Instruction Manual

HI 8614 • HI 8614L
HI 8615 • HI 8615L

pH and ORP Transmitters

HANNA® instruments

www.hannainst.com

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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.

If you need additional technical information, do not hesitate to e-mail us at **tech@hannainst.com**.

These instruments are in compliance with the CE directives.

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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 shipping. If there is any noticeable damage, notify your Dealer.

Note: Save all packing material until you are sure that the instrument functions correctly. All defective items must be returned in the original packing material together with the supplied accessories.

GENERAL DESCRIPTION

HI 8614 / HI 8614L (pH) and **HI 8615 / HI 8615L** (ORP) are 2-wire water-resistant transmitters specially designed for long distance measurement of pH or ORP in industrial applications.

Two versions are available: the standard **HI 8614** and **HI 8615**, and the **HI 8614L** and **HI 8615L** models with LCD.

The LCD allows easy verification and monitoring of measured values, and provides easier calibration and maintainance.

The pH or ORP signal is transmitted in a 2-wire current loop in the range of 4 to 20 mA.

HI 8614 and **HI 8614L** can be connected to the Hanna process instruments **HI 8510T**, **HI 8710T** or **HI 8711T**, or to any recorder, computer or data monitoring device that accepts 4 to 20 mA input.

HI 8615 and **HI 8615L** can be connected to the Hanna meters **HI 8512T**, **HI 8720T** or to any recorder, computer or data monitor that accepts 4 to 20 mA input.

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The transmitters use a universal BNC socket for quick and secure connection to any electrode with a BNC connector.

For **HI 8614** and **HI 8614L** the temperature compensation is performed by the transmitter's ATC circuitry if the temperature probe (**HI 76608**, optional) is attached. If ATC is not required, it is possible to substitute the temperature probe with a fixed resistor.

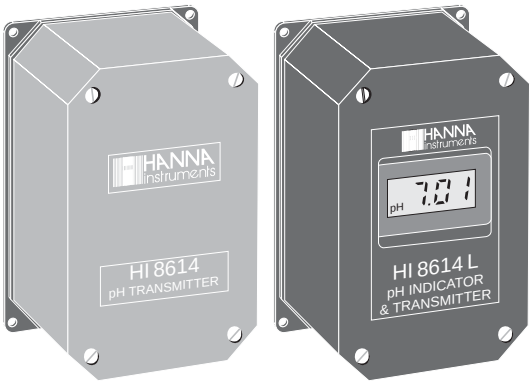
The input is isolated from the current loop to eliminate problems related to ground loop, low insulation cables, multiple electrode connections, and a common mode voltage of up to 100 V ensures true differential readings.

The terminal board of the transmitter provides for connection of power supply, pH or ORP electrodes and temperature probe (for **HI 8614** and **HI 8614L** models only).

The unit is enclosed in a protective casing conforming to IP 65 standards.

SPECIFICATIONS OF HI 8614 & HI 8614L

Range	4 to 20 mA / 0.00 to 14.00 pH
Resolution	0.01 mA / 0.01 pH
Accuracy (@20°C/68°F)	±0.02 mA / ±0.02 pH
Typical EMC Deviation	±0.25 mA / ±0.2 pH
Calibration	Offset: ±2.2 mA / ±2 pH Slope: ±0.5 mA / 86 to 116%
Temperature Compensation	Fixed or automatic from 0 to 100°C (32 to 212°F) with **HI76608** probe
Input Impedance	10^{12} Ohm
Output	4-20 mA (isolated)
Installation Category	II
Protection	IP 65
Environment	0 to 50°C (32 to 122°F); RH max 95% non-condensing
Power Supply	**HI8614**: 18 to 30 Vdc **HI8614L**: 20 to 36 Vdc
Load	Max 500 Ohm
Dimensions	165 x 110 x 90 mm (6.5 x 4.3 x 3.5")
Weight	1 kg (2.2 lb.)



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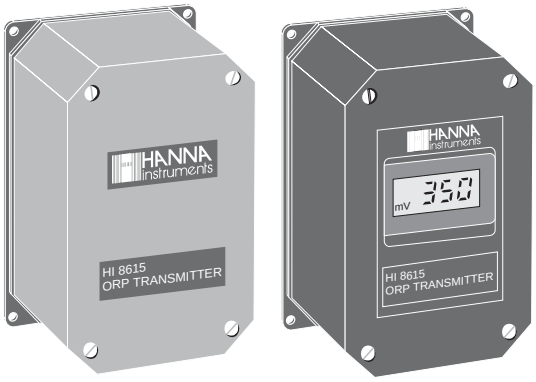
SPECIFICATIONS OF HI8615 & HI8615L

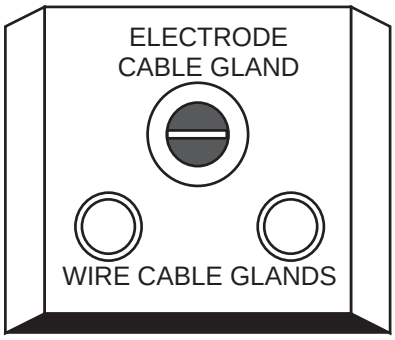
Range	4 to 20 mA / ±1000 mV
Resolution	0.01 mA / 1 mV
Accuracy (@20°C/68°F)	±0.02 mA / ±5 mV
Typical EMC Deviation	±0.25 mA / ±15 mV
Calibration	Offset: ±0.8 mA / ±100 mV Slope: ±0.8 mA / 90 to 110%
Input Impedance	10^{12} Ohm
Output	4-20 mA (isolated)
Installation Category	I I
Protection	IP 65
Environment	0 to 50°C (32 to 122°F); RH max 95% non-condensing
Power Supply	**HI8615**: 18 to 30 Vdc **HI8615L**: 20 to 36 Vdc
Load	Max 500 Ohm
Dimensions	165 x 110 x 90 mm (6.5 x 4.3 x 3.5")
Weight	1 kg (2.2 lb.)



