

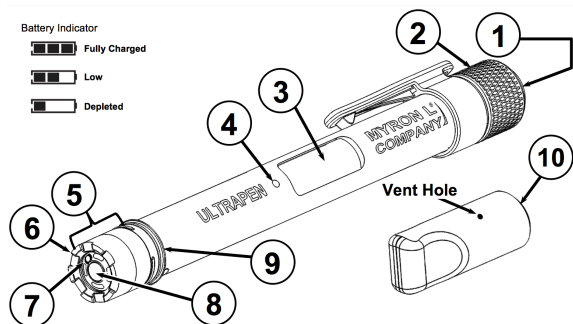
ULTRAPEN™ PT5 –Dissolved Oxygen (DO) and Temperature Pen

Quick Start Guide

QUICK REFERENCE INSTRUCTIONS

1. Push and release the push button to turn the PT5 ON.
2. While the LED flashes rapidly: Dip the pen in sample solution so the sensor is totally submerged.
3. While the LED flashes slowly: Swirl the pen in sample, keeping sensor submerged.
4. In HOLD mode – Real time readings are displayed until the LED turns solid ON. The display holds the final reading briefly then the PT5 turns OFF.
5. In LIVE Mode – The PT5 will display constant, real time measurements for up to 5 minutes then turn OFF.

For a complete set of operating instructions, maintenance procedures and calibration procedures (including Zero, Air, Water, and Temperature Controlled, Full calibration as well as FACTORY CAL reset) download the full PT5 Operation Manual from www.myronl.com.



FEATURES

1. **PUSH BUTTON**—Press to turn ON and select mode settings.
2. **BATTERY CAP**—Unscrew to access battery for replacement.
3. **DISPLAY**—Displays measurements, menu options, battery indicator, etc.
4. **LED INDICATOR LIGHT**—Tells the user when to dip & swirl the PT5 during measurements and calibrations.
5. **DO SENSOR**—Measures dissolved oxygen (DO) in a solution.
6. **MEMBRANE CAP**—Replaceable cap that contains the DO membrane.
7. **THERMISTOR**—Measures temperature of water sample.
8. **DO MEMBRANE**—Membrane is built into the membrane cap.
9. **CAP STOP**—Shows how far to push the cap when putting it on the PT5.
CAUTION: DO NOT push the hydration cap beyond the cap stop as sensor damage may occur.
10. **HYDRATION CAP** – Protects sensor and contains water vapor when performing **AIR** calibrations. To remove, twist the cap clockwise while pulling off. To replace, fill the cap with enough clean water (preferably DI, RO, or distilled water) to soak the sponge inside. Twist the cap clockwise while pushing on. Be careful, excess water may squirt out.

PT5 DEFAULT SETTINGS

Temperature Units: °C (*Temp. alternates on Display with DO value*)

DO Units: Display Alternates between “Conc ppm” and “Sat %”

Pen Mode: Hold

DO Altitude: 0 feet (Sea Level)

DO Salinity: 0ppt

CHANGING SETTINGS: For instructions on altering the above settings, download the full PT5 Operation Manual from www.myronl.com.

SETUP AND MEASUREMENT INSTRUCTIONS

NOTES: Selecting “ESC” from any menu immediately turns the PT5 OFF without saving changes. Minimize bubbles in the sensor electrolyte to improve accuracy.

I. SENSOR SETUP

1. Remove the membrane cap from the sensor body by turning it in a counter-clockwise direction.
2. Install the syringe tip on the syringe and fill the syringe with DO electrolyte solution.
3. Holding the PT5 vertically with the DO sensor at the top, insert the syringe tip into one of the four openings of the sensor body as far as it can go inside the electrolyte well and fill the sensor to the top with electrolyte.
• *Top off with more electrolyte after removing the syringe from the sensor body.*
4. Pour some electrolyte inside the membrane cap to minimize air bubbles that may occur when installing the cap.
5. Holding the filled PT5 in one hand and the filled membrane cap in your other hand, tilt the membrane cap and place it onto the sensor body.

