

ULTRAPEN™ PT1 Quick Start Guide

Conductivity / TDS / Salinity and Temperature Pen

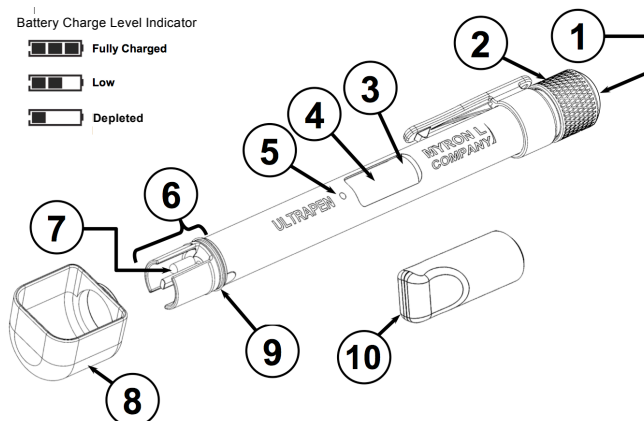
For a complete set of operating instructions, maintenance procedures, calibration procedures, and the **FACTORY CAL** reset procedure, download the full PT1 Operation Manual from www.myronl.com.

QUICK REFERENCE INSTRUCTIONS

1. Press and release Push Button to turn the PT1 ON.
 2. LED flashes rapidly: Dip pen in sample solution so cell is totally submerged.
 3. LED flashes slowly: Swirl pen in sample, keeping sensor submerged. Avoid contact with sides/bottom of container.
 4. LED turns Solid ON when Measurement is complete then pen turns OFF.
- NOTE:** After turning the PT1 ON, press and hold the push button to enter either the calibration or configuration mode.

FEATURES

1. **PUSH BUTTON** – Press to turn ON and select mode settings.
2. **BATTERY CAP** – Unscrew to access battery for replacement.
3. **BATTERY INDICATOR** – Indicates life remaining in battery.
4. **DISPLAY** – Displays measurements and menu options.
5. **LED INDICATOR LIGHT** – Tells the user when to dip & swirl PT1 during measurements and calibration.
6. **CONDUCTIVITY CELL** – Contains flux field in defined area for accurate measurements.
7. **ELECTRODES** – Measures electric current through test sample
8. **SCOOP** – Contains sample solution for measurement when sampling from a vertical stream. To use the scoop:
 - Slide the open end of the scoop over cell 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.
9. **CAP STOP** – **DO NOT** push the Protective Cap beyond the Cap Stop as cell damage will occur.
10. **PROTECTIVE CAP** – Protects cell when not in use.



PT1 DEFAULT SETTINGS

Temperature Units: °C (Temp. value alternates on Display with Conductivity/TDS/Salinity value) **Solution Mode: Conductivity – KCl**

NOTE: For detailed instructions on altering settings, download the full PT1 Operation Manual from the Myron L® Company website.

NOTE: Selecting “ESC” from any menu immediately turns the PT1 OFF without saving changes.

OPERATING INSTRUCTIONS

MEASUREMENT SETUP: Before you take a reading, make sure the pen is clean, calibrated, and in the desired measurement mode. The sample solution must also be within the specified measurement range.

I. SOLUTION MODE SELECTION: The following measurement modes are available on the PT1.

| MODE | PARAMETER | SOLUTION MODEL | UNITS | CALIBRATION SOLUTION |
|-------------|------------------------------|-------------------------------------|--------------------------|--|
| “Cond KCl” | Conductivity | potassium chloride | microSiemens (μS) | KCl: 1800 μS |
| “tdS 442” | Total Dissolved Solids (TDS) | 442™ Myron L Natural Water Standard | parts per million (ppm) | 442™: 3000 ppm |
| “tdS NaCl” | | sodium chloride | ppm | <i>Displays as 2027 ppm NaCl mode</i> |
| “SALt 442” | Salinity | 442™ Myron L Natural Water Standard | parts per thousand (ppt) | 442™: 3000 ppm |
| “SALt NaCl” | | sodium chloride | ppt | <i>Displays as 3.000 ppt; 2.027 ppt in NaCl mode</i> |

To change solution mode:

1. Push and release the Push Button to turn the PT1 ON.
2. Push and hold the Push Button to enter menu mode.
3. Release the Push Button while “SOL SEL” is displayed.
4. Push and hold the Push Button.
5. Release the Push Button when desired solution mode is displayed
6. “SAVEd” will display, then the PT1 will power OFF.

II. NORMAL OPERATION:

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.

NOTE: When testing a vertical stream of sample, use the scoop. Recalibrate the pen using the scoop to retain accuracy of ±1%.

