

KESSIL PROFESSIONAL SPECIFICATION SHEET

W2KBD

Full-spectrum LED (Light Emitting Diode) Product

1.01 GENERAL

- A. The fixture shall be a Kessil W2KBD manufactured by DiCon Fiberoptics Inc.
 - 1. Kessil, a DiCon Fiberoptics Inc. brand, shall provide all LED fixtures to ensure color consistency.
 - 2. The fixture shall be a high-intensity LED illuminator utilizing a Dense Matrix 3D LED Array System comprised of at least 6 different LED chip colors
- B. Each LED fixture shall be tested and optimized for photometric performance.

1.02 PHYSICAL

- A. The dimensions of the fixture shall be 9.6" L x 13.2" W x 14.0" H (24.3 x 33.6 x 35.5cm) and weigh approximately 9.3 lbs (4.2 kg). The following shall be provided:
 - a. Kessil W2KBD fixture, consisting of
 - 1. W2KBD Head Unit
 - 2. 720W (AMZ) / 800W (TLB), 100-240 V or 100-277 V, Clamp Mount PSU
- B. The housing shall have a black or white finish.
- C. The housing material shall be PC (polycarbonate) + ABS (acrylonitrile-butadiene-styrene).
- D. Mounting Type shall have a Clamp or PVT Adapter selection.
- E. Cooling and electronic control systems shall be fully integrated within the fixture housing.

1.03 ENVIRONMENTAL AND AGENCY COMPLIANCE

- A. Compliance shall be verified through ETL testing and certification; the fixture shall bear both ETLus and cETL markings.
- B. The fixture shall comply with FCC 47 CFR Part 15 Subpart B requirements, as verified by ANSI C63.4 testing.
- C. The fixture shall carry the CE mark and comply with RoHS (Restriction of Hazardous Substances) and TAA (Trade Agreements Act) regulations.
- D. The fixture shall be rated for IP-25 and must sustain operation at full intensity while being actively sprayed with light water.

1.04 THERMAL

- A. Product heat management shall be achieved through forced-air cooling.

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- B. The cooling fans shall be rated for a minimum operational lifespan of 50,000 hours.
- C. The fixture shall utilize advanced thermal management systems to maintain LED life to an average of 70% LED intensity after 50,000 hours of cumulative use.
- D. The fixture shall operate in an ambient temperature range of 32°F (0°C) minimum to 104°F (40°C) maximum.

1.05 ELECTRICAL

- A. The fixture shall have an auto-ranging 100 V to 240 V or 100 V to 277 V, 50/60 Hz power supply unit.
- B. The fixture shall have a maximum draw of 720W (AMZ) / 800W (TLB).
- C. AC input Voltage shall be 100-277V, 60Hz
- D. The fixture requires power from a non-dimming source.
- E. Products shall have dynamic thermal monitoring at multiple locations in the LED array, control board, and other electronics to prevent thermal shift of color or intensity.
- F. Product power input shall have current-limiting fuse protection.
- G. The power supply shall have power factor correction.

1.06 OPTICAL DATA

- A. The fixture shall contain a patented Dense Matrix LED Light Source manufactured by DiCon Fiberoptics, Inc.
 - 1. The fixture shall have a 50-degree native beam angle, with a barndoor to control light spill.
- B. DiCon Fiberoptics, Inc. shall utilize an advanced production LED binning process to maintain color consistency.
- C. All LED fixtures (100% of each lot) shall undergo a minimum three-hour burn-in test during manufacturing.
- D. The LED system shall comply with all relevant patents.

1.07 SPECTRUM

- A. Photosynthetically Active Radiation (PAR)
 - a. The fixture shall deliver full-spectrum light with spectral peaks aligned with chlorophyll A and B absorption maxima (425 nm, 455 nm, 640 nm, and 660 nm), critical for efficient photosynthesis.
 - b. The fixture will output a spectrum low in green light (no more than 32% of the total PPFD output shall fall in the 500-600nm range when set at 4000K, and no more than 36% at 6500K), as plants utilize green light less efficiently.
- B. AMZ (Amazon Sun)
 - a. Fixture shall have a tunable CCT between 4000K-6500K.
 - b. Adjusting the CCT shall maintain the spectral peaks for chlorophyll A and B.

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C. TLB (Tuna Light Blue)

- a. Fixture shall have a tunable CCT between 8000K and 14000K.
- b. Adjusting the CCT shall maintain the spectral peaks for chlorophyll A and C.
- c. Fixture shall have spectral peaks at 425 nm and 455 nm to support zooxanthellae photosynthesis and coral fluorescence.
- d. Fixture shall have a broadband blue spectrum with no spectral gaps between 390nm and 500nm.