6. Carefully turn the membrane cap clockwise until it tightens firmly to the sensor body. Some electrolyte may escape. **DO NOT** over tighten the cap.
7. Rinse any residual electrolyte from the outside of the sensor body with clean water (DI, RO or distilled).
8. Fill the hydration cap with enough clean water to soak the sponge inside (preferably DI, RO, or distilled water).
9. Push the hydration cap onto the DO Sensor while twisting it clockwise until it reaches the cap stop.
10. Let the sensor stabilize for 2-4 hours before using the PT5.

II. MEASUREMENT SETUP: Prior to performing a measurement:

1. Adjust the PT5 Altitude to match that of the measurement location.
2. Adjust the PT5 Salinity to match that of the measurement solution.
3. Perform a **ZERO** calibration followed by an **AIR** calibration.

III. ALTITUDE AND SALINITY ADJUSTMENT:

1. Press and release the push button to turn the PT5 ON.
2. Press and hold the push button to enter menu mode.
Altitude Adjustment: Altitude is set in 100-foot increments.
 - a. Release the push button while “ALT SEL” is displayed.
 - b. Press and release the push button repeatedly to slowly increase the altitude, or push and hold the push button to quickly scroll. The altitude selection will increase from -2000 to 15,000 feet, and then repeat.
- Salinity Adjustment:** Salinity is set in 1 ppt increments.
 - a. Release the push button while “SAL SEL” is displayed.
 - b. Press and release the push button repeatedly to slowly increase the salinity, or push and hold the push button to quickly scroll. The salinity will increase from 0 to 50 ppt, and then repeat.
3. Release the push button and wait for the display to show “SAVEd”. The new setting will be saved and the PT5 will turn OFF.

IV. ZERO CALIBRATION

1. Prepare the PT5 for calibration by dipping the sensor in clean water (preferably DI, RO, or purified water).
2. Carefully blot the sensor membrane with a soft, clean cloth or tissue to remove any water drops.
3. Pour the DO zero calibration solution, part # DOSOL, into a beaker or cup.
4. Completely submerge the sensor in zero calibration solution for 5 minutes.
5. Keeping the sensor submerged in the zero calibration solution, press and release the push button to turn the PT5 ON.
6. Press and hold the push button. Release the push button while “CAL” is displayed.
7. Press and hold the push button. The display will alternate between the following:
 - “0 CAL”, “Air CAL”, “H2O CAL”, “ESC”.
8. Release the push button when “0 CAL” is displayed.
9. The PT5 will perform the calibration, then display “SAVEd”, and turn OFF.
10. Verify the calibration by taking a measurement of the zero calibration solution.
 - *The result should be 0 ppm.*

V. AIR CALIBRATION:

1. Dip the DO sensor in clean water (preferably DI, RO, or distilled water).
2. Carefully blot the DO sensor membrane with a soft, clean cloth or tissue to remove any water drops.
3. Saturate the sponge of the hydration cap with clean water (preferably DI, RO, or distilled water).
4. Holding the PT5 vertically with the sensor side down, insert the sensor into the hydration cap just enough to create a good seal (about ½ way up the sensor body). **DO NOT** obstruct the vent hole in the hydration cap.
5. Push and release the push button to turn the PT5 ON.

Air Calibration Continued on Back

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V. AIR CALIBRATION (continued)

6. Push and hold the push button to enter menu mode.
7. Release the push button while "CAL" is displayed. The display will alternate between "CAL" and "PUSHnHLD".
8. Push and hold the button then release while "Air CAL" is displayed.
9. The PT5 will perform the calibration. When calibration is complete, the display will indicate "SAVED" then turn OFF.
10. To verify calibration follow steps 1 thru 5 above (taking a measurement) at 25 °C, the readings should be 104% ±2%.

NOTE: The PT5 **MUST** be recalibrated any time: the DO sensor is replaced; the DO membrane or the electrolyte is replaced, or; the Zinc electrode is cleaned

VI. DO Measurement

CAUTION: For best results when measuring solution at the extremes of the specified temperature or DO range **ALWAYS** perform a TEMPERATURE CONTROLLED, FULL CALIBRATION as described in the full PT5 Operation Manual. Allow the PT5 to equilibrate by submerging the sensor in the sample solution for 1 minute prior to taking a measurement.

- **ALWAYS** make sure that the DO Sensor is completely submerged in the solution being tested.
- If the expected measurement is < 3 ppm it is particularly important to perform the ZERO calibration described in the full PT5 Operation Manual.

