

ULTRAPEN™ PT2

pH & Temperature Pen

CE

- ACCURATE
- RELIABLE
- SIMPLE

Professional Water Analysis

- Accuracy of ±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)

PACKAGE CONTENTS:

- PT2 Pocket Tester Pen - Battery Installed
- Scoop
- Soaker Cap
- Pocket Clip
- Holster
- Lanyard
- Operating Instructions

Visit our website:
myronl.com/pt2.htm

ALSO AVAILABLE!

ULTRAPEN™ PT1
Conductivity, TDS, Salinity & Temperature



ULTRAPEN™ PT3
ORP & Temperature



ULTRAPEN™ PT4
Free Chlorine Equivalent (FC^E) & Temperature



myronl.com

MADE IN USA

MYRON L COMPANY
Water Quality Instrumentation
Accuracy • Reliability • Simplicity
. . . Since 1957

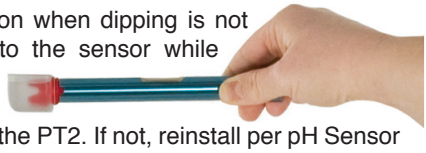
INTRODUCTION



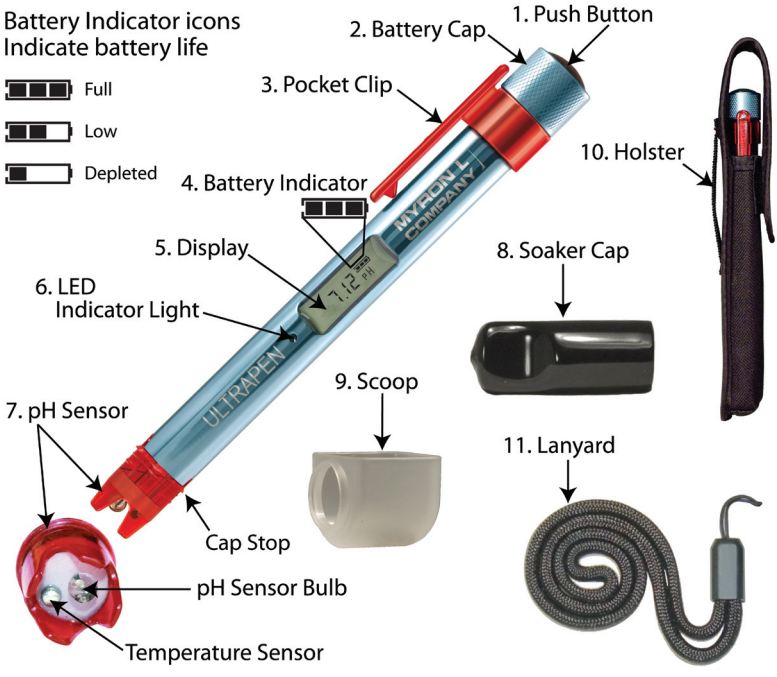
Thank you for purchasing the Myron L ULTRAPEN™ PT2 pH Pen. This instrument is designed to be extremely accurate, fast and simple to use in diverse water quality applications. Advanced features include automatic temperature compensation; highly stable microprocessor-based circuitry; user-intuitive design; and waterproof housing. A true one-handed instrument, the PT2 is easy to calibrate and easy to use. To take a measurement, you simply push a button then dip the pen in solution. Results display in seconds.

FEATURES

1. **Push Button** — turns instrument on; selects mode and unit preferences.
2. **Battery Cap** — provides access to battery for replacement.
3. **Pocket Clip** — holds pen to shirt pocket for secure storage.
4. **Battery Indicator** — indicates life remaining in battery.
5. **Display** — displays measurements, menu options, battery indicator, and firmware revision (during power-up).
6. **LED Indicator Light** — indicates when to dip instrument in solution, when measurement is in progress, and when to remove instrument from solution.
7. **pH Sensor** — measures hydrogen ion concentration of solution.
8. **Soaker Cap** — contains pH Sensor Storage Solution to maintain sensor hydration. To remove, twist the soaker cap while pulling off using caution not to spill the Storage Solution. To replace, fill the soaker cap half full with storage solution. Twist the soaker cap while pushing back on using caution as excess Storage Solution may squirt out.
CAUTION: Fill the soaker cap **ONLY** half full of solution for storage.
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. These crystals do not affect the sensor life, performance, or accuracy provided they are rinsed off with water prior to a test.
9. **Scoop** — used to hold sample solution when dipping is not possible. To install, push the scoop onto the sensor while shifting side-to-side. To remove, pull the scoop off while shifting side-to-side. Verify the pH sensor remained fully inserted into the PT2. If not, reinstall per pH Sensor Replacement, p. 5. To use, pour solution into the scoop or hold the scoop directly under a vertical stream to collect sample.



