User Manual: oYo-Link® Photo-Crosslinking Device

AlphaThera LED PX3 UV Crosslinker



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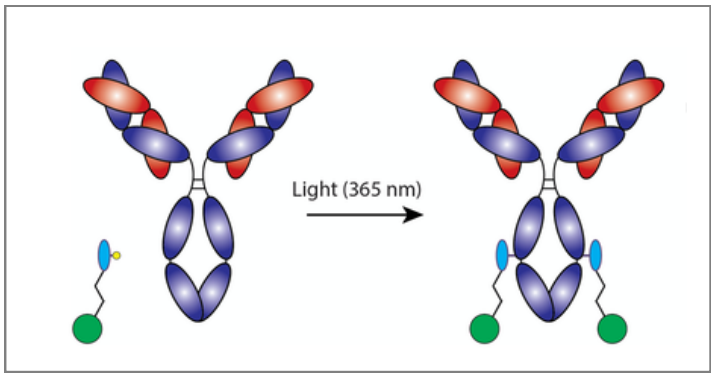
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Section 1: Introduction

The AlphaThera LED PX3 Device is a next-generation 365 nm LED UV crosslinker designed to enable efficient and site-specific labeling of antibodies with **oYo-Link® products**.



The LED PX3 uses non-damaging 365 nm blacklight and an advanced LED module to provide precise and uniform UV exposure without the use of mercury lamps. Compared with conventional bulb-based UV systems, the LED PX3 produces less heat while maintaining controlled irradiation performance.

Key features include:

- 365 nm LED UV illumination
- Uniform irradiation chamber
- Adjustable UV lamp intensity
- Adjustable exposure time
- Integrated safety interlock
- Automatic cooling fan
- Simple top-mounted control panel
- Compact laboratory footprint
- Mercury-free, maintenance-free LED module

The LED PX3 controls UV dosage through a combination of **exposure time** and **lamp intensity.**

Intended use:

The LED PX3 is intended for **in vitro laboratory research use only**.

The device is not intended for:

- Clinical diagnostic use
- Human diagnostic procedures
- Use with clinical samples
- Operation in moist or humid environments

Section 2: Safety Information

2.1 General Safety

- Read this user manual completely before installing or operating the LED PX3.
- Follow all safety instructions to reduce the risk of UV exposure, electrical hazards, overheating, or damage to the instrument.



WARNING: ULTRAVIOLET RADIATION

The LED PX3 produces high-intensity **365 nm ultraviolet radiation**. Direct UV exposure may cause injury to the eyes or skin.

- Never operate the device with the lid open.
- Do not attempt to bypass the safety interlock.
- Keep the lid fully closed during UV operation.
- Avoid direct exposure of the eyes or skin to UV radiation.
- Wear UV-blocking safety glasses and appropriate protective clothing during operation.



WARNING: HOT SURFACES

The internal chamber and LED array may become hot during extended operation. Allow the instrument to cool as needed before handling internal components or samples.



WARNING: ELECTRICAL SAFETY

Always disconnect the main power cord before cleaning the instrument or replacing the fuse.



NOTICE: VENTILATION

Do not block the instrument's ventilation openings. Adequate airflow is required for proper cooling.

2.2 LED Lamp Safety

The LED PX3 **does not** contain mercury lamps.
The integrated LED module is maintenance-free under normal operating conditions.

Section 3: Device Specifications

LED PX3 Cross-Linking Device Specifications

Device	LED PX3 Cross-Linking Device
Outside Dimensions	7 in × 5½ in × 6¼ in (L × W × H) Approximately 18 cm × 14 cm × 16 cm (L × W × H)
Adapter Input	100-240 V AC, 50/60 Hz, 1.0 A
Adapter Output / Fuse Specification	36 W, 12 V, 3 A
Light Source	365 nm LED panel
LED Lamp	UV LED LAMP 3W × 4
Device Power	18 W, 12 V DC, 1.5 A
Timer Range	0–120 minutes
Timer Adjustment	5-minute increments
Recommended Exposure Time	120 minutes (2 hours) for maximum conjugation efficiency
Lamp Intensity Range	0–100%
Intensity Adjustment	5% increments
Recommended Lamp Intensity	75%
Target UV Intensity at Recommended Setting	Approximately 4,300-4,600 µW/cm²
Cooling Fan	Yes
Operating Environment	Laboratory use; avoid moist or humid environments