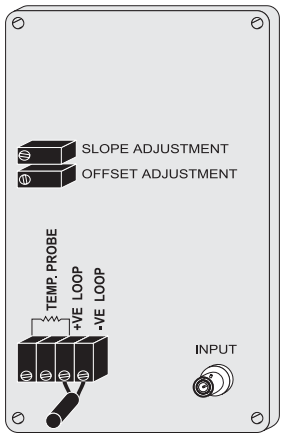
TERMINAL BOARD CONNECTIONS

Unscrew the 4 screws and remove the top cover.

There are three cable glands on the transmitter cover. The large cable gland with the split in the rubber is for the electrode.

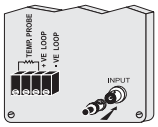


Connect the positive supply to the strip terminal "+VE LOOP" and the negative supply to the terminal "-VE LOOP" of the transmitter terminal block.

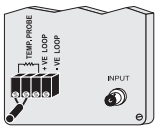


The wire between the transmitter and the recorder/indicator/controller should be a PVC insulated two wire with a wire diameter of at least 0.7 mm. This wire is fed through one of the smaller cable glands. The maximum distance between the power supply and the amplifier is 300 m (1000'). It is not necessary to use shielded cable. The transmitter is protected against inversion of supply voltage.

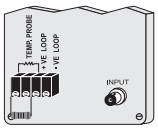
Electrode connection: connect the BNC of the cable to the BNC socket on the transmitter.



For HI 8614 & HI 8614L only: for **automatic temperature compensation**, connect the 2 terminals of the temperature probe (**HI 76608**, optional) to "TEMP. PROBE" terminals.



If automatic temperature compensation is not required, short the "TEMP. PROBE" terminals with a resistance according to the external temperature:

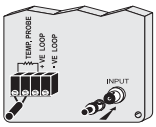


Temperature (°C)	Resistance (Ohms)
0	1634
10	1774
20	1922
30	2078
40	2242
50	2412
60	2590

A 2 kohm resistor is factory mounted for 25°C temperature compensation.

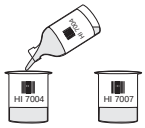
pH CALIBRATION WITH AUTOMATIC TEMPERATURE COMPENSATION (HI 8614 & HI 8614L)

Initial preparation

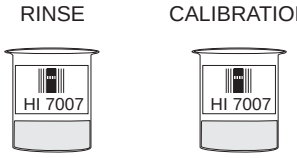


- Connect the pH electrode to the BNC socket.
- Connect the temperature probe to the transmitter.

Pour small quantities of pH 7.01 and pH 4.01 solution into two clean beakers.



For accurate calibration use two beakers for each buffer solution, the first one for rinsing the electrode, the second one for calibration.



To get accurate readings, use pH 7.01 and pH 4.01 if you are going to measure acid samples or pH 7.01 and pH 10.01 for alkaline measurements.

Note: with **HI8614L** the instruments display can be used during calibration without the need to connect the ammeter and the reading is directly expressed in pH units.

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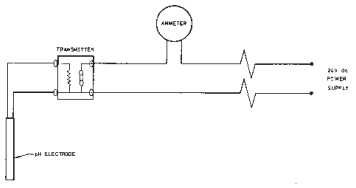
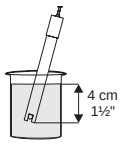
Procedure

- Disconnect the +ve supply cable from "+VE LOOP" terminal and connect a 20mA f.s. ammeter between the +ve cable and "+VE LOOP" terminal.

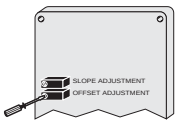


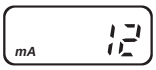
- Remove the protective cap from the electrode, rinse it with some pH 7.01 solution or immerse it in the pH 7 rinse solution, then immerse the pH electrode and temperature probe into pH 7.01 calibration buffer solution; shake briefly and wait for the reading to stabilize.

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



- Adjust the offset trimmer until the ammeter reads 12mA or the display shows "7.01" (**HI 8614L** only) if the temperature of the buffer is at 25°C.

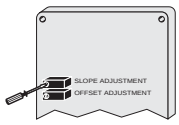




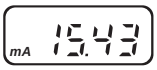
For other buffer temperatures, refer to page 13 for the appropriate mA / pH reading.

- Rinse the electrode with tap water or distilled water and a small amount of pH 4.01 or 10.01 buffer solution or immerse it in the pH 4 rinse solution (2nd calibration point). Dip the electrode and the temperature probe into pH 4.01 (or 10.01) calibration buffer solution, shake briefly and wait for a few minutes for reading to stabilize.

