

ULTRAPEN™ PT1

Conductivity/TDS/Salinity & Temperature Pen

CE

- ACCURATE
- RELIABLE
- SIMPLE

Professional Water Analysis

- Accuracy of ±1% of READING
- ±.2% at Calibration Point
- Reliable Repeatable Results
- KCl, NaCl and 442™ Natural Water Modes
- Automatic Temperature Compensation
- Autoranging
- Waterproof
- Powered by 1 N Type battery (included)

PACKAGE CONTENTS:

- PT1 Pocket Tester Pen - battery installed
- Scoop
- Pocket Clip
- Holster
- Lanyard
- Operating Instructions

Visit our website:
myronl.com/pt1.htm

ALSO AVAILABLE!

ULTRAPEN™ PT2
pH & Temperature



ULTRAPEN™ PT3
ORP & Temperature



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



myronl.com

MADE IN USA

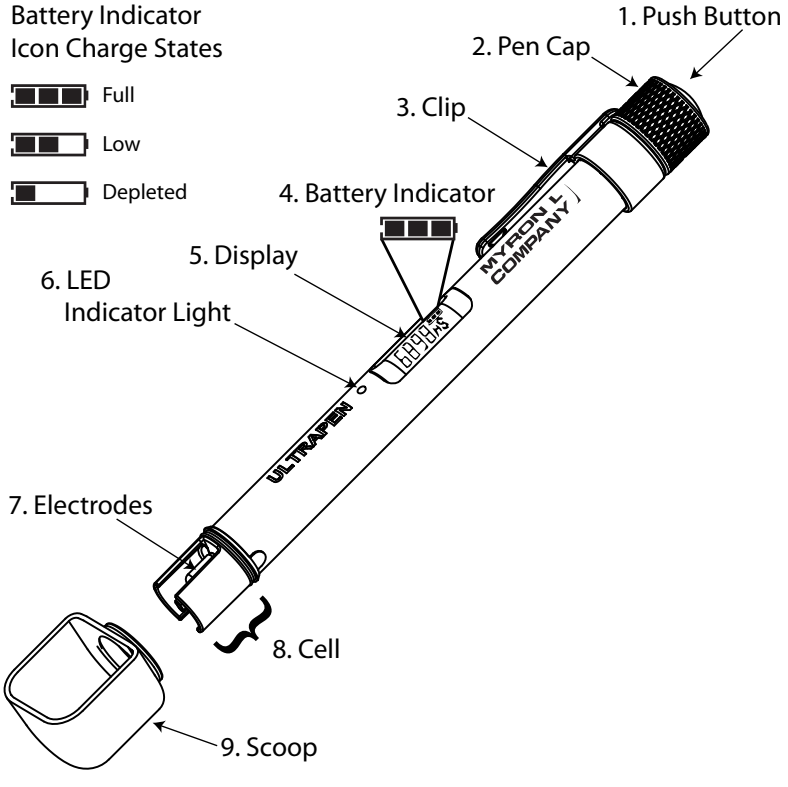
MYRON L COMPANY
Water Quality Instrumentation
Accuracy • Reliability • Simplicity
. . . Since 1957

INTRODUCTION

Thank you for purchasing the Myron L ULTRAPEN™ PT1 Conductivity/ TDS/Salinity Pen. This instrument is designed to be extremely accurate, fast and simple to use in diverse water quality applications. Advanced features include the ability to select from 3 different solution types that model the characteristics of the most commonly encountered types of water; proprietary temperature compensation and TDS conversion algorithms; highly stable microprocessor-based circuitry; user-intuitive design; and waterproof housing. A true, one-handed instrument, the PT1 is easy to calibrate and easy to use. To take a measurement, you simply press 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. Pen Cap — provides access to battery for replacement.
3. Clip — holds pen to shirt pocket for secure storage.
4. Battery Indicator — indicates charge left in battery.
5. Display — displays measurements, mode options and battery indicator.
6. LED Indicator Light — indicates when to dip instrument in solution, when measurement is in progress, and when to remove instrument from solution.
7. Electrodes — measure electric current of solution.
8. Cell — contains flux field in defined area for accurate current measurement.
9. Scoop — contains sample solution for measurement when sampling from a vertical stream. To use, slide the open end of the scoop over the bottom of the pen until the neck of the scoop is flush with the top of the cell. Hold pen with scoop end under stream. Rinse and fill with sample solution 3 times. Fill with solution again, then take measurement. We recommend you recalibrate the pen using the scoop to retain accuracy of ±1%.