10. **Holster** — run your belt through the strap in the back of the holster for hands-free portability.
11. **Lanyard** — attach through hole in top of pocket clip.



OPERATING INSTRUCTIONS

NOTE: Selecting “ESC” from any menu immediately powers the unit off without saving changes.

I. Temperature Unit Selection

The PT2 allows you to select the type of units used for displaying temperature: ˚C (Degrees Celsius) or ˚F (Degrees Fahrenheit).

To set the preference:

1. Push and release the push button to turn the unit on.
2. Push and hold the button. The display will alternate between “CAL”, “FAC CAL”, “ºCºF TEMP”, “ModE SEL” and “ESC”.
3. Release the button while “ºCºF TEMP” is displayed. The display will alternate between “PUSHnHLD” and “ºCºF TEMP”.
4. Push and hold the button. The display will alternate between “˚C”, “˚F” and “ESC”. Release the button when desired unit preference displays.
5. “SAVEd ºC” or “SAVEd ºF” will display; then the unit will power off.

II. pH Mode Selection

The PT2 allows you to select the pH measurement mode you prefer:
Hold (once stabilized, the readings are captured then displayed) or
LIVE (real-time readings are displayed continuously during measurement)

To set the pH measurement mode preference:

1. Push and release the push button to turn the unit on.
2. Push and hold the button. The display will alternate between “CAL”, “FAC CAL”, “ºCºF TEMP”, “ModE SEL” and “ESC”.
3. Release the button when “ModE SEL” is displayed. The display will alternate between “PUSHnHLD” and “ModE SEL”.
4. Push and hold the push button. The display will alternate between “Hold”, “LIVE” and “ESC”.
5. Release the button when desired mode displays.
6. “SAVEd” will display, then the unit will power off.

III. pH Measurement

The following table explains what the LED Indicator Light signals indicate and gives the duration of each signal:

LED Signal	Action	Duration
Rapid Flashing	Dip pen in solution.	6 sec
Slow Flashing	Measurement in process. In LIVE mode, the readings are displayed. In LIVE mode, note measurement values.	10-30 sec in Hold mode 60 sec in LIVE mode
Solid Light (Hold mode only)	Measurement is complete. In Hold mode, captured readings are displayed. In Hold mode, note measurement values.	6 sec

CAUTION: To measure solution at the extremes of the specified temperature or pH range, allow the pen to equilibrate by submerging the sensor in the sample solution 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 container or need to test a vertical stream of solution, use the scoop to hold sample solution.

1. Rinse the pen. If measuring from a container, submerge the pen and swirl it around in FRESH sample solution 3 times. Alternatively, 30 seconds under a stream or of swirling in a body of water is sufficient to prepare the sensor for measurement.
2. Remove pen from solution. (Fill the container one more time with FRESH sample solution, if applicable.) Then push and release the push button.
3. Grasp the pen by its case with your fingers positioned between the display and the battery cap to avoid sample contamination.
4. While the LED flashes rapidly, dip the pen in FRESH sample solution so that the sensor is completely submerged. If you do not submerge the sensor in solution before the flashing slows, allow the pen to power off and retake the reading.
5. While the LED flashes slowly, swirl the pen around to remove bubbles, keeping the sensor submerged.
   a. **In Hold mode** when the LED turns on solid, remove the pen from solution.

The display will alternate between the final pH and temperature readings. Note the readings for your records.

b. **In LIVE mode** allow the pen to remain in solution while the LED flashes slowly. The display will alternate between live pH and temperature readings. Note the readings for your records. LIVE measurement will time out after 1 minute OR push and release the push button to power the pen off at any time during LIVE measurement.

