

The background of the slide features a collection of various LED components, including lenses, reflectors, and heat sinks, arranged in a collage. The LEDiL logo is prominently displayed in the top left corner on a yellow background.

LEDiL[®]

Advanced Technology

LEDiL Oy, Est. 2002 in Salo, Finland.

A world-leading Lens and Reflector manufacturer

Production capabilities in Finland & China

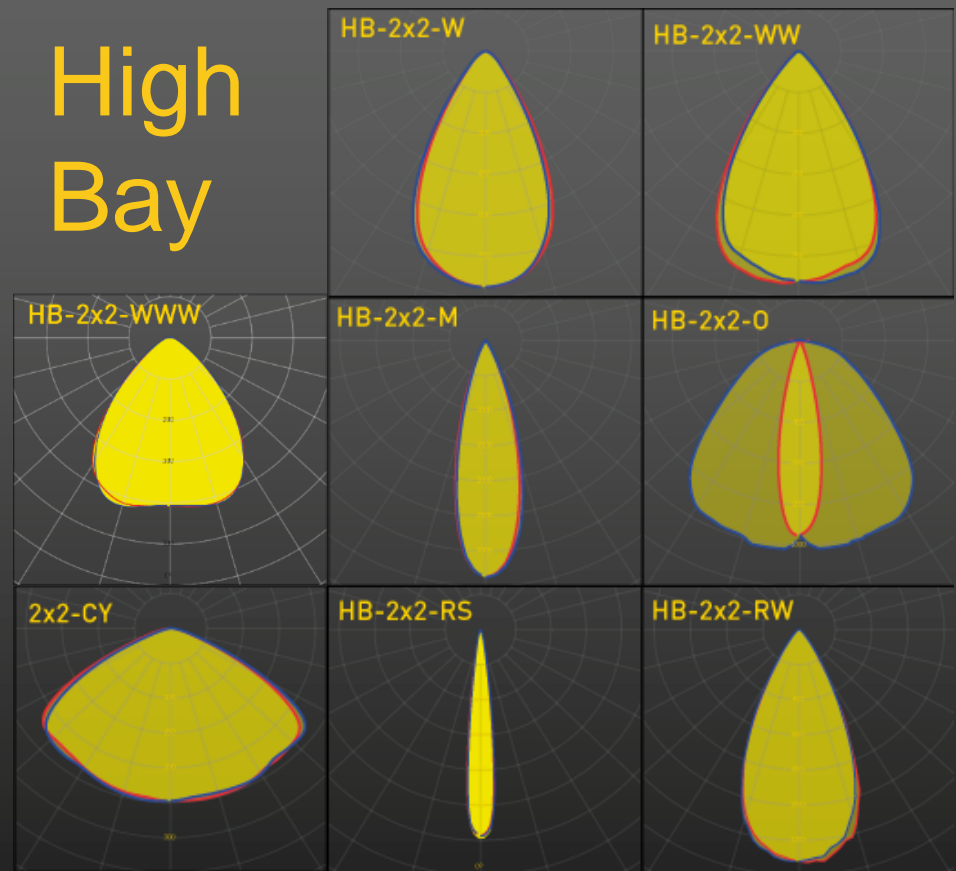
2014 Turnover 26 400 000€ euro

www.ledil.com

2x2 Modules

- ✓ Versatile
- ✓ Future proof
- ✓ Common footprint
- ✓ Interchangeable light patterns
- ✓ Universal PCB/fixture design
- ✓ Over 30 light distributions for the same footprint

