JENCO®
QUALITY INSTRUMENTS

Operation Manual

MODEL 6177MB/6177BEU

pH/ORP/Temperature

Based Bluetooth Benchtop Meter

6177MB/6177BEU

CONTENTS

GENERAL INTRODUCTION

Thank you for selecting the 6177MB/6177BEU meter. The 6177MB/6177BEU is a precision tool that measures pH, mV (RmV) 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 6177MB/6177BEU is a 5th generation pH/ORP/temperature Bluetooth benchtop meter with iOS and Android tablet connectivity.

This meter has a waterproof IP54 case. The mechanical keys are highly reliable with tactile and audio feedback. It is powered by six AAA-size alkaline batteries or with a UL/CE approved AC adapter (OUTPUT:DC 9 V). The meter also displays a "BAT" message when the batteries are in need of replacement. Re-calibration is not required when power is restored.

The front of the meter has a large LCD that displays pH, mV (RmV) 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 (RmV) measurements enables the unit to automatically sense the end point and the "LOCK" display indicates the end point value of a measurement. AUTOLOCK and user prompts help eliminate most errors in determining pH and mV values, resulting in precise, repeatable and error-free measurements. The 6177MB/6177BEU can also be used in non-AUTOLOCK mode.

The unit is also equipped with a non-volatile memory allowing the user to store 750 different sets of readings. This unit will assign a site number for each set of reading so the user can review the data easily.

The model 6177MB/6177BEU is available with pH, ORP and ATC (Automatic Temperature Compensation) probes. Other features include up to 5 point calibration for pH and 1 point calibration for ORP, electrode offset recognition, electrode slope recognition, electrode efficiency display, built-in buffer coefficients, automatic or manual temperature compensation and 50/60 Hz AC noise rejection. This meter is user-friendly for laboratory application.

[**IMPORTANT NOTE:** The 6177MB has a 10 KΩ thermistor and the 6177BEU 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.

POWER INPUT

The model 6177MB/6177BEU can be powered by an UL/CE approved 100 to 240 VAC adaptor as well as 6 "AAA" alkaline batteries. Check the label on the AC adaptor supplied with the meter to make sure that the AC line voltage is correct. If the wrong AC adaptor is supplied, notify your **JENCO** representative immediately.

INSTALLING THE BATTERIES

To insert the batteries into the meter, follow the procedure outlined below.

1. Use a Philip screw driver and unlock the battery cover by turning the screw driver in the counter clockwise direction. After unlocking the screw, take off the battery cover (Fig.1)

2. Replace the old batteries with new ones and install them on the correct polarity position.

3. Put the battery cover back on the meter. Use a Philip screw driver and turn the screw in the clockwise direction to lock the battery cover.
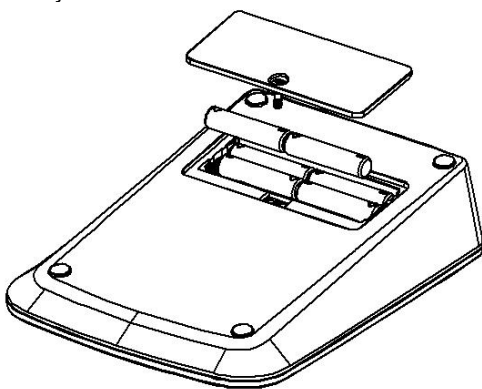

Figure 1: Battery compartment
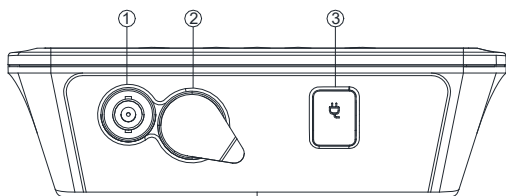
CONNECTORS

Figure 2: 6177MB Connectors

1. pH/ORP connector (BNC connector)
2. ATC connector (8 PIN connector)
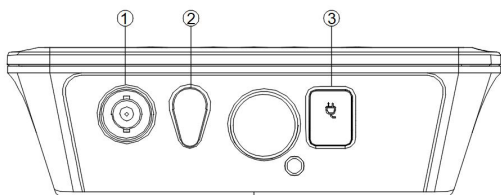3. AC adaptor input connector

