



# ULTRAPEN™ PTBT2

 **Bluetooth®** Enabled

**pH and Temperature Pen**  
for use with your mobile device



◆ **ACCURATE**

◆ **RELIABLE**

◆ **SIMPLE**



Available at  
Apple App Store



## Professional Water Analysis

- Accuracy of  $\pm 0.01$  pH
- Proprietary Sensor Design
- 1, 2 and 3 point calibration
- Automatic Temperature Compensation
- Temperature Readout
- Waterproof
- Powered by 1 N Type battery (included)
- Measurement and Calibration storage with time, date and location.
- Export stored measurement data via email.

### PACKAGE CONTENTS:

- PTBT2 Pocket Tester Pen - battery installed
- Soaker Cap
- Scoop
- Pocket Clip
- Holster
- Lanyard
- Operating Instructions

Visit our website:  
[myronl.com/PTBT2.htm](http://myronl.com/PTBT2.htm)

**Also Available**  
**ULTRAPEN™ PTBT1**  
Conductivity, TDS, Salinity  
& Temperature



**Coming soon**

**ULTRAPEN™ PTBT3**  
ORP & Temperature



**ULTRAPEN™ PTBT4**  
Free Chlorine Equivalent  
(FC<sup>5</sup>) & Temperature



[myronl.com](http://myronl.com)



**MYRON L<sup>®</sup>  
COMPANY**  
Water Quality Instrumentation  
Accuracy • Reliability • Simplicity  
... Since 1957

## INTRODUCTION

Thank you for purchasing the Myron L® ULTRAPEN™ PTBT2 pH Pen. This instrument is designed to be extremely accurate, fast and simple to use in diverse water quality applications. Advanced features include 1, 2 and 3 point calibration; automatic temperature compensation; highly stable microprocessor-based circuitry; waterproof housing; and Mobile Device Application that is user intuitive. The PTBT2 is easy to calibrate and easy to use.

### Downloading the Mobile Device App

1. Go to the Apple App Store.
2. Search for the "ULTRAPEN PTBTx" iPhone App.
3. Open the ULTRAPEN page and tap the **Install** button.
4. Be sure to read the End User License Agreement (EULA) and the Data Use Liability Agreement (DULA).

### Opening the ULTRAPEN App

1. Tap **ULTRAPEN App icon** on the mobile device's HOME screen.
  2. The App's main Measurement screen will appear.
- NOTE:** Apple iOS devices: Activate SIRI and say, "ULTRAPEN."



## FEATURES

### PTBT2

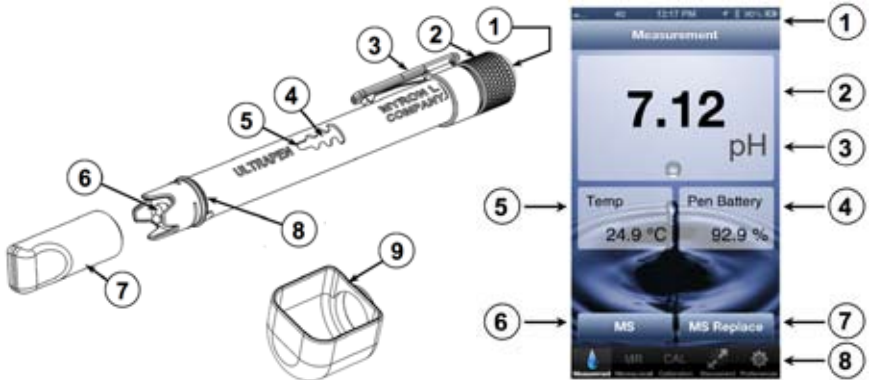
1. **Push Button** - turns PTBT2 on; enters calibration mode, activates PTBT2 preference menus.
2. **Battery Cap** - provides access to battery for replacement.
3. **Pocket Clip** - holds pen to shirt pocket for secure storage.
4. **Wireless Transceiver Window** - Bluetooth antenna is located here.
5. **LED Indicator Light** - Tells the user when to dip & swirl PTBT2 during measurements and calibration. Indicates PTBT2 is in Configuration mode.
6. **pH Sensor** - measures hydrogen ion concentration of solution.
7. **Soaker Cap** - Contains pH Sensor Storage Solution to maintain sensor hydration. To remove, twist the cap while pulling off. Use caution not to spill solution. To replace, fill the cap **half full ONLY** with solution. Twist the cap while pushing on. Be careful, excess solution may squirt out.

