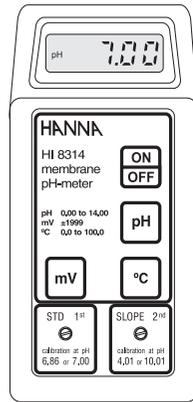


Instruction Manual

HI 8314 Portable pH/mV/°C meter



HANNA
instruments
www.hannainst.com

Dear Customer,

Thank you for choosing a Hanna product. This manual will provide you with the necessary information for the correct operation of the meter. Please read it carefully before using the meter. If you need additional technical information, do not hesitate to e-mail us at tech@hannainst.com. This instrument is in compliance with the **CE** directives.

PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it carefully to make sure that no damage has occurred during shipment. If there is any damage, notify your Dealer. The meter is supplied complete with:

- HI 1217D pH electrode
- calibration and cleaning solution sachets
- 9 V battery, calibration screwdriver and instructions.

Note: Conserve all packing material until the instrument has been observed to function correctly. Any defective item must be returned in its original packing.

GENERAL DESCRIPTION

HI 8314 is a hand-held pH/mV/°C meter designed for to be rugged, easy-to-use, reliable and practical.

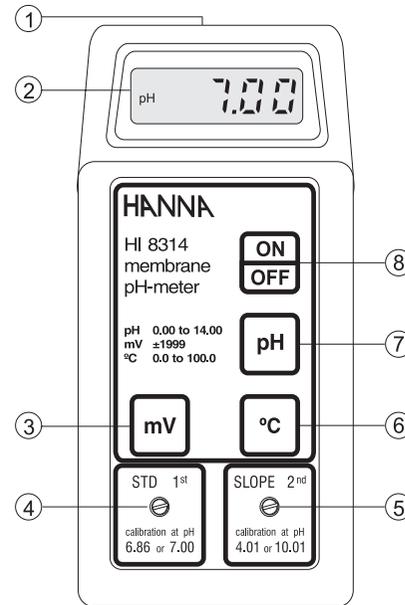
It is ideal for education and for measurements on the field. The pH, mV and °C ranges are easily selected using the membrane keyboard on the front panel.

Calibration procedure is very simple and adjustments are easily made with two trimmers on the front panel.

The built-in temperature sensor in the pH electrode allows automatic temperature compensation of pH readings.

Moreover, HI 8314 features a low battery indicator that alerts the user when the battery needs to be replaced.

FUNCTIONAL DESCRIPTION



- 1) DIN connector for pH or ORP electrode
- 2) Liquid Crystal Display
- 3) mV key, to display the mV (ORP) readings when using an ORP electrode or the mV equivalent to pH values when using a pH electrode
- 4) STD trimmer for OFFSET calibration of pH
- 5) SLOPE trimmer for SLOPE calibration of pH
- 6) °C key, to display the temperature measurement
- 7) pH key, to display the pH value
- 8) ON/OFF key, to turn the meter ON and OFF

SPECIFICATIONS

Range	0.00 to 14.00 pH ±1999 mV 0.0 to 100.0 °C
Resolution	0.01 pH / 1 mV / 0.1°C
Accuracy (@20°C/68°F)	±0.01 pH ±1 mV ±0.4°C
Typical EMC Deviation	±0.07 pH ±5 mV ±1°C
pH Calibration	Manual, 2 point, through trimmers
Offset Calibration	±1 pH
Slope Calibration	85 to 105%
Temperature Compensation	Automatic, 0 to 70°C (32 to 158°F)
Electrode (*)	HI 1217D (included)
Battery Type	1 x 9V alkaline
Battery Life	100 hours of continuous use
Environment	0 to 50°C (32 to 122°F); RH max 95% non-condensing
Dimensions	164 x 76 x 45 mm (6.5 x 3.0 x 1.8")
Weight	180 g (6.3 oz.)

(*) The max. operating temperature of the HI 1217D pH electrode is 80°C. To perform measurements at higher temperature use adequate electrodes.

DISPLAY CODE GUIDE

°C symbol indicates the meter is in temperature mode.

pH symbol indicates the meter is in pH mode.

mV symbol indicates the meter is in mV mode.

All Hanna Instruments meters are warranted for two years against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. **The electrodes and the probes are warranted for a period of six months.** This warranty is limited to repair or replacement free of charge.

Damages due to accident, misuse, tampering or lack of prescribed maintenance are not covered.

If service is required, contact the dealer from whom you purchased the instrument. If under warranty, report the model number, date of purchase, serial number and the nature of the failure. 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, first obtain a Returned Goods Authorization Number from the Customer Service department and then send it with shipment costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

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

Recommendations for Users

Before using these products, make sure that they are entirely suitable for the environment in which they are used. Operation of these instruments in residential area could cause unacceptable interferences to radio and TV equipments, requiring the operator to take all necessary steps to correct interferences. Any variation introduced by the user to the supplied equipment may degrade the instruments' EMC performance. To avoid damages or burns, do not perform any measurement in microwave ovens.

OPERATIONAL GUIDE

INITIAL PREPARATION

The meter is supplied complete with a 9V battery. Remove the battery compartment cover on the back of the meter, install the battery while paying attention to its polarity.

Always remove the electrode protective cap before taking any measurements. If the electrode has been left dry, soak the tip in HI 70300 storage solution for half an hour to reactivate it.

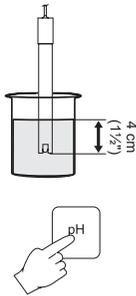
Connect the pH electrode to the DIN connector on the top of the instrument.

Turn the meter ON by pressing the ON/OFF key.

