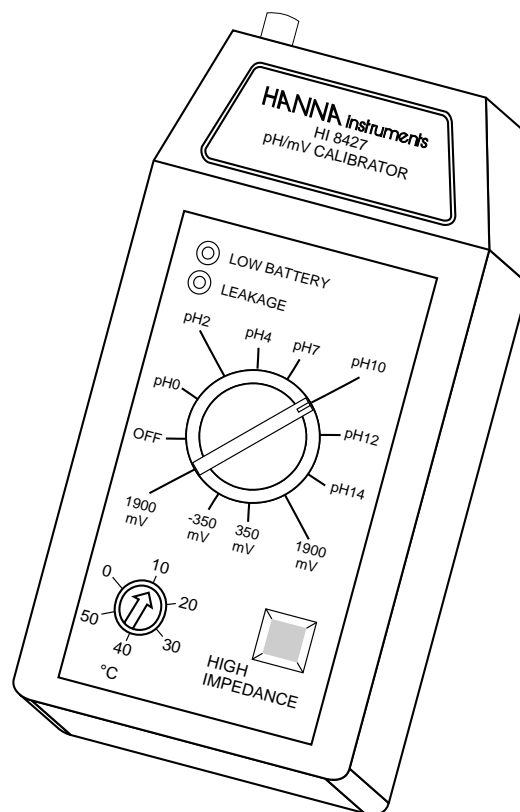


Instruction Manual

HI 8427 - HI 931001

pH/mV Simulators



These Instruments are in Compliance with the CE Directives

 **HANNA**
instruments



Dear Customer,

Thank you for choosing a Hanna Instruments Product.

Please read this instruction manual carefully before using the instrument.

This manual will provide you with all the necessary information for the correct use of the instrument, as well as a more precise idea of its versatility in a wide range of applications.

These instruments are in compliance with the CE directives EN 50081-1 and EN 50082-1.

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PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it carefully to make sure that no damage has occurred during shipment. If noticeable damage is found, immediately notify your Dealer.

Each pH/mV simulator is supplied complete with:

- **HI 7858/1** BNC/BNC Coaxial Cable;

Note: Save all packing material until the instrument has been observed to function correctly because all defective items must be returned to the Dealer in their original packing.

GENERAL DESCRIPTION

HI 8427 and **HI 931001** are portable pH/mV simulators designed specifically for calibrating pH and mV (ORP) meters. Two calibration ranges are provided:

from 0 to 14 pH and from -1900 to 1900 mV with **HI 8427**;

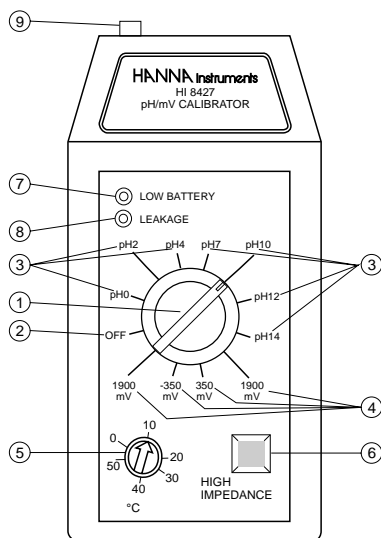
from 0 to 14 pH and from -1000 to 1000 mV with **HI 931001**.

HI 931001 provides with pH/mV values at 25°C.

HI 8427 allows the manual temperature compensation and is equipped with a HIGH IMPEDANCE key and LEAKAGE LED to verify if the connection cable is in perfect condition.

A low battery indicator will be lit when the simulator battery runs low.

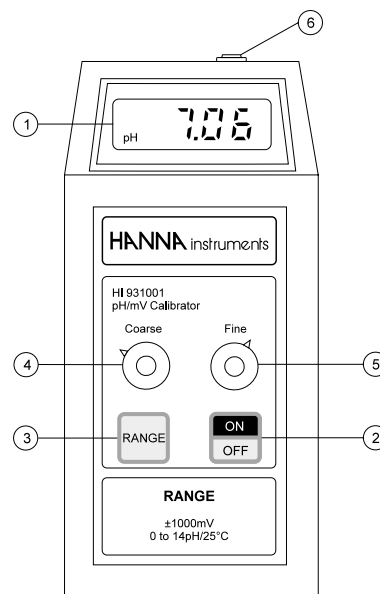
FUNCTIONAL DESCRIPTION HI 8427



1. Rotary Knob
2. Switch Off Selection
3. pH Outputs Selection
4. mV Outputs Selection
5. Temperature Compensation Knob
6. High Impedance Key
7. Low Battery LED
8. Leakage LED
9. BNC Socket

Range	pH mV	0, 2, 4, 7, 10, 12, 14 -1900, -350, 350, 1900
Accuracy (@20°C/68°F)	pH mV	±0.1 ±5
Temperature Compensation		Manual from 0 to 50°C (32 to 122°F)
High Impedance Test		10 ⁹ Ω
Battery Type		9V
Life		100 hours of continuous use
Environment		0 to 50°C (32 to 122°F); 95% RH
Dimensions		180x83x40 mm (7.1 x 3.3 x 1.6")
Weight		255 g (9 oz.)

