

## Instruction Manual

# HI 982411-0 HI 982411-1 Panel-Mounted ORP Indicators & Controllers

**HANNA**  
instruments

Manufacturers since 1978



These Instruments are in  
Compliance with the CE Directives

## WARRANTY

HI982411-0, HI982411-1 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.

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.

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

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Dear Customer,

Thank you for choosing a Hanna product. This manual will provide you with the necessary information for the correct operation of the meter. 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).

These instruments are in compliance with the CE directives EN50081-1 and EN50082-1.

## 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:

.Mounting bracket;

.12VDC adapter (HI 982411-0 only)

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

HI982411-0 and HI982411-1 are ORP indicators and controllers with a relay output designed for simplicity of use in a wide range of industrial applications.

The models are panel mounted with membrane keypads on the front panel and an easy-to-read LCD display.

Power supply, wiring and selection are made via the plug-in terminal blocks on the rear panel. The instruments are equipped with a BNC socket and accept input from ORP electrode.

LED indicators on the front panel identify whether the controller is in set mode or reading mode and dosing mode.

## SPECIFICATIONS

### HI 982411

Range	0 to 1000 mV
Resolution	1 mV
Accuracy (@ 20°C/68°F)	±5%
Calibration (OFFSET)	Manual through trimmer
Setpoint	Adjustable from 0 to 1000 mV
Dosing Contact	Open when Measure > Setpoint Close when Measure < Setpoint
Power supply:	
HI 982411-0	External 12/24 VDC (included)
HI 982411-1	110/115V & 220/240; 50/60Hz
Dimensions	79 x 49 x 95 mm (3.1 x 1.9 x 3.7")

## 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 meters:  
HI982411-0, HI982411-1

have been tested and found to be in compliance with the following regulations:

IEC 801-2	Electrostatic Discharge
IEC 801-3	RF Radiated
IEC 801-4	Fat Transients
EN 55022	Radiated, Class B
EN 61010-1	User Safety Requirement

Date of Issue: 14-4-99

D. Volpato - Engineering Manager  
On behalf of  
Hanna Instruments S.r.l.

## 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 this glass 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.

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

## OPERATIONAL GUIDE

### POWER CONNECTION

#### HI 982411-1

Connect a 3-wire power cable to the terminal strip paying attention to the correct earth, neutral and line contacts (115VAC or 230VAC).

**Note:** It is recommended to cover the unused terminals with insulating tape.

#### HI 982411-0

Connect a 2-wire power cable to the terminal strip paying attention to the correct positive and negative (12/24 VDC).

### DOSING CONTACT

This contact (maximum 2A, 220 V) is used for connection to a dosing system or an alarm system. The relay contact acts as a on/off switch for the controlling device.

**Note:** All external cables connected to the rear panel should end with wire lugs.

### OPERATING THE METER

All operations are via the front panel keys and trimmers. When each key is pressed the appropriate LED lights up to indicate which function is in operation.

Make sure that the meter is calibrated and that the Setpoint is properly adjusted before proceeding (see Setpoint and Calibration below).

Attach an electrode with a BNC connector to the meter. Install the electrode in the fittings or immerse it in the solution to be monitored. Press the "MEAS" key.

The LCD will show the pH value.

When the dosing contact is closed, the "DOSING" LED will be lit.

### CALIBRATION

This meter is factory calibrated. The calibration can be performed diving the electrode in HI7020S solution and adjusting the calibration trimmer.

### SETPOINT

Press the "SET" key. The display will show the default or previously adjusted value for the dosage. Use a small screwdriver to adjust the "SET" trimmer until the required value is displayed.

