

## 1.01 CYCLORAMA LIGHTING

## A. General

1. The fixture shall be a compact, lightweight color-mixing LED asymmetrical wash fixture with 8 or 16 bit DMX control of intensity and color. The fixture shall be the Spectra-Cyc 400 as manufactured by Altman Stage Lighting, Inc. or approved equal.
2. The fixture shall incorporate a state of the art microprocessor-controlled solid-state LED light engine incorporating Red, Green, Blue, Amber / White color LEDs, and an on-board power supply.
3. The fixture shall incorporate a hammer-tone aluminum asymmetrical reflector in combination with a blended linear LED engine to provide even coverage on vertical and horizontal surfaces without "scalloping" or hot spots.
4. The fixture shall be incorporate silent, convection cooling without employing the use of fans or filters. Fixtures incorporating fan cooling systems generate unacceptable levels of noise are not equal and shall not be accepted.
5. IES Photometric files shall be available from the manufacturer to model light output using industry standard design software.
6. The fixture shall comply with USITT DMX-512 A and ANSI E1.20-2006 Remote Device Management over USITT DMX-512A Standard (RDM).
7. The fixture shall be UL1573, and UL8750 LED listed and CE compliant for stage and studio use.
8. Fixtures which do not comply with this specification shall not be accepted.

## B. Physical

1. The fixture shall be constructed of 18-gauge steel. Construction shall employ all corrosion-resistant materials and hardware and shall be free of pits and burrs.
  - a. Standard Finish shall be Epoxy Sandtex black, electrostatic application and shall be available in white, black, and custom color finishes as specified.
  - b. Power supply, cooling and electronics shall be integral to each unit.
  - c. The housing shall serve as a convection chimney when installed in a vertical or horizontal orientation to provide for convection cooling of the LED array, integral driver, and integral power supply.
2. Fixture dimensions shall be 47.5" (1206.5mm) L x 11.2" (384.5mm) H x 7.45" (189.2mm) D. and weigh 37lbs (16.7kg).

3. The fixture shall provide even asymmetrical distribution of light on a vertical or horizontal surface by use of a linear LED source and a hammer-tone asymmetrical reflector. Fixtures requiring the installation of spread lenses or other linear diffusion media to approximate asymmetrical distribution of light are not equal and shall not be accepted.
  4. The fixture shall incorporate independently adjustable rubber leveling feet on the bottom of the fixture to provide for adjustment when used to light a vertical surface from the bottom.
  5. An optional rigid flat steel yoke with locking dog tilt handle shall be available for overhead pipe mounting.
    - a. Pipe mounted fixtures shall be supplied with a cast iron C-clamp Altman #510 suitable for use on up to 2" (50mm) O.D. pipe. Clamp must incorporate a 360-degree rotational "safety stud" with locking bolt. Any clamp not offering this safety feature will not be acceptable.
    - b. Fixtures shall be supplied with safety cable for use when securing the fixture to a pipe.
  6. An optional rugged 18-gauge steel joining bracket shall be available to safely lock multiple units together. Units not incorporating this feature shall not be acceptable. Hanging Irons shall be available to support multiple fixture configurations from a pipe batten.
  7. The fixture shall be designed to provide flat and even coverage of light when placed 4'-0" (1.2m) away from the surface being lit, 12'-0" (3.65m) on center. There shall be no visible dip in coverage or "scalloping" between fixtures when so placed.
  8. Power supply, cooling and electronics shall be integral to each unit.
- C. Thermal
1. The luminaire shall be cooled via natural convention with no aide of fans or other cooling systems.
  2. Under normal operating conditions, the LED engine shall be capable of 50,000 hours rated lifespan to Led manufacturers recommended LM-70 / 70% maximum calibrated intensity with convective cooling, units utilizing active cooling shall not be accepted.
  3. Ambient operating temperature shall be 32°F to 104°F (0 – 40 °C) non-condensing and IP-20 rated for indoor dry location use.
  4. The LED substrate is coupled to a highly efficient heat sink and cooling system for prolonged life of the LEDs. LED fixture housing shall transfer heat from the LED board and associated electronics to the outside environment.