- Adjust the slope trimmer until the ammeter reads 8.58 mA or the display shows "4.01" at 25°C. For other buffer temperatures, refer to page 13 for the appropriate mA / pH reading (**HI 8614L**).



  If you are using pH 10.01 buffer solution adjust the slope trimmer until the ammeter read 15.43 mA at 25°C (77°F) or the value indicated at page 13.



FOR HI8614L ONLY

The Display Module is factory calibrated, so that the LCD display results are referred to the 4-20 mA loop current (e.g. LCD displays 0.00 pH when loop current is 4.00 mA and displays 14.00 pH when current is 20.00 mA).

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Under normal application, adjustment on this module may not be necessary.

If routine check is required, the following procedures shall be performed.

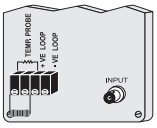
- Calibrate the transmitter module using a ammeter, as explained in the previous pages.
- Simulate a 4.00 mA loop current for the transmitter (i.e. pH 0.00 as Electrode input) and check for display reading.
- Simulate a 20.00 mA loop current for the transmitter (i.e. pH 14.00 as Electrode input) and check for display reading.

Note: when the instrument is used in conjunction with the Hanna indicator **HI 8510T** or controllers **HI 8710T**, **HI 8711T**, the calibration can also be performed on the indicator/controller. In this case slight calibration adjustment can be made on the indicator/controller even if the whole system calibration is advised, always starting from the transmitter.

pH CALIBRATION WITH FIXED TEMPERATURE COMPENSATION (HI 8614 & HI 8614L only)

- Take the temperature of the buffer solutions using a Checktemp or a thermometer with a resolution of at least 1°.

- Connect the appropriate resistor to the "TEMP. PROBE" terminals (see page 6) depending on the temperature of the calibration solution.



- Follow the procedure as outlined in the calibration with automatic temperature compensation and use the thermometer reading to adjust the trimmer until the ammeter reads the value according to the following table.

Temperature		pH 4.01 Buffer		pH 7.01 Buffer		pH 10.01 Buffer	
°C	°F	pH	mA	pH	mA	pH	mA
0	32	4.01	8.576	7.13	12.137	10.32	15.789
5	41	4.00	8.565	7.10	12.103	10.24	15.697
10	50	4.00	8.565	7.07	12.069	10.18	15.629
15	59	4.00	8.565	7.04	12.034	10.12	15.560
20	68	4.00	8.565	7.03	12.023	10.06	15.491
25	77	4.01	8.576	7.01	12.000	10.01	15.434
30	86	4.02	8.587	7.00	11.989	9.96	15.377
35	95	4.03	8.599	6.99	11.977	9.92	15.331
40	104	4.04	8.610	6.98	11.966	9.88	15.285
45	113	4.05	8.622	6.98	11.966	9.85	15.251
50	122	4.06	8.633	6.98	11.966	9.82	15.217
55	131	4.07	8.645	6.98	11.966	9.79	15.182
60	140	4.09	8.667	6.98	11.966	9.77	15.159

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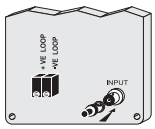
ORP CALIBRATION (HI8615 & HI8615L)

Initial preparation

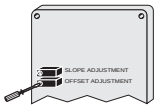
Disconnect the +ve supply cable from the "+VE LOOP" terminal and connect a 20 mA f.s. ammeter between the +ve cable and the "+VE LOOP" terminal. With **HI 8615L** the instrument display can be used during calibration without the need to connect the ammeter. In this case the values are directly expressed in mV units.

Pour a small quantity of HI 7020 ORP solution into a beaker.

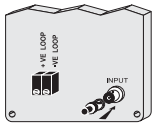
Procedure



- Connect the shorting BNC connector to the ORP transmitter.
- Adjust the OFFSET ADJUSTMENT trimmer on the module for a display of 12 mA on the ammeter or 0 mV on the instrument display (**HI 8615L** only). This sets the zero point for the transmitter.



- Connect the ORP electrode to the transmitter and immerse the tip of the electrode into a beaker of HI 7020 ORP calibration solution, and check that the ammeter reading lies between 13.6 and 14.2 mA or the instrument reading is between 200 and 275 mV at 25°C (**HI 8615L**).



- If the reading lies outside this range, adjust the slope adjustment trimmer on the transmitter for a reading just within this range.

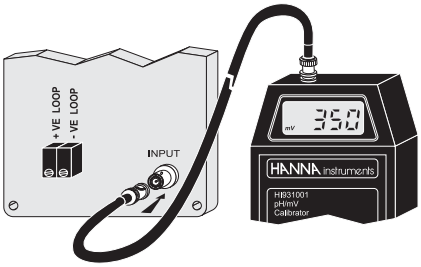
The unit is now calibrated.

A complete calibration of the transmitter module is advised periodically.

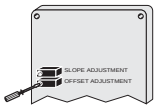
This calibration procedure requires the **HI 8427** or the **HI 931001** pH and ORP simulator to simulate the ORP electrode.

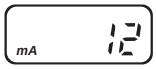
HI 8427 or **HI 931001** produce a known signal into the system so that the faults of the system can be isolated.

