

HI981914

Professional Waterproof Meter

pH/ORP/ISE

- **ISE measurement units**
 - Extensive choice of units to display readings (ppm, ppt, g/L, µg/L, mg/L, M, mol/L, mmol/L, %, w/v, user)
- **Waterproof**
 - IP67 rated waterproof, rugged enclosure
- **CAL Check™**
 - Alerts users to problems during pH calibration including dirty/broken electrode, contaminated buffer and overall probe condition
- **Automatic or manual temperature compensation**
 - pH sensors incorporate a built-in temperature sensor
- **Calibration**
 - Up to a five-point pH calibration with seven standard buffers and five custom buffers available
- **Approximately 200 hour battery life**
 - Powered by (4) 1.5V AA batteries
- **Clear display**
 - Dot matrix display with multifunction virtual keys
- **AutoHold**
 - Automatically holds the first stable reading on the display
- **Calibration timeout**
 - Alerts when calibration is due at a specified interval
- **Connectivity**
 - PC connectivity via opto-isolated micro-USB with HI92000 software
- **GLP**
 - GLP data provides data from previous calibration to ensure Good Laboratory Practices are met
- **Intuitive keypad**
 - Most of the available options such as GLP information, help, range, calibration and backlight have a dedicated button
- **Supplied complete**
 - Each meter is supplied complete with sensor, calibration solution, beakers, PC software and connection cable, instruction manual, quick start guide and batteries in a rugged, custom carrying case.



Waterproof Protection

The meter is enclosed in an IP67 rated waterproof casing and can withstand immersion in water at a depth of 1 m for up to 30 minutes.



Backlit Graphic LCD Display

These meters feature a backlit graphic LCD with on-screen help. The graphic display allows for the use of virtual keys to provide for an intuitive user interface.



CAL Check™

Hanna's CAL Check maintains a history of past calibrations and monitors the pH electrode and buffers during subsequent calibrations for any signs of wide variances due to a dirty or broken electrode or contaminated pH buffers. During calibration, users are alerted to problems should they occur. After calibration, the electrode's overall condition is displayed as a percentage.



Data Logging

The log-on-demand feature allows users to store up to 200 samples that can later be transferred to a PC with the HI920015 USB cable and HI92000 software.

Specifications	HI981914	
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
	Calibration	up to five-point calibration, seven standard buffers available (1.68, 4.01, 6.86, 7.01, 9.18, 10.01, 12.45) and five custom buffers
	Temperature Compensation	automatic or manual from -20.0 to 120.0°C (-4.0 to 248.0°F)
mV*	Range	±2000 mV
	Resolution	0.1 mV
	Accuracy	±0.2 mV
	Relative mV Offset Range	±2000 mV
ISE	Range	from 1.00 E ⁻⁷ to 9.99 E ¹⁰ concentration
	Resolution	3 digits 0.01; 0.1; 1; 10 concentration
	Accuracy	±0.5% of reading (monovalent ions), ±1% of reading (divalent ions)
	Calibration	up to five point calibration, six standard solutions available (0.1, 1, 10, 100, 1000, 10000 ppm)
Temperature*	Range	-20.0 to 120.0 °C (-4.0 to 248.0°F)
	Resolution	0.1°C (0.1°F)
	Accuracy	±0.4°C (±0.8°F) (excluding probe error)
Additional Specifications	pH Probe	HI72911B titanium body, pH electrode with internal temperature sensor, BNC connector and 1 m (3.3' cable)
	Slope Calibration	from 80 to 110%
	Log-on-demand	300 samples (100 each pH/mV/ISE range)
	PC Connection	opto-isolated USB with HI92000 software and micro USB cable
	Input Impedance	10 ¹² Ω
	Battery Type / Life	1.5V AA batteries (4) / approx. 200 hours of continuous use without backlight (50 hours with backlight)
	Auto-off	user selectable: 5, 10, 30, 60 min, disabled
	Environment	0 to 50°C (32 to 122°F); RH 100% IP67
	Dimensions / Weight	185 x 93 x 35.2 mm (7.3 x 3.6 x 1.4") / 400 g (14.2 oz.)
	Ordering Information	HI981914 is supplied with HI72911B pH electrode, HI7004M pH 4.01 buffer solution (230 mL), HI7007M pH 7.01 buffer solution (230 mL), electrode cleaning solution sachet (2), 100 mL plastic beaker (2), HI92000 PC software, HI920015 micro USB cable, 1.5V AA batteries (4), quick start guide, quality certificate and instruction manual in an HI720191 rugged carrying case with custom insert.



