# JENCO®
## QUALITY INSTRUMENTS

# Operation Manual
## MODEL 6011B/6011BEU

### pH/ORP/Temperature
### Basis Bluetooth Portable Meter

# 6011B/6011BEU

# **CONTENTS**

## GENERAL INTRODUCTION

Thank you for selecting the 6011B/6011BEU meter. The 6011B/6011BEU is a precision tool that measures pH, mV (REL mV) and temperature. A built-in microprocessor stores, calculates and compensates for all parameters related to pH determinations including pH electrode temperature characteristics, electrode slope deviations, offset and buffer solutions. The 6011B/6011BEU is a new generation pH/ORP/temperature Bluetooth portable meter with iOS and Android mobile phone apps. The 6011B/6011BEU has a micro USB port for easy data transfer to PC and charging the battery pack.

This unit has a waterproof IP67 case. The touch mode keys are highly reliable with tactile and audio feedback. This meter uses a recharagable battery pack, typical battery life is over 100 hours (turn off Bluetooth). Re-calibration is not required when power is turned on again.

The front of the meter has a large LCD that displays pH, mV (REL mV) and temperature simultaneously along with user prompts and mode indicators. The unit prompts the user through calibration and measurement procedures.

An AUTOLOCK feature for both pH and mV (REL mV) measurements enables the unit to automatically sense the end point and the " √ " display indicates the end point value of a measurement. AUTOLOCK and user prompts help to eliminate most errors in determining pH and mV values, resulting in precise, repeatable and error-free measurements. The 6011B/6011BEU can also be used in non-AUTOLOCK mode.

The unit is also equipped with a non-volatile memory allowing the user to store 750 point memory with date/time stamp for GLP. This unit will assign a site number for each set of reading so the user can review the data easily. And the stored data can be transferred to PC through the micro USB port.

The model 6011B/6011BEU is available with pH, ORP and ATC (Automatic Temperature Compensation) probes. Other features include electrode offset recognition, electrode slope recognition, electrode efficiency display, built-in buffer coefficients, automatic or manual temperature compensation. This meter is user-friendly for field, industrial and laboratory applications.

[ **IMPORTANT NOTE:** The 6011B has a 10 KΩ thermistor and the 6011BEU has a 30 KΩ thermistor. Their temperature sensor is not interchangeable.]

## INITIAL INSPECTION

Carefully unpack the unit and accessories. Inspect for damages made in shipment. If any damage is found, notify your **JENCO** representative immediately. All packing materials should be saved until satisfactory operation is confirmed.

## CHARGING THE BATTERY PACK

This meter uses a recharagable battery pack. It is recommended to charge the battery when the "Battery" icon flashes. The "Battery" icon stops flashing after the charging is full. The battery pack can be charged from the AC power adapter of the cellphone/tablet, directly from a computer USB connection or from an external, portable USB battery pack.

A USB cable is included with the meter to charge the meter battery pack and connect the meter to a PC.

To charge the battery pack, connect the USB cable between the AC adapter the PC USB port or the external USB battery pack and the micro USB part of the meter. (Fig.1).
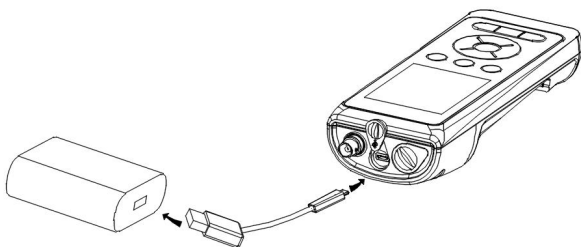


**Fig.1: Connecting the meter to AC power supply**

**WARNING:** Charge the battery pack in an open area away from flammable materials, liquids, and surfaces. Do not charge or handle a battery pack that is hot to the touch. Failure to follow the safety warnings and precautions can result in personal injury and/or meter damage not covered under warranty.

3

## BATTERY PACK REPLACEMENT

The life expectancy for 6011B/6011BEU rechargable battery is ≥ 300 charge cycle @ 25 °C.

1. Use a screw driver to remove the four screws and battery compartment cover to expose the battery compartment. (Fig.2)

2. With two fingers, grasp the battery pack connector and pull the connector straight up to disconnect and remove the battery pack. Properly dispose of the old battery pack.

3. Correctly align and seat the new battery pack into the meter.

4. Properly align the battery pack connector wire terminals with the meter pin connector, then connect the battery pack to the meter. Incorrect installation can damage the battery pack connectors or meter pins.

5. Replace the battery cover and make sure to secure the four screws for the water-tight feature.



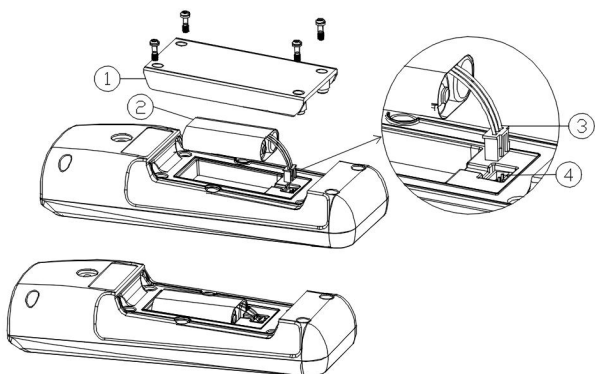**Figure 2 Battery replacement**

1. Battery compartment cover
2. Battery pack
3. Battery pack connector
4. Meter pin connectors
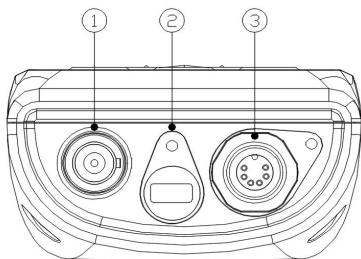
**Figure 3: 6011B Connectors**

