# BL 981411-0
# BL 981411-1

## Panel-Mounted pH Indicators & Controllers

Black Stone

## WARRANTY

These instruments are warranted for two years against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. Probes are warranted for 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 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.

**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 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 these instruments 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.

---

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 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.

## 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.
Each meter is supplied with:
• Mounting brackets
• Instruction manual
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

**BL981411-0** and **BL981411-1** are panel-mounted pH indicators and controllers designed for simplicity of use in a wide range of industrial applications.

Connections and wiring to electrode, power supply and contacts are made via the terminal blocks on the rear panel. The meters are equipped with a BNC socket and accept input from conventional pH electrodes.

Other features include: overtime control system, selection of dosing direction (Acid/Alk), one dosing contact, multi-colour LED for indicating if the meter is in measurement/dosing/alarm condition, possibility to set (Off-Auto-On switch) dosing action mode.
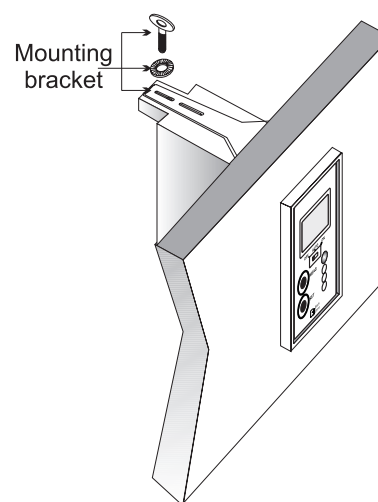
Two models are available:
• **BL 981411-0** powered at 12 Vdc
• **BL 981411-1** powered at 115 or 230 Vac

---

## SPECIFICATIONS

| Range | 0.0 to 14.0 pH |
|---|---|
| Resolution | 0.1 pH |
| Accuracy (@ 20°C/68°F) | ±0.2 pH |
| Typical EMC Deviation | ±0.1 pH |
| Calibration | Manual, through CAL (Offset) trimmer |
| Dosing Contact | Maximum 2A (fuse protected), 250 Vac, 30 Vdc |
| Dosing Selection | Acid or Alk, selectable on the back panel |
| Contact Open=Acid dosage=Relay ON if Measure > Setpoint | |
| Contact Close=Alk dosage=Relay ON if Measure < Setpoint | |
| Setpoint | Adjustable, from 0 to 14 pH |
| Overtime | Adjustable, typically from 5 to approx. 30 minutes |
| Power Consumption | 10 VA |
| Installation Category | II |
| Power supply: | External (fuse protected) |
| BL981411-0 | 12 Vdc |
| BL981411-1 | 115/230 Vac ; 50/60Hz |
| Dimensions | 83 x 53 x 99 mm (3.3x2.1x3.9") |

## ASSEMBLING VIEW

Mounting bracket



---

## ACCESSORIES

**pH CALIBRATION SOLUTIONS**
HI 7006M/L   pH 6.86 buffer solution, 230/500  e
HI 7007M/L   pH 7.01 buffer solution, 230/500  e

**OTHER SOLUTIONS**
HI 70300M/L  Electrode storage solution, 230/50   tle
HI 7061M/L   Electrode general cleaning solution,     mL
HI 7073M/L   Protein cleaning solution, 230/50   le
HI 7074M/L   Inorganic cleaning solution, 230/50  tle
HI 7077M/L   Oil & Fat cleaning solution, 230/

**REFILLING ELECTROLYTE SOLUTIONS (50 m      )**
HI 7071   3.5M KCl+AgCl, for single junctio      es
HI 7072   1M KNO$_3$ solution
HI 7082   3.5M KCl, for double junction elec

**pH ELECTRODES**
HI 1002/5   BNC connector, double junction,        dy
            w/external thread & 5 m (16.5'
HI 1090T    Screw connector, double junction,       dy
            with external thread
HI 1110S    Screw connector, single junction, g
HI 1210T    Screw connector, double junction,       dy
            with external thread
HI 2114P/2  BNC connector, double junction,        dy
            with 2 m (6.6') cable
HI 1210B/5  BNC connector, double junction,        ly,
            with 5 m (16.5') cable
HI 2910B/5  BNC connector, double junction,        ly,
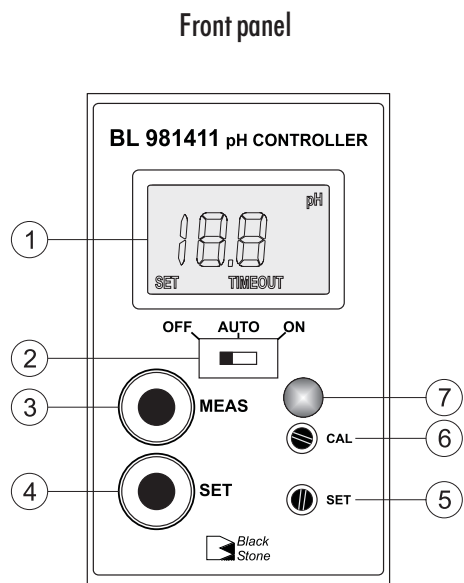            with built-in amplifier and 5 m (    le

**EXTENSION CABLES, SCREW TO BNC CONNE**
HI 7855/5   Extension cable 5 m (16.5') long
HI 7855/10  Extension cable 10 m (33') long