- Connect the ORP transmitter to the simulator.

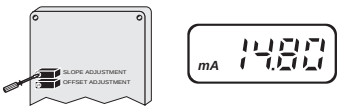


- Set the simulator to 0 mV and adjust the offset trimmer to read 12 mA on the ammeter or 0 mV on the HI 8615L display (HI 8615L only).



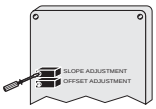


- Set the simulator to 350 mV and adjust the slope trimmer to read 14.8 mA on the ammeter or 350 mV on the HI 8615L display (HI 8615L only).



- Connect the ORP electrode to the module and immerse the tip of the electrode into the beaker of HI 7020 ORP solution and check that the ammeter reading lies between 13.6 and 14.2 mA or the instrument reading is between 200 and 275 mV at 25°C (**HI 8615L** only).

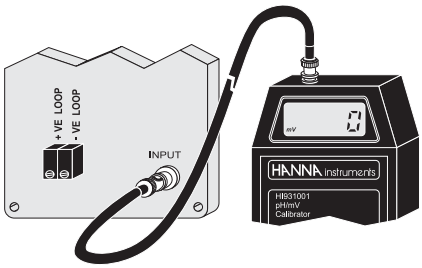
- Only if the reading lies outside this range, adjust the slope adjustment trimmer on the transmitter to reflect a reading within this range.



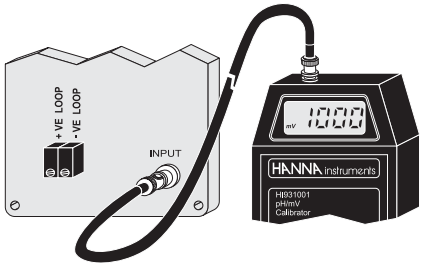
FOR HI 8615L ONLY

The HI 8615L is factory calibrated, and the displayed values are referenced to the 4-20 mA loop current (e.g. LCD displays -1000 mV when loop current is 4.00 mA and displays +1000 mV when current is 20.00 mA). Under normal application, adjustment on this module may not be necessary. If routine check is required, the following procedures shall be performed.

- Follow the above procedure for HI 8615 (see page 12).
- Simulate a 12.00 mA loop current for the transmitter (i.e. 0 mV at Electrode input) and check display reading.



- Simulate a 20.00 mA loop current for the transmitter (e.g. +1000 mV at Electrode input) and check display reading.



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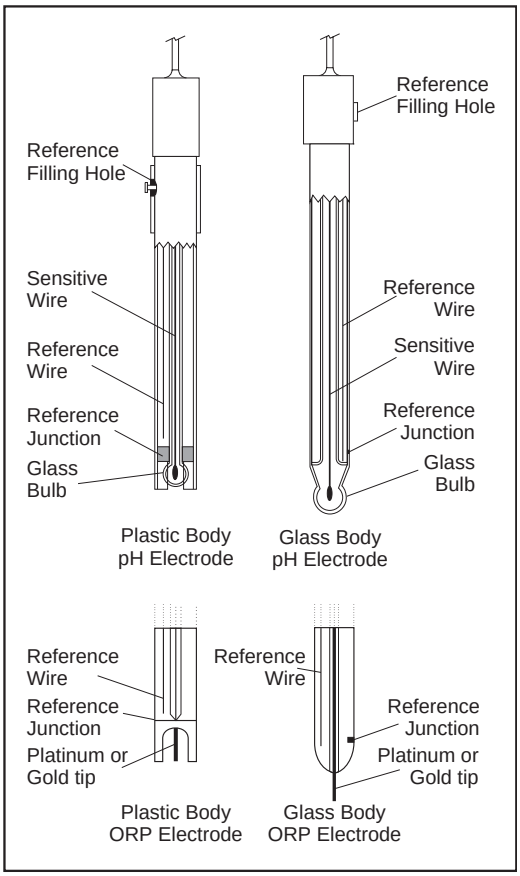
Please note:

-1000 mV	=	4 mA
0 mV	=	12 mA
1000 mV	=	20 mA
350 mV	=	14.8 mA
200 mV	=	13.6 mA
275 mV	=	14.2 mA
1 mV	=	12.008 mA

Note: when the meter is used in conjunction with the Hanna indicator **HI 8512T**, or the controller **HI 8720T**, the calibration can also be performed on the indicator/ controller. In this case slight adjustment can be made on the indicator/ controller even if the whole system calibration is advised, always starting from the transmitter.

ELECTRODE CONDITIONING AND MAINTENANCE



PREPARATION

Remove the protective cap.

DO NOT BE ALARMED IF ANY SALT DEPOSITS ARE PRESENT.

This is normal with electrodes and they will disappear when rinsed with water.

During transport tiny bubbles of air may have formed inside the glass bulb. The electrode cannot function properly under these conditions. These bubbles can be removed by

"shaking down" the electrode as you would do with a glass thermometer.

If the bulb and/or junction are dry, soak the electrode in **HI70300** storage solution for at least one hour.

For refillable electrodes

If the fill solution (electrolyte) is more than 1 cm (½") below the fill hole, add **HI7082 3.5M KCl** electrolyte solution for double junction or **HI7071 3.5M KCl+AgCl** electrolyte solution for single junction electrodes. For a faster response unscrew the fill hole screw during measurements.

