Dear Customer,

Thank you for choosing a Hanna Instruments® product. Please read this instruction manual carefully before using this instrument. For more information about Hanna Instruments and our products, visit www.hannainst.com or e-mail us at sales@hannainst.com. For technical support, contact your local Hanna Instruments office or e-mail us at tech@hannainst.com.

Preliminary Examination

Remove the instrument and accessories from the packaging and examine it carefully. For further assistance, please contact your local Hanna Instruments office or email us at tech@hannainst.com.

Each instrument is delivered in a rugged case and is supplied with:

- HI1217-1 pH electrode
- pH 4.01 buffer solution (1 sachet)
- pH 7.01 buffer solution (1 sachet)
- Cleaning solution sachet (2 sachets)
- 9V Alkaline battery (1 pc.)
- Calibration screwdriver
- Instrument quality certificate
- Instruction manual

Note: *Save all packing material until you are sure that the instrument works correctly. Any damaged or defective item must be returned in its original packing material with the supplied accessories.*

General Description & Intended Use

HI8314-1 is a portable, water-resistant meter designed to be paired with HI1217-1 pre-amplified pH electrode for pH, mV, and temperature measurements. Optionally, the meter can be paired with HI3618D-1 combination ORP electrode (not supplied with the product) for accurate ORP measurements.

Main Features

- Two-point calibration (front panel calibration trimmers)
- Hand-strap on the bottom for a more secure grip
- Compact, heavy-duty, water-resistant instrument
- Ideal for applications that require a custom calibration point

Probe Features

HI1217-1 pH

- Built-in temperature sensor for automatic temperature compensation of pH readings.
- Durable, polyetherimide (PEI) resin body suitable for a wide range of applications and chemically resistant to many aggressive chemicals.
- Single Ag/AgCl reference, ceramic junction

Specifications

Meter

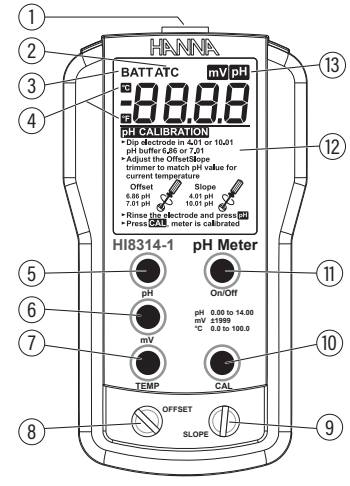
pH	
Range *	0.00 to 14.00 pH
Resolution	0.01 pH
Accuracy	±0.01 pH (@25 °C / 77 °F)
Temperature compensation	Automatic, from 0 to 100 °C (32 to 212 °F)
Calibration	Manual, 2-point (trimmers) Offset: ±1.00 pH; Slope: 80 to 110%
mV	
Range *	±1999 mV
Resolution	1 mV
Accuracy	±1 mV (@25 °C / 77 °F)
Temperature	
Range *	0.0 to 100.0 °C (32.0 to 212.0 °F)
Resolution	0.1 °C / 0.1 °F
Accuracy	±0.4 °C / ±0.8 °F (excluding probe error)
Probe (included)	HI1217-1 pH electrode
Battery type	1 x 9V Alkaline
Battery life	Approximately 150 hours of continuous use
Environment	0 to 50 °C (32 to 122 °F); 100% RH
Auto shut-off	After 8 minutes of non-use
Dimensions	145 x 80 x 36 mm (5.7 x 3.1 x 1.4")
Weight	230 g (8.1 oz.)

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

HI1217-1 pH Probe

Reference	single, Ag/AgCl
Junction	ceramic, single
Electrolyte	gel
Recommended Operating Temp.	0 to 70 °C (32 to 158 °F)
Max. Pressure	2 bar
Range	0 to 13 pH Temperature: 0 to 70°C (32 to 158°F)
Glass Type	GP (general purpose)
Tip / Shape	spheric, Ø 5.0 mm (0.1")
Temperature Sensor	yes
Amplifier	yes
Body Material	PEI
Dimensions	Length: 153.5 mm (6.0") Shaft length: 110 mm (4.3") Shaft diameter: 12 mm (0.4")
Cable	coaxial; 1 m (3.3'); DIN connector