1. Rinse the cell by swirling it in clean water (preferably DI, RO, or purified water).
2. Remove the PT1 from rinse and pat it dry with a clean cloth or tissue.
3. Press and release the push button to turn the PT1 ON.
4. Grasp the pen near the battery 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.
 - If possible, 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 values.

| LED SIGNAL | ACTION | DURATION |
|------------------------------|--|----------|
| Rapid Flashing | Dip pen in solution and swirl. | 6 sec |
| Slow Flashing | Measurement in process; continue to swirl. | 20 sec |
| Solid Light (Hold mode only) | Measurement is complete. Values are displayed until the PT1 turns OFF. | 4 sec |

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III. CALIBRATION

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

NOTE: When selecting a CAL mode, choosing “ESC” exits the calibration routine without changing the stored calibration constants.

- Rinse the PT1 cell in Myron L® Company calibration solution (see the *Solution Mode Selection* table in Section I for the appropriate type).
 - If possible do not use the same container of solution to perform the calibration that was used as a pre-calibration rinse.
- Press and release the push button to turn the PT1 ON.
- Push and Hold the button down.
- Release the button when “CAL” is displayed.
- Grasp the pen near the battery cap to avoid sample contamination.
- 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.
- While the LED flashes slowly, swirl the pen around to remove bubbles, keeping the cell submerged.
 - If possible, keep the pen at least 1 inch (2½ cm) away from sides/bottom of container.
- When the LED turns ON solid, remove the pen from solution.
 - The display will read “CAL SAVED” and the PT1 will turn OFF.

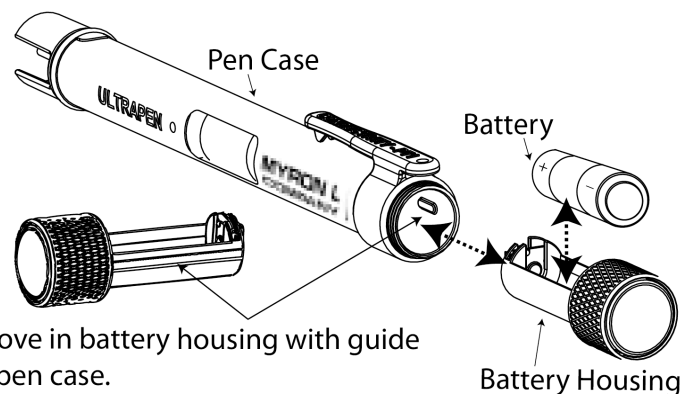
FACTORY CALIBRATION: Factory Calibration (FAC CAL) resets the PT1 to its factory settings. For instructions on how to perform a FAC CAL download the full PT1 Operation Manual from the Myron L® Company website.

MAINTENANCE

I. BATTERY REPLACEMENT

The PT1 display has an indicator that depicts the pen battery's charge level. When the charge level indicator only shows one bar, IMMEDIATELY replace the battery with a new N type battery.

- In a **CLEAN** and **DRY** environment, unscrew the battery cap in a counter-clockwise motion.
- Slide the cap 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 pen cap back on in a clockwise direction. Do not over tighten.



II. ROUTINE MAINTENANCE

- After each use, **ALWAYS** rinse the cell with clean water (preferably DI, RO, or purified water), then carefully blot the cell with a soft, clean cloth to remove any water drops.
- ALWAYS** replace the Protective Cap on the cell after each use. **DO NOT** push the cap past the Cap Stop.
- Do not drop, throw or otherwise strike the PT1. This voids the warranty.
- Do not store the PT1 in a location where the ambient temperatures exceed its specified Operating/Storage Temperature limits.

SPECIFICATIONS

| | | | |
|------------------------|---|---|--|
| Measurement Ranges | 1-9999 µS or ppm (0.0010-9.999 ppt salinity) Temp: 0-71°C / 32-160°F | Accuracy (after wet Cal) | ±1% of reading, Temp. Accuracy ±0.1°C |
| 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°C / F | Repeatability | <1000 µS or ppm ± 1 Count ≥1000 µS or ppm ± 0.3% of reading Temp: ±0.1°C / F |
| Operating/Storage Temp | 0-55°C / 32-131°F | Calibration Solutions | 1800 µS KCl; 3000 ppm 442™ (2027 ppm NaCl) |
| Temp Compensation | Automatic to 25°C | Time to Reading Stabilization | 10-20 seconds |
| Power Consumption | Active Mode: 30-100 mA, Sleep Mode: 2 µA | Battery Type | One N type, Alkaline, 1.5 V |
| Physical Dimensions | 17.15 cm L x 1.59 cm D / 6.75 in. L x .625 in. D Weight: 55 g / 1.94 oz. | Case Material | Anodized Aircraft Aluminum with Protective Coating |
| Enclosure Rating | IP67 and NEMA 6 | EN61236-1: 2006 -Annex A: 2008 Electrostatic discharge to case of instrument may cause the PT1 to power ON. In this case, the PT1 will power OFF after several seconds. | CE |

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