

HI 4522 • HI 4521

# Combination Meter

Research Grade Meters with Color Display, Calibration Check™ and USP



## FEATURES

- 240 x 320 Dot Matrix Color Display
- Logging and Graphing Capabilities
- USB and RS 232 for Computer Compatibility
- Auto recognition of probe type (2 or 4 ring, and nominal cell constant)
- Stages 1, 2 and 3 USP mode
- 3 salinity scales: Practical salinity, Natural sea water, Percent
- Linear and natural water temperature compensation
- Exclusive HANNA Calibration Check™

## The Right Choice in Research Grade Instruments.

HI 4521 and HI 4522 are USP compliant research-grade laboratory pH/EC and pH/ISE/EC bench meters with a backlit 240 x 320 dot-matrix color screen and millesimal measuring resolution. HI 4521 is dual-channel, while HI 4522 adds ISE and is single channel.

Features include auto-logging and real-time graphic displays, auto-end point mode and fully customizable SETUP options. This unit allows for automatic or manual temperature compensation. For accountability, on-screen GLP data displays concurrent measurement readout and logged graph data, calibration information, including buffer values and expiration date.

For ISE measurements, an ionic strength constant value is stored with GLP data

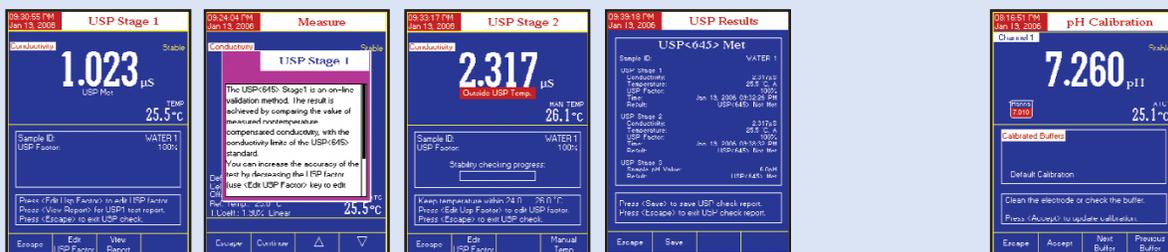
(HI 4522). During ISE Mode, the user has a choice of several incremental methods. With the option to choose up to 5 calibration points for pH (selected from a list of 5 custom and 8 memorized buffers), the system can be fitted to any desired measuring range.

HANNA's exclusive Calibration Check™ diagnostic system keeps the user informed about the quality and condition of the electrode and buffers used for calibration. An enhanced warning system, with acoustic signals, is in place to alert the user when measuring outside the calibration range. This system will also remind the user when a new calibration is due, or when the wrong buffer is being used during calibration. These units may also be given a unique ID number. The

user can consult the on-board contextual help from any mode simply by pressing the HELP menu. All the features are available in English, Italian, French and Spanish. The two measurement channels of HI 4521 and HI 4522 are galvanically isolated to eliminate instability.

Both meters can be used to perform all 3 stages of USP <645> conductivity tests for water quality. This instrument provides clear directions on how to perform each testing stage, automatically monitors the temperature, conductivity and stability during testing and determines whether a sample is within USP limits.

These units are equipped with USB and RS232 ports for PC connectivity and a 12 Vdc power supply.



## EC USP Mode

HANNA's HI 4522 and HI 4521 can be used to perform all 3 stages of United States Pharmacopeia (USP) testing requirements for water quality.

The instruments give clear instructions on how to perform each stage and automatically check that the temperature, conductivity and stability are within USP limits.

Comprehensive results are shown for all stages on a single screen at the end of the test. 200 reports can be saved for future recall.

## pH Calibration Check™

Proper calibration of the pH meter and pH electrode system is critical in order to achieve reliable results. HANNA's exclusive Calibration Check™ system includes several features to help users reach that goal.

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Dual Channel Display



### ORDERING INFORMATION

**HI 4521-01** (115V) and **HI 4521-02** (230V) are supplied with 4-ring EC probe, glass body pH electrode, temperature probe, power adapter, pH 4 and pH 7 buffer solutions, electrode refilling solution, electrode holder and instructions

**HI 4522-01** (115V) and **HI 4522-02** (230V) are supplied with 4-ring EC probe, glass body pH electrode, temperature probe, power adapter, pH 4 and pH 7 buffer solutions, electrode refilling solution, electrode holder and instructions