Section 4: Device Components and Controls

4.1 Front and Top Controls

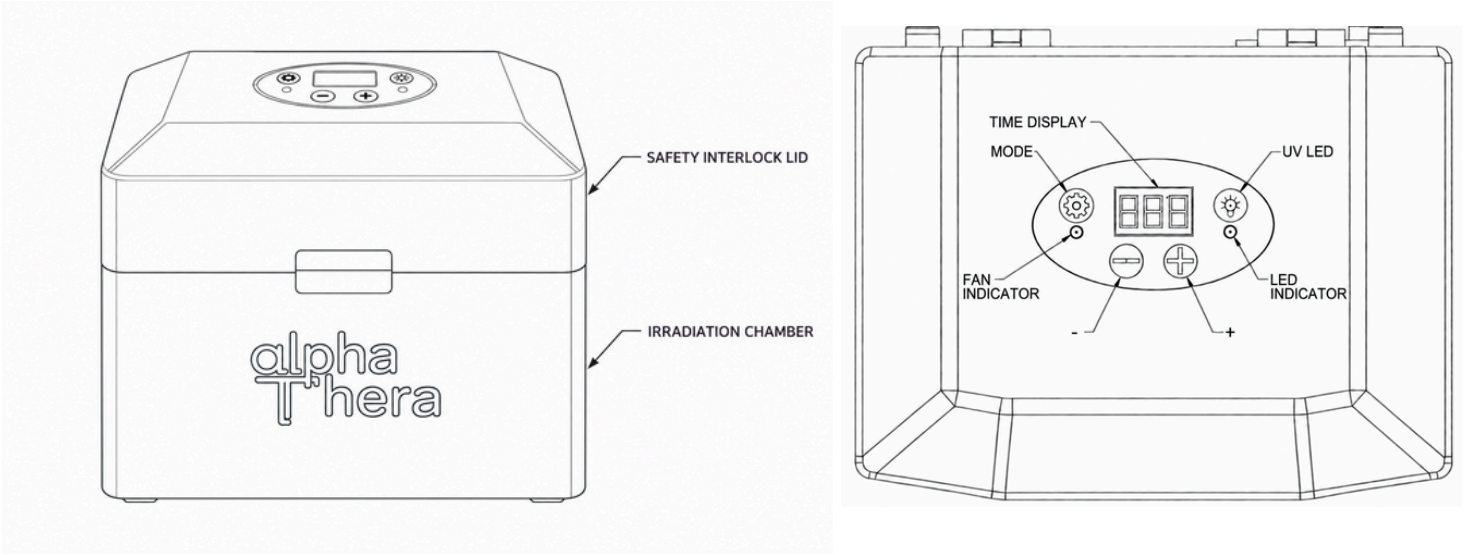


Figure 1. Front / Top View of LED PX3 Device

Mode Button: Gear Symbol

The **Mode** button switches the control panel between three operating modes:

1. **UV Intensity Measurement**
2. **Lamp Intensity**
3. **Timer**

The active mode is shown on the display.

UV LED Button: Light Bulb Symbol

The **UV LED** button is used to:

- Start UV exposure
- Pause UV exposure
- Resume UV exposure
- Stop and reset an exposure cycle

Adjustment Buttons — "+" and "–"

The + and – buttons perform different functions depending on the selected mode.

They can be used to:

- Switch the UV intensity display between **µW/cm²** and **mW/cm²**
- Adjust lamp intensity from **0% to 100%**
- Adjust exposure time from **0 to 120 minutes**

Safety Interlock Lid

The lid contains an integrated safety interlock.

Opening the lid automatically disables UV output to prevent accidental exposure.