High Bay

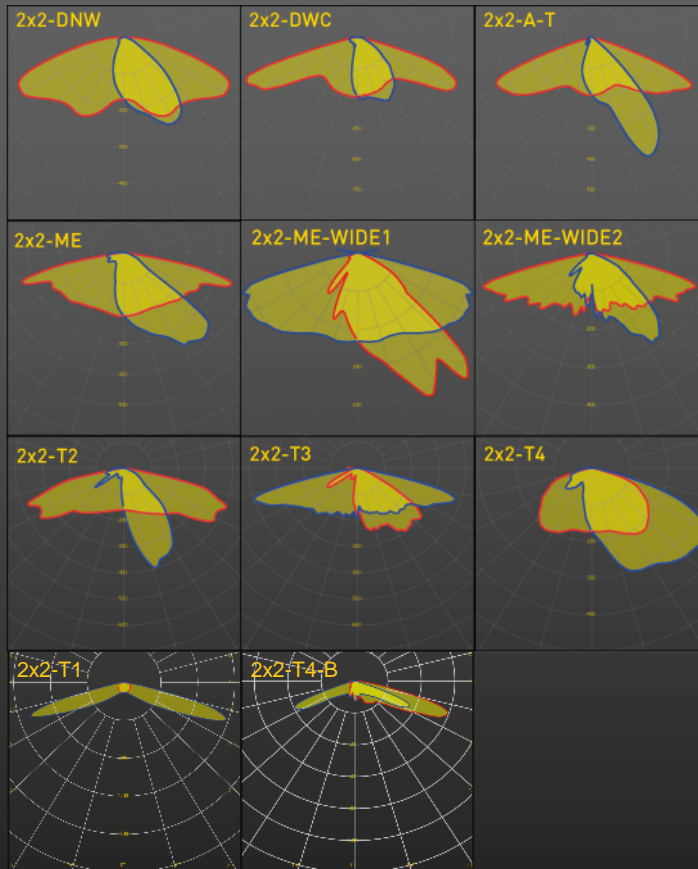


Modular solutions

Competitive edge in manufacturing



Street lighting

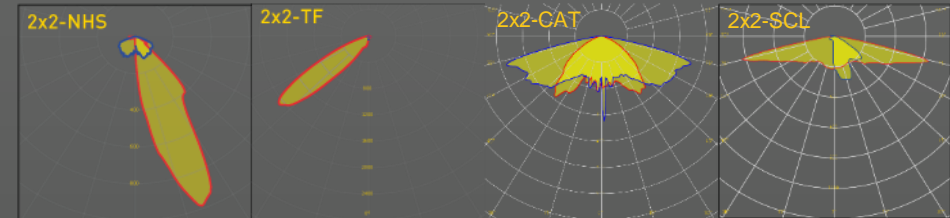


Urban lighting,
Minimal backlight

Tunnel lighting

Catenary street
lighting

S-Class pedestrian
street lighting



Area lighting

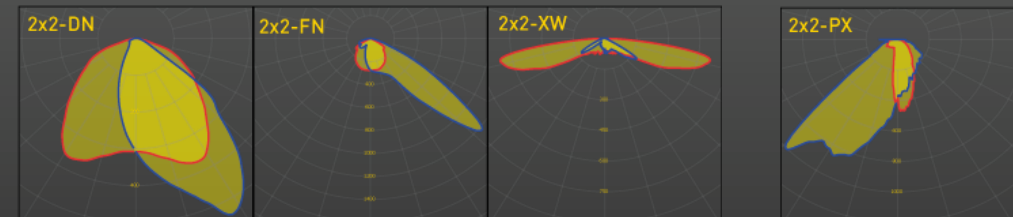
Forward throw,
Narrow beam

Forward throw,
Wide beam

Wide beam

Pedestrian crossing
lighting

Right side traffic



Left side traffic



Modular solutions – STRADA-2X2

Competitive edge in manufacturing



C12361_HB-2X2-W

Meets DLC high bay requirements

- 70% lm in 0°-60° zone
- 35% lm in 20°-50° zone.

Optimal light distribution

- Rectangular pattern
- FWHM ~55°
- Low glare

Optimal mechanical design

- Environmental sealing possible
- Automated assembly markings
- LED spacing for heat management