For AmpHel® electrodes

If the electrode does not respond to pH changes, the battery is run down and the electrode should be replaced.

MEASUREMENT

Rinse the electrode tip with distilled water.

Immerse the tip (4 cm / 1½") in the sample and stir gently for approx. 30 seconds.

For a faster response and to avoid cross contamination of the samples, rinse the electrode tip with a few drops of the solution to be tested, before taking measurements.

STORAGE

To minimize clogging and assuring a quick response time, the glass bulb and the junction should be kept moist and not allowed to dry out. Replace the solution in the protective cap with a few drops of **HI70300** storage solution or, in its absence, filling solution (**HI7071** for single junction or **HI7082** for double junction electrodes). Follow the Preparation Procedure above before taking measurements.

Note: NEVER STORE THE ELECTRODE IN DISTILLED WATER OR DRY.

PERIODIC MAINTENANCE

Inspect the electrode and the cable. The cable used for connection to the meter must be intact and there must be no points of broken insulation on the cable or cracks on the electrode stem or bulb. Connectors must be perfectly clean and dry. If any scratches or cracks are present on the electrode body, replace the electrode. Rinse off any salt deposits with water.

For refillable electrodes

Refill it with fresh electrolyte (**HI7071** for single junction or **HI7082** for double junction electrodes). Allow the electrode to stand upright for 1 hour.

Follow the Storage Procedure above.

CLEANING PROCEDURE

General	Soak in Hanna **HI7061** general cleaning solution for approximately 1 hour.

Removal of films, dirt or deposits on the membrane/junction:

Protein	Soak in Hanna **HI7073** protein cleaning solution for 15 minutes.
Inorganic	Soak in Hanna **HI7074** inorganic cleaning solution for 15 minutes.
Oil/grease	Rinse with Hanna **HI7077** Oil & Fat cleaning solution.

IMPORTANT: After performing any of the cleaning procedures rinse the electrode thoroughly with distilled water, drain and refill the reference chamber with fresh electrolyte, (not necessary for GEL filled electrodes) and soak the electrode in **HI70300** storage solution for at least 1 hour before taking measurements.

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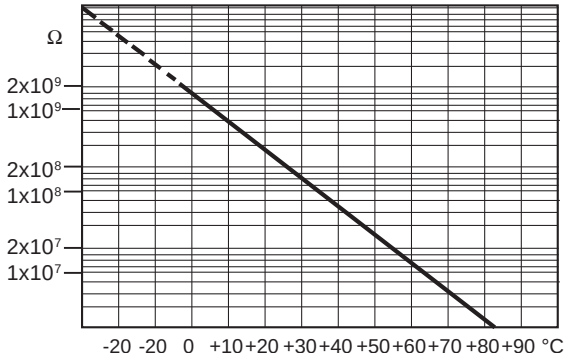
TROUBLESHOOTING

Evaluate your electrode performance based on the following.

- **Noise** (Readings fluctuate up and down) could be due to:
  - **Clogged/Dirty Junction:** refer to the Cleaning Procedure above.
  - **Loss of shielding** due to low electrolyte level (in refillable electrodes only): **HI 7071** for single junction or **HI 7082** for double junction electrodes.
- **Dry Membrane/Junction:** soak in **HI 70300** storage solution for at least one hour.
- **Drifting:** soak the electrode tip in warm Hanna solution **HI 7082** for one hour and rinse the tip with distilled water. Refill with fresh **HI 7071** for single junction electrodes and **HI 7082** for double junction electrodes.
- **Low Slope:** refer to the Cleaning Procedure above.
- **No Slope:** check the electrode for cracks in glass stem or bulb and replace the electrode.
- **Slow Response/Excessive Drift:** soak the tip in Hanna **HI 7061** cleaning solution for 30 minutes, rinse thoroughly in distilled water and then follow the Cleaning Procedure above.

TEMPERATURE-RESISTANCE CORRELATION FOR HANNA pH SENSITIVE GLASS

The resistance of glass electrodes partially depends on the temperature. The lower the temperature, the higher the resistance. It takes longer time for the reading to stabilize if the resistance is higher. In addition, the response time will suffer to a greater degree at temperatures below 10°C.



Since the resistance of the pH electrode is in the range of 200 Mohm, the current across the membrane is in the pico Ampere range. Large currents can disturb the calibration of the electrode for many hours.

For these reasons **high humidity environments, short circuits and static discharges** are detrimental for a stable pH reading.

The pH electrode's life also depends on the temperature. If constantly used at high temperatures, the electrode life is drastically reduced.

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Typical Electrode Life	
Ambient Temperature	**1- 3 years**
90 °C	**Less than 4 months**
120°C	**Less than 1 month**

High concentrations of sodium ions interfere with readings in alkaline solutions; the pH at which the interference starts to be significant depends upon the composition of the glass. This interference is the alkaline error and causes the pH to be underestimated. Hanna's glass formulations have the indicated characteristics.

