

1.01 LED FOLLOW SPOT

A. General - Luminaire

1. The luminaire shall be a 11000K fixed white LED - 490 watt Follow spot luminaire capable of producing over 10,000 lumens. The luminaire shall be the AFS-500 LED Follow Spot from Altman Lighting Inc. or approved equal.
2. The luminaire shall incorporate a microprocessor-controlled solid-state LED light engine, and on-board power supply.
3. The luminaire shall incorporate quiet active cooling no greater than 34 dBA at .5m to maintain luminous intensity.
4. The luminaire shall utilize high efficiency and patented optics to render a homogenized shade of white at the focal plane.
5. Photometric files shall be available upon request from the manufacturer.
6. The luminaire shall comply with USITT DMX-512 A.
7. Luminaire shall be rated ETL or equally accredited 3rd party compliance certification and be CE listed.
8. The luminaire shall be UL1573 and UL8750 LED listed for stage and studio use.
9. The luminaire shall ship with:
 - a. AFS-500 Control Module - Integrated
 - b. Adjustable and collapsible black Tripod
 - c. 5' Neutrik PowerCon™ to Edison power cable as standard.
 - d. AFS-500 Manual
 - e. AFS-500 LED Follow spot containing:
 - 1) Internal Five (5) facet automated Dichroic color wheel
 - 2) Internal three (3) facet automated Dichroic CTO Wheel
 - 3) Internal eighteen (18) Leaf automated iris
 - 4) Internal 7°-13° Manual Zoom Lens
 - 5) Internal Manual Focus Lens

Luminaires that do not provide the above feature sets as a standard option shall not be considered.

10. Available connector options shall include but not be limited to:
 - a. Raw cable-end, 20A Stage-Pin, 20A Twist-lock, or 16A CEE type equipped power leads.
11. Luminaire shall be rated IP20
12. Warranty to include a minimum of 3 years on all components of the luminaire.

B. General – Control Panel

1. The luminaire control panel shall be located on the rear housing of the luminaire. The control panel will be rendered inactive when under DMX control. Luminaires not employing local and DMX control shall not be accepted.
2. The control panel will employ back lit indicator lights for each color and led on/off status.
3. The controller shall have control of:
 - 1) LED on/off
 - 2) Dimmer – Slider for controlling output intensity
 - 3) Strobe – Slider for controlling strobe rate.
 - 4) CTO - Slider for controlling Color Temperature.
 - 5) Iris – Slider for opening and closing luminaires iris.
 - 6) Color (6) Six Back lit buttons

C. Physical

1. The luminaire shall be constructed of extruded aluminum, refined and without burrs, pits, or rough edges. Plastic and steel components shall be used within the luminaire.
2. Luminaire shall weigh no more than 25.5 pounds (11.5kg).
3. Luminaire shall feature an integrated rear handle.
4. The luminaire shall contain a specialized LED array light engine, optimized specifically for this luminaire's optical system.
5. Overall dimensions of the luminaire shall not be larger than the following dimensions:
 - a. 11.75" (298.5mm) tall (inc. yoke)

- b. 10.38" (263.7 mm) wide
 - c. 30.5" (774.7 mm) long
6. All major parts and components shall be black. Luminaire body shall be anodized, not painted.
 7. An additional accessory holder for standard 7.5" x 7.5" shall be completely boxed in on three (3) sides, guarding filter frames from damage. Filter frame shall be capable of supporting industry standard 7.5" x 7.5" accessories.
 8. All system components (including electronics, power supply, and cooling shall be integral to each unit. Units utilizing external power supplies, ballasts, or transformers shall not be accepted.
- D. Electrical
1. The luminaire shall be equipped with 100V to 240V 50/60 Hz universal power supply.
 2. Luminaire shall feature up to a 490 watt long-life LED emitter matrix. Luminaire shall not consume more than 500W in normal operation.
 3. Power input shall be via Neutrik Powercon.
 4. Automatic power correction power supply shall be standard.
 5. Quiescent power load shall be no more than 47 watts.
 6. PWM frequency shall be variable, based upon dimming timing - with an upper limit of 15 kHz.
- E. Thermal
1. Under normal operating conditions, the LED engine shall be capable of 50,000 hours rated lifespan to LM-70 / 70% maximum calibrated intensity with active cooling.
 2. Ambient operating temperature 32°F to 104°F (0 – 40 °C).
 3. Active cooler shall consist of a pulse width modulation-controlled fan.
 4. Fan shall automatically adjust for lowest possible noise output for a given luminance output.
 5. Luminaire shall employ temperature sensors on all temperature sensitive equipment to ensure to ensure stated LM rating.