HI72911B pH Electrode

- Titanium body
 - Titanium construction provides an unbreakable structure and allows the transfer of heat to the internal temperature sensor for rapid temperature compensation
- Maintenance free, gel-filled electrode
 - No fill solution required

Ion Selective Electrodes

Ammonia · Bromide · Cadmium



Parameter	Ammonia	Bromide		Cadmium	
Code	HI4101	HI4002	HI4102	HI4003	HI4103
Type	gas-sensing; combination	solid-state; half-cell	solid-state; combination	solid-state; half-cell	solid-state; combination
Measurement Range	1M to $1 \cdot 10^{-6}$ M 17000 to 0.02 mg/L (ppm) 14000 to 0.016 mg/L as N	1M to $1 \cdot 10^{-6}$ M 79910 to 0.08 mg/L (ppm)		0.1M to $1 \cdot 10^{-7}$ M 11200 to 0.01 mg/L (ppm)	
Optimum pH Range	>11	2 to 12.5	2 to 12.5	2 to 12	2 to 12
Temperature Range	0 to 40°C	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C
Approximate Slope	-56	-56	-56	+28	+28
Body O.D.	12 mm	12 mm	12 mm	12 mm	12 mm
Insertion Length	120 mm	120 mm	120 mm	120 mm	120 mm
Body Material	Delrin®	epoxy	PEI	epoxy	PEI
Cable	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial
Possible Applications	determination of ammonium, ammonia in wine, beer, water, waste water and soil	plants, soils, and as an indicator for titration		electroplating, battery construction, laboratory and as an indicator for titrations	
Connection	BNC	BNC	BNC	BNC	BNC

Ion Selective Electrodes

Calcium · Carbon Dioxide · Chloride



ISE

SENSORS

Parameter	Calcium		Carbon Dioxide	Chloride	
Code	HI4004	HI4104	HI4105	HI4007	HI4107
Type	polymer membrane; half-cell	polymer membrane; combination	gas-sensing; combination	solid-state; half-cell	solid-state; combination
Measurement Range	1M to $3 \cdot 10^{-6}$ M 40080 to 0.12 mg/L (ppm)		$1 \cdot 10^{-2}$ M to $1 \cdot 10^{-4}$ M 440 to 4.4 mg/L (ppm)	1M to $5 \cdot 10^{-5}$ M 35500 to 1.8 mg/L (ppm)	
Optimum pH Range	4 to 10	4 to 10	4.2 to 5.2	2 to 11	2 to 11
Temperature Range	0 to 40°C	0 to 40°C	0 to 40°C	0 to 80°C	0 to 80°C
Approximate Slope	+28	+28	+54	-56	-56
Body O.D.	12 mm	12 mm	12 mm	12 mm	12 mm
Insertion Length	120 mm	120 mm	120 mm	120 mm	120 mm
Body Material	epoxy/PVC	PEI/PVC	Delrin®	epoxy	PEI
Cable	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial
Possible Applications	determination of free calcium in beverages, water, and seawater		determination of carbonates as CO ₂ in water, soft drinks and wine samples	determination of free chloride ions in emulsified food products, beverages, plants, soils and as an indicator for titration	
Connection	BNC	BNC	BNC	BNC	BNC

Ion Selective Electrodes

Cupric · Cyanide



Parameter	Cupric		Cyanide	
Code	HI4008	HI4108	HI4009	HI4109
Type	solid-state; half-cell	solid-state; combination	solid-state; half-cell	solid-state; combination
Measurement Range	0.1M to $1 \cdot 10^{-6}$ M 6355 to 0.06 mg/L (ppm)		0.01M to $1 \cdot 10^{-6}$ M 260 to 0.02 mg/L (ppm)	
Optimum pH Range	3 to 7	3 to 7	>11	>11
Temperature Range	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C
Approximate Slope	+27	+27	-56	-56
Body O.D.	12 mm	12 mm	12 mm	12 mm
Insertion Length	120 mm	120 mm	120 mm	120 mm
Body Material	epoxy	PEI	epoxy	PEI
Cable	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial
Possible Applications	used as an indicator for titrations using chelates		determination of free cyanide ions in plating baths, waste water and in plant and soil samples	
Connection	BNC	BNC	BNC	BNC