## D. Electrical

1. The fixture shall be equipped with 100V to 240V 50/60 Hz auto-ranging internal power supply and requires power from a constant “non-dim” power source.
2. The fixture shall receive power via a Neutrik power con blue connector and 5'-0" (1.5m) power cord with:
  - a. 2 P&G (Stage Pin)
  - b. NEMA 5-15P
  - c. NEMA L520 (Twistlock)
  - d. Territory Power Plug
3. The fixture shall be equipped with a Neutrik Power con Gray to allow for “Daisy Chaining” of fixtures from a single power source. The receptacle shall be protected by an integral 10amp circuit breaker.

## E. Control and User Interface

1. A local control keypad with a three digit LCD display shall be provided for configuration and control of:
  - a. DMX-512A Device Address
  - b. Fixture Personality
  - c. Stand Alone (Manual) Operation
2. It shall be possible to lock out the control keypad at the fixture to prevent accidental change in fixture configuration during operation. Locking and unlocking the control keypad shall be via predefined key sequence.
3. Each fixture shall be compatible with the USITT DMX512-A control protocol and ANSI E1.20-2006 Remote Device Management over DMX512-A (RDM) standard.
4. The DMX-512A device address for each fixture shall be user selectable.
5. It shall be possible to set the DMX-512A device address for the fixture while the fixture is installed and connected to the system via the RDM (ANSI E1.20-2006 protocol) and an appropriate device such as a PC or a handheld programmer.
6. Fixtures which do not allow for setting of the DMX address via both local controls at the fixture and remotely while installed via RDM shall not be accepted.
7. The fixture shall have an available “Master Channel” function to provide control of intensity without changing the color of the output of the fixture. The Master shall operate in either 8-bit or 16-bit resolution as defined by the configuration of the fixture.

8. The fixture shall have user selected personalities to correctly match response to the application and control system utilized. Personalities shall provide the following options which may be combined as desired:
  - a. 8 or 16 Bit DMX operation
  - b. Master Channel On / Off
  - c. Smoothing On / Off
  - d. Stand-alone effects
  - e. Stand-alone fixed output
9. The fixture shall be capable of standalone operation, activated and configured at the control keypad. Standalone modes shall include the following:
  - a. Fixed color temperature defined with local controls
  - b. Strobe with user selectable color and speed
  - c. Primary / Replica

#### F. Optical

1. Fixture shall feature a custom matrix of LEDs to provide color or tunable white light or fixed white light. Variations of LED matrices to include:
  - a. Red, Green, Blue, Amber
  - b. Red, Green, Blue, White
  - c. 3000, 6000 Kelvin white tune-able
  - d. Fixed white (3000 or 6000 Kelvin)
  - e. Custom arrays.
2. Fixture shall utilize a patented mixing lens and reflector system to deliver an asymmetrical beam pattern onto the projection back drop or wall. Cyc lights utilizing only a lens system and not utilizing the aforementioned style system shall not be accepted.
3. The fixture shall optimized for low saturate colors (pastels) as well as high saturate colors used in theatrical applications. Fixtures utilizing 3-color (Red, Green, and Blue) mixing systems cannot produce sufficient skin saturate ambers, lavenders, or oranges and shall not be accepted.

#### G. Light Emitting Diodes

1. The fixture shall use a variety of LEDs for a wide range of color mixing or tuning for color models the standard configurations shall be Red, Green, Blue, and Amber LEDs or Red, Green, Blue and White LEDs. For white models the standard configurations shall be white LEDs at 3,000° Kelvin color temperatures or variable white between 3,000° and 6,000° Kelvin, with custom arrays available.

2. Manufacturer of LED systems shall utilize an advanced production LED binning process to maintain color consistency.
3. LED emitters should be rated for nominal 50,000 hour LED life
4. LED system shall comply with all relevant patents.

H. Dimming Engine

1. Luminaire shall provide full range dimming performance based upon its DMX input control signal and configuration and shall be equipped with an LED system compatible with standard 8-bit and 16-bit input, with high resolution dimming.
2. Dimming curves shall be optimized for smooth dimming at low intensities and over longer timed fades.
3. LEDs shall be driven by Pulse Width Modulation. (PWM)
4. Additional smoothing algorithms shall be available to augment the high resolution dimming engine

END SPECIFICATION

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