TAKING pH MEASUREMENTS

To take a pH measurement simply submerge the electrode tip (at least 4cm/1½") into the sample to be tested.

Select the pH mode. Shake briefly and wait a couple of minutes for the reading to stabilize. The display will show the pH value automatically compensated for temperature variations.



In order to take accurate pH measurements, make sure that the instrument has been calibrated for pH before use.

If measurements are taken in different samples successively, it is recommended to rinse the electrode thoroughly to avoid cross-contamination. After cleaning, rinse the electrode with some of the sample to be measured.

TAKING ORP MEASUREMENTS

Connect the ORP electrode to the DIN connector on the top of the meter.

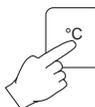
To enter the "mV" mode (ORP, Oxidation Reduction Potential) turn the instrument ON and press the mV key.



To take the mV measurement of a sample submerge the ORP electrode tip (at least 4 cm/1½") into the solution to be tested. Wait a few minutes for the reading to stabilize.

TAKING TEMPERATURE MEASUREMENTS

Turn the instrument ON, press the °C key and allow the reading to stabilize.



pH CALIBRATION

For greatest accuracy, frequent calibration of the instrument is recommended. The instrument should be recalibrated for pH:

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

PREPARATION

Pour small quantities of pH7.01 (HI 7007) and pH4.01 (HI 7004) buffer solutions into two clean beakers.

For accurate calibration use two beakers for each buffer solution, the first one for rinsing the tip of the electrode, the second one for calibration. In this way contamination of the buffers is minimized.

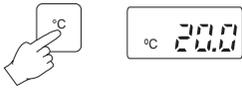
To obtain accurate readings, use pH7.01 (HI 7007) and pH4.01 (HI 7004) buffers if you are going to measure acidic samples, or pH7.01 (HI 7007) and pH10.01 (HI 7010) for alkaline measurements.

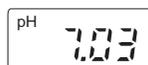
If you need to calibrate the meter to NIST standards, use pH6.86 (HI 7006) instead of pH7.01 and pH9.18 (HI 7009) instead of pH10.01.

PROCEDURE

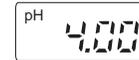
- Connect the pH electrode and switch the meter ON.
- Remove the protective cap from the electrode, rinse the tip with some pH7.01 solution, then immerse the electrode into a pH7.01 buffer solution; stir gently and wait a couple of minutes for thermal equilibrium to be reached.

Note: the electrode should be submerged approximately 4 cm (1½") into the solution.

- Press the °C key to display the temperature of the buffer (e.g. 20°C). 
- Press the pH key to read pH values. Stir gently and wait for a couple of minutes. 
- Adjust the STD trimmer on the lower left of the front panel until LCD shows the pH value at the noted temperature.



- Rinse and immerse the pH electrode in pH4.01 or pH10.01 buffer (2nd calibration point) and stir gently.
- Wait a couple of minutes and adjust the SLOPE trimmer on the lower right of the front panel until the LCD shows the pH value at the noted temperature.



The pH calibration is now complete.

pH VS. TEMPERATURES

TEMP °C	pH VALUES		
	4.01	7.01	10.01
0	4.01	7.13	10.32
5	4.00	7.10	10.24
10	4.00	7.07	10.18
15	4.00	7.04	10.12
20	4.00	7.03	10.06
25	4.01	7.01	10.01
30	4.02	7.00	9.96
35	4.03	6.99	9.92
40	4.04	6.98	9.88
45	4.05	6.98	9.85
50	4.06	6.98	9.82
55	4.07	6.98	9.79
60	4.09	6.98	9.77
65	4.11	6.99	9.76
70	4.12	6.99	9.75

BATTERY REPLACEMENT

When the battery becomes weak, the meter displays a blinking additional decimal point on the left side of the LCD. 

When the low battery indicator appears only a few hours of battery life is remaining. A low battery level may also result in unreliable measurements. It is recommended to replace the battery immediately.

Unscrew the 3 screws on the back of the meter, remove the battery cover and replace the battery while paying attention to its polarity.

Replacement must only take place in a non-hazardous area using an alkaline 9V battery.

ACCESSORIES

- HI 1217D Double junction, gel filled pH-electrode with built-in temperature sensor, DIN connector and 1 m (3.3') cable
- HI 3618D Platinum ORP-electrode with built-in temperature sensor, DIN connector and 1 m (3.3') cable
- HI 4619D Gold ORP-electrode with built-in temperature sensor, DIN connector and 1 m (3.3') cable
- HI 7004M pH 4.01 buffer solution, 230 mL bottle
- HI 7007M pH 7.01 buffer solution, 230 mL bottle
- HI 7010M pH 10.01 buffer solution, 230 mL bottle
- HI 70300M Storage solution, 230 mL bottle
- HI 7061M General cleaning solution, 230 mL bottle
- HI 7091M Reducing pretreatment solution, 230 mL bottle
- HI 7092M Oxidizing pretreatment solution, 230 mL bottle
- HI 731326 Calibration screwdriver (20 pcs)
- HI 76405 Electrode holder

CE DECLARATION OF CONFORMITY



DECLARATION OF CONFORMITY

We

Hanna Instruments Italia Srl
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ITALY

herewith certify that the pH and temperature meter:

HI 8314

has been tested and found to be in compliance with EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC according to the following applicable normative:

- EN 50082-1: Electromagnetic Compatibility - Generic Immunity Standard
IEC 61000-4-2 Electrostatic Discharge
IEC 61000-4-3 RF Radiated
- EN 50081-1: Electromagnetic Compatibility - Generic Emission Standard
EN 55022 Radiated, Class B
- EN 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use

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A. Marsilio - Technical Director
On behalf of
Hanna Instruments S.r.l.