4.2 Rear Controls

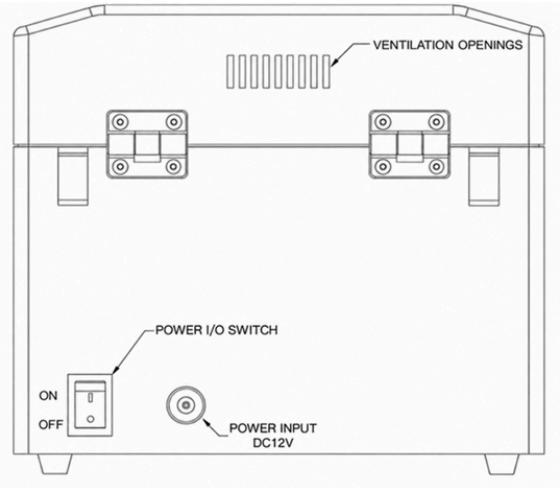


Figure 2. Rear view of LED PX3 device

Rear Power I/O Switch
The rear power switch controls main instrument power.
I = ON
O = OFF

Section 5: Device Operation

5.1 Before You Begin

Before operating the LED PX3:

1. Place the instrument on a stable laboratory surface.
2. Ensure the ventilation openings are unobstructed.
3. Confirm that the instrument and power adapter are dry.
4. Confirm that the lid closes completely.
5. Place the sample inside the irradiation chamber as required for the applicable experimental procedure.
6. Close the lid before beginning UV exposure.

NOTE
It is recommended to place the sample on ice. Add ice to the acrylic sample container until 2/3 full. Do not overfill with ice. Place your sample tube on its side, on top of the ice and not buried so that the light may penetrate the tube.

It is normal for some of the ice to melt after 2 hours of UV illumination.
Optional: To minimize ice melting, we recommend either using crushed ice, or placing the device containing the ice in a 4°C refrigerator during the illumination period.

5.2. Power On the Instrument

1. Connect the LED PX3 to the supplied power adapter.
2. Plug the adapter into a grounded AC electrical outlet.
3. Move the rear Power I/O switch to the I (ON) position.
4. Confirm that the control panel illuminates.
5. The LED PX3 will enter standby mode and is ready for setup.

5.3. Set the Exposure Time

1. Press the **Mode** button repeatedly until the display shows **TIME.**
2. Use the **+** and **–** buttons to select the desired exposure duration.
3. Exposure time can be adjusted in **5-minute increments**, from **0 to 120 minutes**.
4. Confirm the selected exposure time before starting the UV cycle.

Recommended Setting:

For maximum conjugation efficiency:

Exposure Time: 120 minutes (2 hours)

5.4 Set the Lamp Intensity

1. Press the **Mode** button repeatedly until the display shows **LAMP**.
2. Use the + and – buttons to select the desired lamp intensity.
3. Lamp intensity can be adjusted in **5% increments**, from **0% to 100%**.
4. Confirm the selected intensity before beginning UV exposure.

Recommended Setting:

Lamp Intensity: 75%

At this setting, the UV intensity should be approximately:

4,300-4,600 µW/cm²

5.5 Start UV Exposure

Before starting the exposure cycle, confirm that:

- The exposure time has been set.
- The lamp intensity has been set.
- The sample is correctly positioned.
- The lid is completely closed.

To begin:

1. Press the **UV LED button** once.
2. The UV LEDs will illuminate.
3. The LED operating indicator will turn on.
4. The timer will begin counting down.
5. The cooling fan will activate automatically.
6. When the instrument is in **TIME** mode, the display will show the remaining exposure time.

WARNING
Do not open the lid or attempt to bypass the safety interlock while UV exposure is active.

6. Adjustments During Operation

6.1 Adjust the Remaining Exposure Time

The remaining exposure time can be modified while the UV LEDs are operating.

1. Select **TIME** mode using the Mode button.
2. Press + to increase the remaining exposure time.
3. Press – to decrease the remaining exposure time.

The minimum setting is 0 minutes.
When the timer reaches 0, the UV LEDs will turn off.

6.2 Adjust Lamp Intensity

Lamp intensity can also be adjusted while the UV LEDs are operating.