FUNCTIONAL DESCRIPTION HI 931001



1. LCD Display
2. ON/OFF Key
3. Range Selection Key
4. pH/mV Coarse Setting Knob
5. pH/mV Fine Setting Knob
6. BNC Socket

Range	pH mV	0.00 to 14.00 -1000 to 1000
Resolution	pH mV	0.01 1
Accuracy (@20°C/68°F)	pH mV	±0.01 ±1
EMC Typical Deviation	pH mV	±0.02 ±2
Temperature Compensation		All output values simulated at 25°C (77°F)
Battery Type		9V
Life		500 hours of continuous use
Environment		0 to 50°C (32 to 122°F); 95% RH
Dimensions		180 x 83 x 40 mm (7.1 x 3.3 x 1.6")
Weight		320 g (11.3 oz.)

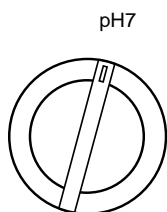
pH CALIBRATION

HI 8427:

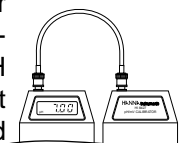
- Connect the simulator to the pH meter using the **HI 7858/1** cable provided.



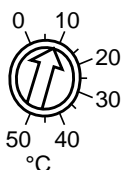
- Switch the pH meter on and select pH 7 on the simulator. Make sure that the LOW BATTERY LED is not lit. If it is lit, change the battery of the simulator before performing the calibration.



- Verify that the pH meter displays the pH 7 message. If not, adjust the pH meter until the correct reading pH 7 is displayed (refer to the pH meter instruction manual).



- Select any other pH value on the simulator and set the °C knob to the desired working temperature (e.g. pH 4 at 30°C).



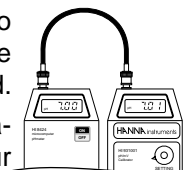
- If your pH meter has a temperature probe connected to it, set the °C knob to the measured temperature displayed by your pH meter.
If your meter is manually compensated for temperature, adjust the temperature settings for both the pH meter and the simulator to the same temperature.
- Verify that the pH meter displays the correct pH value compensated at the

working temperature. If not, adjust the pH meter to read the correct value.

Note: The °C knob is not effective during pH 7 calibration, since pH 7 is used as reference.

HI 931001:

- Connect the simulator to the pH meter using the **HI 7858/1** cable provided.
- Manually set the temperature compensation of your meter to 25°C.



- Switch the simulator on and select the pH mode by pressing the RANGE key.



- Make sure that the two additional decimal points are not displayed. If they are displayed, change the battery of the simulator before performing the calibration.
- Turn the Coarse and Fine knob to set any desired pH value and make sure that the pH meter you are checking reflects the correct result (e.g. 7.01 pH).

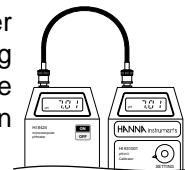
Coarse



Fine



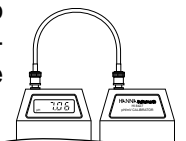
- If not, adjust the pH meter until the correct reading is displayed (refer to the pH meter instruction manual).



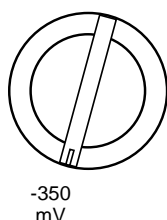
mV (ORP) CALIBRATION

HI 8427:

- Connect the simulator to the mV (ORP) meter using the **HI 7858/1** cable provided.



- Switch the mV meter on and select the desired mV value on the simulator. Make sure that the LOW BATTERY LED is not lit. If it is lit, change the battery of the simulator before performing the calibration.



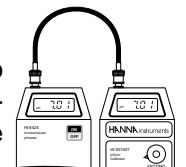
-350
mV

- If the meter is not displaying the correct mV value, adjust the meter until it displays the correct mV (refer to the mV meter instructions manual).

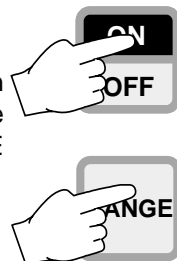
Note: The °C knob is not effective during mV calibration.

HI 931001:

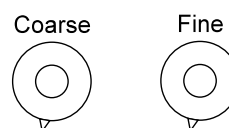
- Connect the simulator to the mV (ORP) meter using the **HI 7858/1** cable provided.



