CIELUX PROFESSIONAL SPECIFICATION SHEET
W500B

Full-spectrum LED (Light Emitting Diode) Product

1.01 GENERAL

A. The product shall be a Cielux W500B manufactured by DiCon Fiberoptics Inc.

1. Cielux, a DiCon FiberOptics Inc. brand, shall provide all LED products to ensure color consistency.
2. The product 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 ∅ 5.2” W x 5.5” H (13.2 x 14.0 cm) and weigh approximately 1.7 lbs (0.8 kg). The following shall be provided:

a. Cielux W500B fixture, consisting of

1. W500B Head Unit
2. 175W, 24V, 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 Track, Clamp, or Monopoint 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.

B. The product shall bear both ETLus and cETL markings.

C. The product shall also comply with FCC 47 CFR Part 15 Subpart B requirements, tested by ANSI C63.4.

D. The fixture shall comply with RoHS (Restriction of Hazardous Substances) and TAA (Trade Agreements Act) regulations.

E. The product shall be rated for IP-25 and able to sustain operation at full intensity while actively being sprayed by water from all directions.

1.04 THERMAL

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

B. The cooling fans shall be rated for a minimum operational lifespan of 50,000 hours.

C. The product shall utilize advanced thermal management systems to maintain LED life to an average of 70% intensity after 50,000 hours of use.

D. The product shall operate in an ambient temperature range of 32°F (0° C) minimum to 104°F (40° C) maximum.

1.05 ELECTRICAL

A. The product shall have an auto-ranging 100 V to 240 V 50/60 Hz power supply unit.

B. The product shall have a maximum draw of 175W.

C. DC input Voltage shall be 14- 30V.

D. The product 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 product shall contain a patented Dense Matrix LED Light Source manufactured by DiCon FiberOptics, Inc.

1. The fixture shall have a 55-degree native beam angle

B. All LEDs used in the product shall be manufactured by DiCon FiberOptics, ensuring high brightness and proven quality.

C. DiCon FiberOptics, Inc. shall utilize an advanced production LED binning process to maintain color consistency.

D. All LED products (100% of each lot) shall undergo a minimum three-hour burn-in test during manufacturing.

E. 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 do not use green light.

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

C. TB (Tuna Blue)

a. Fixture shall have a tunable CCT between 10000K and 20000K

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 an additional 390–400 nm UVA range enhances coral and invertebrate pigmentation and overall health

e. 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 7,515 lumens in Amazon Sun and 3,006 lumens in Tuna Blue.

B. High PPFD Output:

a. At 4000K distance 3’ (0.9m):

i. Measured illuminance: 733 footcandles (fc) = 7886 lux

ii. Conversion factor (fc to PPFD): 0.26

iii. Average PPFD: 733 fc x 0.26 = 190.6 µmol/m2/s

b. At 6500K distance 3’ (0.9m):

i. Measured illuminance: 734 footcandles (fc) = 7899 lux

ii. Conversion factor (fc to PPFD): 0.23

iii. Average PPFD: 734 fc x 0.23 = 168.8 µmol/m2/s

c. At 10,000K distance 3’ (0.9m):

i. Measured illuminance: 443 footcandles (fc) = 4758 lux

ii. Average PPFD: 443 fc x 0.007375 = 3.267 µmol/m2/s

d. At 20,000K distance 3’ (0.9m):

i. Measured illuminance: 105 footcandles (fc) =1128 lux

ii. Average PPFD: 105 fc x 0.002126 = 0.223 µmol/m2/s

C. The fixture must produce a uniform light distribution without intense brightness in the center. When measuring light output, the center intensity should be no more than 2x that measured at 30 degrees from the center.

D. Amazon Sun

a. Color output @4000k distance 3' (0.9m) at 733fc/7886lux, distance 5' (1.5m) at 373fc/4012lux, distance 10' (3.0m) at 73fc/776lux.

b. Color output @6500k distance 3' (0.9m) at 734fc/7889lux, distance 5' (1.5m) at 373fc/4012lux, distance 10' (3.0m) at 73fc/776lux.

c. At 3 feet (0.9 meters), the beam spreads to 2.6 feet (0.8 meters) in diameter.

d. At 5 feet (1.5 meters), the beam spreads to 4.3 feet (1.3 meters) in diameter.

e. At 10 feet (3.0 meters), the beam spreads to 8.7 feet (2.6 meters) in diameter.

E. Tuna Blue

a. Color output @10,000k distance 3' (0.9m) at 443fc/4758lux, distance 5' (1.5m) at 159fc/1711lux, distance 10' (3.0m) at 42fc/450lux.

b. Color output @20,000k distance 3' (0.9m) at 105fc/1128lux, distance 5' (1.5m) at 41fc/441lux, distance 10' (3.0m) at 20fc/209lux.

c. At 3 feet (0.9 meters), the beam spreads to 2.6 feet (0.8 meters) in diameter.

d. At 5 feet (1.5 meters), the beam spreads to 4.3 feet (1.3 meters) in diameter.

e. At 10 feet (3.0 meters), the beam spreads to 8.7 feet (2.6 meters) in diameter.

1.09 DIMMING AND CONTROL

A. The product 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 product shall use analog dimming and be flicker-free at all refresh rates/measurements when run above 6% intensity.

C. The product 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. 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 Blue

i. Channel 1: Intensity (0–255)

ii. Channel 2: CCT (10,000K–20,000K 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 product shall offer user-selectable Color Temperature settings.

B. The product shall offer user-selectable dimming settings.

C. The product shall contain a direct power connection.

D. The product shall contain two manual knobs on the back of the fixture to control all fixture parameters.

E. All provided products will contain the above feature set.

-END-