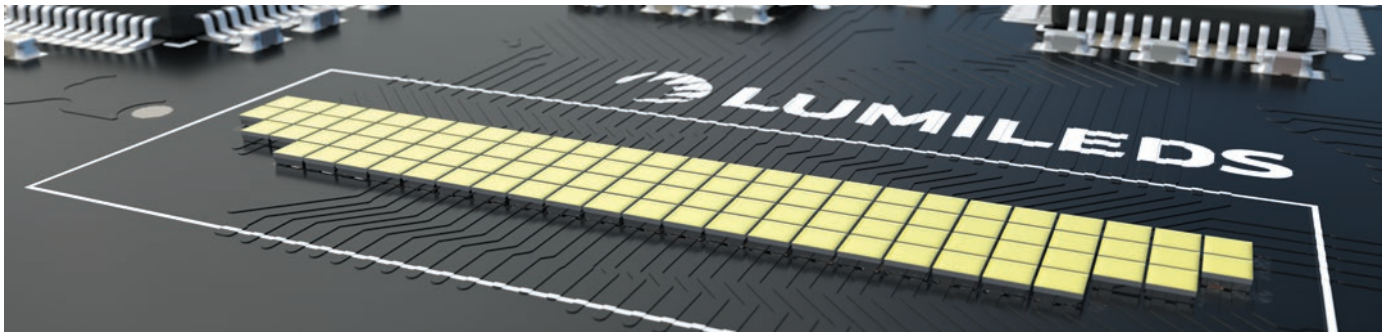
LUMILEDS

AUTOMOTIVE



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.

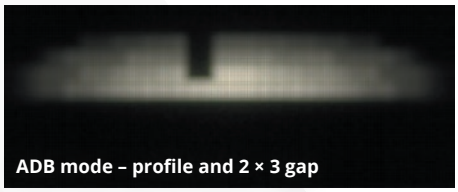
FEATURES AND BENEFITS

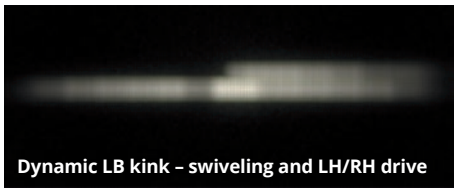
- The proprietary thin-film side coat of LUXEON NeoExact results in an extremely compact footprint, enabling close-die spacing down to 50 µm and compact optics
- Reduced glare due to improved contrast versus conventional LEDs
- 0.5 and 1.0 mm^2 light-emitting areas (LEAs) available, allowing customization 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

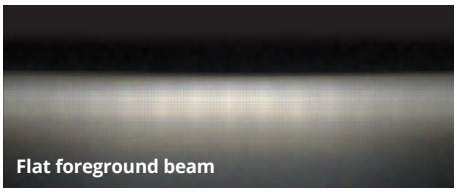
PRIMARY APPLICATIONS

- 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

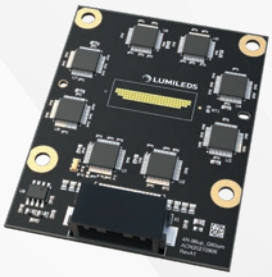

ADB mode – profile and 2 × 3 gap

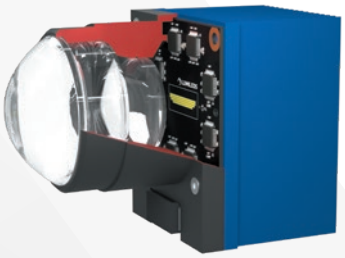

Dynamic LB kink – swiveling and LH/RH drive


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



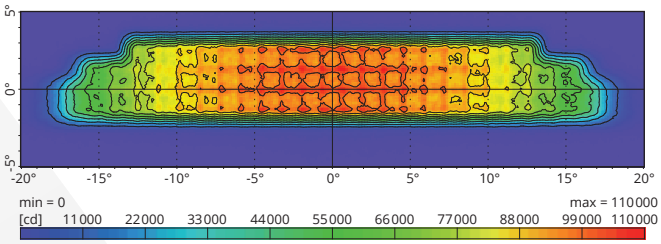


- 96 x LUXEON NeoExact 0.5 mm² in 4-row configuration
- Gap of 60 µm between LEDs in both directions
- FR4 PCB with AlN ceramic inlay in the area of LEDs
- 8 matrix managers with 12 channels
- Direct-imaging PMMA/PC prototype lens system with 50 mm diameter

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 cd, E_{max}* = 175 lx
- Optical efficiency*: 27%
- Field of view: -/+18° H, -2.5°/+3.5° V
- Resolution of 1.3° at center pixel



Foreground module

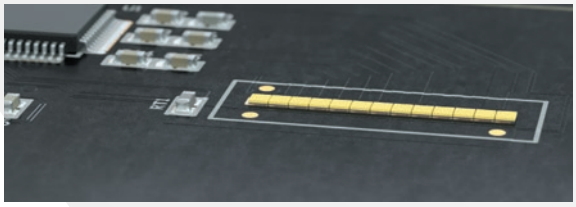

LED arrangement

- 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 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
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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