1. pH/ORP connector (BNC connector)
2. Micro USB connector
3. ATC connector (6 PIN waterproof connector)
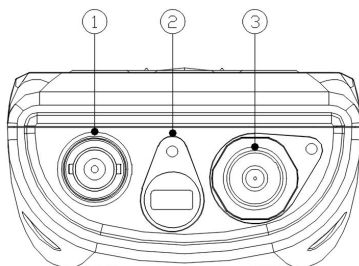
**Figure 4: 6011BEU Connectors**

1. pH/ORP connector (BNC connector)
2. Micro USB connector
3. ATC connector (3.5 mm waterproof phone jack)

## DISPLAY & KEY FUNCTIONS

### A. Display
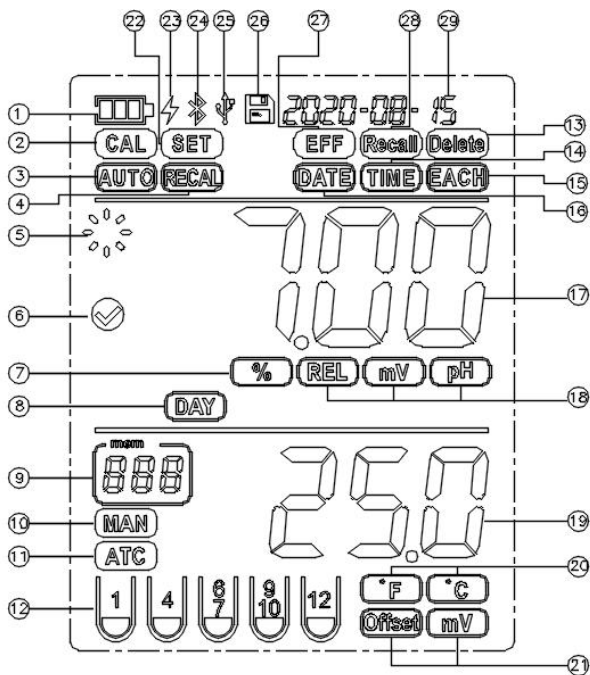


**Figure 5: Active LCD screen**

| 1. Battery charge. | 2. **CAL-** In the calibration mode. |
|---|---|
| 3. **AUTO-** AUTOLOCK mode indicator. | 4. **RECAL-** Recalibrate meter. |
| 5. **WAIT-** This will be displayed when the unit is still waiting for a stable reading or end point sensing. | 6. **√-** This will indicate that the reading is frozen during AUTOLOCK mode. |

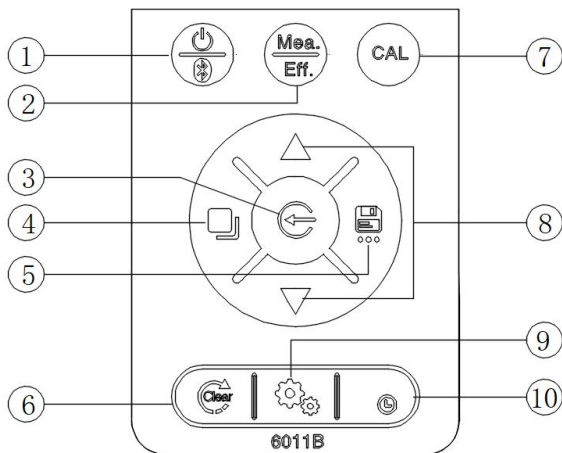| | |
|---|---|
| 7. **%-** <br> Efficiency of the electrode unit. | 8. **DAY-** <br> Represents the time unit "days" required for recalibration. |
| 9. Data storage site number. | 10. **MAN-** <br> Manual temperature compensation. |
| 11. **ATC-** <br> Auto temperature compensation. | 12. Buffer sets. |
| 13. **Delete-** <br> In the delete mode. | 14. **TIME-** <br> In the time setting mode. |
| 15. **EACH-** <br> To delete a single set of data from the data storage. | 16. **DATE-** <br> In the date setting mode. |
| 17. Main display for pH, mV and probe efficiency values. | 18. **REL/mV/pH-** <br> Unit and mode indicators. |
| 19. Temperature value or offset value of electrode. | 20. Temperature unit. |
| 21. **Offset & mV-** <br> Electrode offset. | 22. **SET-** <br> In the setting mode. |
| 23. In the charging mode. | 24. In the Bluetooth mode. |
| 25. USB/PC connection indicator. | 26. **Save-** <br> To save a reading into the data storage. |
| 27. **EFF-** <br> This will be displayed if the user is viewing the efficiency of the electrode. | 28. **Recall-** <br> To recall data from the data storage. |
| 29. Date/Time | |

