Pool Line

HI9310014

pH/mV Precision Simulator

INSTRUCTION MANUAL

HANNA instruments

Dear Customer,

Thank you for choosing a Hanna Instruments product.
Please read this instruction manual carefully before using this instrument.
This manual will provide you with the necessary information for correct use of this instrument, as well as a precise idea of its versatility.
If you need additional technical information, do not hesitate to e-mail us at tech@hannainst.com or view our worldwide contact list at www.hannainst.com.

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1. 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.
HI9310014 is delivered in a cardboard box and supplied with:

- HI7858/1 BNC/BNC coaxial cable, 1 m (3.3')
- 9V battery (1 pc.)
- 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.*

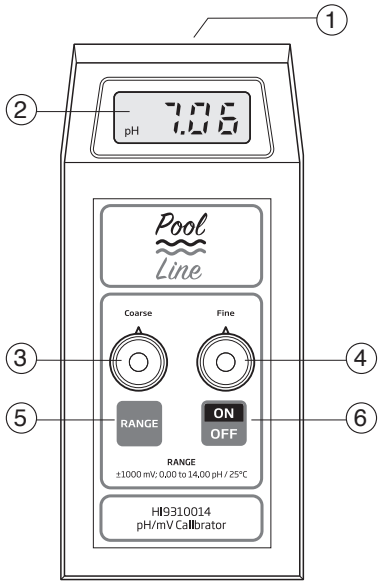
2. GENERAL DESCRIPTION & INTENDED USE

The HI9310014 is a portable pH and mV simulator designed for calibrating pH and mV (ORP) meters, part of Hanna Instruments pool-line family.
When connected to a meter's input socket, by turning the dials, it simulates the pH readings from 0 to 14 pH, in 0.01 steps. The output signals all correspond to pH values at 25 °C.
For the mV range, HI9310014 can simulate output from -1000 to 1000 mV, in 1 mV steps.
Battery powered, allows use away from a power source. The LCD display shows a low-battery indicator that advises the user that the battery should be replaced.

Main Features

- Simulate pH and mV(ORP) sensor outputs to discover malfunctions
- Provided with universal BNC connector, compatible with any meter or electrode that uses BNC connectors

3. FUNCTIONAL DESCRIPTION



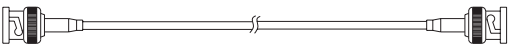
1. BNC socket
2. Liquid Crystal Display
3. pH and mV coarse-setting knob
4. pH and mV fine-setting knob
5. RANGE key
6. ON/OFF key

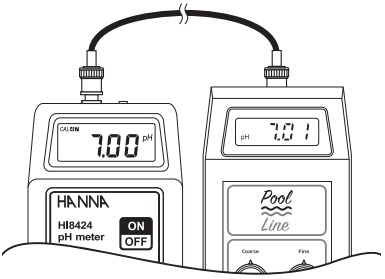
4. SPECIFICATIONS

Range	0.00 to 14.00 pH -1000 to 1000 mV
Resolution	0.01 pH / 1 mV
Accuracy (@20 °C)	±0.01 pH / 1 mV
Temperature compensation	all output values simulated at 25 °C (77 °F)
Battery type/ life	9V / approximately 500 hours of use
Environment	0 to 50 °C (32 to 122 °F); RH 95%
Dimensions	185 x 82 x 53 mm (7.3 x 3.2 x 2.1")
Weight	320 g (11.3 oz.)

5. pH CALIBRATION

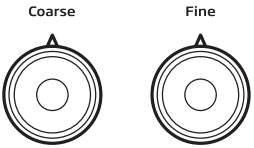
1. Connect the simulator to the pH meter using the supplied HI7858/1 cable.





2. Manually set the temperature compensation of the meter to 25 °C.
3. Turn on the simulator.
4. Press RANGE key to select pH mode.

