

## WARRANTY

ORP *pronto* HI 982401 is warranted for two years against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. The electrode is warranted for a period of one year. 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.

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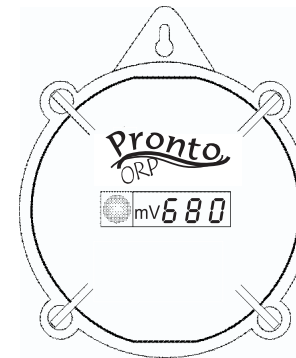
Hanna Instruments reserves the right to modify the design, construction and appearance of its products without advance notice.

1517982401R3 05/05

## Instruction Manual

*pronto*  
OR  
(HI 982401)

**On-line, Waterproof  
ORP meter with Alarm**



**PEWA**  
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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](mailto: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 with:

- Screwdriver
- 12 Vdc power adapter

**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

*Pronto* **HI 982401** is an ORP meter specially designed to meet the needs of monitoring ORP such as in swimming pools. The housing has been completely sealed against vapors and humidity with IP54 rating. Simply hang the *Pronto* above the sample to be monitored.

The **HI 3214P/2** gel-filled ORP electrode (optional) is interchangeable and the BNC connector is protected behind a waterproof sheath. The unique design of the electrode provides longer life even in harsh conditions.

## ACCESSORIES

<b>HI 3214P/2</b>	Double fiber junction, plastic body, Platinum ORP electrode with 2 m (6.6') cable and BNC connector
<b>HI 7020M</b>	ORP test solution at 200/275 mV, 230 mL
<b>HI 7020L</b>	ORP test solution at 200/275 mV, 500 mL
<b>HI 7091M</b>	Reducing solution, 230 mL
<b>HI 7091L</b>	Reducing solution, 500 mL
<b>HI 7092M</b>	Oxidizing solution, 230 mL
<b>HI 7092L</b>	Oxidizing solution, 500 mL
<b>HI 7061L</b>	Electrode cleaning solution, 500 mL bottle
<b>HI 710005</b>	12 Vdc power adapter, US plug
<b>HI 710006</b>	12 Vdc power adapter, European plug
<b>HI 710012</b>	12 Vdc power adapter, Australian plug
<b>HI 710013</b>	12 Vdc power adapter, Southern Africa plug
<b>HI 710014</b>	12 Vdc power adapter, UK plug

## CE DECLARATION OF CONFORMITY

### 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.

During operation, ESD wrist straps should be worn to avoid possible damage to the electrode by electrostatic discharges.

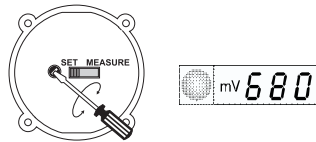
Any variation introduced by the user to the supplied equipment may degrade the instrument's EMC performance.

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

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

	
<b>CE</b> DECLARATION OF CONFORMITY	
We Hanna Instruments Srl Via E.Ferrari, 10 29030 Sarmeola di Rubano (PD) ITALY herewith certify that the ORP meter <b>HI 982401</b> has been tested and found to be in compliance with the following regulations: <b>IEC 601-2</b> Electrostatic Discharge <b>IEC 601-3</b> RF Radiation <b>IEC 601-4</b> Fast Transient <b>EN 5522</b> Radiated, Class B <b>EN 61010-1</b> Electrical Safety	
Date of Issue: 23-04-1999	 D. Volpato - Engineering Manager On behalf of Hanna Instruments S.r.l.

- With a small screwdriver adjust the setpoint trimmer to display the desired value in the 350 to 850 mV range (e.g. 680 mV).



- Moved back the switch to the MEASURE position.
- Close the meter while making sure the gasket is in place before tightening the screws.
- Whenever the mV reading is lower than the setpoint, the red alarm LED blinks to warn the user.



### **Maintenance**

To minimize clogging and provide longer life to the ORP electrode, it is recommended to clean it monthly.

Immerse the tip of the electrode in **HI 7061** cleaning solution for at least one hour and then rinse it with tap water.

Check the meter accuracy by immersing the electrode in the **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 cotton or lint-free cloth soaked with **HI 7061** cleaning solution.