## B. Operational Keys Description



**Figure 6**

| NO. | Key | Description |
|-----|-----|-------------|
| 1 | ⏻/✻ | **Power/BLE(Bluetooth)-** Press and hold this key for 3 seconds to power on and shut off the meter. In the measure mode, press this key to turn Bluetooth on or off. |
| 2 | Mea./Eff. | **Mea./Eff.-** This key is used to bring the unit out of the AUTO condition when operating in the pH-AUTOLOCK or mV (REL mV) - AUTOLOCK mode. In the pH measure mode, press and hold this key for 5 seconds, the LCD will display the efficiency of the electrode and the offset value. In the ORP measure mode, press and hold this key for 5 seconds, the LCD will display the offset value of the electrode. |
| 3 | ⊖ | **Enter-** This key is used to confirm the setting data or parameter. At the Recall mode, press **"Enter"** key to display the last set of saved data. In the "Delete All" mode, press **"Enter"** and enters the selection screen. In the "Delete EACH" mode, press **"Enter"** key to delete a single set of data. |

| 4 |  | **Mode-**<br>This key is used to selects display mode. Pressing this key changes the display sequentially to display pH-AUTOLOCK, mV (REL mV)-AUTOLOCK, pH, mV (REL mV).<br>In the "Recall" and "Delete" modes, press this key to exit "Recall" and "Delete" modes respectively.<br>In the calibration mode, press **"Mode"** key to exit calibration mode.<br>In the SET mode, press **"Mode"** key to exit SET mode. |
|---|---|---|
| 5 |  | **Save-**<br>In the measure mode, press **"Save"** key for 3 seconds, to save reading into the data storage site.<br>Press this key to select "Recall", "Delete Each" and "Delete All" Mode, sequentially. |
| 6 |  | **Clear-**<br>This key is used to clear the unit when error signal appears. It clears all calibration values stored in the internal memory.<br>In the pH mode or mV (REL mV) mode, when the **"Clear"** key is pressed for 5 seconds, the meter clears all calibration values stored in internal memory. |
| 7 |  | **CAL-**<br>This key is used for pH and ORP calibration. For its specific functions, please see the "calibration" section in each parameter. |
| 8 |  | **Up & Down-**<br>In the pH/ORP measure mode, these two keys are used to manually enter the temperature values. They have no effect on the unit when operating in ATC mode.<br>In the ORP calibration mode, these two keys are used to adjust the REL mV display value.<br>In the "Recall" mode, view saved data and data storage site number by pressing these keys.<br>In the "Delete ALL" mode, select between the "Yes" and "No" for data all delete.<br>In the "Delete One" mode, view to be deleted data and data site numbers by pressing these keys. |

9

| 9 | | **SET-**<br>Press this key to enter system setup mode. |
|---|---|---|
| 10 | | **Date/Time-**<br>In the measure mode and recall mode, press this key to switch date or time display. |

## OPERATIONAL PROCEDURES

### A. System Setup

Use the System Setup to customize operation of the 6011B/6011BEU meter.

Press the **"SET"** key to enter system setup mode and enter first setup, RECAL.

#### 1. RECAL setup

a. This function is to prompt end user to recalibrate the meter.

b. "SET" and "RECAL" icons will lit up. Main LCD will show 00 day, 00 will flash.

c. Press **"Up"** or **"Down"** key to set desire recalibration period, between 0 to 60 days. Then press **"Enter"** key to save and enter next setting, DATE setup.

d. "RECAL" icon will flash when pre-set recalibration time is due.

#### 2. DATE setup

a. This function is for setting the correct date.

b. "SET", "DATE" icons will lit up. Main LCD will show flashing "tYP 1" and upper LCD will show yyyy-mm-ddxx.
tYP 1 date format : yyyy-mm-ddxx, x: no display
tYP 2 date format: xxmm-dd-yyyy
tYP 3 date format: xxdd-mm-yyyy
Upper LCD display will follow the type number to be selected.

c. Press **"Up"** or **"Down"** key to select desired date format. Press **"Enter"** key to save date format setting and enter calendar setup. The upper LCD will show the date format

10

selected by user.

d. "Year" will flash first. Press **"Up"** or **"Down"** key to set the correct year. Then press **"Enter"** key to save.

e. "Month" will flash. Press **"Up"** or **"Down"** key to set the correct month. Then press **"Enter"** to save.

f. "DAY" will flash. Press **"Up"** or **"Down"** key to set the correct day. Then press **"Enter"** to save.

## 3. TIME setup

a. This function is for setting the correct time.

b. "SET", "TIME" icons will lit up. Main LCD will show flashing "12H" or "24H".

c. Press **"Up"** or **"Down"** key to select desired time format. Press **"Enter"** key to save time format setting and enter real time setup.

d. "Hour" will flash first. Press **"Up"** or **"Down"** key to set the correct hour and press **"Eentr"** key to save hour setting and enter minute setup.

   [**Note:** 24H format: Hour will cycle from 0 to 24
   12H format: Hour will cycle from 0 am, …12 am,
   1 pm,….12 pm, 0 am. Last digit will show A for
   a.m., P for p.m.]

e. "Minute" will flash. Press **"Up"** or **"Down"** key to set the correct minute and press **"Enter"** key to save minute setting and enter second setup.

f. "Second" will flash. Press **"Up"** or **"Down"** key to set the correct second and press **"Enter"** key to save minute setting and enter buffer set setup.

## 4. Buffer set setup

a. This function allows end user to select between "USA" or "NIST" buffer sets.

b. "SET" icon will lit up. Main LCD will show "buFF" and the lower LCD will show flashing "niSt" or "USA". Lower left corner will show the buffer set (5 buffer tubes drawing).

c. Press **"Up"** or **"Down"** key to select. Press **"Enter"** key to save buffer set and enter temperature unit setup. Lower left

11

corner will show the 5 selected buffer set.

[**Note:** 5 buffer tubes display is depended on selected buffer set.]

**5. Temperature unit setup**

a. This function allows end user to select the between "°C" or "°F" temperature unit.

b. "SET" icon will lit up. Main LCD will show "Atc". Lower LCD will show "unit" and "C" or "F" unit will flash.

c. Press **"Up"** or **"Down"** key to select the desired temperature unit. Press **"Enter"** key to save temperature unit and enter shut down time setup.

