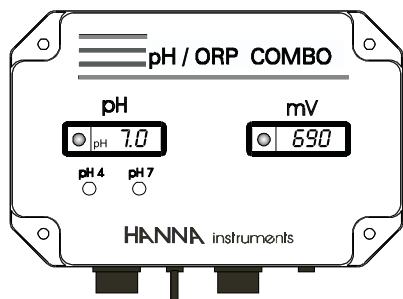


Instruction Manual

HI 981406

pH & ORP Indicator with LED Alarm Signals



WARRANTY

HI 981406 is warranted for two years against defects in workmanship and materials when used for its intended purpose and maintained according to instructions. The electrodes 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 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. To validate your warranty, fill out and return the enclosed warranty card within 14 days from the date of purchase.

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sale@ponpe.com

Dear Customer,
Thank you for choosing a Hanna product.
This manual will provide you with the necessary information for a correct operation. 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. If any damage has occurred during shipment, immediately notify your dealer or the nearest Hanna Customer Service Center.

The meter is supplied complete with:

- HI 1283 grounding bar
- pH calibration solutions (20 mL each)
- Screwdriver, 12 Vdc adapter 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.

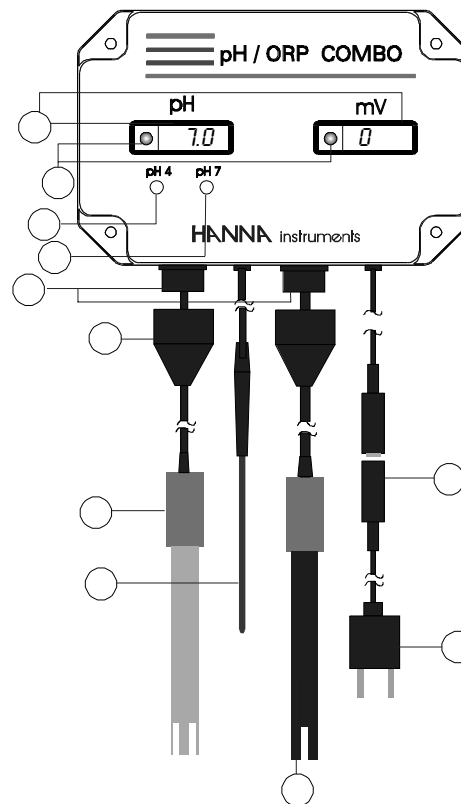
GENERAL DESCRIPTION

HI 981406 indicator has been specially designed for water treatment and swimming pool applications where both pH and ORP need to be monitored.

The instrument is provided with two separate setpoints for pH and ORP which the operator can adjust at will. Once the pH setpoint is exceeded or the ORP level drops below the setpoint, the appropriate LED will flash to alert the operator.

The optional HI 2114P/2 pH electrode and HI 3214P/2 ORP electrode are specially designed for the swimming pool market. Their purpose-built fiber junction is particularly resistant to clogging in pools, and the BNC connector is protected behind a waterproof sheath.

FUNCTIONAL DESCRIPTION



1. Liquid Crystal Displays
2. Alarm LEDs for pH and ORP
3. pH 4/10 calibration trimmer
4. pH 7 calibration trimmer
5. BNC connectors
6. Protective sheaths
7. HI 2114P/2 pH electrode (optional)
8. HI 1283 grounding bar (included)
9. HI 3214P/2 ORP electrode (optional)
10. Power supply connector
11. 12 Vdc power adapter (included)

SPECIFICATIONS

Range	0.0 to 14.0 pH / ± 999 mV
Resolution	0.1 pH / 1 mV
Accuracy (@20°C/68°F)	± 0.2 pH / ± 5 mV
Setpoints	adjustable, 5.0 to 9.0 pH and 350 to 850 mV
pH Alarm	LED blinks when pH reading exceeds setpoint
ORP Alarm	LED blinks when ORP reading falls below setpoint
pH Calibration	Manual, 1 or 2 point
Probes	HI 2114P/2 pH electrode (optional) HI 3214P/2 ORP electrode (optional) HI 1283 grounding bar (included)
Power Supply	12 Vdc power adapter (included)
Environment	0 to 50°C (32 to 122°F); RH max 95%
Dimensions	165 x 110 x 35 mm (6.5 x 4.3 x 1.4")
Weight	300 g (10.6 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 areas could cause unacceptable interferences to radio and TV equipment.

The glass bulb at the end of the electrode is sensitive to electrostatic discharges. Avoid touching the bulb at all times. During operation, ESD wrist straps should be worn to avoid possible damage to the electrode by electrostatic discharges.

Any variation introduced by the user to the supplied equipment may degrade the instrument's EMC performance.

To avoid electrical shock, do not use this instrument when voltage at the measurement surface exceeds 24 Vac or 60 Vdc.

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

OPERATIONAL GUIDE

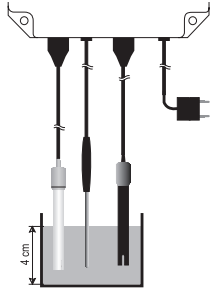
pH and ORP Electrode Connection

In order to protect the instrument against vapors and humidity, the BNC connectors are shielded behind waterproof sheaths.