**CAUTION:** Do **NOT** push the soaker cap beyond the Cap Stop as sensor damage **WILL** occur.

**NOTE:** The formation of KCl crystals around the soaker cap is normal and does not affect the sensor life, performance, or accuracy provided they are rinsed off with water prior to a test.

8. **Cap Stop** - Shows how far to push the soaker cap when putting it on the PTBT2.
9. **Scoop** - Used to hold sample solution when dipping is not possible. To use, push the scoop onto the sensor while shifting side-to-side. and hold the scoop directly under a vertical stream, avoiding bubbles. To remove, pull the scoop off while shifting side-to-side. If the sensor is not fully seated in the PTBT2, reinstall per pH Sensor Replacement section on page 5.

**Not shown:** Lanyard and Holster.



### ULTRAPEN App Measurement Screen

1. **Mobile Device Status Bar** - standard Status Bar for your mobile device.
2. **Measurement Value Field** - displays the measured value of the solution. When the ULTRAPEN turns off, displays the message, "ULTRAPEN is Offline" and values gray out.
3. **Units of Measure** - displays pH units.
4. **ULTRAPEN Battery Level** - flashes RED when ULTRAPEN battery is  $\leq 25\%$ .
5. **Solution Temperature** - measured temperature of the solution.
6. **Memory Store Button** - tap here to record the measurement in the App's database.
7. **Memory Replace Button** - tap here to replace a previously stored measurement with data from a new measurement.
8. **Feature Navigation Bar** - these buttons activate various App features.

## OPERATING INSTRUCTIONS

The following are basic instructions for operating the PTBT2 ULTRAPEN & App. To access a full Operations Manual:

1. Inside the App tap the **Preferences** button on the Feature Navigation Bar.
2. Select **Help** from the Settings Menu screen.
3. The browser of your mobile devices will open and link to the Myron L<sup>®</sup> Company website page where the PTBTx Operations Manual can be accessed.



### I. Connecting the ULTRAPEN to the Mobile Device

To pair and connect the PTBT2 to your mobile device:

1. Inside the App tap the **Connect** button in the Feature Navigation Bar.
2. Push and release the button on the PTBT2 to turn it ON.
3. When the PTBT2's name appears on the Connect Screen, select that line.
4. A checkmark will appear next to PTBT2's name.



**NOTE:** The default name for all PTBT2's is, "MLC-PTBTx". To edit the name, Tap the **Preferences** button and go to ULTRAPEN Settings section. See the PTBTx Operations Manual for full instructions.

To unpair from a PTBT2:

1. Tap the red **Unpair** button next to the PTBT2's name.
2. An Unpair Instrument dialogue box will appear.
3. Tap the **Disconnect** button in the dialogue box.



### II. Temperature Unit Selection

The PTBT2 allows you to select either Centigrade (°C) or Farenheit (°F) when displaying temperature on the iOS screens.

To select the Temperature Units:

1. Inside the App tap the **Preferences** button on the Feature Navigation Bar.
2. Select **Application Preferences** from the list of settings topics.
3. Slide the Temperature Units switch left or right to display temperature values as either °C or °F.



### III. pH Mode Selection

The PT2 allows you to select between two pH measurement modes:

**HOLD** (Default): Once stabilized, the reading is captured then displayed.

**LIVE:** Real-time readings are displayed continuously during measurement until the ULTRAPEN times out.

To select the pH Mode:

1. Inside the App tap the **Preferences** button on the Feature Navigation Bar.
2. Select **ULTRAPEN Settings** from the list of settings topics
3. Push and release the button on the PTBT2 to turn it ON.
4. When the PTBT2 LED begins to flash, The App will display, "Press and hold the button on the ULTRAPEN to enter Preferences"
5. Press and hold the PTBT2's push button.
6. When the LED goes to solid ON the ULTRAPEN Settings screen will appear.
7. Select **Pen Mode** from the ULTRAPEN Settings screen. The Pen Mode screen will appear.
8. Tap the **Pen Mode** field on the screen.
9. Choose the desired mode (Hold or Live) from the list that appears.
10. Tap the **Apply** button.