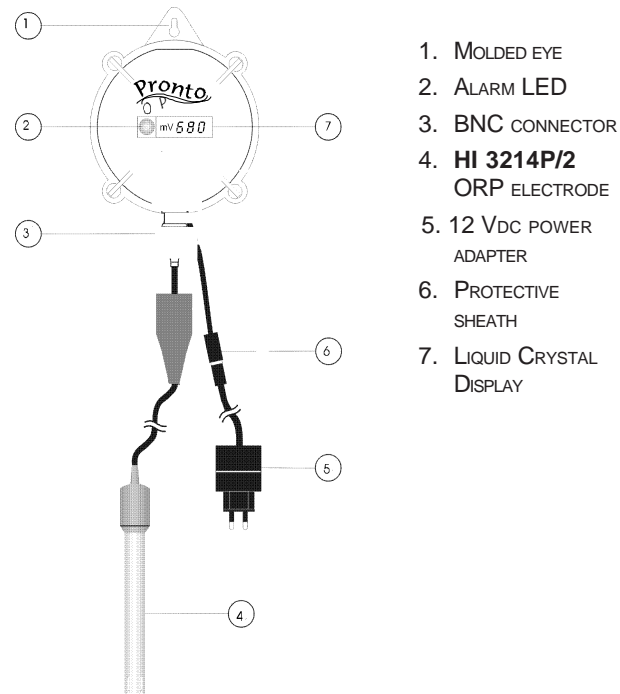
After cleaning, condition the ORP electrode by leaving it in a pretreatment reducing (**HI 7091**) or oxidizing (**HI 7092**) solution for half an hour.

The alarm setpoint is adjustable and if the ORP value is out of range the user is alerted by a red light.

The meter is factory calibrated and does not need recalibration.

You no longer need to worry about battery changes: the unit runs without interruption on 12 Vdc power supply.

## FUNCTIONAL DESCRIPTION



1. MOLDED EYE
2. ALARM LED
3. BNC CONNECTOR
4. **HI 3214P/2** ORP ELECTRODE
5. 12 VDC POWER ADAPTER
6. PROTECTIVE SHEATH
7. LIQUID CRYSTAL DISPLAY

## SPECIFICATIONS

### HI 982401 ORP *Yonko*

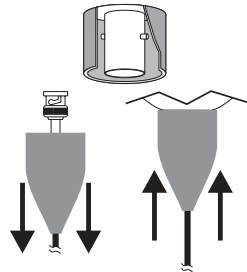
Range	±999 mV
Resolution	1 mV
Accuracy (@20°C/68°F)	±5 mV
Typical EMC Deviation	±5 mV
Setpoint	Selectable from 350 to 850 mV
Alarm	LED blinks when the measured ORP value is lower than the setpoint
Calibration	Factory calibrated
Probe	<b>HI 3214P/2</b> interchangeable ORP electrode (optional)
Casing	IP54
Power Supply	12 Vdc adapter (included)
Dimensions	86 x 110 x 43 mm (3.4 x 4.3 x 1.7")
Weight	150 g (5.3 oz.)

## OPERATIONAL GUIDE

### ORP electrode CONNECTION

The BNC connector is protected against vapors and humidity by a waterproof sheath.

- Slide the protective sheath down. Connect the **HI 3214P/2** ORP electrode to the BNC connector and then slide up. Make sure the connector is completely covered.
- Do not be alarmed if white crystals appear around the electrode protective cap. This is normal with ORP electrodes and they dissolve when rinsed with water.

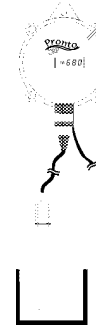


- When not in use, rinse the electrode with water and store it with the protective cap.
- If the electrode has been left dry, soak the tip in **HI70300** storage solution for at least one hour to reactivate it.

### Taking ORP Measurements

- Turn the meter on.
- Remove the protective cap from the ORP electrode and immerse the tip (4 cm/1½") in the sample.
- The LCD will show the ORP value measured in mV unit. Allow the reading to stabilize and **HI 982401** will start continuous monitoring.

Note: to prevent damages to the meter, remove the ORP electrode from the sample before turning the meter off.



### Adjusting the Setpoint

- To access the MEASURE/SET switch and the setpoint adjustment trimmer, unscrew the 4 screws on the meter back and remove the rear panel.
- Move the switch to the SET position (left).