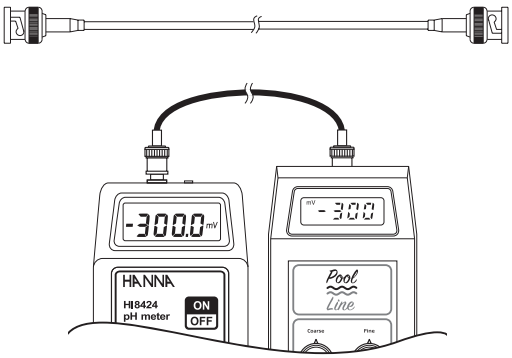
5. Make sure that the two additional decimal points are not displayed. If displayed, replace the battery before proceeding.
6. Turn the coarse or fine dial to set the value, and make sure that the pH meter displays the correct result (e.g. 7.01 pH).



7. If the reading is not correct, adjust the meter until the correct reading is displayed (see meter instruction manual).

6. mV (ORP) CALIBRATION

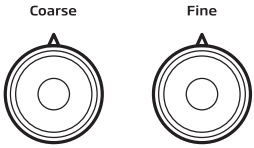
1. Connect the simulator to the ORP meter using the supplied HI7858/1 cable.



Note: *Temperature compensation does not apply to ORP (mV) readings.*

2. Turn on the simulator.
3. Press RANGE key to select mV mode.

4. Make sure that the two additional decimal points are not displayed. If displayed, replace the battery before proceeding.
5. Turn the coarse or fine dial to set the value, and make sure that the ORP meter displays the correct result.



6. If the reading is not correct, adjust the meter until the correct reading is displayed (see meter instruction manual).

7. pH / TEMPERATURE TABLE

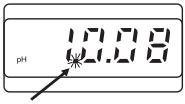
Temperature has an effect on pH. The calibration buffer solutions are affected by temperature changes to a lesser degree than normal solutions (see table).

Note: *The pH simulation is not affected by this chemical behavior.*

TEMP.		pH VALUES				
°C	°F	**4.01**	**6.86**	**7.01**	**9.18**	**10.01**
0	32	4.01	6.98	7.13	9.46	10.32
5	41	4.00	6.95	7.10	9.39	10.25
10	50	4.00	6.92	7.07	9.33	10.18
15	59	4.00	6.90	7.05	9.27	10.12
20	68	4.00	6.88	7.03	9.22	10.06
25	77	4.01	6.86	7.01	9.18	10.01
30	86	4.02	6.85	7.00	9.14	9.96
35	95	4.03	6.84	6.99	9.10	9.92
40	104	4.04	6.84	6.98	9.07	9.88
45	113	4.05	6.83	6.98	9.04	9.85
50	122	4.06	6.83	6.98	9.01	9.82
55	131	4.08	6.84	6.98	8.99	9.79
60	140	4.09	6.84	6.98	8.97	9.77
65	149	4.11	6.85	6.99	8.95	9.76
70	158	4.12	6.85	6.99	8.93	9.75

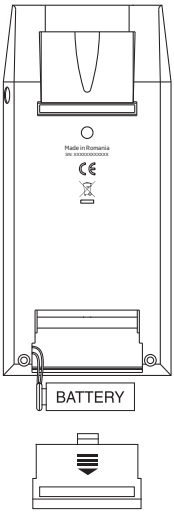
8. BATTERY REPLACEMENT

HI9310014 is supplied with a 9 V battery that lasts for approximately 500 hours of continuous use.
When the battery capacity is low, two additional decimal points are displayed.



Note: *Only use the battery type specified in this instruction manual.*

To change the battery, slide off the back cover, replace the old battery and re-attach the cover.



9. ACCESSORIES

HI710009	Shockproof rubber boot, blue
HI7858/1	BNC/BNC coaxial cable, 1 m (3.3')
HI7858/5	BNC/BNC coaxial cable, 5 m (16.5')
HI7858/10	BNC/BNC coaxial cable, 10 m (33')

CERTIFICATION

All Hanna Instruments conform to the **CE European Directives.**

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 battery, do not dispose of it with other household waste. Hand it 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, the place of purchase or go to www.hannainst.com.

RECOMMENDATIONS FOR USERS

Before using this product, make sure 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 instrument's performance. For your and the instrument's safety do not use or store the instrument in hazardous environments.

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. 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 (see engraved on the back of the instrument) 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, first obtain a Returned Goods Authorization number from the Technical Service department and then send it with shipping costs prepaid. When shipping any instrument, make sure it is properly packed for complete protection.

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

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