EVANS & SUTHERLAND

ESLP 8K

ESLP® 8K Laser Video Projector

Ultra-high Resolution Digital Projection System

A leader in digital theater technology for more than 25 years, Evans & Sutherland is taking display technology to a new level with the ESLP 8K Laser Video Projector. This 3D-capable projection system combines **nanopixel**™ technology, a novel approach to modulating light with cool, efficient solid-state laser light sources, delivering unprecedented 8K x 4K resolution, brightness, color, and contrast.

E&S® Laser Light Sources

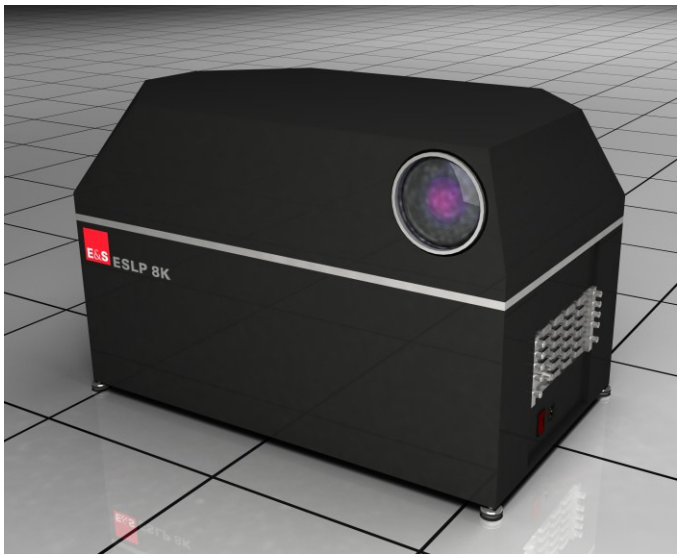
The second-generation ESLP introduces a hybrid arrangement of commercially available NECSEL™ diode lasers, along with E&S' own unique patented solid-state fiber laser technology. By using laser light sources, the ESLP is able to produce a much wider range of hues and colors than other available projection technologies. These continuous wave lasers are extremely efficient and reliable, and do not have the potentially damaging high power densities associated with other pulsed lasers. Furthermore, output power and wavelength of these lasers do not vary over time (as is typically the case with bulb-illuminated projectors), thereby maintaining optimum performance throughout the life of the system, and eliminating the need for constant color matching and tuning.

The ESLP requires no special power or environmental conditioning. And, because the E&S lasers are based on telecommunications technology and solid-state semiconductors, they are inherently reliable. The laser light sources have lifetimes in excess of 30,000 hours.

nanopixel Light Modulator

The ESLP takes advantage of the **nanopixel** light modulator, which is a MEMS (micro electro-mechanical system) device fabricated on a silicon microchip. On this chip are thousands of electrostatic reflective elements arranged in a line array. This array corresponds to an entire column of pixels on the display (up to 4096), and thereby allows all of those pixels to be drawn simultaneously.

By sweeping an entire column of light across all pixel rows of the image, the system can achieve unprecedented levels of resolution. The only moving mechanical part in the optical path is a horizontal scan mirror which operates at a very stable 60 – 120 Hz refresh frequency.



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Operating Specifications

General

• Resolution	32 Megapixel (8192 x 4096)
• Brightness	5000 ANSI Lumens (model ESLP8K-5) 2000 ANSI Lumens (model ESLP8K-2)
• Contrast Ratio	> 15000:1 (sequential)
• Color Precision	36 bits/pixel (12 bits each, red/green/blue)

nanopixel Modulator

- Integrated silicon light valve based on MEMS technology
- Draws all pixels within an entire column (up to 4K) simultaneously
- Each **nanopixel** chip has over 8000 precisely controlled reflective elements
- One nanopixel chip per primary color (red, green, blue)
- Response time (full-on to full-off): < 200 nanoseconds
- Zero smearing of moving images (zero persistence; superb 3D separation)
- No visible boundaries between pixels

nanopixel Modulator Chip

E&S Laser Light Sources

- Second-generation hybrid lasers based on solid-state diode technology
- Do not require regular maintenance or replacement (lifetime in excess of 30K hours)
- Expanded color space (200% of NTSC/HDTV)
- Combines patented E&S direct conversion diode-pumped solid-state high-power lasers with NECSEL™ laser diode bar devices
    - Efficient and cool
    - 635 nm, 532 nm, 465 nm lasers (red, green, blue)

Optics – Available Configurations

- Domes or spherical section screens:
    - 160° Field-of-view Fisheye Lens
- Flat Screens:
    - 1.75 Throw Ratio Flat Field Lens
    - (Additional throw ratios TBA)
- Panoramic or cylindrical screens:
    - LaserWide® scanner, up to 220° Horizontal F.O.V.

Video Formats

- Vertical: 4096, 2048, or 1024 pixels
- Horizontal: Any integer multiple of 8 pixels, up to 8192
- Refresh Rate: Programmable, 60 – 120 Hz
- 3-D Stereoscopic @ 4096 x 4096, 120 Hz
- All settings controlled by flexible remote Windows® client GUI

Interface

- DVI (single-link, 16 ports/connectors)
- HDMI 1.3, HDSDI, DisplayPort interfaces on request
- 10/100 Ethernet port for control/diagnostic remote client

Environmental

- Size: 37” W x 23” D x 25” H (94 x 58 x 63 cm)
  (approximate: varies with projector configuration)
- Weight: Approx. 550 lb. (250 kg)
- Operating temperature range: 62º F - 80º F (17º C - 27º C)
- Operating humidity range: 30% - 50% (noncondensing)
- Projector power requirement: 208-240 VAC, 20-Amp outlet
- Total power consumption: 3.2 KW (model ESLP8K-5)
- Total heat dissipation: Approx. 2500 BTU/hr
- Cooling provided by quiet liquid closed-loop external chiller
    - Chiller dimensions: Approx. 30” H x 30” D x 20” W
    - Can be located remotely, up to 150 ft. from projector
    - Power requirement: 208-240 VAC, 20-Amp outlet
    - Weight: Approx. 325 lb.

Safety

- EMI, Electrical: CE Mark
- Laser Safety Classification:
    - IEC 3R AEL (models ESLP8K-2, -5)

LASER RADIATION
AVOID EXPOSURE TO BEAM
CLASS 3R/3B LASER PRODUCT

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PRELIMINARY
All Specifications are Subject to Change