IV. Calibration

The Myron L 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 for any reason, "Error" 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. After calibration is completed, measure the pH buffer solutions again to verify correct 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. Arrange them in such a way that you can clearly remember which is the rinse solution and which is the calibration buffer. If you don't have enough buffer, you can use 1 container of each buffer for calibration and 1 container of clean water for all rinsing. Always rinse the pH sensor between buffer solutions.
2. Ensure the pH sensor is clean and free of debris.

B. 3-Point Calibration

Use pH 7, 4 and 10 buffers for 3-point calibration.

1. Thoroughly rinse the pen by submerging the sensor in pH 7 buffer rinse solution and swirling it around.
2. Push and release the push button to turn the unit on.
3. Push and hold the push button. The display will alternate between "CAL", "FAC CAL", "ºCºF TEMP", "ModE SEL" and "ESC".
4. Release the button when "CAL" displays. The display will indicate "CAL" and the LED will flash rapidly.
5. While the LED flashes rapidly, dip the pen in pH 7 buffer calibration solution so that the sensor is completely submerged.
6. While the LED flashes slowly, the pH calibration point will display along with "CAL". Swirl the pen around to remove bubbles, keeping the sensor submerged.
7. If the pH 7 calibration is successful, the display will indicate "SAVEd", then "PUSHCONT" will be displayed.
8. Push and release the push button to continue. The LED will begin flashing rapidly.
9. Repeat steps 5 through 8 with pH 4 and 10 buffer calibration solutions.
10. After the 3rd calibration point is successfully saved, the display will indicate "SAVEd" and power off.
11. Verify calibration by retesting the calibration solution.

C. 2-Point Calibration

Use pH 7 and 4 or 10 buffers for 2-point calibration.

1. Thoroughly rinse the pen by submerging the sensor in pH 7 buffer rinse solution and swirling it around.
2. Push and release the push button to turn the unit on.
3. Push and hold the push button. The display will alternate between "CAL", "FAC CAL", "ºCºF TEMP", "ModE SEL" and "ESC".
4. Release the button when "CAL" displays. The display will indicate "CAL" and the LED will flash rapidly.
5. While the LED flashes rapidly, dip the pen in pH 7 buffer calibration solution so that the sensor is completely submerged.
6. While the LED flashes slowly, the pH calibration point will display along with "CAL". Swirl the pen around to remove bubbles, keeping the sensor submerged.

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7. If the pH 7 calibration is successful, the display will indicate “SAVEd”, then “PUSHCONT” will be displayed.
8. Push and release the push button to continue. The LED will begin flashing rapidly.
9. Repeat steps 5 through 7 with pH 4 or 10 buffer calibration solution.
10. Leave the pen in the same buffer solution until the unit powers off. The offset will be applied to the remaining calibration point.
11. Verify calibration by retesting the calibration solution.

D. 1-Point Calibration

Use pH 7, 4 or 10 buffer for 1-point calibration.

1. Thoroughly rinse the pen by submerging the sensor in pH buffer rinse solution and swirling it around.
2. Push and release the push button to turn the unit on.
3. Push and hold the push button. The display will alternate between “CAL”, “FAC CAL”, “ºCºF TEMP”, “ModE SEL” and “ESC”.
4. Release the button when “CAL” displays. The display will indicate “CAL” and the LED will flash rapidly.
5. While the LED flashes rapidly, dip the pen in pH buffer calibration solution so that the sensor is completely submerged.
6. While the LED flashes slowly, the pH calibration point will display along with “CAL”; swirl the pen around to remove bubbles, keeping the sensor submerged.
7. If the pH calibration is successful, the display will indicate “SAVEd”, then “PUSHCONT” will be displayed. “PUSHCONT” will not display if you calibrated 4 or 10.
8. Leave the pen in the same buffer solution until the unit powers off. The offset will be applied to the remaining calibration points.
9. Verify calibration by retesting the calibration solution.

