows for real-time graphing.

Capacitive Touch

The HI5321 features sensitive capacitive touch buttons for accurate keystrokes when navigating menus and screens.

Auto-ranging

The meter can be set to auto-ranging in which the meter chooses the appropriate conductivity range from seven ranges or fixed range in which the meter will only display reading in µS/cm or mS/cm.

Automatic Temperature Compensation

All readings are automatically compensated for temperature variations with a built in temperature sensor.

Calibration

The HI5321 can be calibrated up to four points with a choice of six pre-programmed conductivity standards or user defined custom standards. Resistivity, TDS, Practical Salinity (PSU) and Natural Seawater Scale are calibrated through conductivity. The % NaCl is calibrated to single point with the HI7037 salinity standard.

GLP Data

HI5321 includes a GLP Feature that allows users to view calibration data and calibration expiration information at the touch of a key. Calibration data include date, time, standards used for calibration.

Data Logging

Three selectable logging modes are available on the HI5321: automatic, manual, and AutoHold logging. Automatic and manual logs up to 100 lots with 50,000 records max/lot, with up to 100,000 total data points. Automatic logging features the option to save data according to sampling period and interval.

Data Transfer

Data can be transferred to a PC with USB cable and HI92000 software (both sold separately).

Contextual Help

Contextual help is always available through a dedicated "HELP" key

Four-ring Conductivity Probe

All readings are performed with the HI76312 four-ring conductivity probe with a built in temperature sensor for automatic temperature correction. The four rings are made with platinum and the body of the electrode is made of Polyetherimide (PEI) plastic that is resistant to many harsh chemicals.

USP <645>

For the measurement of high purity water used in pharmaceutical manufacturing, the HI5321 is programmed with the first two stages of the USP <645> method. Once a stage is met a report is generated and can be saved. Up to 200 reports can be stored and transferred to a Windows® compatible computer using a USB cable and software (sold separately).

Specifications		HI5321
EC	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 actual EC*
	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)
	Cell Constant	0.0500 to 200.00/cm
	Cell Type	4-pole cell
	Calibration	automatic standard recognition, user standard single point / multi-point calibration
	Calibration Reminder	yes
	Temperature Coefficient	0.00 to 10.00 %/°C
	Temperature Compensation	disabled, linear and non-linear (natural water)
	Reference Temperature	5.0 to 30.0°C
	Profiles	up to 10
	USP Compliant	yes
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)
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	±2% of reading (±1 Ω•cm)
Salinity	Range	practical scale: 0.00 to 42.00 psu; natural sea water scale: 0.00 to 80.00 ppt; percent scale: 0.0 to 400.0%
	Resolution	0.01 for practical scale/natural sea water scale; 0.1% for percent scale
	Accuracy	±1% of reading
	Calibration	percent scale–one-point (with HI7037 standard); all others through EC
Temperature**	Range	-20.0 to 120°C; -4.0 to 248.0°F; 253.15 to 393.15K
	Resolution	0.1°C; 0.1°F; 0.1K
	Accuracy	±0.2°C ; ±0.4°F; ±0.2K (without probe)
Additional Specifications	EC Probe	HI76312 platinum, four-ring EC/TDS probe with and 1 m (3.3') cable (included)
	GLP	cell constant, reference temperature/coefficient, calibration points, cal time stamp, probe offset for conductivity
	Logging	**record :** 100,000 data point storage/channel, up to 100 lots with max. 50,000 records/lot; **interval:** fourteen presets selectable between 1 second and max log time of 180 minutes; **type:** automatic, manual, AutoHOLD; **additional:** 200 records USP
	PC Connection	USB
	Power Supply	12 VDC adapter (included)
	Environment	0 to 50°C (32 to 122°F; 273 to 323K) RH max 95% non-condensing
	Dimensions / Weight	160 x 231 x 94 mm (6.3 x 9.1 x 3.7") / 1.2 kg (2.64 lbs.)
Ordering Information		**HI5321-01** (115V) and **HI5321-02** (230V) are supplied with HI76312 EC/TDS probe, 1413 µS/cm conductivity standard sachet (4), 12880 µS/cm conductivity standard sachet (2), 5000 µS/cm conductivity standard sachet (2), electrode rinse solution sachet (2), HI76404W electrode holder, 12 VDC adapter, capillary dropper pipette, quality certificate, quick start guide and instruction manual.

(*) Uncompensated conductivity (or TDS) is the conductivity (or TDS) value without temperature compensation.
(**) Reduced to actual probe limits

EC, TDS and Salinity solutions begin on page 5.31

HI2300

Autoranging Bench Meter

EC, TDS, Salinity and Temperature

The HI2300 is a durable benchtop EC/TDS/Salinity and temperature meter that features a four-ring potentiometric probe, one-point calibration, and a USB port for computer connectivity. The meter is autoranging to choose the appropriate conductivity and total dissolved solids (TDS) range, and can easily be switched to salinity mode to measure from 0.0 to 400.0% NaCl.