- Slide the protective sheaths down. Connect the pH and the ORP electrodes to the BNC connectors, and then slide the protective sheaths back up. For maximum protection, make sure the connectors are completely covered.
- Do not be alarmed if white crystals appear around the electrode protective cap. This is normal with pH and ORP electrodes, and they dissolve when rinsed with water.

Taking Measurements

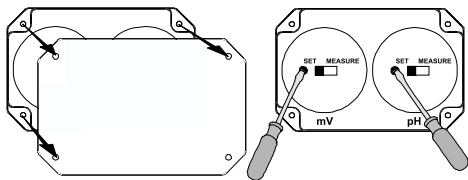
- Turn the meter on by connecting the adapter to the meter and the
- Remove the protective caps and immerse the tips (4cm/1½") of the electrodes and the ground probe into the sample to be monitored. In order not to affect the measurement accuracy, the electrodes should not touch or stand close to the vessel's walls or bottom.
- The 2 LCDs will show the pH and ORP values. Allow the readings to stabilize.



Adjusting the Setpoints

With HI 981406 you can select two separate setpoints for pH and ORP, and be alerted through two independent alarm LEDs when an abnormal situation occurs.

- To access the MEASURE/SET switches, unscrew and remove the rear panel and gasket seal. Move the switches to the left (SET) position.



- With a small screwdriver adjust the setpoint trimmers to display the desired setpoint value on the LCD. You can adjust one or both setpoints at once in the following ranges:

pH: from 5.0 to 9.0
ORP: from 350 to 850 mV

The pH LED blinks when the pH reading exceeds the setpoint, while the ORP LED blinks when the ORP reading falls below the setpoint.

- Move the switches back to the MEASURE position and replace the rear panel, while making sure the gasket is in place before tightening the screws.

Electrode Maintenance

- When not in use, rinse the electrodes with water and store them with a few drops of HI70300 storage solution in the protective cap. Always replace the protective cap after use. NEVER USE DISTILLED OR DEIONIZED WATER FOR STORING THE ELECTRODES.
- If the electrodes have been left dry, immerse the tips in HI70300 storage solution overnight to reactivate them.
- To minimize clogging and provide longer life to the electrodes, it is recommended to clean them at least once a month. Immerse the tips in HI 7061 cleaning solution for 30 minutes and then rinse with tap water.

ORP Electrode

Check the accuracy of the meter by immersing the ORP electrode in HI 7020 test solution.

The reading should be between 200 and 275 mV at 20°C (68°F). Otherwise clean the platinum tip of the electrode by rubbing it with a soft cloth soaked with HI 7061 cleaning solution or alcohol

After cleaning, condition the ORP electrode by leaving it in a pretreatment oxidizing (HI 7092) solution for 30 minutes.

pH CALIBRATION

For best accuracy, it is recommended to calibrate the instrument frequently. The meter should also be recalibrated:

- whenever the pH electrode is cleaned or replaced
- where high accuracy is required
- at least once a month.

Calibration Procedure

Pour a small quantities of pH 7.0 (HI 7007) and pH 10.0 or pH 4.0 (HI 7010 or HI 7004) solution into two clean beakers.

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

Choose the pH 4.0 (HI 7004) buffer as second calibration solution if you are going to measure acidic samples; use pH 10.0 (HI 7010) for alkaline samples.

- Turn the meter on and check that the pH MEASURE/SET switch is on MEASURE position.
- Remove the protective cap, then rinse and immerse the electrode in the pH 7.0 buffer. Stir gently and wait a couple of minutes for the reading to stabilize.

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

- Adjust the pH7 trimmer with the calibration screwdriver until the LCD shows "pH 7.0".
- Rinse and immerse the pH electrode in the pH 10.0 (or pH 4.0) buffer and stir gently.
- Wait a couple of minutes and adjust the pH4 trimmer until the LCD shows "pH 10.0" (or "pH 4.0").

The pH calibration is now complete.

CE DECLARATION OF CONFORMITY



ACCESSORIES

HI 2114P/2	Double-junction, plastic body pH electrode with 2 m (6.6') cable and BNC connector
HI 3214P/2	Double-junction, plastic body ORP electrode with 2 m (6.6') cable and BNC connector
HI 1283 *	Stainless steel grounding bar with 2 m (6.6') cable
HI 70004P	pH 4.01 solution, 20 mL sachet (25 pcs)
HI 70007P	pH 7.01 solution, 20 mL sachet (25 pcs)
HI 70010P	pH 10.01 solution, 20 mL sachet (25 pcs)
HI 7004M	pH 4.01 solution, 230 mL bottle
HI 7007M	pH 7.01 solution, 230 mL bottle
HI 7010M	pH 10.01 solution, 230 mL bottle
HI 7020M	200/275 mV test solution, 230 mL
HI 7092M	Pretreatment oxidizing solution, 230 mL
HI 70300M	Electrode storage solution, 230 mL bottle
HI 7061M	Electrode cleaning solution, 230 mL bottle
HI 710005	115 Vac/12 Vdc power adapter, US plug
HI 710006	230 Vac/12 Vdc power adapter, European plug

* To be replaced by authorized technical personnel only.