Functional Description & LCD Display

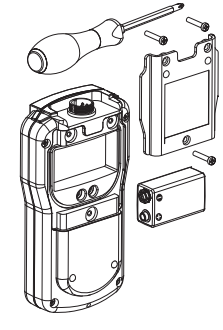


1. DIN connector (pH or ORP electrode)
2. Temperature compensation status (ATC)
3. Battery indicator (BATT)
4. Temperature unit (°C or °F)
5. **pH** key – pH range selection
6. **mV** key – mV (ORP) range selection
7. **TEMP** key – temperature measurement & unit selection
8. **OFFSET** trimmer – adjusts offset (pH calibration)
9. **SLOPE** trimmer – adjusts slope (pH calibration)
10. **CAL** key – enters pH calibration
11. **On/Off** key
12. LCD display
13. Measurement mode (mV or pH)

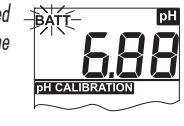
General Operations

Battery Replacement

1. Turn off the instrument.
2. Remove the three screws on the back of the instrument to open the battery compartment.
3. Remove the old battery. Insert one new 9 V Alkaline battery in the battery compartment while paying attention to the correct polarity.
4. Close the battery compartment using the three screws.



Note: *If the "BATT" tag is displayed blinking, battery level is too low and the battery needs to be replaced.*



Connecting the pH Electrode

Align the HI1217-1 DIN connector's 8 pins with the socket and push in the plug.

Turning the Meter On

Press the **On/Off** key to turn the meter on. Initialization screen briefly displays all the LCD segments followed by the battery status, alerting user to the remaining battery life.

Sensor Preparation & Conditioning

1. Remove the protective cap.
2. If the protective cap does not contain any liquid, pour HI70300 Storage solution into the cap.
3. Place it back on the sensor and soak for at least 30 minutes before use.
4. Rinse with tap water prior to Calibration or Measurement.

pH Calibration

For high accuracy, frequent calibrations are recommended.

Additionally, the pH range should be recalibrated:

- whenever the pH electrode is replaced
- at least once a month
- after testing aggressive chemicals

Preparation

One- or two-point calibration can be performed using one of the following standard buffer solutions: pH 4.01, 6.86 (NIST), 7.01, 9.18 (NIST), or pH 10.01.

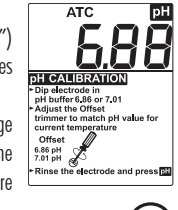
When a two-point calibration is required, use pH 7.01 or pH 6.86 buffer as first calibration point.

Use pH 7.01 (HI7007) (or pH 6.86 NIST equivalent) for neutral samples, pH 4.01 (HI7004) for acidic samples, pH 10.01 (HI7010) (or pH 9.18 NIST equivalent) for alkaline samples.

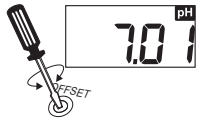
For best results, use a rinse beaker and a separate calibration beaker for each buffer. Discard rinsing buffers after use.

Procedure

1. Connect the probe and turn the meter on.
2. Remove the protective cap and rinse the tip with first buffer being used for calibration (e.g. pH 7.01).
3. Place the tip of the electrode 4 cm (1 ½") into correct buffer. Allow a few minutes for the probe and buffer to stabilize.
4. Press the **CAL** key. The calibration range is automatically recognized and the offset on-screen tutorial messages are displayed.
5. Press the **TEMP** key to read the buffer temperature. Take a note of the displayed value.
6. Press the **pH** key to take the pH reading. Stir gently.



7. Wait a few minutes and use the calibration screwdriver to adjust the OFFSET trimmer until it displays the pH value at the previously noted temperature. See pH Buffer Values at Various Temperatures table.

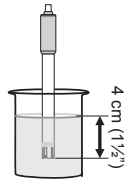


8. Press the **pH** key.
9. Rinse with second buffer being used for calibration (e.g. pH 4.01 or pH 10.01). Place the tip of the electrode 4 cm (1 ½") into the second buffer. Stir gently.
10. Press **TEMP** key to read buffer temperature. Take a note of the displayed value.
11. Press **pH** key to take a pH reading.
12. Wait a couple of minutes and adjust the SLOPE trimmer until it displays the pH value at the previously noted temperature. See pH Buffer Values at Various Temperatures table.