E. Factory Calibration

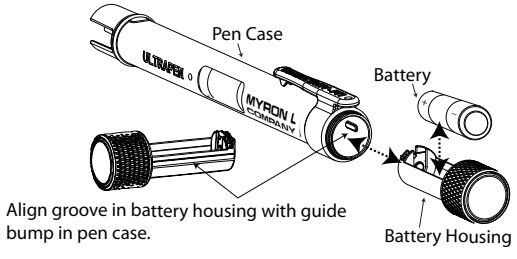
When pH buffers are not available, the PT2 can be returned to factory default calibration using the FAC CAL function. This will erase any stored wet calibration.
NOTE: default factory calibration resets the electronics only and does NOT take the condition of the sensor into consideration.
To return your unit to factory calibration:

1. Push and release the push button.
2. Push and hold the push button. The display will alternate between “CAL”, “FAC CAL”, “ºCºF TEMP”, “ModE SEL” and “ESC”.
3. Release the button when “FAC CAL” displays. The display will alternate between “PUSHnHLD” and “FAC CAL”.
4. Push and hold the push button. “SAVEd FAC” displays indicating the pen has been reset to its factory calibration.

MAINTENANCE

I. Battery Replacement

The PT2 display has a battery indicator that depicts the life remaining in the battery. When the indicator icon is at 3 bars, the battery is full. When the indicator icon falls to 1 bar, replace the battery with an N type battery.



1. In a CLEAN DRY environment unscrew the pen cap in a counter-clockwise motion.
2. Slide the cap and battery housing out of the pen.
3. Remove the depleted battery out of its housing.
4. Insert a new battery into the battery housing oriented with the negative end touching the spring.
5. Align the groove along the battery housing with the guide bump inside the pen case and slide the battery housing back in.
6. Screw the pen cap back on in a clockwise direction. Do not overtighten.

SPECIFICATIONS

	pH	Temperature
Range:	0.00-14.00pH	0-71°C/32-160°F
Accuracy:	± 0.01pH (After Wet Calibration)	±0.1ºC/±0.1ºF
Repeatability:	± 0.01pH	±0.1ºC/±0.1ºF
Resolution:	0.01pH	0.1ºC/0.1ºF
Time to Reading Stabilization: 10-30 seconds		
Power Consumption: Active Mode 37mA, Sleep Mode 2μA		
Temperature Compensation: Automatic to 25ºC		
Physical Dimensions: 17.15cm L x 1.59cm D or 6.75in. L x 0.625in. D		
Weight: 54g/1.9oz. (without soaker cap and lanyard)		
Case Material: Anodized Aircraft Aluminum with Protective Coating		
Battery Type: N type, Alkaline, 1.5V		
Calibration Solutions: pH4, pH7, pH10		
Operating/Storage Temperature: 0-55ºC or 32-131ºF		
Enclosure Ratings: IP67 and NEMA6		
EN61236-1: 2006 – Annex A: 2008: Electrostatic discharge to case of instrument may cause PT2 to spontaneously power on. If this happens, the PT2 will power itself off within seconds.		

QUICK REFERENCE INSTRUCTIONS

1. Push and release the push button to turn the pen on.
2. While the LED flashes rapidly, dip the pen in sample solution so that the sensor is completely submerged.
3. While LED flashes slowly, swirl pen around to remove bubbles, keeping the sensor submerged. Avoid contact with sides/bottom of container, if applicable.
   If in LIVE mode, while the LED is flashing slowly, the display will alternate between the live pH and temperature readings. Note readings for your records.
   If in Hold mode, when the LED turns on solid, remove the pen from the solution. The display will alternate between the captured pH and temperature readings. Note readings for your records.

II. Routine Maintenance

1. **ALWAYS** rinse the pH sensor with clean water after each use.
2. **ALWAYS** replace the soaker cap half filled with pH Sensor Storage Solution to prevent the sensor from drying out after each use.
3. If the sensor becomes dirty, clean the sensor surface with an isopropyl soaked cotton swab. Then rinse thoroughly with clean water.
4. Do not drop, throw or otherwise strike the pen. This voids the warranty.
5. 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: Remove the soaker cap; make sure the PT2 (including the pH sensor) is clean and dry. Loosen the battery tray (to allow pressure equalization). Then firmly grasp the pH sensor body and slowly pull the pH sensor out.
To install a new pH sensor: Line up the alignment tabs on the pH sensor with the alignment slots on the PT2 unit. Gently push the pH sensor into position, then close the battery cap.

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

The PT2, excluding the pH sensor, has a one (1) year limited warranty.
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
Customer Service E-Mail: info@myronl.com
Technical Support E-Mail: techquestions@myronl.com
Website: www.myronl.com

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PT2OM 08-13