1. Select **LAMP** mode using the Mode button.
2. Press **+** to increase lamp intensity.
3. Press **–** to decrease lamp intensity.

The available range is **0% to 100%.**

7. Pausing, Resuming, and Resetting an Exposure

7.1 Adjust Lamp Intensity

To temporarily pause an exposure:

- Press the **UV LED** button once while the device is operating.
- The UV LEDs will turn off.
- The countdown timer will stop at the current remaining time.

While the instrument is paused, the remaining exposure time can be adjusted using the **+** and **–** buttons.

7.2 Resume UV Exposure

To resume a paused exposure:

- Confirm that the lid is fully closed.
- Press the **UV LED** button again.

The UV LEDs will turn on and the timer will continue counting down from the paused time.

7.3 Stop and Reset an Exposure

To stop the current exposure and reset the timer:

1. Press and hold the **UV LED button for approximately 3 seconds.**
2. UV output will stop.
3. The timer will reset to the originally programmed exposure time.
4. The device will return to standby mode.

8. Safety Interlock Operation

The LED PX3 is equipped with an automatic lid safety interlock designed to prevent accidental UV exposure.

8.1 Opening the Lid During Operation

If the lid is opened while UV exposure is active:

- UV output will immediately stop.
- The countdown timer will pause.
- The instrument will enter a safe operating state.

After the lid is securely closed, operation may be continued according to the instrument controls.

IMPORTANT
Never disable, modify, or bypass the safety interlock. The interlock is an essential operator-safety feature.

9. End of Exposure Cycle

When the programmed exposure time reaches zero:

- The UV LEDs will turn off automatically.
- The instrument will return to standby mode.
- The cooling fan will continue operating for approximately **10 seconds**.
- The fan will then shut off automatically.

The sample may then be removed according to the applicable laboratory procedure.

10. Powering Off the Instrument

If the LED PX3 will not be used again immediately:

1. Confirm that UV exposure has ended.
2. Allow the cooling fan to complete its automatic post-exposure cycle.
3. Move the rear **Power I/O switch** to **O (OFF)**.

If the instrument will be cleaned, serviced, or stored, disconnect the power adapter from the electrical outlet.

11. Cleaning and Routine Care

Before cleaning the LED PX3:

1. Turn the rear power switch to **O (OFF)**.
2. Disconnect the main power cord.
3. Confirm that the UV LEDs are off.
4. Allow the instrument to cool if it has recently completed an extended exposure cycle.

The LED module does not contain mercury lamps and is designed to be maintenance-free under normal operation.

Keep all ventilation openings clear of obstructions.

Do not operate or clean the instrument in excessively moist or humid conditions.

12. Recommended Standard Operating Settings

For typical oYo-Link® antibody conjugation using the LED PX3:

Parameter	Recommended Setting
Exposure Time	120 minutes
Lamp Intensity	75%
Expected UV Intensity	Approximately 4,300-4,600 µW/cm²
Wavelength	365 nm

These values represent the recommended LED PX3 operating settings described in this manual. Experimental requirements may vary depending on the applicable AlphaThera protocol.

13. Quick Start Guide

For trained users already familiar with the safety requirements:

- Connect the LED PX3 to the supplied power adapter.
- Turn the rear power switch to **I (ON)**.
- Place the sample in the irradiation chamber.
- Close the lid completely.
- Select **TIME** mode.
- Set exposure time to **120 minutes**, or the time required by the applicable protocol.
- Select **LAMP** mode.
- Set lamp intensity to **75%**, or the intensity required by the applicable protocol.
- Press the **UV LED button** to begin exposure.
- Allow the exposure cycle to complete.
- Wait for the post-exposure fan cycle to finish.
- Remove the sample.
- Turn the rear power switch to **O (OFF)** when finished.

SAFETY REMINDER

Never operate the LED PX3 with the lid open and never bypass the safety interlock.

Click here or scan below to watch the How To Video:

Document Information

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Document: User Manual

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Manufacturer / Company: AlphaThera

Application: oYo-Link® antibody labeling

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