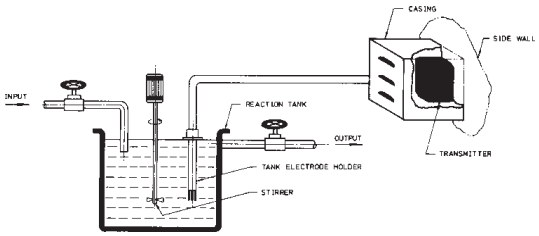
Alkaline Error

Sodium Ion Correction for the Glass at 20-25°C		
Concentration	**pH**	**Error**
0.1 Mol L^{-1} Na^{+}	13.00	0.10
	13.50	0.14
	14.00	0.20
1.0 Mol L^{-1} Na^{+}	12.50	0.10
	13.00	0.18
	13.50	0.29
	14.00	0.40

INSTALLATION PROCEDURE AND EXAMPLES

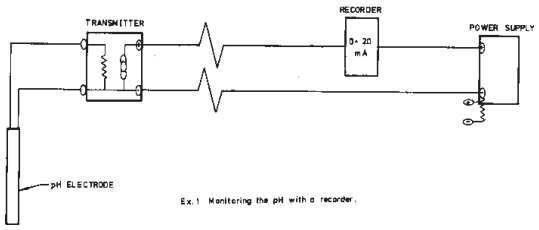
The HI 8614, HI 8614L, HI 8615 and HI 8615L transmitters may be wall mounted in any convenient location near the measurement point. To minimize thermal drift due to extreme temperature fluctuations during the measurement process, particularly if the measurement is conducted outdoors, it is best to protect the transmitter in an enclosed casing.

General Installation Procedure



For most industrial application involving long term monitoring and control, it is also recommended to use tank electrode holders (HI 6050 or HI 6051) to protect the pH electrode and the temperature probe from contamination by the test solution.

Controlling the pH / ORP with a recorder



Ex. 1 Monitoring the pH with a recorder.

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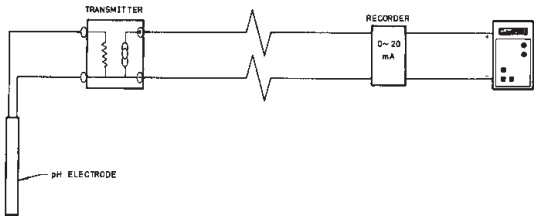
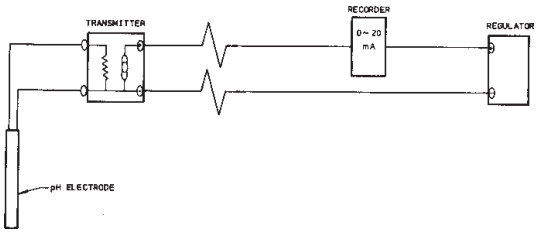
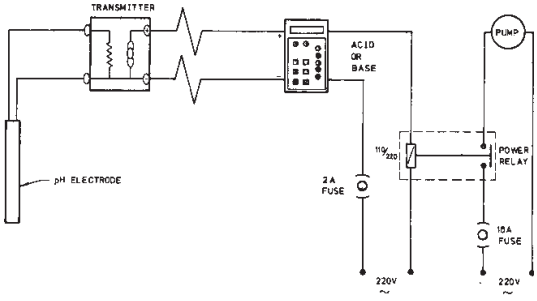
Monitoring the pH/ORP with Panel Mounting pH (HI 8510)/ORP (HI 8512) Indicator



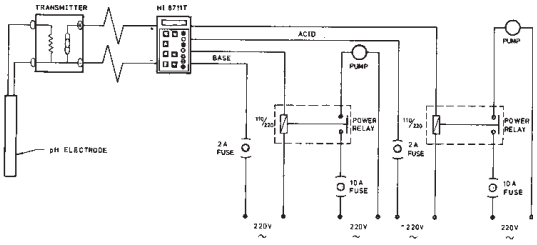
Controlling the pH/ORP with an Industrial Regulator



Monitoring and Controlling the pH/ORP with Panel Mounting Indicator/Regulator and Dosage Control of either Acid or Base



Monitoring and Controlling the pH with (HI 8711) Panel Mounting Indicator/ Regulator with Independent Dosage Control for Acid and Base



ACCESSORIES

pH CALIBRATION SOLUTIONS

HI 7004M pH 4.01 buffer solution, 230 mL
HI 7004L pH 4.01 buffer solution, 500 mL
HI 7006M pH 6.86 buffer solution, 230 mL
HI 7006L pH 6.86 buffer solution, 500 mL
HI 7007M pH 7.01 buffer solution, 230 mL
HI 7007L pH 7.01 buffer solution, 500 mL
HI 7009M pH 9.18 buffer solution, 230 mL
HI 7009L pH 9.18 buffer solution, 500 mL
HI 7010M pH 10.01 buffer solution, 230 mL
HI 7010L pH 10.01 buffer solution, 500 mL

ORP SOLUTIONS

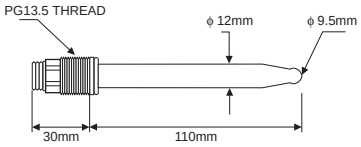
HI 7020M 200-275 mV test solution, 230 mL
HI 7020L 200-275 mV test solution, 500 mL
HI 7091M Reducing pretreatment solution, 230 mL
HI 7091L Reducing pretreatment solution, 500 mL
HI 7092M Oxidizing pretreatment solution, 230 mL
HI 7092L Oxidizing pretreatment solution, 500 mL