### IV. pH Measurement

The following table explains the LED Indicator signals and typical durations.



LED Indicator Signal	Meaning	Duration
Rapid Flashing	Dip pen in solution	6 sec
Slow Flashing	Swirl Pen. Measurement in process In LIVE mode, the readings are displayed.	10-30 sec in Hold mode 5 minutes in Live mode
Solid ON Light	Measurement is complete Final reading is displayed.	≤ 6 sec

**CAUTION:** To measure solution at the extremes of the specified temperature range, allow the pen to equilibrate by submerging the cell in the sample solution of the same temperature for 1 minute prior to taking a measurement.

**NOTE:** If you cannot dip the pen in the sample solution, pour the sample into a clean container. If you don't have a sample container or need to test a vertical stream of solution, use the scoop.

1. Rinse the pen. If measuring from a container, submerge the pen and swirl it around in FRESH sample solution 3 times. Alternatively, swirl for 30 seconds under a stream or in a body of water.
2. If the Measurement screen is not displayed, tap the **Measurement** button in the Feature Navigation Bar. The screen will say, *“Paired ULTRAPEN is Offline”*. 
3. Grasp the pen near the pen cap to avoid sample contamination.
4. Remove pen from the rinse solution.
5. Press and release the PTBT2's push button to turn it ON.
6. When the LED flashes rapidly, IMMEDIATELY dip the pen in the sample solution so that the cell is completely submerged. If you do not submerge the cell in solution before the flashing slows, allow the pen to power off and retake the reading.
7. The App screen will display *“Measuring ...”*
8. When the LED flashes slowly, swirl the pen to remove bubbles, keeping the cell submerged and preferably at least 1 inch (2½ cm) away from sides/bottom of container.
  - a. In **Hold** mode when the LED turns on solid the display will show the final pH and temperature readings.
  - b. In **LIVE** mode allow the pen to remain in solution while the LED flashes slowly. The display will show live pH and temperature readings. The pen will time out after 5 minute. Push and release the pen's button to power it OFF at any time during LIVE measurement
9. The ULTRAPEN will turn OFF once the measurement is completed.

## V. Recording and Recalling Measurements

1. Once a measurement is finished, tap the **MS** button (Memory Store). 
2. The App screen will display the measurement as an unsaved record.
3. Tap the **Save** button in the upper right corner of the record display.
4. The record will be saved and the App will return to the Measurement screen.
5. Tap the **MR** button (Memory Recall) in the Feature Navigation Bar to display a list of stored records. 
6. Swipe up and down to reveal the full list. Tap any record on the list to view it's details.

## VI. Calibration

The Myron L<sup>®</sup> Company recommends calibrating twice a month depending on usage. However, you should check the calibration whenever measurements are not as expected. 3-point Wet Calibration is most accurate and is recommended.

**NOTE:** If the measurement is NOT within calibration limits, *“Error. Clean sensor. Check Solution.”* will display. Check to make sure you are using a proper pH buffer solution. If the solution is correct, clean the glass bulb of the sensor with a cotton swab soaked in isopropyl alcohol. Restart calibration.

**NOTE:** Small bubbles trapped in the sensor may give a false calibration.

**NOTE:** If at any point during calibration, you do not submerge the sensor in solution before the flashing slows, allow the pen to power off and start over.

### A. Calibration Preparation



1. For maximum accuracy, fill 2 clean containers with each pH buffer you will be using. Arrange them in such a way that you can clearly remember which is the rinse solution and which is the calibration buffer. Always rinse the pH sensor between buffer solutions.

2. Ensure the pH sensor is clean and free of debris.

**NOTE:** If you do not have enough buffer, you can use 1 container of each buffer for calibration and 1 container of clean water for all rinsing.

### B. Multi-Point Calibration (2 and 3 point Calibration).

To perform a multi-Point Calibration you must always start with 7.0 pH buffer.

