

# **PPM330-220**

## UVC LED Purple Planet Mods

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### PRELIMINARY SPECIFICATIONS

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## 1. Description

- The Elphoton UV sterilization Lamp.
- The PPM330-220 is a compact high-performance UVC LED sterilization lamp designed for surface, air, and small-space disinfection where space efficiency is critical.
- It features an integrated Driver-on-Board (DOB) architecture that accepts AC220V input and internally regulates a 12V DC supply to drive the LED array, ensuring reliable optical output and fast startup performance.

## ◆ Features

- Built-in AC-to-DC driver circuit (DOB) supplying regulated 12V DC to the LEDs.
- Instant-on capability with nanosecond-level startup and no delay.
- Dual-wavelength LED array: 10 high-intensity UVC LEDs (270–280 nm) and 3 UVA LEDs to broaden the germicidal spectrum.
- Robust thermal design using a  $328 \times 20$  mm aluminum-core PCB for effective heat dissipation.
- Aerospace-grade anodized aluminum housing and quartz glass cover for maximum UV transmission and mechanical durability.

## ◆ Application

- Sterilization of surfaces, equipment housings, and air enclosures.
- Integration into compact disinfection chambers or HVAC duct systems.
- Point-of-use water treatment modules requiring targeted UV sterilization.

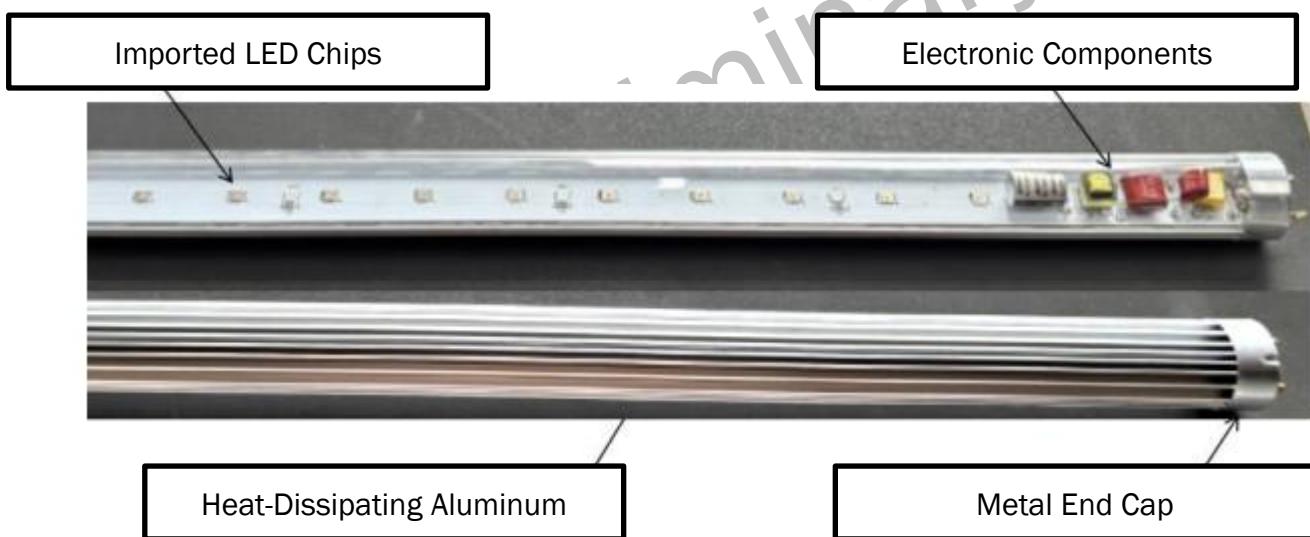
## 2. Product information

- Lamp type
  - ✓ UVC LED double-ended tube lamp (T8 form factor)
- Lamp size:
  - ✓ Diameter × Length = 25 mm × 330 mm (excluding pins)
  - ✓ Overall length including pins: 363 mm
- Lamp Material:
  - ✓ Housing: Aluminum alloy (aviation-grade)
  - ✓ Cover: Quartz glass
- PCB Specification
  - ✓ Dimensions: 328 mm × 20 mm × 1.2 mm
  - ✓ Material: Single-sided aluminum-based PCB
- LED Configuration
  - ✓ 10 × 3535 UVC LEDs (270–280 nm), connected in series
  - ✓ 3 × 2835 UVA LEDs (typ. 365–400 nm), connected in series
  - ✓ Other components: Constant-voltage IC, resistors, capacitors, Zener diodes
- Drive Mode
  - ✓ AC220V input with internal constant-voltage DC12V LED drive

