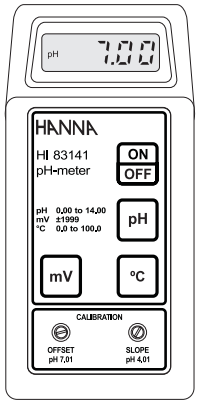
Instruction Manual

HI 83141
Portable pH/mV/°C meter



HANNA instruments
www.hannainst.com

WARRANTY

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.

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

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 1230B** plastic-body, double-junction, gel, combination pH electrode with BNC and 1 m cable
- **HI 7669AW** temperature probe with 1 m cable
- 1 x 9V battery, screwdriver and instructions.

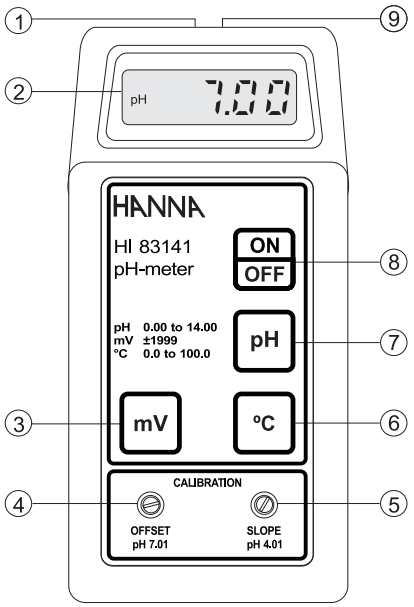
Note: Conserve all packing material until the instrument has been observed to function correctly. Any defective item must be returned in its original packing.

ACCESSORIES

HI 1230B	Plastic body, double-junction, gel, combination pH-electrode with BNC connector and 1 m cable
HI 3131B	Glass-body, refillable, combination platinum ORP-electrode with BNC connector and 1 m cable
HI 7669AW	Temperature probe with 1 m screened cable
HI 7004M	pH 4.01 buffer solution, 230 ml bottle
HI 7006M	pH 6.86 buffer solution, 230 ml bottle
HI 7007M	pH 7.01 buffer solution, 230 ml bottle
HI 7009M	pH 9.18 buffer solution, 230 ml bottle
HI 7010M	pH 10.01 buffer solution, 230 ml bottle
HI 70300M	Storage solution, 230 ml bottle
HI 7061M	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

Consult the Hanna General Catalog for a complete and wide selection of electrodes.

FUNCTIONAL DESCRIPTION



1) BNC 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) Trimmer for pH OFFSET calibration.
5) Trimmer for pH SLOPE calibration.
6) **°C** key, to display the temperature measurement.
7) **pH** key, to display the pH value.
8) **ON/OFF** key.
9) Socket for **HI 7669AW** temperature probe.

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, at 2 points through offset and slope trimmers
Offset Calibration	±1 pH
Slope Calibration	from 85 to 105%
ORP Calibration	Factory calibrated
Temperature Calibration	Factory calibrated
Temperature Compensation	Automatic, from 0 to 70°C
Probes (included)	**HI 1230B** pH-electrode **HI 7669AW** temperature probe
Battery Type	1 x 9V alkaline
Battery Life	100 hours of continuous use
Environment	0 to 50°C (32 to 122°F); max 95% RH non-condensing
Dimensions	164 x 76 x 45 mm (6.5 x 3.0 x 1.8")
Weight	180 g (6.3 oz.)

Recommendations for Users

Before using this product, make sure that it is entirely suitable for the environment in which it is used. Operation of this instrument in residential area could cause unacceptable interference to radio and TV equipment, requiring the operator to take all necessary steps to correct interference.

The glass bulb at the end of the electrode is sensitive to electrostatic discharges. Avoid touching this glass bulb at all times.

To maintain the EMC performance of equipment, the recommended cables noted in the user's manual must be used. Any variation introduced by the user to the supplied equipment may degrade the instruments' EMC performance.

To avoid electrical shock, do not use these instruments when voltages at the measurement surface exceed 24Vac or 60Vdc. To avoid damage or burns, do not perform any measurement in microwave ovens.

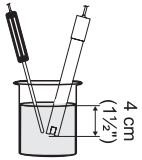
OPERATIONAL GUIDE

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 and the temperature probe to the proper connectors on the top of the instrument.

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



To take pH measurements simply submerge the pH electrode (at least 4cm/1½") and the temperature probe (as close as possible to the electrode) into the sample to be tested.

The temperature probe can be used independently to take temperature measurements, or it can be used in conjunction with the pH electrode to utilize the meter's ATC capability.



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.



To take temperature measurements make sure the temperature probe is connected to the meter, immerse it in the sample to be measured and press the °C key to enter the temperature mode.

Note: If the temperature probe is not connected, the pH reading will be compensated at 25°C.



To take ORP (mV) measurements connect an ORP electrode (optional) to the BNC connector on the top of the meter, submerge the tip (at least 4 cm/1½") into the solution, enter the "mV" mode by pressing the mV key and wait a few minutes for the reading to stabilize.

CALIBRATION

The ORP (mV) and temperature ranges are factory calibrated. Contact the nearest Hanna Service Center for recalibration, if needed.

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

a) Whenever the pH electrode is replaced.
b) At least once a month.
c) After testing aggressive chemicals.
d) 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 for measuring acidic samples, or pH7.01 (**HI 7007**) and pH10.01 (**HI 7010**) for alkaline measurements.

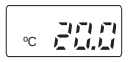
If a calibration with NBS standards is needed, use pH6.86 (**HI 7006**) instead of pH7.01 and pH9.18 (**HI 7009**) instead of pH10.01.

Procedure

- Connect pH electrode and temperature probe to the meter and switch it ON.
- Remove the protective cap, rinse the tips of pH electrode and temperature probe with some pH7.01 solution. Immerse them into a pH7.01 buffer solution, stir gently and wait a couple of minutes for stable reading.

Note: The electrode should be submerged approximately 4 cm (1½") into the solution and the temperature probe should be located as close as possible to the electrode.





- 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 OFFSET 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.





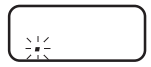
The pH calibration is now complete.

pH VALUES AT VARIOUS TEMPERATURES

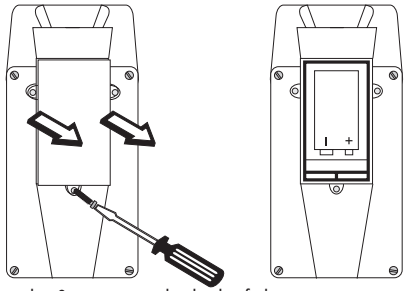
TEMP	pH VALUES		
°C	4.01	7.01	10.01
0	4.01	7.13	10.32
5	4.00	7.10	10.24
10	4.00	7.07	10.18
15	4.00	7.04	10.12
20	4.00	7.03	10.06
25	4.01	7.01	10.01
30	4.02	7.00	9.96
35	4.03	6.99	9.92
40	4.04	6.98	9.88
45	4.05	6.98	9.85
50	4.06	6.98	9.82
55	4.07	6.98	9.79
60	4.09	6.98	9.77
65	4.11	6.99	9.76
70	4.12	6.99	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. Replacement must only take place in a non-hazardous area using an alkaline 9V battery.



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

CE DECLARATION OF CONFORMITY

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CE

DECLARATION OF CONFORMITY

We

Hanna Instruments Italia Srl
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ITALY

herewith certify that the pH and temperature meter:

HI 83141

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 normatives:

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

EN61010-1: 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.