1. Push and release the push button to turn the PT5 ON.
2. Dip PT5 sensor in solution to be tested and swirl.
3. Continue to swirl the PT5 in solution while measurement is taking place.

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

NOTE: You can turn OFF the unit at any time during live measurement with a simple press and release of the push button.

LED Signal	Action	Duration
Rapid Flashing	Dip pen in solution and swirl.	6 sec
Slow Flashing	Measurement in process; continue to swirl. In HOLD mode real-time readings are displayed until the LED is ON solid. In LIVE mode real-time readings are displayed until the PT5 turns OFF.	20 -120 sec in Hold mode Up to 5 min in LIVE mode
Solid Light (Hold mode only)	Measurement is complete. Values are displayed until the PT5 turns OFF.	6 sec

MAINTENANCE

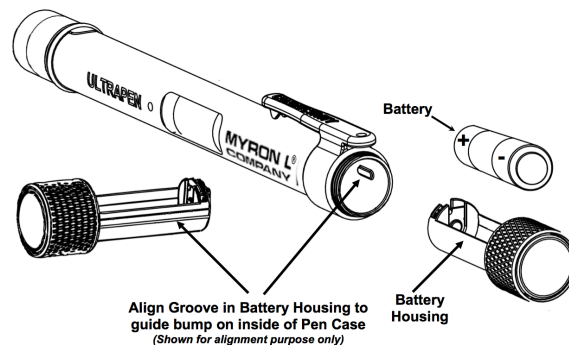
I. Routine Maintenance

1. After each use **ALWAYS** rinse the DO sensor with clean water (preferably DI, RO, or distilled water), then carefully blot the sensor membrane with a soft and clean cloth to remove any water drops.
2. **ALWAYS** replace the hydration cap on the DO sensor after each use.
3. To replace the membrane cap and/or refill electrolyte solution follow the SENSOR SETUP instructions.
4. Do not drop, throw or otherwise strike the PT5. This voids the warranty.
5. Do not store the PT5 in a location where the ambient temperatures exceed its specified Operating/Storage Temperature limits.

NOTE: For instructions on cleaning the DO sensor download the full PT5 Operation Manual from www.myronl.com.

II. Battery Replacement

1. In a **CLEAN DRY** place unscrew the battery cap in a counter-clockwise direction.
2. Slide the cap and battery housing out of the PT5.
3. Remove the depleted battery from 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 PT5 case and slide the battery housing back in.
6. Screw the battery cap back on in a clockwise direction. Do not over tighten.



SPECIFICATIONS

Measurement Ranges	DO Concentration: 0-20 ppm, DO Saturation 0-200% Temperature: 0°-71° C / 32-160° F	Accuracy ¹	Concentration: ±0.2ppm or ± 2% of the reading, whichever is greater. Saturation: 0.0% to ≤ 100.0%: ± 20 counts; >100%: ± 2% of the reading. Temperature: ± 0.1°C	
Time to Reading Stabilization	10 - 180 seconds		Resolution	DO Concentration: 0.01 ppm, DO Saturation 0.1% Temperature 0.1°C/F
Operating / Storage Temp	0-55°C / 32-131°F	Salinity Adjustment	0 - 50 ppt in increments of 1 ppt	
Altitude Adjustment	-2,000 ft. to 15,000 ft. in increments of 100 ft.	Battery Type	N type, Alkaline 1.5 V	
Power Consumption	Active Mode: 33 - 140 mA, Sleep Mode: 2 µA	Calibration Methods	1 or 2 Point; 0 ppm DO Calibration Solution; Air or Water	
Temp Compensation	Automatic Temperature Compensation for Membrane permeability	Case Material:	Anodized Aircraft Aluminum with Protective Coating	
Physical Dimensions / Weight	17.15 cm L x 1.59 cm D or 6.75 in. L x .625 in. D; Weight: 54g or 1.94oz	EN61236-1: 2006 -Annex A: 2008; 1999/5/EC Annex III: Electrostatic discharge to case of instrument may cause PT5 to spontaneously power ON. In this case, the PT5 will power OFF after several seconds.		
Water Resistance	IP67 and NEMA 6	CE		

¹ Accuracy after Temperature Controlled, Full Calibration. For this procedure and for more detailed accuracy specs download the full PT5 Operation Manual from www.myronl.com.

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