Over 90% optical efficiency

- Optical grade PMMA lens
- Extra glass cover not needed

Results with example lens

LED output per luminaire: 15,000 lumen

Average illuminance: 306 lux

Average uniformity: 0.47



C13232_HB-2X2-WW

Typical FWHM: 25°

Typical efficiency: 92%

Typical cd/lm: 3.7

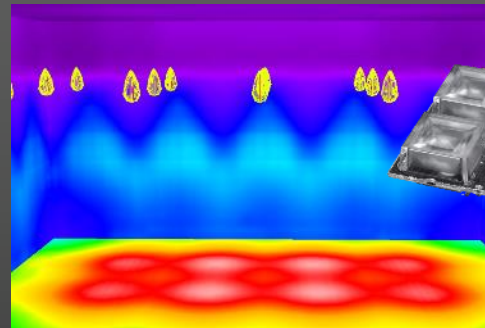
SIMULATION

Distance between luminaires 6m

10 klm / luminaire

Average 280-300 lx

Installation height 9 meters



C12361_HB-2X2-W

Typical FWHM: 51°

Typical efficiency: 88%

Typical cd/lm: 0.9

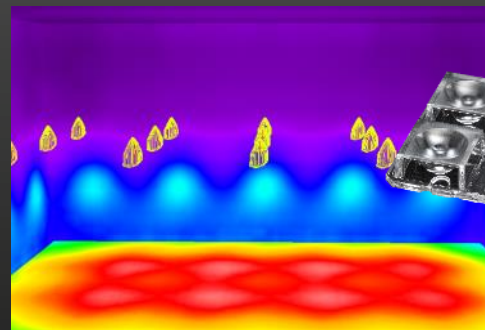
SIMULATION

Distance between luminaires 6m

10 klm / luminaire

Average 280-300 lx

Installation height 12 meters



C13233_HB-2X2-M

Typical FWHM: 65°

Typical efficiency: 91%

Typical cd/lm: 0.9

SIMULATION

Distance between luminaires 6m

10 klm / luminaire

Average 280-300 lx

Installation height 15 meters

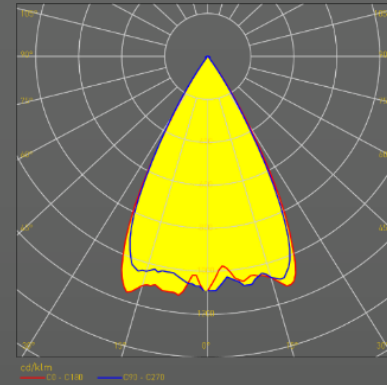
HB-2x2

Easy industrial lighting (~10, 30, ~50, ~70 110° beams)

- ✓ New high power HB-2X2 versions optimized for Cree XM-L and XP-L LEDs
- ✓ Luminous flux over 4000 lm per optics module achievable
- ✓ Newly designed TIR lenses are optimized for uniform illumination and high efficiency
- ✓ DLC compliant light distribution

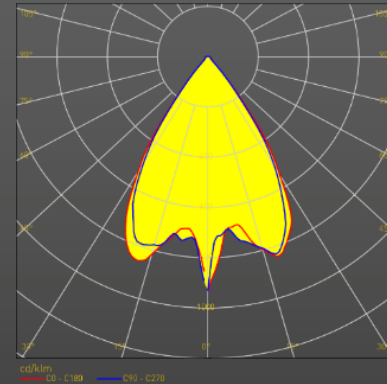
C14605_HB-2X2-RW

- D: 50 x 50 mm
- H: 8.5 mm
- Typical efficiency: 93%
- Beam type: Wide



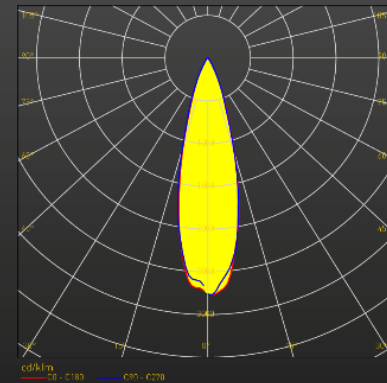
C14606_HB-2X2-WW

- D: 50 x 50 mm
- H: 8.5 mm
- Typical efficiency: 92%
- Beam type: Extra Wide



C14607_HB-2X2-M

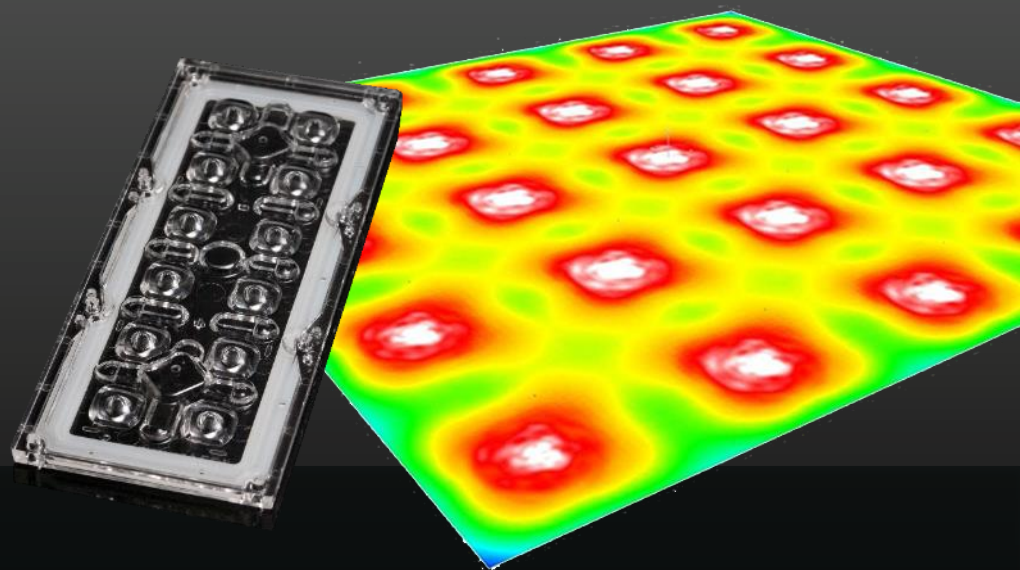
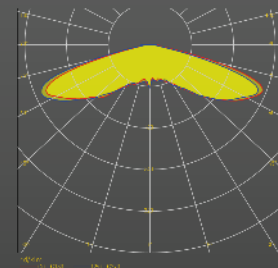
- D: 50 x 50 mm
- H: 8.5 mm
- Typical efficiency: 93%
- Beam type: Medium