Figure 3: 6177BEU Connectors

1. pH/ORP connector (BNC connector)
2. ATC connector (2.5 mm phone jack)
3. AC adaptor input connector
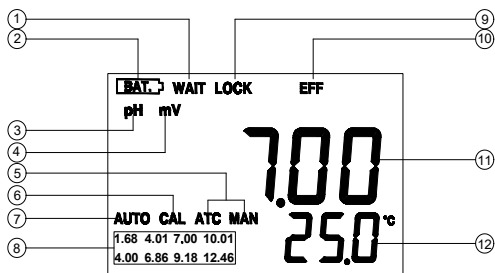
DISPLAY & KEYS FUNCTIONS

A. Display

Figure 4: Active LCD screen

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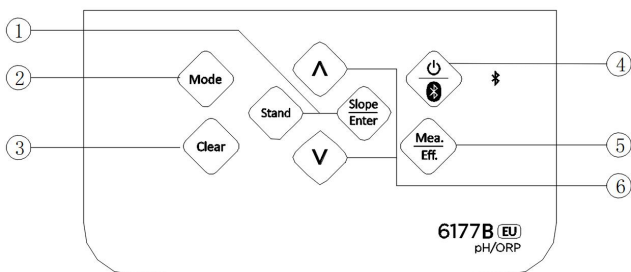| 1. **WAIT-** This will be displayed when the unit is still waiting for a stable reading or end point sensing.	7. **AUTO-** AUTOLOCK mode indicator.
2. **BAT-** Low battery indicator.	8. **Buffer selection-** This indicator will flash if the unit is not yet calibrated. This indicator will remain lit-up if the unit has been calibrated.
3. **pH-** Unit and mode indicators.	9. **LOCK-** This will indicate that the reading is frozen during AUTOLOCK mode.
4. **mV (RmV)-** Unit and mode indicators.	10. **EFF-** This will be displayed when the user is viewing the efficiency of the electrode. It is recommended to use a new electrode when the efficiency value is less over than 75%.
5. **ATC/MAN-** ATC indicator will be displayed if a temperature probe is connected otherwise the MAN indicator will be displayed.	11. **MAIN DISPLAY-** For pH, mV and probe efficiency values.
6. **CAL-** This will be displayed when the unit enters into the calibration mode.	12. **SECONDARY DISPLAY-** For temperature in ℃.

B. Operational Keys Description

Figure 5

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NO.	Key	Description
1	(Stand) (Slope/Enter)	**Stand & Slope/Enter-** These two keys are used for pH and ORP calibration. For their specific functions, please see the "calibration" section in each parameter. In the measure mode, press "Slope/Enter" key 2 seconds to save reading into the data storage site. At the Recall mode, press **"Slope/Enter"** key to display the last set of saved data. In the "Delete All" mode, press **"Slope/Enter"** and enters the selection screen. In the "Delete One" mode, press **"Slope/Enter"** key to delete a single set of data.
2	(Mode)	**Mode-** Selects display mode. Pressing this key changes the display sequentially to display pH-AUTOLOCK, mV (RmV)-AUTOLOCK, pH , mV (RmV), Recall, Delete One and Delete All. In the calibration mode, press **"Mode"** key to exit calibration mode. In the Recall and Delete modes, press **"Mode"** key to exit "Recall" and "Delete" modes respectively.
3	(Clear)	**Clear-** This key is used to clear the unit when error signal appears. It clears all calibration values stored in the internal memory. In the pH mode or mV (RmV) mode, when the **"Clear"** key is pressed for 5 seconds, the meter clears all calibration values stored in internal memory.
4	(Power/BLE)	**Power/BLE (Bluetooth)-** Press and hold this key for 2 seconds to power on and shut off the meter. In the measure mode, press this key to turn Bluetooth on or off.
5	(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 (RmV) - 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.