F. Control and User Interface

The luminaire shall provide full range (0-100%) dimming without exhibiting flicker or stepping to both the eye and HD camera. Dimming curves shall be optimized for smooth dimming at low intensities and over longer timed fades.

1. A local control keypad with LCD display shall be provided for configuration and control of:
 - a. DMX-512A Device Address
 - b. Luminaire Personality
 - c. Stand Alone Operation
2. Each luminaire shall be compatible with the USITT DMX512-A control protocols.
3. DMX or Local Control shall be connected via integral flush mount 5-Pin XLR input and output connectors.
4. Luminaire shall include integral flush mount 5-pin XLR output connector for DMX pass through or "Daisy Chain". Luminaires not including an output receptacle for DMX pass through shall not be acceptable.
5. The DMX-512A device address for each luminaire shall be user selectable.
6. The luminaire shall be capable of standalone operation, activated and configured at the control keypad. Standalone functions shall include the following:
 - a. Fixed Color defined with local controls
 - b. Strobe
 - c. CTO
 - d. Iris
 - e. Dimmer
 - f. Led on/off
 - g. Primary and Replica

G. Optical

1. Luminaire shall feature a custom matrix of LEDs to provide fixed color temperature white light. Variations of LED matrices to produce a 11000K native white beam with color and CCT variations via integrated color and CTO wheels.
2. Luminaire shall feature a fully homogenized output at the focal plane to enable color temperature changes without visible colors at the lens.
3. Lenses to feature cosine beam and field distribution and feature a 2:1 beam to field distribution ratio.
4. Zoom range shall be manually controlled and shall provide a range no less than 7 – 13 degrees in beam angle.
5. Focus Lens system shall be manually controlled and shall provide a crisp concise beam with a sharp edge and allow for a soft edged beam with out affecting the previously set zoom.
6. An Automated 18 facet iris shall be capable of shaping the beam edge to reduce the over all beam diameter allowing for a 2.5 degree beam when fully closed.
7. An Automated CTO wheel capable of thee (3) different CTO settings shall be integral to the AFS-500 and shall be able to achieve 7400K, 6000K, and 4200K color temperatures. Luminaires with out CTO capability shall not be accepted.
8. A five (5) position color wheel capable of adding color to the beam in conjunction with the CTO wheel shall be capable of full or split colors.
9. A LED ON/OFF button (DMX Channel) shall allow for instant ON/OFF of the LED array following the luminaires initial calibration start up.
10. A variable strobe function up to 20hz (20 times a second) shall be available standard on the luminaire. Any luminaire not offering strobe functionality shall not be accepted.
11. A range of accessories shall be available from the manufacturer including but not limited to:
 - a. Cylindrical Hood (top hat)
 - b. Front Accessory Holder 7.5" x 7.5"
 - c. Color frame
 - d. Accessory Color Boomerang (6 Color)
 - e. Weighted handle
 - f. Follow spot Handle

g. Extended Zoom / Focus Handles

H. Light Emitting Diodes

1. The luminaire shall utilize a proprietary mix of white LEDs to produce the output as specified.
2. LEDs shall be from reputable manufacturers with a proven track record for quality.
3. All LEDs shall be subject to rigorous single binning and mixing procedures.
4. LEDs shall be calibrated to an absolute nm wavelength CIE1931 X & Y coordinates.
5. Burn-in procedure to be no less than 8 hours.

I. Dimming Engine

1. LEDs shall be driven by Pulse Width Modulation. (PWM)
2. PWM rates shall be variable and above 9800hz, ensuring no camera phasing, image flip or roll.
3. Dimming curves shall be smooth with no perceptible steps over long fades. Follow spots utilizing flag or chop mechanical dimmers shall not be accepted.
4. Luminous Output: Shall meet or exceed 10000 lumens output at narrow beam and produce no less than 95fc (1025 LUX) at 100'-0" (30.48M)

END SPECIFICATION

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