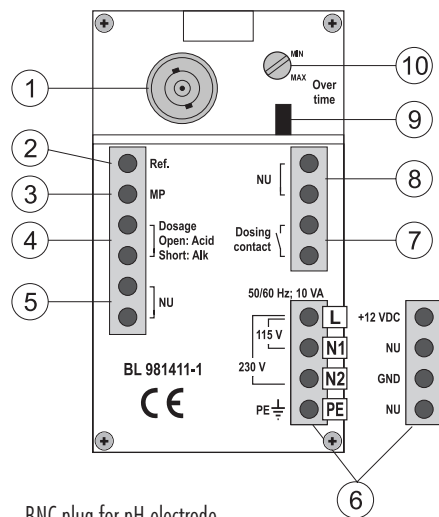**OTHER ACCESSORIES**
BL PUMPS   Dosing Pumps (flow rate from 1.5      )
HI 6050    Submersible electrode holder, 60
HI 6051    Submersible electrode holder, 110
HI 6054B   Electrode holder for in-line applica
HI 6054T   Electrode holder for in-line applica
HI 710005  12 Vdc power adapter, US plug
HI 710006  12 Vdc power adapter, European
HI 731326  Calibration screwdriver (20 pcs)
HI 740146  Mounting brackets
HI 7871    Level Controller (min and max)
HI 7873    Level Controller (min, max and ov

## Front panel

1. Liquid Crystal Display
2. Switch for selecting dosing mode:
   - OFF = dosing disabled
   - Auto = automatic dosage, depending on setpoint value and dosing selection
   - ON = dosing always active
3. "MEAS" key to set the instrument to measurement mode
4. "SET" key to display and set the setpoint value
5. "SET" trimmer to adjust the setpoint value (0 to 14 pH)
6. "CAL" trimmer to adjust the pH offset value during calibration
7. 3-colour LED indicator:
   - Green = meter in measurement mode
   - Orange/Yellow = dosing in progress
   - Red, blinking = indicates an alarm condition

---

1. BNC plug for pH electrode
2. Connection for electrode reference
3. Connection for potential Matching Pin
4. Acid/Alkaline dosage selection terminal:
   - contact open = acid selection
   - contact closed = alkaline selection
5. Not Used contact
6. Power supply terminal:
   - for **BL981411-0** model: 12 Vdc adapter
   - for **BL981411-1** model: 115 Vac or 230 Vac option
7. This contact acts as a switch for driving the dosing system (e.g. dosing pump)
8. Not Used contact
9. Jumper for enabling (jumper in) or disabling (jumper removed) the overtime control
10. Trimmer for overtime setting (typically from 5 to 30 minutes)

⚠ All external cables connected to the rear panel should end with cable lugs.

⚠ **A circuit breaker (rated 6A max.) must be connected in close proximity to the equipment, and in a position easy to reach by the operator, for disconnection of the instrument and of all the devices connected to the relays.**

---

### REAR PANEL CONNECTIONS

#### Terminals #1, #2 and #3: Electrode
- Connect a pH-electrode to the meter BNC plug (#1).
- To benefit from the differential input, connect the proper electrode wire (if available) or a cable with a potential matching pin (grounding bar) to the relevant terminal (#3) on the rear panel.

**Note:** When the Matching Pin can not be immersed together with the pH electrode in the solution, disable the differential input by shorting terminals #3 (Matching Pin) and #2 (Electrode Reference) with a jumper wire.

#### Terminals #4: Dosing selection
- For acid dosage, leave the circuit open.
- For alkaline dosage, short the terminals with a jumper wire.

#### Terminals #5: Not Used

#### Terminals #6: Power Supply
- Model **BL981411-0:** connect the 2 wires of a 12 Vdc power adapter to the terminals +12 Vdc and GND.
- Model **BL981411-1:** connect a 3-wire power cable to the terminals while paying attention to the correct earth (PE), line (L) and neutral (N1 for 115 V or N2 for 230 V) contacts.

#### Terminals #7: Dosing Contact
- This contact drives the dosing system, accordingly to the selected setpoint and dosing direction:
  - if "Acid" dosage is set, the relay is ON and dosing activated if measured value is higher than setpoint;
  - if "Alk" dosage is set, the relay is ON and dosing activated if measured value is lower than setpoint.

**Note:** The setpoint has a typical hysteresis value comparable to the meter accuracy.

#### Terminals #8: Not Used

#### Overtime system: jumper (#9) and trimmer (#10)
- This system allows the user to set a maximum dosing period, by adjusting the rear trimmer from 5 (min) to approx. 30 (max) minutes.
- When the set time is exceeded, any dosing action stops, the LED indicator on the front panel will blink Red and the LCD will show the "TIMEOUT" warning message. To exit the overtime condition, set the OFF/Auto/ON switch to "OFF" position, and then to "Auto" again.

- For disabling the overtime feature, simply ▢▢ he jumper on the rear panel.

**Note:** The overtime system works only if the O▢▢ ▢N switch is in "Auto" position.

### OPERATING THE METER
Before proceeding make sure that:
- the meter is calibrated;
- the setpoint value has been properly adjuste▢
- all rear panel wiring and selections are corre▢
- the OFF/Auto/ON switch is in the desired pos▢

Install or immerse the electrode in the solution ▢ ▢i-tored, then press the "MEAS" key (if necessary). The LCD will show the pH value. The LED indicat▢ ▢ht up Green when the meter is in measurement ▢ ▢nd dosing is not active, while will light up Orang▢ ▢for signaling that a dosing action is in progress.

### CALIBRATION
With meter in measurement mode, immerse el▢ ▢nd Matching Pin (if available) in pH 7.01 buffer sol▢ ▢ke briefly and wait for reading to stabilize. Adj▢ ▢AL trimmer until "7.0 pH" is displayed on the LCD.

### SETPOINT
Press the "SET" key: the display will show the▢ ▢or previously adjusted value, together with the "SET▢ ▢n. Using a small screwdriver adjust the "SET" trimn▢ ▢he desired setpoint value is displayed.
After 1 minute the meter automatically returns to ▢ ▢al mode; or press the "MEAS" key.