ELECTRODE MAINTENANCE SOLUTIONS

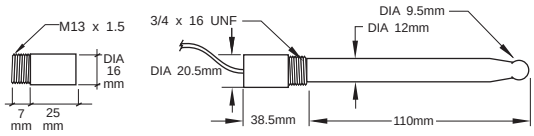
HI 70300M Storage solution, 230 mL
HI 70300L Storage solution, 500 mL
HI 7061M General cleaning solution, 230 mL
HI 7061L General cleaning solution, 500 mL
HI 7073M Protein cleaning solution, 230 mL
HI 7073L Protein cleaning solution, 500 mL
HI 7074M Inorganic cleaning solution, 230 mL
HI 7074L Inorganic cleaning solution, 500 mL
HI 7077M Oil & Fat cleaning solution, 230 mL
HI 7077L Oil & Fat cleaning solution, 500 mL
HI 7071 3.5M KCl + AgCl electrolyte solution, 4 x 50 mL bottle, for single junction electrodes
HI 7072 1M KNO_3 electrolyte solution, 4 x 50 mL bottle
HI 7082 3.5M KCl electrolyte solution, 4 x 50 mL bottle, for double junction electrodes

pH ELECTRODES

HI 1090T Screwcap PG13.5 connector, double junction, glass body

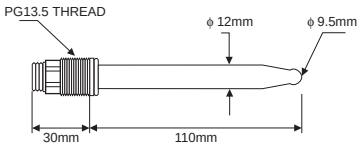


HI 1110S Screw connector, single junction, glass body
HI 1130B/3 BNC connector, 3 m (9.9') cable, single junction, glass body

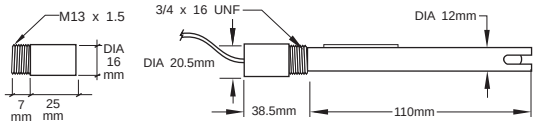


HI 1110S HI 1130B/3

HI 1110T Screwcap PG13.5 connector, double junction, glass body

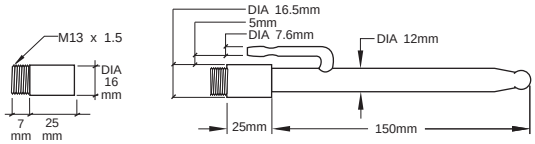


HI 1114S Screw connector, double junction plastic body
HI 1134B/3 BNC connector, 3 m (9.9') cable, double junction plastic body



HI 1114S HI 1134B/3

HI 1115S Screw connector, single junction, glass body
HI 1135B/3 BNC connector, 3 m (9.9') cable, single junction, glass body



HI 1115S HI 1135B/3

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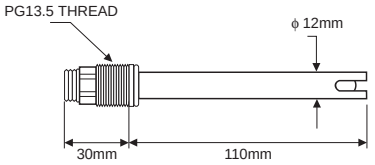
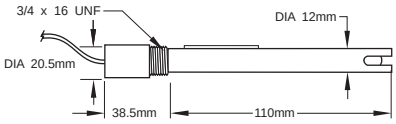
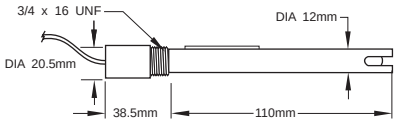
HI 1210T Screwcap PG13.5 connector, double junction, plastic body



HI 1910B BNC connector, 1 m (3.3') cable, double junction, plastic body, built-in amplifier

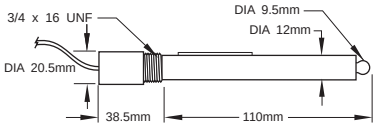


HI 1911B BNC connector, 1 m (3.3') cable, double junction, plastic body, built-in amplifier

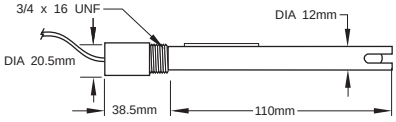


HI 1912B BNC connector, 1 m (3.3') cable, double junction, plastic body, built-in amplifier

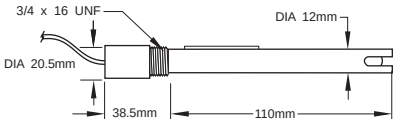
HI 1912B/5 BNC connector, 5 m (16.5') cable, double junction, plastic body, built-in amplifier



HI 2114B/5 BNC connector, 5 m (16.5') cable, double junction, plastic body

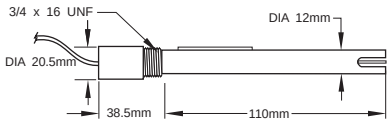


HI 2910B/5 BNC connector, 5 m (16.5') cable, double junction, plastic body, built-in amplifier



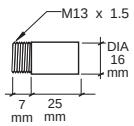
ORP ELECTRODES

HI 2930B/5 BNC connector, 5 m (16.5') cable, Pt, plastic body, built-in amplifier