13. Press **CAL** key. The pH calibration is now complete.

Measurement

1. Turn the meter on.
2. After initialization, battery status is displayed. Replace the battery if BATT tag is displayed blinking.
3. Connect the probe (pH or ORP) to the meter.
4. For accurate pH measurements calibrate the meter for pH before use.



5. Place the tip of the electrode 4 cm (1 ½") into the sample.
6. Press the designated key to select corresponding measurement mode (i.e. **pH** for pH measurements, **mV** for mV or ORP measurements, and **TEMP** for temperature measurements).

7. Stir briefly and wait a few minutes for the measurement to stabilize. Measured value and unit tag is displayed for the selected parameter.

***Note**: If measurements are taken in different samples successively, rinse the probes between measurements to avoid cross contamination. After cleaning, rinse the probes with some of the samples to be measured next.*

Warnings

If measured value is outside the parameter limit of the probe, the maximum or minimum value is displayed blinking.

pH Buffer Values at Various Temperatures

Temp		pH Values		
°C	°F	4.01	7.01	10.01
0	32	4.01	7.13	10.32
5	41	4.00	7.10	10.24
10	50	4.00	7.07	10.18
15	59	4.00	7.04	10.12
20	68	4.00	7.03	10.06
25	77	4.01	7.01	10.01
30	86	4.02	7.00	9.96
35	95	4.03	6.99	9.92
40	104	4.04	6.98	9.88
45	113	4.05	6.98	9.85
50	122	4.06	6.98	9.82
55	131	4.07	6.98	9.79
60	140	4.09	6.98	9.77
65	149	4.11	6.99	9.76
70	158	4.12	6.99	9.75
75	167	4.14	7.00	9.74
80	176	4.16	7.01	9.73
85	185	4.17	7.02	9.74
90	194	4.19	7.03	9.75
95	203	4.20	7.04	9.76

Accessories

Ordering info.	Product description
HI1217-1	Double junction, gel filled pH-electrode with built-in temperature sensor, DIN connector and 1 m (3.28 ft) cable
HI3618D-1	ORP combination electrode with DIN connector, 1 m (3.28 ft) cable
HI7004M	pH 4.01 buffer solution, 230 mL
HI7006M	pH 6.86 buffer solution, 250 ml
HI7007M	pH 7.01 buffer solution, 230 mL
HI7009M	pH 9.18 buffer solution, 250 ml
HI7010M	pH 10.01 buffer solution, 230 mL
HI70300M	Storage solution, 230 mL bottle
HI7061M	General cleaning solution, 230 mL bottle
HI7091L	Reducing pretreatment solution, 500 mL + 14 g (set)
HI7092M	Oxidizing pretreatment solution, 250 mL
HI731326	Calibration screwdriver (20 pcs.)
HI76405	Electrode holder

Certification

All Hanna® instruments conform to the **CE European Directives.**

CE RoHS compliant

Disposal of Electrical & Electronic Equipment. The product should not be treated as household waste. Instead, hand it over to the appropriate collection point for the recycling of electrical and electronic equipment, which will conserve natural resources.

Disposal of waste batteries. This product contains batteries, do not dispose of them with other household waste. Hand them over to the appropriate collection point for recycling.

Ensuring proper product and battery disposal prevents potential negative consequences for the environment and human health. For more information, contact your city, your local household waste disposal service, or the place of purchase.

Recommendations for Users

Before using this meter, make sure that it is entirely suitable for your specific application and for the environment in which it is used. Any variation introduced by the user to the supplied equipment may degrade the meter's performance. For your and the meter's safety do not use or store the meter in hazardous environments.

Warranty

HI8314-1 is warranted for a period of two years against defects in workmanship and materials when used for its intended purpose and maintained according to instructions. Electrodes and probes are warranted for a period of six months. This warranty is limited to repair or replacement free of charge. Damage due to accidents, misuse, tampering, or lack of prescribed maintenance is not covered. If service is required, contact your local Hanna Instruments® office. If under warranty, report the model number, date of purchase, serial number and the nature of the problem. If the repair is not covered by the warranty, you will be notified of the charges incurred. If the instrument is to be returned to Hanna Instruments office, first obtain a Returned Goods Authorization (RGA) number from the Technical Service department and then send it with shipping costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

Hanna Instruments reserves the right to modify the design, construction, or appearance of its products without advance notice.

IST8314-1 02/22

INSTRUCTION MANUAL

HI8314-1

Portable pH/mV/Temperature Meter

HANNA® instruments