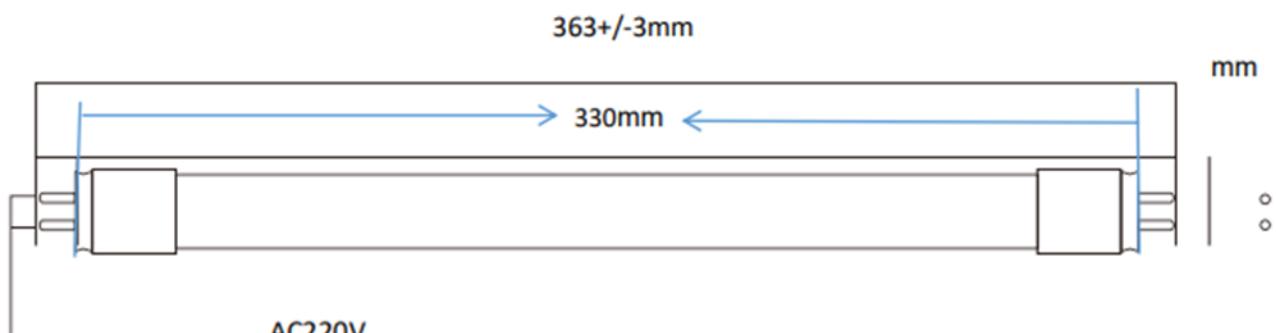
### 3. Outline Dimensions and Physical Structure

Item	Value	Conditions / Note
Lamp Body Length	330 mm	Excluding pins
Overall Length	$363 \pm 3$ mm	Including pins
Outer Diameter	25 mm	Quartz tube
PCB Dimensions	$328 \times 20 \times 1.2$ mm	Aluminum-core PCB

