PPM330-12-24

UVC LED Purple Planet Mods

PRELIMINARY SPECIFICATIONS

Elphoton

INNOVATE HUMAN LIFE

CONTENTS

1. Description

- The Elphoton UV sterilization Lamp.
- The PPM330-12-24 is a compact, high-performance UVC LED sterilization lamp designed for surface, air, and point-of-use disinfection applications..
- It operates with an external constant-voltage DC12–24V power source and provides stable UV output through an optimized LED configuration, featuring both UVC and UVA emitters.

◆ Features

- External constant-voltage DC input (12–24V) with wide compatibility for low-voltage systems.
- Dual-wavelength LED array:
  - ✓ 10 × 3535 UVC LEDs (270–280 nm)
  - ✓ 3 × 2835 UVA LEDs (typ. 365–400 nm)
- Optimized current balancing circuit ensuring uniform illumination and extended LED lifetime.
- Aluminum-core PCB (328×20 mm) for efficient heat dissipation.
- Quartz glass cover and anodized aluminum housing for UV transparency and mechanical durability.

◆ Application

- Disinfection of instrument panels, surfaces, and confined spaces.
- Integration into mobile or battery-powered sterilization units.
- Compact UV disinfection modules for embedded system use.

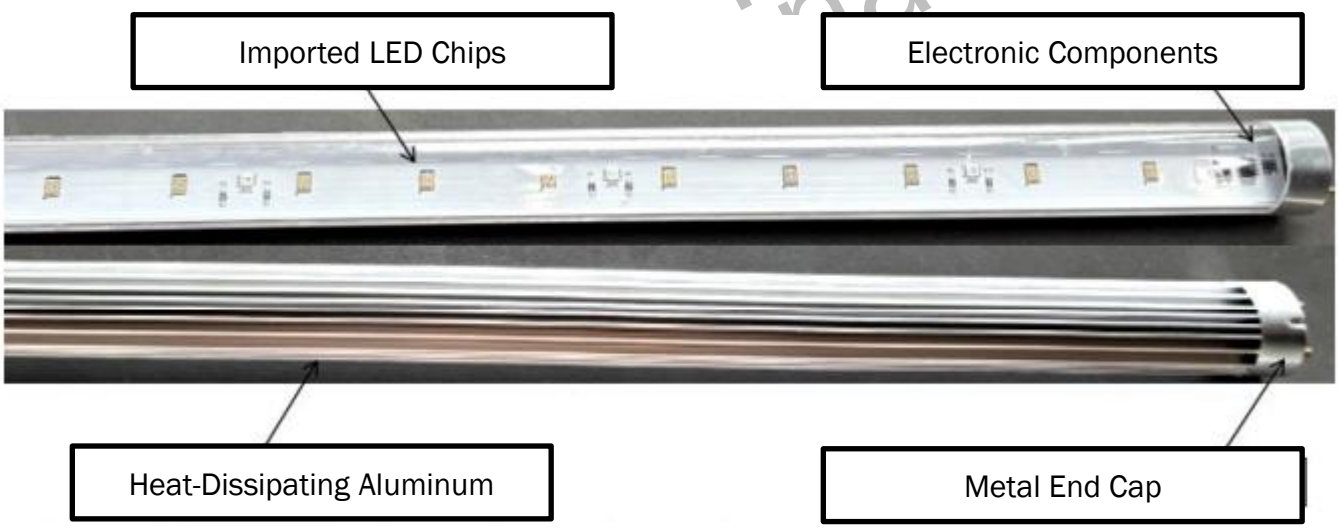
2. Product information

- 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
    - → Configured as 5 parallel strings of 2 series-connected LEDs (2S5P)
  - ✓ 3 × 2835 UVA LEDs (typ. 365–400 nm), connected in series
    - → Configured as a single string of 3 in series
  - ✓ Other components: Passive current balancing elements (resistors, Zeners, capacitors)
- Drive Mode
  - ✓ External constant-voltage DC12–24V input
  - ✓ This model does not include an internal AC–DC converter

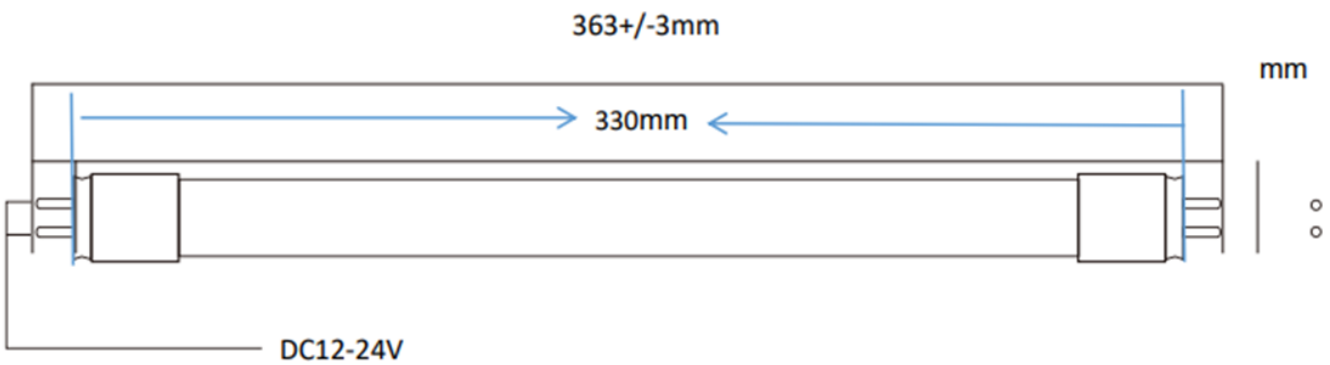
3. Outline Dimensions and Physical Structure