1. Tap the **CAL** button in the Feature Navigation Bar. The App screen will appear and say, *“Paired ULTRAPEN is Offline”*. 
2. Grasp the pen near the battery to avoid sample contamination.
3. Remove pen from the rinse solution.
4. Press and release the pen's push button. The Calibration screen will display, *“Press and hold the button on the ULTRAPEN to enter CAL mode.”*
5. Press and Hold the pen's button. The LED will go to solid ON and the App's Calibration screen will appear
6. Tap the green **CAL** button on the Calibration screen. 
7. When the pen's LED flashes rapidly, IMMEDIATELY dip the pen in calibration 7.0 pH buffer so that the cell is completely submerged. The Calibration screen will display. *“Calibrating pH ...”*

*Continued on page 4 ...*

- When the LED flashes slowly, swirl the pen around to remove bubbles, keeping the cell submerged. The Calibration screen will display. "Calibrating 7.0 pH ..."
  - When the LED light goes solid ON, the Calibration screen will display "7.0 pH CAL SAVED" along with the before and after calibration values.
  - DONE and CONTINUE Buttons will appear at the bottom of the Calibration Screen.
- NOTE:** Tap the DONE button to end the calibration at this point, or;
- Rinse the pH sensor with the next pH buffer (it can be either 4.0 pH or 10.0 pH buffer).
  - Tap the CONTINUE Button to calibrate the next point.
  - Repeat steps 7 through 10. The instrument will automatically recognize the calibration point based on the buffer used.
  - After the 3rd calibration point is successfully saved only the DONE button will appear. Tapping this button ends the calibration.



## C. Single-Point Calibration.

- Using either 4, 7, or 10 pH buffer, perform the calibration as described in steps 1 through 9 of Section B.
- After the calibration point is successfully saved, tap the DONE button

## D. Factory Calibration

When pH buffers are not available, the PTBT2 can be returned to factory default calibration using the FAC CAL function. This will erase stored wet calibration constants. **NOTE:** default factory calibration resets the electronics only and does **NOT** take the condition of the sensor into consideration.

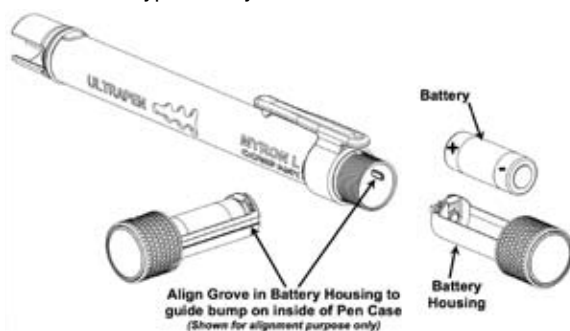
- Inside the App tap the CAL button in the Feature Navigation Bar. The App screen will say, "Paired ULTRAPEN is Offline."
- Press and release the push button. The screen will display, "Press and hold the button on the ULTRAPEN to enter CAL mode".
- Press and Hold the ULTRAPEN's button the LED will go to solid ON and the App's Calibration screen will appear.
- Tap the red **FAC CAL** button. A warning dialogue box will appear.
- Tap the **OK** button in the dialogue box. The App's Calibrating screen will display, "FAC CAL Reset".



## MAINTENANCE

### I. Battery Replacement

The PTBT2 App display has an indicator that depicts the pen battery's charge level. When the charge level falls below 25%, the indicator will flash red. Immediately replace the battery with an new N type battery.



- In a **CLEAN DRY** place unscrew the battery cap in a counter-clockwise motion.
- Slide the battery and battery housing out of the pen.
- Remove the depleted battery from its housing.
- Insert a new battery into the battery housing oriented with the negative end touching the spring.
- Align the groove along the battery housing with the guide bump inside the pen case and slide the battery housing back in.
- Screw the battery cap back on in a clockwise direction. **Do not over tighten.**

### II. Routine Maintenance

- ALWAYS** rinse the pH sensor with clean water after each use.
- ALWAYS** replace the soaker cap half filled with pH Sensor Storage Solution to prevent the sensor from drying out after each use.
- If the sensor becomes dirty, clean the sensor surface with an isopropyl soaked cotton swab. Then rinse thoroughly with clean water.
- Do not drop, throw or otherwise strike the pen. This voids the warranty.
- Do not store the pen in a location where the ambient temperatures exceed its specified Operating/Storage Temperature limits.