#### ◆ Actual Product Images

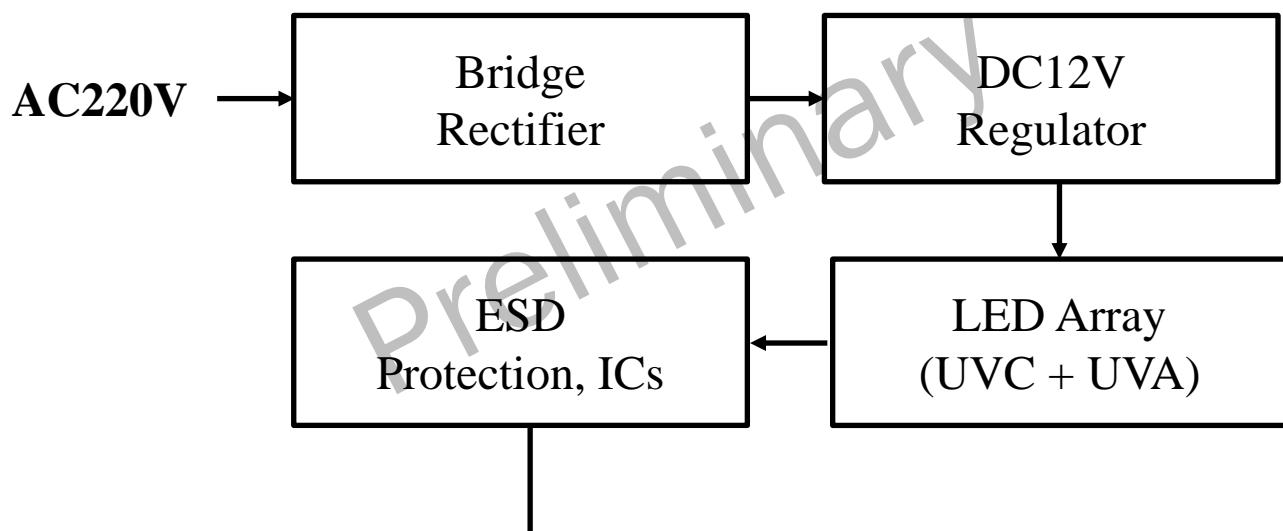


#### ◆ Outline Dimensions & Lighting Configuration



## 4. Internal Drive Architecture Overview

- The PPM330-220 utilizes a built-in high-voltage AC-to-DC converter based on bridge rectification and MT7714 controller IC.
- The regulated output (DC12V) drives a series-connected array of 3535 UVC LEDs and 2835 UVA LEDs.
- The driver includes ESD protection, current regulation, and EMI filtering components to ensure stable optical performance and safe operation.



*This diagram illustrates the internal power architecture of the PPM330-220 lamp. AC220V input is rectified and regulated through an onboard driver circuit to supply constant-voltage DC power to the LED array, which includes both UVC and UVA emitters.*

## 5. Electro Optical Characteristics

Item	Value	Conditions / Note
Rated Input Voltage	AC220	Fixed input voltage
UVC Radiant Flux ( $\Phi_e$ )	470 - 530 mW	Measured under rated AC220V operation
Peak Wavelength (UVC, WLP1)	270 - 280nm	Measured under rated AC220V operation
Peak Wavelength (UVA, WLP2)	365 - 400nm ( <i>typical</i> )	Based on standard 2835 UVA LED type used

- The product operates with AC220V input.
- The internal LED array is driven by a constant-voltage DC12V circuit, but all optical characteristics were measured under full product operation at AC220V.

## 6. Sterilization Performance

- E. coli inactivation.
  - ✓  $\geq 99.99\%$  reduction after 8-minute exposure at 30 cm distance
- Natural microbial inhibition.
  - ✓ Microbial colony count maintained below 50 cfu/mL over 200 hours with 8 min/hour exposure at 30 cm

## 7. Reliability & Environmental Conditions

Item	Value	Conditions / Note
LED Lifetime (L70)	$\geq 10,000$ hours	At rated AC220V
Operating Temperature	-30°C to +60°C	Ambient
Storage Temperature	-30°C to +60°C	Non-operating

### Note

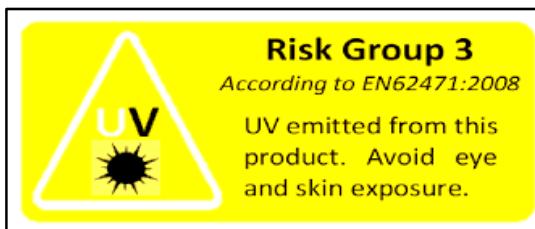
- \* UVA wavelength not officially specified.
  - Typical range (365–400 nm) is based on standard 2835 UVA LED characteristics.

## 8. Handling Precautions

- Do not subject the lamp to impact, vibration, or excessive pressure. The quartz structure is fragile.
- Power is supplied internally via regulated DC12V. Observe polarity when connecting directly to driver terminals.
- Avoid continuous operation in sealed, high-temperature environments.
- The product is ESD-sensitive. Proper grounding and anti-static measures are required during handling and installation.
- Keep the quartz surface clean. Organic residues may absorb UVC and significantly degrade performance. Use IPA or alcohol-based agents for cleaning.
- Do not expose the lamp to high humidity or direct moisture. Apply waterproof sealing where necessary.

## 9. Safety Warning

- This product emits deep ultraviolet (UVC) radiation when powered on.
- Direct exposure to UVC light can cause serious injury to skin and eyes.
- Do not look directly at the light source under any circumstances.
- Ensure that appropriate shielding, interlocks, or protective measures are applied during operation.
- UVC radiation is invisible. Do not assume the lamp is safe when it appears off.
- Keep the product away from children or unauthorized personnel during use.



## 10. Revision Sheet