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

◆ Actual Product Images

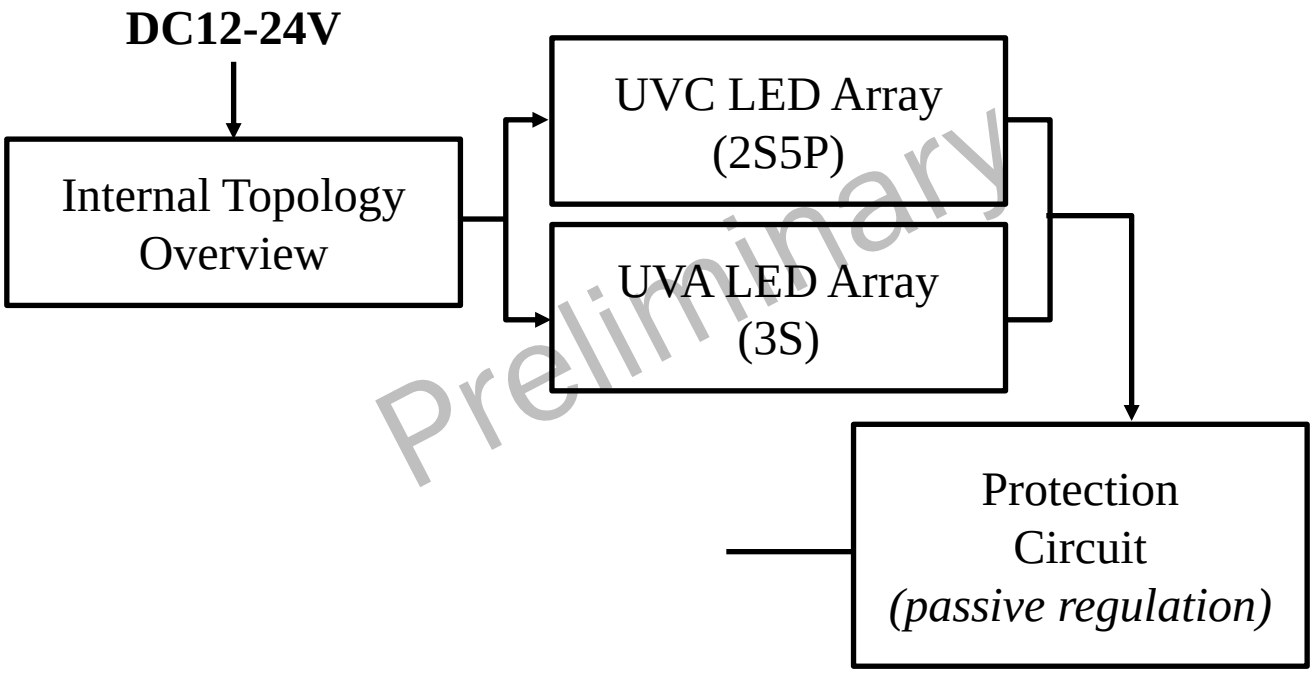


◆ Outline Dimensions & Lighting Configuration



4. Internal Drive Architecture Overview

- The PPM330-12-24 model operates with an external constant-voltage DC12–24V input.
- It employs a passive protection and regulation circuit with a direct parallel LED configuration:
  - ✓ UVC LED Array (5 parallel strings of 2 series)
  - ✓ UVA LED Array (a single string of 3 in series)
- This architecture ensures safe operation, basic surge suppression, and balanced optical output.



Functional diagram for conceptual reference. LED strings are independently regulated with passive components.

5. Electro Optical Characteristics

Item	Value	Conditions / Note
Rated Input Voltage	DC12 – 24V	Constant-voltage input from external power supply
UVC Radiant Flux (Φe)	470 - 530 mW	Measured at 12V, 25°C ambient
Peak Wavelength (UVC, WLP1)	270 - 280nm	Measured at 12V, 25°C ambient
Peak Wavelength (UVA, WLP2)	365 - 400nm *(typical)*	Based on standard 2835 UVA LED type used

- The product operates with an external DC12–24V constant-voltage source.
- All optical values are measured under standard 12V input and ambient lab conditions.

6. Sterilization Performance

- E. coli inactivation.
  - ✓ ≥ 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)	≥ 10,000 hours	Under rated DC operation
Operating Temperature	–30°C to +60°C	Ambient
Storage Temperature	–30°C to +60°C	Non-operating

Note

* UVA wavelength not officially specified.

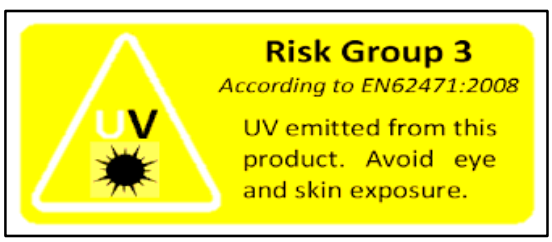
- Typical range (365–400 nm) is based on standard 2835 UVA LED characteristics.

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 DC12–24V. 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

Revision	Date	Page	Description	Remark
Rev.1.0	25.07.25	-	Preliminary edition	