**6. Shut down time setup**

a. This function allows end user to set the auto shut down time.

b. "SET" icon will lit up. Main LCD will show "Shut". Lower LCD will show flashing "OFF" or last time set parameter.

c. Press **"Up"** or **"Down"** key to select desire shut down time, "OFF", "10 ", "20" or "30" minutes. Press **"Enter"** key to save shut down time and enter reset setup.

**7. Reset setup**

a. This function allows end user to revert the meter back to manufacture default settings.

b. "SET" annunciator will show. Main LCD will show "rSt". Lower LCD will show flashing "no".

c. Press **"Up"** or **"Down"** key to select "YES" or "no".

d. If select "no", press **"Enter"** key to exit setup mode (return to pH-AUTOLOCK measure mode).

e. If select "YES", press **"Enter"** to reset all parameters to factory default and exit setup mode.

[**Note:** Day and time data will not change. User can press **"Mode"** key to exit setting anytime.]

**Factory default:**  RECAL :                0 day
Time format :        12 Hour format
Day format :         type 1/yyyy-mm-dd
Buffer set :         USA
Temperature unit : °C
Clear all CAL and user records

## B.  <u>pH Calibration</u>

The 6011B/6011BEU uses up to 5 point calibration.

[**Note:** If the device is required to perform more than one calibration points, the first calibration point must be 6.86/7.00 pH.]

### 1.  Calibration with an ATC/Temp probe in the pH-AUTOLOCK mode.

a.  Turn the unit on. In the pH mode, press **"Clear"** key for 5 seconds, all LCD elements will lit up. The meter clears all calibration values stored in the internal memory.

b.  Connect the pH electrode to the BNC connector and the ATC/Temp probe to the ATC/Temp connector of the unit.

c.  Press **"Mode"** key to go to pH-AUTOLOCK mode. "ATC" icon, "pH" icon and "AUTO" icon will lit up. The "CAL" icon will begin to flash.

d.  Rinse the pH and ATC/Temp probes in distilled water and immerse them in the first buffer solution. Allow temperature reading to stabilize. Then press and hold **"CAL"** key for 3 seconds to calibrate. The "WAIT" icon will flash until the unit detects a stable reading. Once the unit calibrates the first point. The selected buffer will lit up while two other selectable buffers start to flash. The unit is ready to be sloped at the second buffer. The unit is ready to be sloped at the second buffer if the first buffer solution is 6.86 or 7.00 pH.

[**Note:** At this moment, press the **"Mode"** key, the unit will exit the calibration mode. Single point calibration is complete.
To continue with two or more point calibration, the first buffer solution has to be either 7.00 or 6.86 pH.]

e.  Rinse the pH and ATC/Temp probe in distilled water and immerse them in the second buffer solution (either 4.00/4.01 pH or 9.18/10.01 pH corresponding to the

13

flashing number on display). Allow temperature reading to stabilize. Then press **"Enter"** key to calibrate. The "WAIT" icon will flash until the unit detects a stable reading. Once the unit calibrates the second point. The selected two buffers lit up and the remaining buffer starts to flash. The unit is ready to be sloped at the third buffer.

[**Note:** At this moment, press the **"Mode"** key, the unit will exit the calibration mode. Dual point calibration is complete.]

f.   The third point, the fourth point and the fifth point are the same as the second point calibration point. When the unit completed the fifth point calibration, press the **"Mode"** key and exit the calibration mode.

g.   The unit calculates and compensates for the pH electrode slope deviation corresponding to the values of the calibrated buffers. After calibration, press and hold **"Mea./Eff."** key for about 5 seconds to display the new electrode efficiency and offset value.

## 2.  Calibration with manual temperature compensation in the pH-AUTOLOCK mode.

a.   Turn the unit on. In the pH mode, press "Clear" key for 5 seconds, all LCD elements will lit up. The meter clears all calibration values stored in internal memory.

b.   Connect the pH electrode to the BNC connector of the unit.

c.   Press **"Mode"** key to go to pH-AUTOLOCK mode. "MAN" icon, "pH" icon and "AUTO" icon will lit up. The "CAL" icon will flash.

d.   Rinse the pH electrode in distilled water and immerse it in the first buffer solution. Adjust the temperature reading to that of the first buffer using the **"Up"** or **"Down"** keys (0.0 to 60.0 ℃). Then press and hold **"CAL"** key for 3 seconds to calibrate. The "WAIT" icon will flash until the unit detects a stable reading. Once the unit calibrates the first point. The selected buffer remains lit up while two other selectable buffers start to flash. The unit is ready to be sloped at the second buffer if the first buffer solution is 6.86 or 7.00 pH.

[**Note:** At this moment, press the **"Mode"** key, the unit will exit the calibration mode. Single point calibration is complete.

To continue with two or more point calibration, the first buffer solution has to be either 7.00 or 6.86 pH.]

    **e.** Repeat steps "e" of **"Calibration with an ATC/Temp probe in the pH-AUTOLOCK mode"** for 2 to 5 point calibration.

    f. The unit calculates and compensates for the pH electrode slope deviation corresponding to the values of the calibrated buffers. After calibration, press and hold **"Mea./Eff."** key for about 5 seconds to display the new electrode efficiency and offset value.