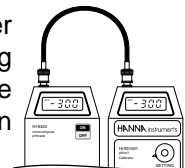
- Switch the simulator on and select the mV mode by pressing the RANGE key.



- Make sure that the two additional decimal points are not displayed. If they are displayed, change the battery of the simulator before performing the calibration.
- Turn the Coarse or Fine knob to any desired value and make sure that the mV meter you are checking reflects the correct result.



- If not, adjust the mV meter until the correct reading is displayed (refer to the mV meter instruction manual).

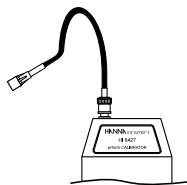


Note: Temperature compensation does not apply here.

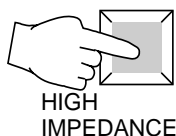
CABLE HIGH IMPEDANCE TEST

HI 8427 only:

- Connect the simulator to the cable (e.g. HI 7855).



- Press the HIGH IMPEDANCE key and observe the LEAKAGE LED while you are turning the simulator rotary knob to any pH/mV value.



- If the LED does not light, the cable and connector going to the meter are in perfect condition.



- If the LED is lit, it means there is a leakage problem with the cable and connector and you should check/replace it.



pH VALUES AT VARIOUS TEMPERATURE

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

This pH simulation will not be affected by this chemical behavior.

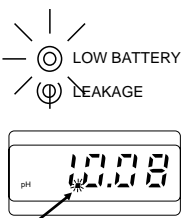
Note: With **HI 8427** your pH meter will always show the pH buffer solution at the standard temperature of 25°C.

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	10.24
10	50	4.00	6.92	7.07	9.33	10.18
15	59	4.00	6.90	7.04	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	4.07	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

BATTERY REPLACEMENT

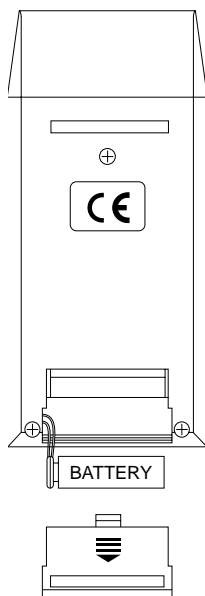
The instruments use a 9 volt battery that lasts for approximately 100 hours or 500 hours of continuous use with **HI 8427** and **HI 931001** respectively.

In the event of dead battery the LOW BATTERY LED of **HI 8427** will be lit or two additional decimal points will be displayed on **HI 931001**.



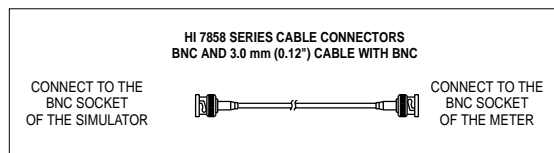
Battery replacement must only take place in a non hazardous area using the battery types specified in this instruction manual (see page 11).

To change battery, slide the bottom back cover, replace the old battery and replace the cover.



ACCESSORIES

- HI 710001** Soft carrying case for HI 931001, dimensions 230 x 100 x 50 mm
- HI 7858/1** Extension cable with 3 mm diameter (0.12"), 1m (3.3') long
- HI 7858/3** Extension cable with 3 mm diameter (0.12"), 3m (9.9') long
- HI 7858/5** Extension cable with 3 mm diameter (0.12"), 5m (16.5') long
- HI 7858/10** Extension cable with 3 mm diameter (0.12"), 10m (33') long
- HI 7858/15** Extension cable with 3 mm diameter (0.12"), 15m (49.5') long



- HI 710031** Hard carrying case, dimensions 340 x 230 x 90 mm

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 accidents, 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 shipping costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

To validate your warranty, fill out and return the enclosed warranty card within 14 days from the date of purchase.

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

CE DECLARATION OF CONFORMITY

	
DECLARATION OF CONFORMITY	
We	
Hanna Instruments Srl Via Fermi 10 35030 Sarmeola di Rubano (PD) ITALY	
herewith certify that the pH/mV simulators	
HI 8427	HI 931001
have been tested and found to be compliant with the following regulations:	
IEC 801-2	Electrostatic Discharge
IEC 801-3	RF Radiated
EN 55022	Radiated, Class B
Date of Issue: 20-12-1995	 D. Volpato - Engineering Manager On behalf of Hanna Instruments S.r.l.

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.

In HI 8427, with an applied field of 3V/m, no leakage is signaled by the LEAKAGE led.

To avoid damages or burns, do not perform any measurement in microwave ovens.



MANSIMULR2 11/97 PRINTED IN ITALY

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