Ion Selective Electrodes

Fluoride · Iodide



ISE

SENSORS

Parameter	Fluoride			Iodide	
Code	HI4010	HI4110	FC301B	HI4011	HI4111
Type	solid-state; half-cell	solid-state; combination	solid-state; half-cell	solid-state; half-cell	solid-state; combination
Measurement Range	1M to 1•10 ⁻⁶ M Sat. to 0,02 mg/L (ppm)			1M to 1•10 ⁻⁷ M 127000 to 0,01 mg/L (ppm)	
Optimum pH Range	5 to 8	5 to 8	5 to 8	2 to 13	2 to 13
Temperature Range	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C
Approximate Slope	-56	-56	-56	-56	-56
Body O.D.	12 mm	12 mm	12 mm	12 mm	12 mm
Insertion Length	120 mm	120 mm	120 mm	120 mm	120 mm
Body Material	epoxy	PEI/epoxy	epoxy	epoxy	PEI
Cable	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial
Possible Applications	determination of free fluoride in potable water, soft drinks, wine, plants, emulsified food products, plating and pickling acids			determination of free iodide ions in emulsified food samples (iodized table salt), plants and for titration	
Connection	BNC	BNC	BNC	BNC	BNC

HI4012 · HI4112 · HI4013 · HI4113 · HI4014 · HI4114

Ion Selective Electrodes

Lead/Sulfate · Nitrate · Potassium



Parameter	Lead/Sulfate		Nitrate		Potassium	
Code	HI4012	HI4112	HI4013	HI4113	HI4014	HI4114
Type	solid-state; half-cell	solid-state; combination	polymer membrane; half-cell	polymer membrane; combination	polymer membrane; half-cell	polymer membrane; combination
Measurement Range	0.1M to 1•10 ⁻⁶ M 20700 to 0.21 mg/L (ppm)		1.0M to 1•10 ⁻⁵ M 6200 to 0.62 mg/L (ppm) 1400 to 0.4 mg/L (ppm) as N		1.0M to 1•10 ⁻⁶ M 39100 to 0.039 mg/L (ppm)	
Optimum pH Range	4 to 7	4 to 7	3.0 to 8	3.0 to 8	1.5 to 12.0	1.5 to 12.0
Temperature Range	0 to 80°C	0 to 80°C	0 to 40°C	0 to 40°C	0 to 40°C	0 to 40°C
Approximate Slope	+27	+27	-56	-56	+56	+56
Body O.D.	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm
Insertion Length	120 mm	120 mm	120 mm	120 mm	120 mm	120 mm
Body Material	epoxy	PEI	epoxy/PVC	PEI/PVC	epoxy/PVC	PEI/PVC
Cable	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial
Possible Applications	determination of lead ions in plating baths and as an indicator for titrations		determination of free nitrate in natural waters (fresh and sea), and in emulsified food and plant samples		determination of potassium ions in wine, waters, soils and biological samples	
Connection	BNC	BNC	BNC	BNC	BNC	BNC

Ion Selective Electrodes

Silver/Sulfide · Sodium · Reference



Parameter	Silver/Sulfide		Sodium	Reference
Code	HI4015	HI4115	FC300B	HI5315
Type	solid-state; half-cell	solid-state; combination	glass combination	N/A
Measurement Range	1.0M to 1•10 ⁻⁶ M 107900 to 0.11ppm (Ag ⁺) 1.0M to 1•10 ⁻⁷ M 32100 to 0.003 ppm (S ²⁻)	Ag ⁺ 1.0M to 1•10 ⁻⁶ M 107900 to 0.11ppm S ²⁻ 1.0M to 1•10 ⁻⁷ M 32100 to 0.003 ppm	1M to 1•10 ⁻⁵ M 22990 to 0.23 ppm	N/A
Optimum pH Range	2 to 8 (Ag ⁺) 12 to 14 (S ²⁻)	Ag ⁺ 2 to 8 S= 12 to 14	9.75 to 14 pH	N/A
Temperature Range	0 to 80°C	0 to 80°C	0 to 80°C	0 to 85°C
Approximate Slope	+56 (Ag ⁺) / -28 (S ²⁻)	+56 Ag ⁺ / -28 S ²⁻	+57	N/A
Body O.D.	12 mm	12 mm	12 mm	12 mm
Insertion Length	120 mm	120 mm	120 mm	120 mm
Body Material	epoxy	PEI	glass	PEI
Cable	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial
Possible Applications	used as an indicator for titrations using silver nitrate; for the determination of sulfide ions in waters, paper liquors, natural waters and soils.		water, soil, food products, soup, dairy, brines, soft drinks, beer, wine and laboratory	used to complete electrical circuit and to provide stable reference voltage for ISE half-cells
Connection	BNC	BNC	BNC	BNC