## 3. Calibration with an ATC/Temp probe in the pH NON-AUTOLOCK mode.

    a. Turn the unit on. In the pH mode, press **"Clear"** key for 5 seconds, all LCD elements will lit up. The meter clears all calibration values stored in internal memory.

    b. Connect the pH electrode to the BNC connector and the ATC/Temp probe to the ATC/Temp connector of the unit.

    c. Press **"Mode"** key for the LCD to display pH and the AUTOLOCK annunciator is off. "ATC" icon will lit up. "pH" icon is on. The "CAL" icon will begin to flash.

    d. Rinse the pH and ATC/Temp probes in distilled water and immerse them in the first buffer solution. Allow temperature and pH reading to stabilize. Then press and hold **"CAL"** key for 3 seconds to calibrate. The unit immediately calibrates the first point. The selected buffer remains lit up while two other selectable buffers start to flash. The unit is ready to be sloped at the second buffer if the first buffer solution is 6.86 or 7.00 pH.

    [**Note:** At this moment, press the **"Mode"** key, the unit will exit the calibration mode. Single point calibration is complete.
To continue with two or more point calibration, the first buffer solution has to be either 7.00 or 6.86 pH.]

    e. Rinse the pH and ATC/Temp probe in distilled water and immerse them in the second buffer solution (either 4.00/4.01 pH or 9.18/10.01 pH corresponding to the flashing number on display). Allow temperature reading to stabilize. Then press **"Enter"** key to calibrate. The unit immediately calibrates the second point. The selected two buffers lit up and the remaining buffer starts to flash. The unit is ready to be sloped at the third buffer.

[**Note:** At this moment, press the "Mode" key, the unit will exit the calibration mode. Dual point calibration is complete.]

f. The third point, the fourth point and the fifth point are the same as the second point calibration. When the unit completed the fifth point calibration, press the **"Mode"** key and exit the calibration mode.

g. The unit calculates and compensates for the pH electrode slope deviation corresponding to the values of the calibrated buffers. After calibration, press and hold **"Mea./Eff."** key for about 5 seconds to display the new electrode efficiency and offset value.

**4. Calibration with manual temperature compensation in the pH NON-AUTOLOCK mode.**

a. Turn the unit on. In the pH mode, press **"Clear"** key for 5 seconds, all LCD elements will lit up. The meter clears all calibration values stored in internal memory.

b. Connect the pH electrode to the BNC connector of the unit.

c. Press **"Mode"** key for the LCD to display pH and the AUTOLOCK annunciator is off. "MAN" icon will lit up. "pH" icon is on. The "CAL" icon will begin to flash.

d. Rinse the pH electrode in distilled water and immerse it in the first buffer solution. Adjust the temperature reading to that of the first buffer using the **"Up"** or **"Down"** keys (0.0 to 60.0 ℃) before pressing **"CAL"** key. Then press and hold **"CAL"** key for 3 seconds to calibrate. The unit immediately calibrates the first point. The selected buffer remains lit up while the remaining buffers start to flash. The unit is ready to be sloped at the second buffer if the first buffer solution is 6.86 or 7.00 pH.

[**Note:** At this moment, press the **"Mode"** key, the unit will exit the calibration mode. Single point calibration is complete.
To continue with two or more point calibration, the first buffer solution has to be either 7.00 or 6.86 pH.]

e. Repeat steps 5 of **"Calibration with an ATC/Temp probe in the pH NON- AUTOLOCK mode"** for 2 to 5 point calibration.

f. The unit calculates and compensates for the pH electrode

slope deviation corresponding to the values of the calibrated buffers. After calibration, press and hold **"Mea./Eff."** key for about 5 seconds to display the new electrode efficiency and offset value.

## C. pH Measurements

To take pH measurements, 6011B/6011BEU must be calibrated before first use.

### 1. Measurement with an ATC/Temp probe in the pH AUTOLOCK mode.

a. Connect the pH electrode to the BNC connector and the ATC/Temp probe to the ATC/Temp connector of the unit. The "ATC" icon will lit up.

b. Press **"Mode"** key until "pH", "AUTO", "ATC", "buffer", "WAIT" icons lit up.

c. Rinse the pH electrode and ATC/Temp probe with distilled water and immerse them in the sample to be measured. Remove any air bubbles trapped around the probe by shaking or stirring the probe.

d. Press the **"Mea./Eff."** key. The "WAIT" icon will start flashing. The unit is waiting for a stable reading. The display will track the pH value as sensed by the pH electrode and the ATC/Temp probe.

e. When the "WAIT" icon disappears and the "√" icon appears, the meter will not respond to further changes from the sample. The pH value shown is the pH value of the sample at the displayed sample temperature.

[**Note:** For samples that are inherently unstable, the unit will not AUTOLOCK. In this case, use the pH NON-AUTOLOCK mode for measurements.]

### 2. Measurement with manual temperature compensation in the pH-AUTOLOCK mode.

a. Connect the pH electrode to the BNC connector of the unit. The "MAN" icon will lit up. Set unit to display the sample temperature by pressing the **"Up"** or **"Down"** keys (-10.0 to 120.0 ℃).

b. Press **"Mode"** key until "pH", "AUTO", "MAN", "buffer", "WAIT" icons lit up.

17

c. Repeat steps "c" to "e" of **"Measurement with an ATC/Temp probe in the pH- AUTOLOCK mode"**.

3. **Measurement with an ATC/Temp probe in the pH NON-AUTOLOCK mode.**

   a. Connect the pH electrode to the BNC connector and the ATC/Temp probe to the ATC/Temp connector of the unit. The "ATC" icon will lit up.

   b. Press **"Mode"** key until the "pH", "ATC", "buffer" icons lit up.

   c. Rinse the pH electrode and ATC/Temp probe with distilled water and immerse them in the sample to be measured. Remove any air bubbles trapped around the probe by shaking or stirring the probe.

   d. Allow sufficient time for the display to stabilize. The meter will display the pH value of the sample at the displayed sample temperature.