## FUNCTIONAL DESCRIPTION

### FRONT PANEL

#### Keypad

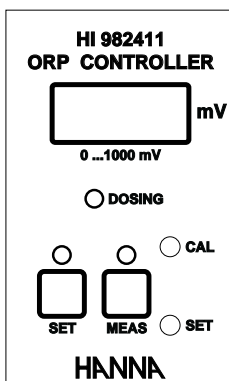
**SET** To display setpoint  
**MEAS** To display measurement

#### Trimmers

**CAL** For mV Calibration  
**SET** To adjust setpoint

#### LEDs

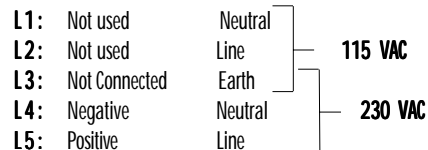
**SET** ON when LCD displays the set value  
**MEAS** ON when LCD displays the measured value.  
**DOSING** ON when dosing contact is activated (closed)



### REAR PANEL

1. Power Supply:  
**HI 982411-0**  
**12VDC**

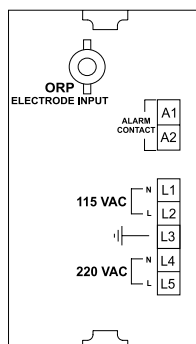
**HI 982411-1**  
**115/230 VAC**



2. **Alarm contact.** This dosing contact acts only as a switch.

The dosing alarm contact will be closed when measure is lower than setpoint.  
**NOTE:** The contact has to be protected outside by the user.

3. BNC for ORP electrode



## HI992411 LAYOUT

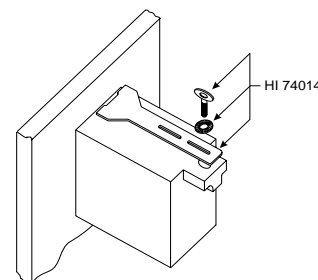
Front view of the panel-mounted unit

Dimensions show the cutout size for installation and outside dimensions of the panel.

Side view of the panel-mounted unit

Adjustable location brackets (supplied with the meter) allow the controller to slide into the cutout and will hold the unit securely in place. 95 mm (3.74") is the minimum amount of space required to install the controller with the cables connected.

Panel-mounted unit assembling view



## ACCESSORIES

### ORP SOLUTIONS

**HI 7020M** 200-275mV Buffer Solution, 230 mL  
**HI 7020L** 200-275mV Buffer Solution, 460 mL  
**HI 7091M** Pre-Treatment Reducing Solution, 230 mL  
**HI 7091L** Pre-Treatment Reducing Solution, 460 mL  
**HI 7092M** Pretreatment Oxidizing Solution, 230 mL  
**HI 7092L** Pre-Treatment Oxidizing Solution, 460 mL

### ELECTRODE STORAGE SOLUTIONS

**HI 70300M** Storage Solution, 230 mL  
**HI 70300L** Storage Solution, 460 mL

### ELECTRODE CLEANING SOLUTIONS

**HI 7061M** General Cleaning Sol., 230 mL  
**HI 7061L** General Cleaning Sol., 460 mL

### ORP ELECTRODES

**HI 3214P/2** BNC-type, platinum, double-junction, plastic body with 2m (6.6') cable.  
**HI 2003/5** Heavy-duty, BNC-type platinum, double junction, plastic-body with 5m (16.5') cable.  
**HI 2012/5** Heavy-duty, BNC-type platinum, double junction, plastic-body with 5m (16.5') cable.

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

**HI 7855/1** Extension cable 1m (3.3') long  
**HI 7855/3** Extension cable 3m (9.9') long  
**HI 7855/5** Extension cable 5m (16.5') long  
**HI 7855/10** Extension cable 10m (33') long  
**HI 7855/15** Extension cable 15m (49.5') long

### OTHER ACCESSORIES

**BL PUMPS** Dosing Pumps with Flow Rate from 1.5 to 20 LPH  
**HI 6050 & HI 6051** Submersible Electrode Holders  
**HI 6054 & HI 6057** Electrode Holders for In-Line Applications  
**HI 731326** Calibration Screwdriver (20 pcs)

**HI 7871 & HI 7873** Level Controllers  
**HI 710005** 12 VDC power adapter, US plug  
**HI 710006** 12 VDC power adapter, European plug  
**HI 710012** 12 VDC power adapter, Australian plug  
**HI 710013** 12 VDC power adapter, Southern Africa plug  
**HI 710014** 12 VDC power adapter, UK plug