

LUXEON NeoExact ADB matrix

Customized solutions for compact and efficient direct-imaging systems



Customized LUXEON NeoExact matrix solutions enable extremely compact, highly efficient systems with superior intensity and contrast. Using simple direct-imaging optical designs reduces build-in depth, simplifies the module assembly, and enhances integration flexibility. Single-row and especially multi-row ADB systems benefit from this system architecture.

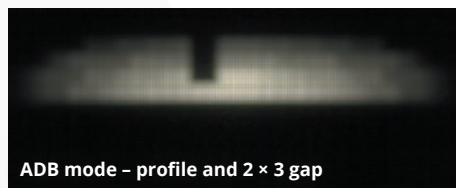
FEATURES AND BENEFITS

- The proprietary thin-film side coat of LUXEON NeoExact results in an extremely compact footprint, enabling close-die spacing down to 50 μm and compact optics
- Reduced glare due to improved contrast versus conventional LEDs
- 0.5 and 1.0 mm^2 light-emitting areas (LEAs) available, allowing customization and design flexibility for the matrix configuration
- Enables direct-imaging optical architecture, eliminating the need for complex primary optics
- LUXEON NeoExact matrix-board solutions offer easy design-in integration

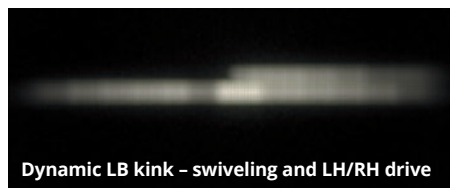
PRIMARY APPLICATIONS

- Adaptive driving beam (ADB)
- Adaptive front-lighting system (AFS)
- Glare-free high beam

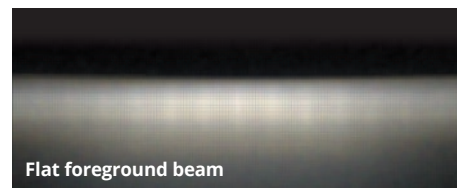
Create your own range of beam patterns with LUXEON NeoExact customized solutions



ADB mode - profile and 2 x 3 gap



Dynamic LB kink - swiveling and LH/RH drive



Flat foreground beam

Reference design for a 4-row, 96-pixel ADB matrix system supplemented with a foreground module

ADB matrix module: PCB & optical system

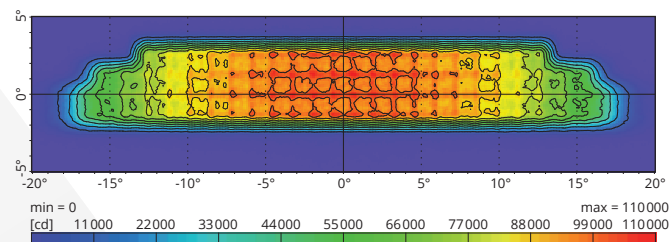


- 96 x LUXEON NeoExact 0.5 mm² in 4-row configuration
- Gap of 60 μm between LEDs in both directions
- FR4 PCB with AlN ceramic inlay in the area of LEDs
- 8 matrix managers with 12 channels
- Direct-imaging PMMA/PC prototype lens system with 50 mm diameter

ADB matrix performance

Based on a reference flux of 150 lm from the LEDs in the center:

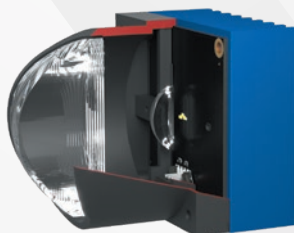
- Flux in beam (typical high-beam profile)*: 4432 lm
- $I_{\max}^* = 110000 \text{ cd}$, $E_{\max}^* = 175 \text{ lx}$
- Optical efficiency*: 27%
- Field of view: $-/+18^\circ \text{ H}$, $-2.5^\circ/+3.5^\circ \text{ V}$
- Resolution of 1.3° at center pixel



Foreground module



LED arrangement

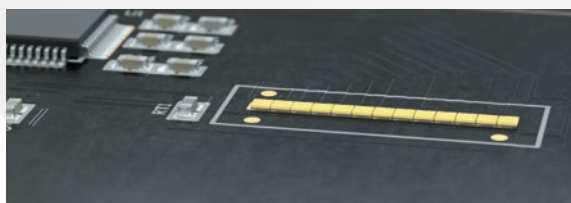


- 3 x LUXEON NeoExact 1.0 mm² and 2 x LUXEON NeoExact 0.5 mm² in special arrangement, using vertical displacement in array for improved homogeneity
- Simple optical system with PMMA prototype lens system, 50 mm diameter
- Flux in beam*: 685 lm, $I_{\max}^* = 18000 \text{ cd}$
- Optical efficiency*: 59%

* including 15% losses at the cover glass

LUXEON NeoExact matrix solutions

Customized arrays of LUXEON NeoExact on a PCB:
1 to 4 rows, any pixel count per row,
electronic controls as specified by customer



LUXEON NeoExact

0.5 mm²

1.0 mm²

	0.5 mm ²	1.0 mm ²
Maximum current	1.0 A	2.0 A
Typical luminous flux	188 lm (0.7 A, 85 °C)	306 lm (1.0 A, 85 °C)
Light-emitting area = package size	0.742 mm × 0.742 mm	1.046 mm × 1.046 mm
Contrast	1:400	1:400

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