4. **Measurement with manual temperature compensation in the pH NON-AUTOLOCK mode.**

   a. Connect the pH electrode to the BNC connector of the unit. The "MAN" icon will lit up. Set unit to display the sample temperature by pressing the **"Up"** or **"Down"** keys (-10.0 to 120.0 ℃).

   b. Press **"Mode"** key until the "pH", "MAN", "buffer" icons lit up.

   c. Repeat steps "c" to "d" of **"Measurement with an ATC/Temp probe in the pH NON- AUTOLOCK mode"**.

## D. Temperature Measurements

The 6011B/6011BEU can measure temperature independently with the ATC/Temp probe without using the pH electrode. Place the ATC/Temp probe in the sample. The unit will display the measured temperature.

## E. mV Offset

1. Turn the unit on. In the mV mode, press "Clear" key for 5 seconds. All LCD elements will lit up. The meter clears all calibration values stored in internal memory.

2. Connect the ORP electrode to the BNC connector of the unit.

3. Press **"Mode"** key for the LCD to display "MAN" and "mV" icons will lit up. The "WAIT" icon begins to flash.

4. Rinse the ORP probe in distilled water and immerse it in the standard solution. Then press and hold **"CAL"** key for 3 seconds to calibrate. The "CAL", "mV" and "Offset" icons will lit up. According to the mV (REL mV) value displayed, press the **"Up"** or **"Down"** keys to adjust the display value to the same value as the standard solution. Press the **"Enter"** key to save and complete the calibration.

5. Press and hold **"Mea./Eff."** key for about 5 seconds to display the new electrode offset value.

## F. mV (REL mV) Measurements

### 1. Measurement in the mV (REL mV)-AUTOLOCK mode.

a. Connect the combination ORP electrode to the BNC connector of the unit.

b. Press **"Mode"** key until the "mV" (REL mV), "AUTO", "MAN" and "WAIT" icons lit up.

c. Rinse the ORP electrode with distilled water and immerse it in sample to be measured.Remove any air bubbles trapped around the electrode by shaking or stirring the electrode.

d. Press the **"Mea./Eff."** key. The "WAIT" icon will start flashing. The unit is waiting for a stable reading. The meter will track the mV (REL mV) value as sensed by the ORP electrode.

e. When the "WAIT" icon disappears and the "√" icon appears, the meter will not respond to further changes from the sample. The mV (REL mV) value is the sample reading.

[**Note:** For samples that are inherently unstable, the unit will not AUTOLOCK. In this case, use the mV (REL mV) NON- AUTOLOCK mode for measurements.]

### 2. Measurement in the mV (REL mV) NON-AUTOLOCK mode.

a. Connect the combination ORP electrode to the BNC connector of the unit.

b.  Press **"Mode"** key until the "mV (REL mV)" and "MAN" icons lit up.

c.  Rinse the ORP electrode with distilled water and immerse it in sample to be measured. Remove any air bubbles trapped around the electrode by shaking or stirring the electrode.

d.  Allow sufficient time for the display to stabilize. The meter will display the mV (REL mV) value of the sample.

## G.  Save, Recall and Delete Data

### 1.  Saving readings to memory.

a.  In the measure modes, press and hold **"Save"** key for 3 seconds to save data. The "Save" icon and number with the corresponding site number will lit up for a brief moment to indicate a successful data save. Saving is now complete.

b.  If the main LCD will shows "Full", this means that all 750 data saving sites are used up. No new data can be saved until existing saved data are deleted.

### 2.  Recalling readings from memory.

a.  Press **"Save"** key until the "rCL" will show. Press **"Enter"** key to go into "Recall" mode, the "Recall" icon will lit up.

b.  To view data, press **"Up"** or **"Down"** key to select the storage site number and displays the corresponding record.

c.  Press **"Mode"** key to exit "Recall" mode.

### 3.  Deleting data.

a.  Press **"Save"** key until the "dEL EACH" or "dEL ALL" will show. Then press the **"Enter"** key to go into the corresponding "Delete EACH " or "Delete ALL" mode.

b.  In the "Delete ALL" mode, press the **"Enter"** and enters the selection screen. Use the **"Up"** or **"Down"** key to select YES/no for clearing all stored data. To clear all data, must select "YES" and press the **"Enter"** key. "nonE" will show after data is completely deleted.

c.  In the "Delete EACH" mode, use **"Up"** or **"Down"** key to select data to be deleted. Then press **"Enter"** key to

delete. Deletion is now complete. The next set of saved data will automatically move up a slot in the storage site.

d. Press **"Mode"** key to exit "Delete" mode.

## H.  Viewing Data and Calibration Records on PC

### 1.  Meter driver Installation

Driver is embedded in the meter, connect the meter to PC and power up. The driver will automatically download from the meter and install to the PC.

### 2.  Locating data files in Windows Explorer

Navigate to Windows Explorer and the PC will recognize the meter as the "Jenco" removable drive. There is one CSV file that can be copied to a location on your PC:
Record contains all of the data currently stored on the meter, including the most recent 5 calibration records for pH and the most recent 5 calibration records for mV. CSV file is recreated every time when data is saved to the meter and/or when the meter is turned on.

### 3.  Viewing data files in Excel

Once the CSV files are in your PC, they can be easily opened in Excel. When opening CSV file, it is not necessary to use Excel Text Import Wizard for the data to appear correctly, as the CSV files have a line of text at the top of the file (sep=;) that directs Excel to use a semi-colon as the delimiter.