1.08 INTENSITY MEASUREMENTS

A. The fixture shall emit a luminous flux of approximately 26,822 lumens in Amazon Sun and 14,166 lumens in Tuna Light Blue.

B. High PPFD Output:

- a. At 4000K distance 3' (0.9m):
 - i. Measured illuminance: 4208 fc, 45295 lux
 - ii. Measured PPFD: 1140 $\mu\text{mol}/\text{m}^2 \cdot \text{s}$
- b. At 6500K distance 3' (0.9m):
 - i. Measured illuminance: 4728fc, 46047 lux
 - ii. Measured PPFD: 1196 $\mu\text{mol}/\text{m}^2 \cdot \text{s}$
- c. At 8,000K distance 3' (0.9m):
 - i. Measured illuminance: 2635 fc, 28362 lux
 - ii. Measured PPFD: 740 $\mu\text{mol}/\text{m}^2 \cdot \text{s}$
- d. At 14,000K distance 3' (0.9m):
 - i. Measured illuminance: 1850 fc, 19919 lux
 - ii. Measured PPFD: 950 $\mu\text{mol}/\text{m}^2 \cdot \text{s}$

C. The fixture shall produce a uniform light distribution without hotspotting. The center intensity shall be no more than two times (2x) the intensity measured at 30 degrees off-center.

D. Amazon Sun

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- a. Color output @4000k distance 3' (0.9m) at 4208fc/45295lux, distance 5' (1.5m) at 1457fc/15673lux, distance 10' (3.0m) at 375fc/4035lux.
- b. Color output @6500k distance 3' (0.9m) at 4278fc/46047lux, distance 5' (1.5m) at 1481fc/15933lux, distance 10' (3.0m) at 382fc/4102lux.
- c. At 3 feet (0.9 meters), the beam spreads to 2.4 feet (0.7 meters) in diameter.
- d. At 5 feet (1.5 meters), the beam spreads to 4.1 feet (1.2 meters) in diameter.
- e. At 10 feet (3.0 meters), the beam spreads to 8.1 feet (2.5 meters) in diameter.

E. Tuna Light Blue

- a. Color output @8,000k distance 3' (0.9m) at 2635fc/28362lux, distance 5' (1.5m) at 1171fc/12606lux, distance 10' (3.0m) at 286fc/3082lux.
- b. Color output @14,000k distance 3' (0.9m) at 1850fc/19919lux, distance 5' (1.5m) at 822fc/8853lux, distance 10' (3.0m) at 203fc/2186lux.
- c. At 3 feet (0.9 meters), the beam spreads to 2.7 feet (0.8 meters) in diameter.
- d. At 5 feet (1.5 meters), the beam spreads to 4.0 feet (1.2 meters) in diameter.
- e. At 10 feet (3.0 meters), the beam spreads to 8.0 feet (2.4 meters) in diameter.

1.09 DIMMING AND CONTROL

- A. The fixture shall provide LED dimming from 0% to 100% using a 0–255 scale, where values between 0 and 255 control the light's brightness.
- B. The fixture shall use analog dimming and be flicker-free at all refresh rates/measurements when run above 6% intensity.
- C. The fixture shall be equipped with a 2-knob user interface and can be DMX controlled when used with a DMX-compatible driver labeled "PSX" in the ordering guides and part numbers.
- D. Fixtures manufactured after May 2026 have a toggleable "RAMP" setting for adjusting intensity slowly over a period of time, in order to avoid harming sensitive animals. When enabled, the ramp setting shall make all changes over a period of 1% intensity per second, without the need for an external controller. Please indicate if this is required when ordering.

E. DMX Footprint

- a. Amazon Sun
 - i. Channel 1: Intensity (0–255)
 - ii. Channel 2: CCT (2,000K–10,000K mapped across 0–255)
- b. Tuna Light Blue

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- i. Channel 1: Intensity (0–255)
- ii. Channel 2: CCT (8,000K–14,000K mapped across 0–255)
- iii. Channel 3: Violet Control
- iv. Channel 4: Red Control
- v. Channel 5: Green Control

1.10 REQUIRED FEATURE SET

- A. The fixture shall offer user-selectable Color Temperature settings.
- B. The fixture shall offer user-selectable dimming settings.
- C. The fixture shall contain a direct power connection.
- D. The fixture shall contain two manual knobs on the back of the fixture to control all fixture parameters.
- E. All provided fixtures will contain the above feature set.

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