

verifiedUV™ Version 2 365nm UV Strip Reels

Integration & Do-It-Yourself Fabrication Guide

Thank you for purchasing **verifiedUV™ Version 2 365nm UV strips** for your exposure project. This guide outlines the essential performance standards, power architecture, and assembly best practices to help you build an institutional-grade exposure system.

Key Highlights

- **Engineered Specifically for Alternative Process Photography:** Optimal for Platinum/Palladium, Cyanotype, Gum Dichromate, Salt Prints, Carbon, Gold, and Photopolymer relief/intaglio plates.
- **Maximum Irradiance:** Delivers higher 365nm photon density than competing products while maintaining exceptional energy efficiency.
- **Superior Cost-to-Irradiance Ratio:** Unmatched performance per dollar compared to traditional metal halide or standard UV LED options.
- **Industrial Durability:** Emitters rated for a 50,000-hour operational lifespan.
- **Exclusive Pedigree:** Designed by Cone Editions Press and distributed exclusively by Vermont PhotoInkjet / InkjetMall.

The Technology Behind verifiedUV™ Version 2

Choosing verifiedUV™ Version 2 as your light source ensures maximum exposure speed, edge acuity, repeatability, and reliability.

Our breakthrough with verifiedUV™ Version 2 lies in pairing an industrial-strength 365nm semiconductor die with an unthrottled, optimized electrical pathway on a custom flexible PCB strip. By eliminating wasteful radiation above and below 365nm, 100% of the electrical energy is focused strictly into the narrow band required by UV-sensitive emulsions.

Unlike consumer-grade "blacklight" strips or fluorescent tubes, verifiedUV™ produces virtually no visible pale-blue or purple waste light. The result is pure, high-potency UV irradiation tuned precisely to 365nm.

Grid Spacing & Exposure Matrix

The 120-degree dispersion angle of our emitters allows flexibility when laying out your panel. You can space strips tightly for maximum speed or widen the spacing to cover a larger bed at a lower reel cost.

When mounting strips at a target height of **4 to 6 inches** above the exposure bed, there are **no light patterning issues** across any of these configurations:

- **Max Density (3mm Spacing):** Placing strips virtually edge-to-edge (the minimum clearance needed for our heavy-duty strip connectors) yields a blistering platinum print exposure time of approximately **60 seconds**.
- **11mm Spacing:** Produces a platinum print exposure time of approximately **100 seconds**.
- **22mm Spacing:** Produces a platinum print exposure time of approximately **2.5 minutes**.
- **33mm Spacing:** Produces a platinum print exposure time of approximately **4 minutes**.

Note: As strip spacing increases, irradiance hitting the media decreases proportionately, extending required exposure times. For large heads or exposure runs exceeding 4 minutes, active chassis cooling fans are recommended.



Visual Comparison of Grid Configurations: Max density 3mm spacing (left), 11mm spacing (center), and 22mm spacing (right). Wider spacing reduces total reel count while maintaining edge-to-edge exposure uniformity.

Understanding Optical Phenomena & Visual Safety

Because pure 365nm radiation is invisible to the human eye, these LEDs can appear deceptive in brightness. However, the output is extremely intense. When operating your array, you will observe two natural physical reactions called **photoluminescence**:

1. **Internal Yellow/White Package Glow:** Each LED package contains microscopic protective Zener components alongside the UV chip. The invisible 365nm light is so powerful that it physically illuminates these internal safety components, causing a subtle yellow or pale-white glow. You are seeing the actual anatomy of the LED package reacting to its own power.
2. **The Eye-Haze Effect:** When pure 365nm energy hits the organic proteins inside the human eye's natural lens, the eye physically filters it to protect your retina, creating a faint blue-white haze in your vision.

Safety Requirement: Never look directly into illuminated LEDs. Always operate your exposure system inside a light-tight enclosure, or wear **clear polycarbonate UV safety glasses (ANSI Z87.1)**. Polycarbonate naturally blocks 99.9% of UV radiation, instantly eliminating the visual blue haze and protecting your eyes completely.

Fabrication & Assembly Standards

1. Thermal Management & Mounting

To ensure maximum emitter longevity and output stability, mount the strips directly to a solid sheet of **1/8" (0.125") raw aluminum**. The aluminum acts as an enormous heat sink to pull thermal energy away from the PCB.

- Clean the aluminum surface with isopropyl alcohol before applying the adhesive backing.
- For exposure heads larger than 20"x24" or exposure runs exceeding 4 minutes, active cooling fans are recommended.

2. Initial Thermal Stabilization (10-Minute Burn-In)

Newly installed LED arrays require an initial **10-minute break-in cycle** under load. As the internal silicone encapsulation and protective submount elements reach steady-state operating temperature for the first time, photoluminescent characteristics settle, and visual emitter appearance stabilizes into a uniform state. Always run new panels for 10 minutes prior to fine-tuning exposure calibrations.

3. Power Architecture & Voltage Tuning

- **Power Draw:** Version 2 architecture draws up to **14.5W – 15W per meter (~1.25A per meter at 12.0V)** under full thermal steady-state load.
- **Power Supply Sizing (The 80% Rule):** Size your 12V DC power supply so total load does not exceed 80% of its rated capacity (e.g., use a minimum 100W supply for 1 reel / 75W load, or a 200W/350W supply for 2 reels / 150W load).
- **Parallel Bus Wiring:** Always wire strips in **parallel**, never in continuous series. Wiring in series causes heavy voltage drop, resulting in uneven light output across the array.
- **Studio-Standard Layout:** For maximum irradiance ($\mu\text{W}/\text{cm}^2$), run heavy-duty **12 AWG copper wire** from a multi-bank industrial power supply (such as the Mean Well LRS-350-12) to terminal distribution blocks inside the head, dividing the array into three parallel bank groups. Adjust the power supply trim to deliver a true, regulated **12.0V under full load**.

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