Four-ring EC Probe

The HI2300 meter is supplied with the HI76310 platinum, four-ring EC/TDS probe with a built-in temperature sensor that operates over a wide range from 0.00 µS/cm to 500.0 mS/cm*.

Calibration

EC and TDS are calibrated at one point with a choice of six pre-programmed standards. Salinity is calibrated at one point using the HI7037 100% NaCl standard solution.

Temperature Compensation

Temperature can be compensated for automatically (ATC) or manually (MTC) from -20.0 to 120.0°C, or it can be disabled for actual conductivity or TDS measurements. The temperature correction coefficient, also referred to as β, is adjustable from 0.00 to 6.00 %/°C.

Adjustable TDS Factor

The factor that relates conductivity to total dissolved solids is based on the type of sample being measured. For users to get an accurate determination of TDS based on their unique solution, the TDS factor is adjustable from 0.40 to 0.80.

GLP Data

The calibration data including date, time, standards used, offset and cell constant can be accessed at any time along with the current measurement by selecting the Good Laboratory Practice (GLP) display option.

Data Logging

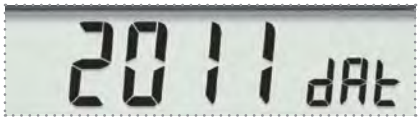
The log-on-demand feature allows up to 500 data points to be recorded and exported to a computer for data review and storage.

Data Transfer

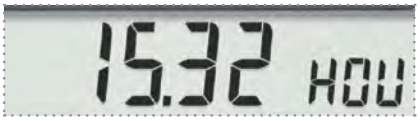
Data can be transferred to a PC with USB cable and HI92000 software (both sold separately).

On-screen Features

Last calibration date



Last calibration year



Last calibration time

Cell constant value (K)

Offset value

Specifications		HI2300
EC	Range	0.00 to 29.99 µS/cm; 30.0 to 299.9 µS/cm; 300 to 2999 µS/cm; 3.00 to 29.99 mS/cm; 30.0 to 200.0 mS/cm; up to 500.0 mS/cm (actual EC)*
	Resolution	0.01 µS/cm; 0.1 µS/cm; 1 µS/cm; 0.01 mS/cm; 0.1 mS/cm
	Accuracy	±1% of reading ± (0.05 µS/cm or 1 digit)
TDS	Range	0.00 to 14.99 mg/L (ppm); 15.0 to 149.9 mg/L (ppm); 150 to 1499 mg/L (ppm); 1.50 to 14.99 g/L (ppt); 15.0 to 100.0 g/L (ppt); up to 400.0 g/L (actual TDS)*, with 0.80 conversion factor
	Resolution	0.01 mg/L; 0.1 mg/L; 1 mg/L; 0.01 g/L; 0.1 g/L
	Accuracy	±1% of reading ± (0.03 mg/L or 1 digit)
Salinity	Range	0.0 to 400.0% NaCl
	Resolution	0.1%
	Accuracy	±1% of reading
Temperature**	Range	-20.0 to 120.0°C
	Resolution	0.1°C
	Accuracy	±0.4°C
Additional Specifications	EC Calibration	automatic, one point with six memorized values (84, 1413, 5000, 12880, 80000, 111800 µS/cm)
	NaCl Calibration	one point, with HI7037 calibration solution (optional)
	Temperature Calibration	two point, at 0 and 50°C
	Temperature Compensation	automatic or manual from -20.0 to 120.0°C, disabled
	Temperature Coefficient	selectable from 0.00 to 6.00%/°C (EC and TDS only)
	TDS Conversion Factor	selectable from 0.40 to 0.80 (default value: 0.50)
	Probe	HI76310 platinum, four ring conductivity/TDS probe with internal temperature sensor and 1 m (3.3') cable (included)
	PC Connectivity	opto-isolated USB
	Logging	log on demand, 500 samples
	Auto-off	after five minutes of non-use (can be disabled)
	Power Supply	12 VDC adapter (included)
	Environment	0 to 50°C (32 to 122°F); RH max 95%
	Dimensions	235 x 222 x 109 mm (9.2 x 8.7 x 4.3")
	Weight	1.3 kg (2.9 lbs.)
Ordering Information	**HI2300-01** (115V) and **HI2300-02** (230V) is supplied with HI76310 conductivity probe, 12 VDC adapter and instructions.	

* with temperature compensation function disabled
(**) Reduced to actual sensor limits

EC, TDS and Salinity solutions begin on page 5.31

EC and Resistivity Meter

The HI2316 is a durable benchtop EC and resistivity meter that comes with a four-ring potentiometric EC probe and a resistivity probe. Both EC and resistivity can be manually calibrated at one point, and a knob on the front panel allows users to adjust the temperature coefficient.