## I. pH Buffers

The temperature coefficient of pH calibration buffers 1.68, 4.00, 4.01, 6.86, 7.00, 9.18 , 10.01 and 12.46 pH are stored inside the meter. The buffers used to calibrate the meter must exhibit the same temperature characteristics as the stored values.

**Temperature coefficient of the pH buffers**

| °C | 1.68 | 4.00 | 6.86 | 9.18 | 4.01 | 7.00 | 10.01 | 12.46 |
|----|------|------|------|------|------|------|-------|-------|
| 0  | 1.67 | 4.01 | 6.98 | 9.46 | 4.01 | 7.11 | 10.32 | 13.42 |
| 5  | 1.67 | 4.00 | 6.95 | 9.39 | 4.01 | 7.08 | 10.25 | 13.21 |
| 10 | 1.67 | 4.00 | 6.92 | 9.33 | 4.00 | 7.06 | 10.18 | 13.01 |
| 15 | 1.67 | 4.00 | 6.90 | 9.28 | 4.00 | 7.03 | 10.12 | 12.80 |
| 20 | 1.68 | 4.00 | 6.88 | 9.23 | 4.00 | 7.01 | 10.06 | 12.64 |
| 25 | 1.68 | 4.00 | 6.86 | 9.18 | 4.01 | 7.00 | 10.01 | 12.46 |
| 30 | 1.68 | 4.01 | 6.85 | 9.14 | 4.01 | 6.98 | 9.97  | 12.30 |
| 35 | 1.69 | 4.02 | 6.84 | 9.10 | 4.02 | 6.98 | 9.93  | 12.13 |
| 40 | 1.69 | 4.03 | 6.84 | 9.07 | 4.03 | 6.97 | 9.89  | 11.99 |
| 45 | 1.70 | 4.04 | 6.83 | 9.04 | 4.04 | 6.97 | 9.86  | 11.84 |
| 50 | 1.71 | 4.06 | 6.83 | 9.02 | 4.06 | 6.97 | 9.83  | 11.71 |
| 55 | 1.72 | 4.07 | 6.83 | 8.99 | 4.08 | 6.97 | 9.80  | 11.57 |
| 60 | 1.72 | 4.09 | 6.84 | 8.97 | 4.10 | 6.98 | 9.78  | 11.45 |

[**Note:** The actual reading of the meter can differ from the values shown by ±0.01pH.]

## APP NAVIGATION

## A. App Functions

The 6011B/6011BEU is a pH/ORP/temperature Bluetooth Portable meter with iOS and Android apps for tablets or mobile phones. Functions of the App includes, GLP compliant data storage and data sharing, GPS, Cloud data storage and user-defined compliance policies. 6011B/6011BEU is capable of storing 750 sets of measurement data. Uploading stored records to tablet or mobile phone, can be performed through App when connected to tablet or mobile phone.

## B. App Download and Installation

Download the companion App for the 6011B/6011BEU from the Apple Store or Google Play Store. Continue to the next

step after the correct App is installed to the tablet or mobile phone.

## C. Connecting the Meter with the App

### 1. Prepare the 6011B/6011BEU for Bluetooth Connection.

Press the **"Power/BLE"** key for 3 second to turn on the 6011B/6011BEU device. Press and release the **"Power/BLE"** Key again to turn on the 6011B/6011BEU Bluetooth connection. The Bluetooth icon on the 6011B/6011BEU will fast blink and it is ready for Bluetooth connection.

### 2. Pair the 6011B/6011BEU to the Tablet or Mobile phone.

a.  Tap "Settings" tab at in the navigation bar of the App screen.

b.  Tap the "Pair" button.

c.  The tablet or mobile phone will search for any JENCO Bluetooth devices. When the App discovers and displays the "6011B/6011BEU", tap the "Connect" button.

d.  Once the 6011B/6011BEU is successfully connected to the tablet or mobile phone, the Bluetooth icon on display of the meter will lit up and "Ready for data" will be shown on the App.

## D. __Key Operations__

### 1. Upload and save data

  a. Tap the "Saved" tab in the navigation bar.

  b. "Sync Data" button is displayed. Tap "Sync Data" button.

  c. The App will display the loading diagram and the estimated time at the bottom. The display shall return to the Saved screen when the data transmission is completed.

### 2. View saved readings and add Notes to saved readings

  a. Tap the "Saved" tab in the navigation bar.

  b. Saved readings are displayed. Tap on a saved reading to view its detail information.

  c. From the saved reading detail screen, tap the Notes field to add notes.

  d. Tap the "<" button to save and exit the screen.

### 3. Share saved readings

  a. Tap the "Saved" tab in the navigation bar.

  b. Saved readings are displayed. Tap the "Share" icon on the upper left area of the screen.

  c. Tap to check the saved readings you want to be shared.

  d. Tap "Send" on the upper right corner of the screen.

  e. Tap to select the App to receive the selected saved readings.

### 4. Delete saved readings

  a. Tap the "Saved" tab in the navigation bar.

  b. Saved readings are displayed. Tap "Edit" on the upper right area of the screen.

  c. Tap to check the saved readings to be deleted.

  d. Tap "Done" on the upper right corner of the screen.

## E.  Notes:

1. One meter can be paired to only one App at a time. To put an already - paired meter into pairing mode, one must first close the App it is paired to.

2. Turn on tablet or mobile phone and activate Bluetooth. (Select Optimized Power Mode on Android tablets or mobile phone).

3. Grant Bluetooth and GPS permissions during App installation.

4. After first pairing with the meter, App records the meter's Bluetooth information. Hence, no pairing is needed the next time when opening the same App. After App is successfully connected to the meter, tablet or mobile phone displays meter reading values on the "Settings Screen.