6		**Up & Down-** In the 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. In the ORP calibration mode, these two keys are used to adjust the RmV display value. In the "Recall" mode, view saved data and data storage site number by pressing these keys. In the "Delete ALL" mode, select between the "YES" and "no" for data all delete. In the "Delete One" mode, view to be deleted data and data site numbers by pressing these keys.

OPERATIONAL PROCEDURES

A. pH Buffer Set Selection

The 6177MB/6177BEU meter has two buffer sets: 1.68, 7.00, 4.01, 10.01, 12.46 pH and 1.68, 6.86, 4.00, 9.18, 12.46 pH.

To change the buffer set, turn off the unit, then press and hold the **"Stand"** key while turning on the unit again.

[**Note:** There is no need to repeat this procedure every time the unit is power up unless one decides to change the buffer settings.]

B. pH Calibration

The 6177MB/6177BEU uses up to 5 point calibration.

[**Note:** If the device requires to calibrate more than one calibration point, 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 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 begins to flash.

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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 **"Stand"** key for 2 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 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 **"Slope/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 buffers start 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.

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 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 ℃). Then press and hold **"Stand"** key for 2 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 5 of "**Calibration with an ATC/Temp probe in the pH-AUTOLOCK mode**" for 2 to 5 points 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 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 reading to stabilize. Then press and hold **"Stand"** key for 2 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 probes 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 **"Slope/Enter"** key to calibrate. The unit immediately calibrates the second point. The selected two buffers lit up and the remaining buffers start 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 **"Stand"** key. Then press and hold **"Stand"** key for 2 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 points 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, 6177MB/6177BEU 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 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 "LOCK" 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.

   c. Repeat steps 3 to 5 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 "pH", "ATC", "buffer" icons lit up.

   c. Rinse the pH electrode and ATC/Temp probe with distilled water and immerse 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 "pH", "MAN", "buffer" icons lit up.

   c. Repeat steps 3 to 4 of **"Measurement with an ATC/Temp probe in the pH NON- AUTOLOCK mode".**

D. Temperature Measure

The 6177MB/6177BEU 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". The "WAIT" icon begins to flash.

4. Rinse the ORP electrode in distilled water and immerse it in the standard solution. Then press and hold **"Stand"** key for 2 seconds to calibrate. The "CAL", "RmV" and "MAN" icons will lit up. According to the RmV value displayed, press the **"Up"** or **"Down"** keys to adjust the display value to the same value as the standard solution. Press the **"Slope/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 (RmV) Measurements

1. Measurement in the mV (RmV)-AUTOLOCK mode.

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

b. Press **"Mode"** key until "mV" ("RmV") icon, "MAN", "AUTO" icons lit up. The "WAIT" icon begins to flash.

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 display will track the mV (RmV) value as sensed by the ORP electrode.

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

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

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

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

b. Press **"Mode"** key until "mV" or "RmV" 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 (RmV) value of the sample.

G. <u>Save, Recall and Delete Data</u>

1. Saving readings to memory.

a. In the measure modes, press and hold **"Slope/Enter"** key for 2 seconds to save data. The "ID" 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 "Full" will show, 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 **"Mode"** key until the "dAtA rCL" will show. Press **"Slope/Enter"** key to go into "Recall" mode.

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 **"Mode"** key until the "dEL onE" or "dEL ALL" will show. Then press the **"Slope/Enter"** key to go into the corresponding "Delete one " or "Delete ALL" mode.

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

c. In the "Delete one" mode, use **"Up"** or **"Down"** key to select

data to be deleted. Then press **"Slope/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. <u>pH Buffers</u>

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 ±0.01 pH]

APP NAVIGATION

A. <u>App Functions</u>

The 6177MB/6177BEU is a pH/ORP/temperature Bluetooth benchtop meter that can pair with iOS and Android tablets to enable additional functionality such as graphing, guided calibration procedures, data storage and data sharing. Basic functionality of a pH/ORP/temperature benchtop meter such as taking measurements, calibration and storing data can be performed on the meter or on the paired tablets.