SPECIFICATIONS

Measurement Range:	1 - 9999 µS or ppm (0.0010 - 9.999 ppt salinity)
Accuracy (After Wet Calibration):	± 1% of reading
Repeatability:	< 1000 µS or ppm ± 1 Count ≥ 1000 µS or ppm ± 0.3% of reading
Resolution:	Conductivity and TDS: 0.1 for 1.0 - 99.9 µS or ppm 1 for 100 - 9999 µS or ppm Salinity: 0.0001 for 0.0010 - 0.0999 ppt 0.001 for 0.100 - 9.999 ppt Temperature: 0.1 ºC or ºF
Time to Reading Stabilization:	10 - 20 seconds
Active Mode Power Consumption:	30 - 100 mA
Sleep Mode Power Consumption:	2 µA
Temperature Measurement Range:	0 - 71° C or 32 - 160° F
Temperature Accuracy Displayed:	± 0.1 ºC or ± 0.1 ºF
Temperature Compensation Method:	Automatic to 25ºC
Physical Dimensions:	17.15 cm L x 1.59 cm D or 6.75 in. L x .625 in. D
Weight:	55 g or 1.94 oz.
Case Material:	Anodized Aluminum with Protective Coating
Battery Type:	N type, Alkaline
Battery Voltage:	1.5 V
Calibration Solution Point:	1800 µS KCl; 3000 ppm 442™ (2027 ppm NaCl)
Operating/Storage Temperature:	0 - 55ºC or 32 - 131ºF
Water Resistance:	IP67 and NEMA 6
CE EN61236-1: 2006 - Annex A: 2008	Electrostatic discharge to case of instrument may cause PT1 to spontaneously power on. In this case, the PT1 will power off after several seconds.

FULL OPERATING INSTRUCTIONS

I. Solution Selection

The PT1 allows you to select from several preprogrammed measurement modes. The following table lists measurement modes with their corresponding parameters; temperature compensation and TDS conversion solution models; and units of measure.

Mode	Parameter	Solution Model	Units
Cond KCl	Conductivity	potassium chloride	microsiemens (µS)
tdS 442	Total Dissolved Solids (TDS)	442™ Myron L Natural Water Standard	parts per million (ppm)
tdS NaCl	TDS	sodium chloride	ppm
SALt 442	Salinity	442™ Myron L Natural Water Standard	parts per thousand (ppt)
SALt NaCl	Salinity	sodium chloride	ppt
ESC	This is the escape function. Selecting escape exits solution selection without saving changes and turns the PT1 off.		

To select a measurement mode:

1. Press and release the push button. The LCD will briefly display the firmware version then the current measurement mode. If the measurement parameter and solution type displayed are correct, proceed to II. Temperature Unit Selection. If not, proceed to step 2.
2. Immediately push and hold the push button. The display will scroll through “CAL”, “SOL SEL”, “FAC CAL”, “ºCºF TEMP”, and “ESC”. Release the button when “SOL SEL” displays.
3. While the display scrolls through “PUSHnHLD” and “SOL SEL”, push and hold the push button. The display will scroll through “Cond KCl”, “tdS 442”, “tdS NaCl”, “SALt 442”, “SALt NaCl” and “ESC”. Release when the desired measurement mode displays.
4. “SAVEd” displays indicating the measurement mode is saved in memory. Allow the pen to time out to turn power off.

II. Temperature Unit Selection

The PT1 allows you to select the type of units used for temperature measurements. The following table lists preference options with their corresponding units.

Mode	Unit Preference
C	Degrees Celsius
F	Degrees Fahrenheit
ESC	This is the escape function. Selecting escape exits temperature unit selection without saving changes and turns the PT1 off.

To set the preference:

1. Press and release the push button. The LCD will briefly display the firmware version then the current measurement mode.
2. Immediately push and hold the push button. The display will scroll through "CAL", "SOL SEL", "FAC CAL", "ºCºF TEMP", and "ESC". Release the button when "ºCºF TEMP" displays.
3. While the display scrolls through "PUSHnHLD" and "ºCºF TEMP", push and hold the push button. The display will scroll through "C", "F" and "ESC". Release when the desired unit option displays.
4. "SAVEd" displays indicating the unit preference is saved in memory. Allow the pen to time out to turn power off.

III. Normal Operation

Before you take a reading, make sure the pen is clean, calibrated (see IV. Calibration) and in the appropriate measurement mode. The sample solution must also be within the specified measurement range. Keep all foreign material away from the sample to avoid contamination.

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 and need to test a vertical stream of solution, use the scoop.

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

LED Indicator Light Signal	Meaning	Duration
Rapid Flashing	Dip pen in solution	6 sec
Slow Flashing	Measurement in process	10-20 sec
Solid Light	Note measurement value	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 for 1 minute prior to taking a measurement.

1. Rinse the pen 3 times by submerging the cell in fresh sample solution and swirling it around.
2. Remove pen from solution, then press and release the push button. Firmware version will be displayed, then current measurement mode.
3. Grasp the pen by its case with your fingers positioned between the display and the pen cap to avoid sample contamination.
4. While the LED flashes rapidly, dip the pen in fresh 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.
5. While the LED flashes slowly, swirl the pen around to remove bubbles, keeping the cell submerged. Keep the pen at least 1 inch (2½ cm) away from sides/bottom of container, if applicable.
6. When the LED turns on solid, remove the pen from solution. The display will alternate between the measurement and temperature readings. Note the readings for your records.