Four-ring EC Probe

The HI2316 meter is supplied with the HI76303 platinum, four-ring EC probe with a built-in temperature sensor that operates over a wide range from 0.00 µS/cm to 199.9 mS/cm.

Resistivity Probe

The HI3316D probe is specially designed to measure resistivity. The probe features a built-in temperature sensor and is easy to maintain.

Temperature Compensation

Temperature is automatically compensated for from 0 to 50°C. The temperature correction coefficient, also referred to as β, is adjustable from 0 to 2.5 %/°C for EC measurements and from 2 to 7 %/°C for resistivity measurements.

Calibration

One-point calibration for both EC and resistivity is able to be performed manually.

Large LCD

The large LCD display is bright and easy to read.

Built-in Solution Holders

The HI2316 features four built-in solution holders for users to conveniently store their calibration standards when not in use.

Specifications		HI2316
EC	Range	0.0 to 199.9 µS/cm; 0 to 1999 µS/cm; 0.00 to 19.99 mS/cm; 0.0 to 199.9 mS/cm
	Resolution	0.1 µS/cm; 1 µS/cm; 0.01 mS/cm; 0.1 mS/cm
	Accuracy	±1% FS
Resistivity	Range	0 to 19.90 MΩ•cm
	Resolution	0.10 MΩ•cm
	Accuracy	±2% FS
Additional Specifications	Calibration	manual, one point, for both EC and resistivity
	Temperature Compensation	Automatic, 0 to 50°C (32 to 122°F) with β user selectable coefficients between 0 to 2.5%/°C for EC and from 2 to 7%/°C for resistivity
	Probes	HI76303 platinum four ring conductivity probe with internal temperature sensor, DIN connector and 1 m (3.3') cable (included); HI3316D resistivity probe with internal temperature sensor, DIN connector and 1 m (3.3') cable (included)
	Power Supply	12 VDC (power adapter included)
	Environment	0 to 50°C (32 to 122°F); RH max 95%
	Dimensions / Weight	235 x 222 x 109 mm (9.2 x 8.7 x 4.3") 1.3 kg (2.9 lbs)
Ordering Information		**HI2316-01** (115V) and **HI2316-02** (230V) are supplied with HI76303 conductivity probe, HI3316D resistivity probe, 12 VDC adapter and instruction manual.

Conductivity Meter

The HI2314 and HI2315 are durable benchtop meters that measure conductivity in four different ranges. These meters utilize a four-ring potentiometric conductivity probe with platinum sensors to offer versatility over typical amperometric designs. By utilizing the four-ring probe, it is possible to measure very low or very high conductivity levels without having to change probes. EC can be manually calibrated at one point, and a knob on the front panel allows users to adjust the temperature coefficient.

The HI2315 also offers automatic temperature compensation and an adjustable temperature coefficient (β).

Four-ring EC Probe

The HI2315 meter is supplied with the HI76303 platinum, four-ring EC probe with a built-in temperature sensor that operates over a wide range from 0.00 µS/cm to 199.9 mS/cm.

Temperature Compensation

Temperature is automatically compensated for from 0 to 50°C. The temperature correction coefficient, also referred to as β, is adjustable from 0 to 2.5 %/°C for EC measurements.

Calibration

Users can easily perform a manual, one-point calibration to ensure accurate measurements.

Large LCD

The large LCD display is bright and easy to read.

Built-in Solution Holders

The HI2315 features four built-in solution holders for users to conveniently store their calibration standards when not in use.

Specifications		HI2314	HI2315
EC	Range	0.0 to 199.9 µS/cm; 0 to 1999 µS/cm; 0.00 to 19.99 mS/cm; 0.0 to 199.9 mS/cm	
	Resolution	0.1 µS/cm; 1 µS/cm; 0.01 mS/cm; 0.1 mS/cm	
	Accuracy (@25°C/77°F)	±1% F.S. (excluding probe error)	
Additional Specifications	Calibration	manual, one point	
	Temperature Compensation	manual, 0 to 50°C (32 to 122°F) with β = 2%/°C	automatic, 0 to 50°C (32 to 122°F) with β adjustable coefficient from 0 to 2.5%/°C
	Probe	HI76300, platinum four ring conductivity probe with DIN connector and 1 m (3.3') cable (included)	HI76303, platinum four ring conductivity probe with internal temperature sensor, DIN connector and 1 m (3.3') cable (included)
	Power Supply	12 VDC adapter (included)	
	Environment	0 to 50°C (32 to 122°F); RH max 95% non-condensing	
	Dimensions	235 x 222 x 109 mm (9.2 x 8.7 x 4.3")	
	Weight	1.3 kg (2.9 lbs)	
Ordering Information		**HI2314-01** (115V) and **HI2314-02** (230V) are supplied with HI76300 conductivity probe, 12 VDC adapter and instruction manual. **HI2315-01** (115V) and **HI2315-02** (230V) are supplied with HI76303 conductivity probe, 12 VDC adapter and instruction manual.	

EC solutions begin on page 5.31