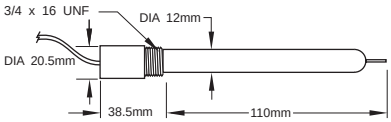


HI 3110S Screw-type connector, Pt, glass body

HI 3130B/3 BNC connector, 3 m (9.9') cable, Pt, glass body

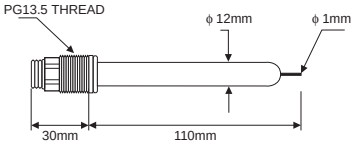


HI 3110S



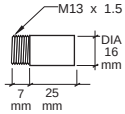
HI 3130B/3

HI 3110T Screwcap PG13.5 connector, Pt, glass body

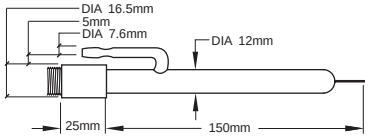


HI 3115S Screw-type connector, side-arm, Pt, glass body

HI 3135B/3 BNC connector, 3 m (9.9') cable, side-arm, Pt, glass body

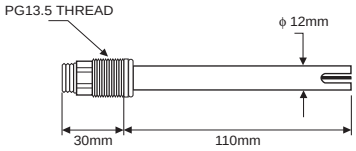


HI 3115S



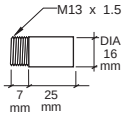
HI 3135B/3

HI 3210T Screwcap PG13.5 connector, Pt, plastic body

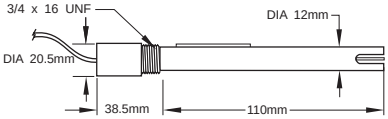


HI 3410S Screw connector, Pt, plastic body

HI 3430B/3 BNC connector, 3 m (9.9') cable, Pt, plastic body

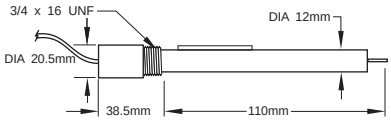


HI 3410S



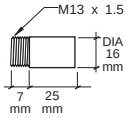
HI 3430B/3

HI 3932B/5 BNC connector, 5 m (16.5') cable, Pt, plastic body, built-in amplifier

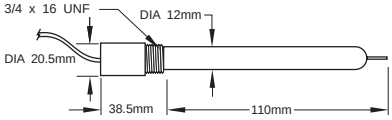


HI 4110S Screw-type connector, Au, glass body

HI 4130B/3 BNC connector, 3 m (9.9') cable, Au, glass body

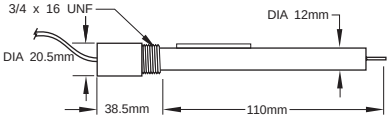


HI 4110S

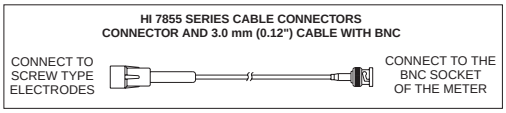


HI 4130B/3

HI 4932B/5 BNC connector, 5 m (16.5') cable, Au, plastic body, built-in amplifier



EXTENSION CABLES FOR SCREW-TYPE ELECTRODES ONLY (SCREW TO BNC CONNECTOR)



HI7855/1 Extension cable 1 m (3.3') long

HI7855/3 Extension cable 3 m (9.9') long

HI7855/5 Extension cable 5 m (16.5') long

HI7855/10 Extension cable 10 m (33') long

HI7855/15 Extension cable 15 m (49.5') long

OTHER ACCESSORIES

BL PUMPS Dosing pumps with flow rate from 1.5 to 20 lph

HI98501 Pocket-size, thermometer with penetration probe and 0.1°C resolution (range -50.0 to 150.0°C)

HI 6050 & HI 6051 Submersible electrode holders

HI 6054 & HI 6057 Electrode holders for in-line applications

HI 7871 & HI 7873 Level controllers

HI 8427 pH / ORP electrode simulator

HI 931001 pH / ORP electrode simulator with LCD

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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 probes and the electrodes are warranted for a period of six months.

Damages due to accident, misuse, tampering or lack of prescribed maintenance are not covered. This warranty is limited to repair or replacement free of charge.

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. Obtain a Returned Goods Authorization from the Customer Service department first and then return the instrument with the Authorization # included along with shipment costs prepaid. If the repair is not covered by the warranty, you will be notified of the charge for repair or replacement. 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.

CE DECLARATION OF CONFORMITY

HANNA instruments

CE

DECLARATION OF CONFORMITY

We

Hanna Instruments Italia Srl
via E.Fermi, 10
35030 Sarmeola di Rubano - PD
ITALY

herewith certify that the pH and ORP transmitters

HI 8614 HI 8614L HI8615 HI8615L

have 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 801-2 Electrostatic Discharge
IEC 801-3 RF Radiated
IEC 801-4 Fast Transient

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

Date of Issue: 11-12-1998

P. Cesa - Technical Director
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.

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

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SALES AND TECHNICAL SERVICE CONTACTS

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Tel. (07851) 9129-0 • Fax (07851) 9129-99

Greece:
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Korea:
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Singapore:
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South Africa:
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Thailand:
Tel. 66.2619.0708 • Fax 66.2619.0061

United Kingdom:
Tel. (01525) 850.855 • Fax (01525) 853.668

USA:
Tel. (401) 765.7500 • Fax (401) 765.7575

MANPHTRR3 11/05

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