IV. Calibration

The PT1 is designed to be very reliable and requires only infrequent calibration. The Myron L Company recommends calibrating each measurement mode you use once monthly. However, you should check the calibration whenever measurements are not as expected.

The PT1 is programmed for 2 calibration options: Wet Calibration or Factory Calibration. Wet calibration is most accurate. But if a high quality standard KCl-1800 μS or 442-3000 ppm solution is not available, the PT1 can be returned to factory settings.

A. Wet Calibration

Use calibration solution specified for measurement mode: Use KCL-1800 for Cond KCl; Use 442-3000 for tdS 442, SALt 442, tdS NaCl, and SALt NaCl. See Specifications table for 442 solution ppm NaCl equivalent value. Calibrating tdS simultaneously calibrates SALt for the same value and vice versa.

1. Pour Myron L Company calibration solution into a clean container.
2. Rinse the pen 3 times by submerging the cell in fresh calibration solution and swirling it around.
3. Remove pen from solution, then fill the container one more time.
4. Press and release the push button. The LCD will briefly display the firmware version then the current measurement mode. Ensure the PT1 is in the correct solution mode.
5. Immediately push and hold the push button. The display will scroll through "CAL", "SOL SEL", "FAC CAL", "ºCºF TEMP", and "ESC". Release the button when "CAL" displays.
6. Grasp the pen by its case with your fingers positioned between the display and the pen cap to avoid sample contamination.
7. While the LED flashes rapidly, dip the pen in calibration 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 start over.
8. While the LED flashes slowly, swirl the pen around to remove bubbles, keeping the cell submerged. Keep pen at least 1 inch (2½ cm) away from sides/bottom of container.
9. When the LED light stays on solid, remove the pen from the solution. "CAL SAVED" will display indicating a successful calibration.
   NOTE: If an incorrect solution is used or the measurement is NOT within calibration limits for any other reason, "Error" displays alternately with "CLEAn CEL/CHEC SOL". Check to make sure you are using the correct calibration solution. If the solution is correct, clean the cell by submerging the cell in a 1:1 solution of Lime-A-Way® and water for 5 minutes. Rinse the cell and start over.
10. Small bubbles trapped in the cell can give a false calibration. Measure the calibration solution again to verify correct calibration. If the reading is not within ±1% of the calibration solution value, repeat calibration.

B. Factory Calibration

If you do not have the proper calibration solution or wish to restore the pen to its original factory settings for any other reason, use the FAC CAL function to calibrate the PT1.

1. Press and release the push button. The LCD will briefly display the firmware version then the current measurement mode.
2. Immediately push and hold the push button. The display will scroll through "CAL", "SOL SEL", "FAC CAL", "ºCºF TEMP", and "ESC". Release the button when "FAC CAL" displays.
3. While the display scrolls through "PUSHnHLD" and "FAC CAL", push and hold the push button until the display scrolls through "SAVEd" and "FAC CAL", indicating the pen has been reset to its factory calibration.
4. Allow the pen to time out to turn power off.

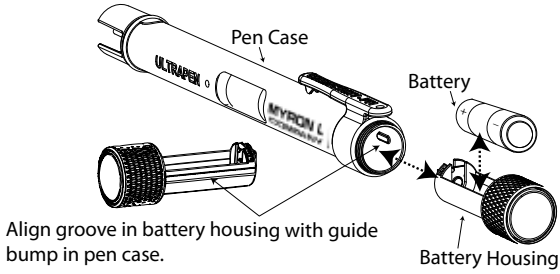
QUICK REFERENCE INSTRUCTIONS

1. **Press and release push button to turn pen on.**
2. **While the LED flashes rapidly, dip the pen in sample solution so that the cell is completely submerged.**
3. **While LED flashes slowly, swirl pen around to remove bubbles, keeping cell submerged. Avoid contact with sides/bottom of container, if applicable.**
4. **When LED turns on solid, remove pen from solution. Display will alternate between measurement and temperature readings.**
5. **Note readings for your records.**

MAINTENANCE

I. Battery Replacement

The PT1 display has a battery charge indicator that depicts the life left 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.



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.

II. Routine Maintenance

1. Always rinse the cell and electrodes with clean water after each use.
2. If the electrodes scale or become dirty, clean the cell by submerging the probe end in a 1:1 solution of Lime-A-Way® and water for 5 minutes. Then rinse thoroughly with clean water.
3. Do not drop, throw or otherwise strike the pen. This voids the warranty.
4. Do not store the pen in a location where the ambient temperatures exceed its specified Operating/Storage Temperature limits.

ACCESSORIES

STANDARD SOLUTIONS FOR CALIBRATION:
The ULTRAPEN™ PT1 uses the following solutions for wet calibration. Order MODEL#s: KCL-1800, 442-3000 (2027 ppm NaCl)

MYRON L WARRANTY

Excepting the battery, the Myron L PT1 Conductivity/TDS/Salinity Pen is warrantied to be free from manufacture defect for 1 year.

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