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B. App Download and Installation

Download the companion App for the 6177MB/6177BEU from the Apple Store or Google Play Store. Continue to the next step after the correct App is installed to the tablets.

C. Connecting the Meter with the App

1. Prepare the 6177MB/6177BEU for Bluetooth connection.

Press the **"Power/BLE"** key for 2 seconds to turn on the 6177MB/6177BEU device. Press the **"Mode"** key to go to the measure mode. Then press and release the **"Power/BLE"** key again to turn on 6177MB/6177BEU Bluetooth connection. The Bluetooth light on the 6177MB/6177BEU will fast blink and it is ready for Bluetooth connection.

2. Pair the 6177MB/6177BEU to the tablet.

a. Tap the "Settings" tab at the lower right of the App screen.

b. Tap the "Pair" button.

c. The tablet will search for any JENCO Bluetooth devices within close proximity. When the App discovers and displays the 6177MB/6177BEU, tap the "Connect" button.

d. Once the 6177MB/6177BEU is connected to the tablet, the device Bluetooth light will blink slowly.
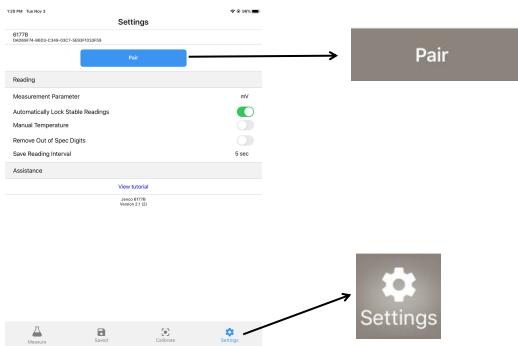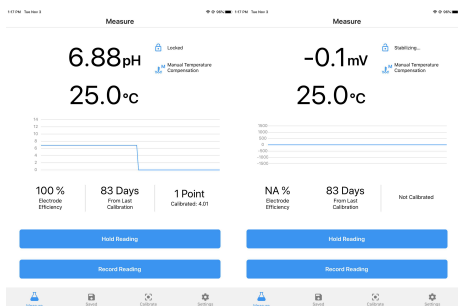

After the App has been installed, calibrate the 6177MB/6177BEU to ensure the best reading quality.

D. Measurement Screen

The Measure Screen displays measurement readings,

measurement mode, temperature compensation mode, parameter measurement curve, calibration information, electrode health (App for pH only) and days since last calibration.

From this screen, tap the "Hold Reading" button to freeze or unfreeze the readings, or tap the "Record Reading" button to save the current readings for future use.

E. <u>Saved Readings Screen</u>

The Saved Reading Screen displays a listing of reading values saved to the App, and provides access to view saved reading detail information such as timestamp and notes.(Fig.1)

F. <u>Calibration Screen</u>

The Calibration Screen displays past calibration data. From this screen, tap the "Calibrate" button and follow the step-by-step instructions to calibrate the 6177MB/6177BEU. (Fig.2)

G. <u>Settings Screen</u>

The Settings Screen displays the various settings that affects the measurements of the 6177MB/6177BEU. (Fig.3)
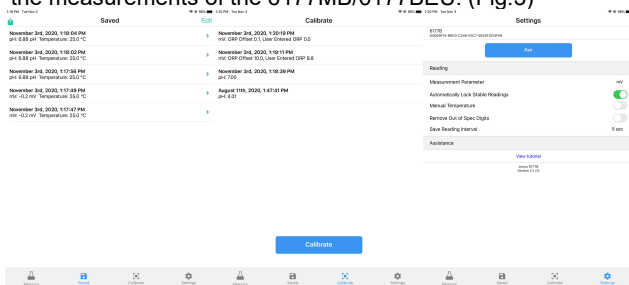

Fig.1   Fig.2   Fig.3

H. <u>Key Operations</u>

1. Take measurements

Tap the "Measure" tab in the navigation bar.