5. On Android OS system, if the connection between the App and the meter is lost for over 2 minutes, force close and reopen the same App for normal operation.

6. Log data on the meter can be in sync with the App saved data but not vise versa.

## FCC WARNING STATEMENT

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. To comply with FCC RF exposure compliance requirements, this grant is applicable to only Mobile Configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

## ERROR DISPLAYS AND TROUBLESHOOTING

| Main Display | Secondary Display | Mode | Corrective Action(s) |
|---|---|---|---|
| "OuEr" | "our" / "udr" | a. pH | a. Temperature > 120.0°C or < -10.0°C [Bring solution to a lower / higher temperature.] |
| "OuEr" | "our" / "udr" | b. pH - cal | |
| "mV" | "our" / "udr" | c.mV | b. Wrong temperature sensor. [Use a correct temperature probe.] |
| "Er1" | 0 to 60 °C | pH-cal-Stand | Offset voltage > 1.00 pH or <-1.00pH [Use a new buffer solution.] [Replace electrode.] |
| "Er2" | 0 to 60 °C | pH-cal-Slope | Slope out of ±30% range of idea slope [Use a new buffer solution.] [Replace electrode.] |
| "Er3" | <0 °C or >60.0 °C | pH-cal | Buffers temperature out of range [Bring buffers temperature between 0.0 to 60.0 °C ] |
| "OuEr" / "Undr" | -10 to 120 °C | a. pH  b. mV | a. OuEr: pH > 20.00 pH, Undr: pH < -2.00 pH  b. OuEr: mV > 2000 mV, Undr: mV < -2000 mV [Recalibrate / check buffers / replace electrode.] |
| The total usage time is significantly shorter on a fully charged battery pack. | | | Change the battery pack. |

[**Note:** If the meter still does not perform normally after the above measures are taken, call **JENCO** Service Department.]

## SPECIFICATIONS

| Display | Range | Resolution | Accuracy |
|---|---|---|---|
| pH | -2.00 to 20.00 pH | 0.01 pH | ±0.01 pH |
| mV (Rel. mV) | -2000 to 2000 mV | 1 mV | ±0.1% F.S. |
| Temperature | -10.0 to 120.0 °C<br>14.0 to 248.0 °F | 0.1 °C<br>0.2 °F | ±0.3 °C<br>±0.6 °F |

| | |
|---|---|
| **pH buffer recognition** | 1.68, 7.00, 4.01, 10.01,12.46 pH or 1.68, 6.86, 4.00, 9.18, 12.46 pH |
| **pH Temperature compensation** | AUTO / MAN –10.0 °C to 120.0 °C （14.0 to 248.0 °F） |
| **pH Calibration** | Up to 5 point |
| **pH Buffer Temperature range** | 0 to 60.0 °C |
| **ORP calibration** | 1 point Offset ±150 mV |
| **Input impedance** | >1 x 10$^{12}$ Ω |
| **Connectivity** | Bluetooth, USB |
| **Temperature sensor** | Thermistor, 10 kΩ at 25°C (6011B)<br>Thermistor, 30 kΩ at 25°C (6011BEU) |
| **Calibration Back-up** | EEPROM |
| **Memory** | 750 sets |
| **Automatic shut off function** | 10, 20, 30 minutes or non-use |
| **Audio Feedback** | All touch keys |
| **End Point Sensing & Hold** | Yes |
| **Screen** | Segmented LCD |
| **Power** | Rechargeable battery |
| **Battery Life** | Over 100 hours (turn off Bluetooth) |
| **Ambient Temperature Range** | 0 to 50 °C |
| **Relative Humidity** | At 90% RH |
| **Waterproof** | IP67 |
| **Dimensions** | 214 X 74 X 42 mm<br>216 X 80 X 50 mm (Have jacket) |
| **Weight** | 290 g |

## WARRANTY

**JENCO** warrants this product to be free from significant deviations in material and workmanship for a period of 1 year from date of purchase. If repair or adjustment is necessary and has not been the result of abuse or misuse, within the year period, please return-freight-prepaid and the correction of the defect will be made free of charge. If you purchased the item from our **JENCO** distributors and it is under warranty, please contact them to notify us of the situation. **JENCO** Service Department alone will determine if the product problem is due to deviations or customer misuse.

Out-of-warranty products will be repaired on a charge basis.

RETURN OF ITEMS

Authorization must be obtained from one of our representatives before returning items for any reason. When applying for authorization, have the model and serial number handy, including data regarding the reason for return. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss. **Jenco** will not be responsible for damage resulting from careless or insufficient packing. A fee will be charged on all authorized returns.

**NOTE: JENCO** reserves the right to make improvements in design, construction and appearance of our products without notice.

**Jenco Instruments, Inc.**
7968 Arjons Drive, Suite C
San Diego, CA 92126 USA
TEL: 858-578-2828
FAX: 858-578-2886
E-Mail: jencoinfo@jencoi.com; sales@jencoi.com
Website: www.jencoi.com

**Jenco Electronics, Ltd.**
6F., NO. 81, Sec.2, Chang-an E. Rd., Jhongshan District, Taipei
City 104, Taiwan
TEL: 886-2-2508-2928
FAX: 886-2-2508-2938
E-Mail: sales@jenco.com.tw
Website: www.jenco.com.tw

**Shanghai Jenco Instruments, Ltd.**
18 Wang Dong Zhong Road
Sijing Town, Songjiang
Shanghai, China
TEL: 86-021-5761-9599
FAX: 86-021-5761-9598
E-Mail: jencos@jenco.com.cn
Website: www.jenco.com.cn