

1.01 COLOUR MIXING LIGHT EMITTING DIODE CYCLORAMA FIXTURE

A. General

1. The fixture shall be a colour-mixing high-intensity LED illuminator with DMX control of intensity and colour. The fixture shall be a ColorSource® CYC as manufactured by Electronic Theatre Controls, Inc. or approved equal.
2. All LED fixtures shall be provided by a single manufacturer to ensure compatibility
3. The fixture shall be CE compliant and UL 1573 listed for stage and studio use
4. The fixture shall comply with the USITT DMX512-A standard

B. Physical

1. The fixture shall be contained in a rugged all-metal die-cast housing, free of burrs and pits.
2. The housing shall have a rugged black powder coat finish
 - a. White or silver grey powder coat finishes shall be available as colour options
 - b. Other powder coat colour options shall be available on request
3. Power supply and electronics shall be integral to each unit.
4. Fixture housing shall provide built in spill control
5. Fixture shall operate directly on the ground or by hanging via yoke
6. The unit shall ship with:
 - a. Theatrical-style hanging yoke as standard
 - b. 1.8m power Neutrik® PowerCON to bare ends power cable
7. Available options shall include but not be limited to:
 - 1) DMX input via XLR5 or RJ45 connector
8. Light output shall be produce an asymmetrical beam
 - a. Lensing shall be designed to provide smooth coverage both horizontally and vertically for seamless blending from fixture to fixture
 - b. With a minimum setback from the cyclorama of 60cm, the fixtures shall be able to achieve a 2-to-1 spacing ration and maintain smooth coverage

C. ENVIRONMENTAL AND AGENCY COMPLIANCE

1. The fixture shall be Ce compliant and UL/ cUL Listed, and shall be so labelled when delivered to the job site.
2. The fixture shall be rated for IP20 dry location use.

E. THERMAL

1. The fixture shall be natural convection cooled and shall not use a fan
2. The fixture shall utilise advanced thermal management systems to maintain LED life to an average of 70% intensity after 50,000 hours of use
 - a. Thermal management shall include multiple temperature sensors within the housing to include:
 - 1) The LED array
 - 2) The control board
3. The fixture shall operate in an ambient temperature range of 0°C minimum to 40° C maximum.

F. ELECTRICAL

1. The fixture shall be equipped with an 100V to 240V 50/60 Hz internal power supply
2. The fixture shall support power in and thru operation
 - a. Power in shall be via Neutrik® PowerCON input connector
 - b. Power thru shall be via Neutrik ® PowerCON output connector
 - c. Fixture power wiring and accessory power cables shall be rated to support linking of multiple fixtures up to the capacity of a 15A breaker
3. The fixture requires power from non-dim source
4. Power supply shall have power factor correction

G. LED Emitters

1. The fixture shall contain 5 different LED colours to provide colour characteristics as described in Section H below.
2. All LEDs used in the fixture shall be high brightness and proven quality from established and reputable LED manufacturers.
 - a. Fixture shall utilize Luxeon® C LED emitters
3. Manufacturer of LED emitters shall utilise an advanced production LED binning process to maintain colour consistency.
4. LED emitters should be rated for nominal 50,000 hour LED life to 70% intensity
5. LED system shall comply with all relevant patents
6. Fixtures shall have a flicker free mode that will set the LED refresh rate to 25,000 Hz for flicker-free operation on camera

H. CALIBRATION

1. Fixture shall be calibrated at factory for achieve consistent colour between fixtures built at different times and/or from different LED lots or bins
 - a. Calibration data shall be stored in the fixture as a permanent part of on-board operating system
 - b. All arrays, including replacement arrays shall be calibrated to the same standard to ensure consistency
 - c. Fixtures not offering LED calibration shall not be acceptable
2. Fixture shall have droop compensation to overcome thermal droop in the LEDs to maintain output levels and colour point.

I. COLOUR

1. The fixture shall utilise a minimum of 42 LED emitters
 - a. These emitters shall be made up of Red, Green, Blue, Indigo and Lime

J. DIMMING

1. The LED system shall use 15-bit non-linear scaling techniques for high-resolution dimming.
2. The dimming curve shall be optimised for smooth dimming over longer timed fades.
3. The LED system shall be digitally driven using high-speed pulse width modulation (PWM)
4. LED control shall be compatible with broadcast equipment in the following ways:
 - a. PWM control of LED levels shall be imperceptible to video cameras and related equipment
 - b. PWM rates shall be adjustable by the user via RDM to avoid any visible interference to video cameras and related equipment

K. CONTROL AND USER INTERFACE

1. The fixture shall be USITT DMX512-A compatible via In and Thru 5-pin XLR connectors or RJ45 connectors
2. The fixture shall be compatible with the ANSI RDM E1.20 standard
 - a. All fixture functions shall accessible via RDM protocol for modification from suitably equipped control console
 - b. Temperature sensors within the luminaire shall be viewable in real time via RDM
 - c. Fixtures not offering RDM compatibility, feature set access or temperature monitoring via RDM shall not be compatible
3. The fixture shall be equipped with a 7-segment display for easy-to-read status and control
4. The fixture shall be equipped with a three-button user-interface

5. The fixture shall offer multiple control modes including but not limited to:
 - a. RGB
 - b. 5 channel (IRGBS)
 - c. Direct
 - d. Single channel
6. The fixture shall operate in Regulated mode for droop compensation
7. The fixture shall offer stand-alone functionality eliminating the need for a console
 - a. Fixture shall ship with 12 preset colours accessible as a stand-alone feature
 - b. Fixture shall ship with 5 Sequences accessible as a stand-alone feature
 - c. Each preset can be modified by the end user
 - d. Fixtures can be linked together with standard DMX cables and controlled from a designated master fixture
 - 1) Up to 32 fixtures may be linked
 - e. Fixtures in a stand-alone state shall restore to the settings present prior to power cycling, eliminating the need for reprogramming
 - f. Fixtures without stand-alone operation features described in a, b, c, d, and e shall not be acceptable.