2. Calibrate

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

b. Tap the "Calibrate" button.

c. Follow the on-screen instructions.

3. Save readings

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

b. Tap the "Record Reading" button. At this moment the "Record Reading" button change to "Cancel Record" button. To stop recording, tap "Cancel Record" button.

4. Sync data

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

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

d. 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.

5. 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 detail screen.

6. 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 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.

7. 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.

8. View and change settings

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

b. Tap the value for the setting to be changed.

c. Click the "Save" button to save changes.

9. Pair meter to App

a. Pressing and releasing the **"Power/BLE"** key in the measure mode.

b. Tap the "Settings" tab in the navigation bar.

c. Tap the "Pair" button.

d. Wait for the App to discover the 6177MB/6177BEU.

e. Tap the "Connect" button.

I. <u>Notes:</u>

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

2. Bluetooth must be turned on on the tablet. (Select Optimized Power Mode on Android tablets).

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 displays meter reading values on the "Measure" page.

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. Switching operation control between meter and App during calibration affects data integrity. Hence, it is not recommended.

7. 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	Possible cause(s)	Corrective Action(s)
"Er1"	1. **"Stand"** was pressed before the electrode and ATC/Temp probe settled to within +/-1.00 pH of the buffer value.	1. Press **"Clear"** key. Allow sufficient time for the electrode and ATC/Temp probe to stabilize. Re-press **"Stand"** key to start the calibration procedure.
	2. pH electrode offset is greater / less than +/-1.00 pH.	2. Replace the buffer and /or the pH electrode. Press **"Clear"** key to recalibrate meter.
	3. pH electrode is faulty.	3. Replace electrode.
"Er2"	1. **"Slope/Enter"** was pressed before the electrode and ATC/Temp probe settled to within 30% of the buffer value.	1. Allow sufficient time for the electrode and ATC/Temp probe to stabilize. Re-press **"Slope/Enter"** key to continue the calibration procedure.
	2. Buffer 1.68, 4.00, 4.01, 9.18, 10.01 and 12.46 pH is not correct.	2. Check if the correct buffer is used.
	3. pH electrode slope is off by more than 30% of ideal slope.	3. Replace the buffer and /or the pH electrode. Press **"Clear"** key to recalibrate meter.
"Er3"	In the pH calibration mode, temperature is out of the 0.0 to 60.0 °C range.	Bring the pH buffer temperature within range.
"over" / "undr"	1. Measured pH is out of the -2.00 to 16.00 pH range.	1. Bring sample pH into the correct measuring range.
	2. Measured mV (RmV) is out of the –1999.9 to 1999.9 mV range.	2. Bring sample ORP into the correct measuring range.
	3. Measured temperature is out of the -10.0 to 120.0 °C range.	3. Bring sample temperature into the correct measuring range.

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

SPECIFICATIONS

Display	Range	Resolution	Accuracy
pH	-2.00 to 16.00 pH	0.01 pH	±0.01 pH
mV (RmV)	-1999.9 to 1999.9 mV	0.1 mV	±0.05% F.S.
Temperature	-10.0 to 120.0 °C	0.1 °C	±0.2 °C

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 to 120.0 °C
pH Buffer Temperature range	0 to 60.0 °C
pH calibration	Up to 5 point
ORP calibration	1 point Offset ±150 mV
Input impedance	$>1 \times 10^{12}$ Ω
Connectivity	Bluetooth
Temperature sensor	Thermistor, 10 kΩ at 25 °C (6177MB) Thermistor, 30 kΩ at 25 °C (6177BEU)
Power	6 X 1.5 V AAA Batteries or 100 to 240 VAC adapter
Calibration Back-up	EEPROM
Memory	750 sets
Audio Feedback	All Touch Keys
End Point Sensing & Hold	Yes
Screen	Segmented LCD w/backlight
Ambient Temperature Range	0 to 50 °C
Relative Humidity	up to 90%
Case	IP54
Dimensions (W x D x H)	150 x 210 x 45 mm
Weight	430 grams

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.

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