### SOLUTIONS

- HI 7030L** 12880 µS/cm cal. sol., 500 mL
- HI 7031L** 1413 µS/cm calibration so., 500 mL
- HI 7033L** 84 µS/cm calibration sol., 500 mL
- HI 7034L** 80000 µS/cm cal. sol., 500 mL
- HI 7035L** 111800 µS/cm cal. sol., 500 mL
- HI 7039L** 5000 µS/cm calibration sol., 500 mL
- HI 7037L** Calibration solution, 500 mL
- HI 6016** pH 1.677 buffer solution, 500 mL
- HI 6004** pH 4.010 buffer solution, 500 mL
- HI 6007** pH 7.010 buffer solution, 500 mL
- HI 6010** pH 10.010 buffer solution, 500 mL
- HI 6124** pH 12.450 buffer solution, 500 mL
- HI 77400P** pH 4 and pH 7 solution, (10) 20 mL sachets (5 ea.)

### ACCESSORIES

- HI 76404N** Electrode holder
- HI 92000** Windows® compatible software
- HI 920013** USB cable for PC connection
- HI 920010** RS232 cable for PC connection
- HI 180G\*** Compact magnetic stirrer with ABS plastic cover material, max 1000 rpm, Speedsafe™
- HI 190M\*** Magnetic stirrer with ABS plastic cover material, max 1000 rpm, Speedsafe™
- HI 200M\*** Magnetic stirrer with AISI stainless steel cover material, max 1000 rpm, Speedsafe™

\* -1: 110/115V, 50/60Hz  
 -2: 220/240V, 50/60Hz



### SPECIFICATIONS

		HI 4522	HI 4521
pH	Range	-2.0 to 20.0; -2.00 to 20.00; -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	
mV	Range	±2000 mV	
	Resolution	0.1 mV	
	Accuracy	±0.2 mV	
ISE	Range	1 x 10 <sup>-7</sup> to 9.99 x 10 <sup>-6</sup> concentration	—
	Resolution	1; 0.1; 0.01 concentration	—
	Accuracy	±0.5% (monovalent ions); ±1%	—
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 999.9 mS/cm; 1000 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; 1 mS/cm	—
	Accuracy	±1% of reading (±0.01 µS/cm)	
Resistivity	Range	1.00 to 99.99 Ohm·cm; 100.0 to 999.9 Ohm·cm; 1.000 to 9.999 kOhm·cm; 10.00 to 99.99 kOhm·cm; 100.0 to 999.9 kOhm·cm; 1.00 to 9.99 MOhm·cm; 10.0 to 100.0 MOhm·cm	—
	Resolution	0.01 Ohm·cm; 0.1 Ohm·cm; 0.001 kOhm·cm; 0.01 kOhm·cm; 0.1 kOhm·cm; 0.01 MOhm·cm; 0.1 MOhm·cm	—
	Accuracy	±2% of reading (±1 Ohm·cm)	
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	—
	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)	
	Factor	0.40 to 1.00	
Salinity	Range	Practical salinity: 0.00 to 42.00; Natural seawater: 0.00 to 80.00 ppt; Percent: 0.0 to 400.0%	
	Resolution	0.01 for practical salinity/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; 253.15 to 393.15K	
	Resolution	0.1°C; 0.1°F; 0.1K	
	Accuracy	±0.2°C; ±0.4°F; ±0.2K	
Calibration	pH	Automatic up to 5 points with 8 memorized values (pH 1.68, 3.00, 4.01, 6.86, 7.01, 9.18, 10.01, 12.45) + 5 custom buffers	
	ISE	Automatic, up to 5 points with 6 standard + 5 custom values	—
	Conductivity	Auto standard recognition, custom calibration solution/4 point calibration	
	Salinity	Percent scale—1 point (with HI 7037 buffer)	
	Temperature	3 points	
Relative mV Offset Range		±2000 mV	
Input Channel(s)		1 pH/mV/ISE + 1 EC	1 pH/mV + 1 EC
Calibration Check		pH electrode and buffer condition	
Temperature Compensation	pH	Automatic or manual from -20.0 to 120.0°C (-4.0 to 248.0°F)	
	EC	Linear and non-linear (natural water)	
Log-on-demand		10 Lots, 5000 samples per lot	
Auto Data Logging		10 Lots, 5000 samples per lot	
PC Connection		Opto-isolated USB and RS232	
Display		240 x 320 dot-matrix color LCD with on-screen help, graphing, language selection and custom configuration	
Power Supply		12 Vdc adapter (included)	
Dimensions/Weight		159 x 230 x 93 mm (6.3 x 9.1 x 3.7")/800 g (1.8 lbs.)	