### III. pH Sensor Replacement *(Follow the instructions that come with your Replacement Sensor.)*

**CAUTION:** Only Remove/Replace the pH sensor in a CLEAN and DRY environment!

To remove the pH sensor:

1. Remove the soaker cap; make sure the PTBT2 (including the pH sensor) is clean and dry. Loosen the battery tray to allow pressure equalization.
2. Then firmly grasp the pH sensor body and slowly pull the pH sensor out.

To install a new pH sensor:

1. Line up the alignment tabs on the pH sensor with the alignment slots on the PT2 unit.
2. Gently push the pH sensor into position, close battery cap. **Do not over tighten.**

### SPECIFICATIONS

App Requirements:	Apple iOS 6 or iOS 7. Optimized for iOS 7.
Measurement Range:	0.00 – 14.00 pH; Temperature: 0°-71° C/32-160° F
Accuracy (After Wet Calibration):	± 0.01 pH; Temperature ± 0.1°C / ± 0.1°F
Repeatability:	± 0.01 pH; Temperature ± 0.1°C / ± 0.1°F
Resolution:	0.01 pH; Temperature ± 0.1°C / ± 0.1°F
Time to Reading Stabilization:	10 - 30 seconds
Active Mode Power Consumption:	Active Mode 137 mA, Sleep Mode 2 µA
Temperature Compensation:	Automatic to 25°C
Physical Dimensions:	17.15 cm L x 1.59 cm D or 6.75 in. L x .625 in. D
Weight:	54 g or 1.94 oz
Case Material:	Anodized Aircraft Aluminum with Protective Coating
Battery Type:	N type, Alkaline 1.5 V
Calibration Standard Solution:	4.0 pH, 7.0 pH, 10.0 pH
Operating/Storage Temperature:	0 - 55°C / 32 - 131°F
Water Resistance:	IP67 and NEMA 6
EN61236-1: 2006 - Annex A: 2008; 1999/5/EC Annex III	Electrostatic discharge to case of instrument may cause PTBT2 to spontaneously power on. In this case, the PTBT2 will power off after several seconds
FCC ID: T7VPAN17	The Bluetooth transceiver device meets the requirements for modular transmitter approval as detailed in FCC public Notice DA00-1407.
Canada (IC), license: IC: 216Q-PAN17	The Bluetooth transceiver device meets the requirements for modular transmitter approval as detailed in RSS-GEN.

### QUICK REFERENCE INSTRUCTIONS

1. Turn on ULTRAPEN App: Tap **ULTRAPEN** icon on mobile device's home screen.
2. Turn on PTBT2: Press and release push button on pen.
3. LED flashes rapidly: Dip pen in sample solution so cell is totally submerged.
4. LED flashes slowly: Swirl pen to remove bubbles, keep cell submerged.
5. LED turns solid ON then turns OFF: Measurement is complete and reading is displayed.

### Feature Navigation Bar



This button always returns the App to the Measurement Screen.



This button displays a list of saved measurements.



This button places the App in Calibration mode.



This button opens the App's Bluetooth Connect / Disconnect screen.



This button opens the App's preferences and settings mode.



An internet link to full Operations Manual (**Help** button) is found here.

### ACCESSORIES

STANDARD SOLUTIONS FOR CALIBRATION: The ULTRAPEN™ PT2 requires pH 4, pH 7, and pH 10 buffer solutions for wet calibration and pH Sensor Storage Solution for proper storage.

— Order MODEL#s: **PH4, PH7, PH10, and PHSS.**

Replacement pH Sensor (with instructions) — Order Model: **RPT2.**

### MYRON L® WARRANTY

Excepting sensor and battery, the Myron L® Company PTBT2 pH ULTRAPEN is warranted to be free from manufacture defect for 1 year. The pH sensor has a six (6) month limited warranty.

MYRON L® COMPANY

2450 Impala Drive • Carlsbad, Ca 92010-7226 • Phone: +1-760-438-2021

E-Mail: Customer Service – info@myronl.com • Technical Support – techquestions@myronl.com

Website: www.myronl.com

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