HB-2X2 modules for Cree XM-L and XP-L LEDs



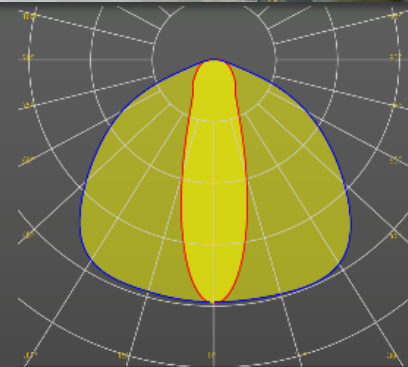
- ✓ IP2X6 based on STRADA-2X2-VSM module
- ✓ Symmetrical wide square beam (IESNA Type VS)
- ✓ Designed for wide area lighting (Pedestrian areas, Parking lots, Street lighting)
- ✓ Good luminance uniformity
- ✓ Typical luminaire classifying IESNA "Semi Cutoff" or G1-G2 luminous intensity class (EN13201)
- ✓ Ingress protection up to IP67 with integrated silicone gasket
- ✓ Compatible with up to XM-L sized LED packages



STRADA-IP-2X6-VSM

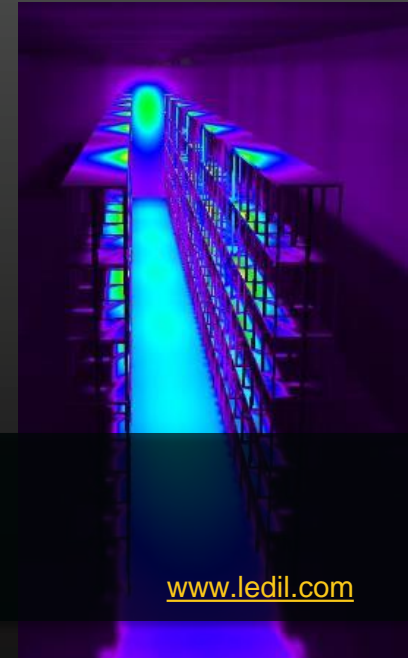
Designed for wide area lighting outdoors

- ✓ Oval light distribution and highly efficient design is optimized especially for illumination of high racks and warehouse aisles
- ✓ Features the standard IP-2X6 footprint
- ✓ Integrated silicone gasket provides protection from dirt and water up to IP67
- ✓ Designed to work with high power LEDs from brands like Cree, Osram, Philips Lumileds and Nichia
- ✓ Dimensions 173 x 71.4 mm
- ✓ Height 12.2 mm
- ✓ Typical efficiency 91%
- ✓ Typical FWHM 32+115°



DESIGN EXAMPLE

- Luminaire installation height: 8 m
- Luminaire spacing: 8.3 m
- Number of luminaires: 6 pcs
- Shelf height: 6 m
- Distance between shelves: 2 m
- Luminaires are installed in the aisle centerline
- Fixture luminous flux 3000 lm
- Eav: 38 lx, Emin: 32 lx, Emax: 41 lx
- u0: 0.839



HB-IP-2X6-O

For efficient warehouse aisle lighting

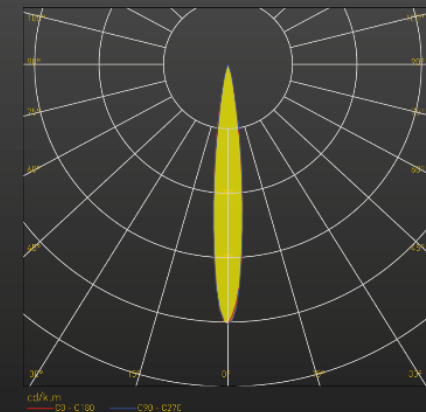
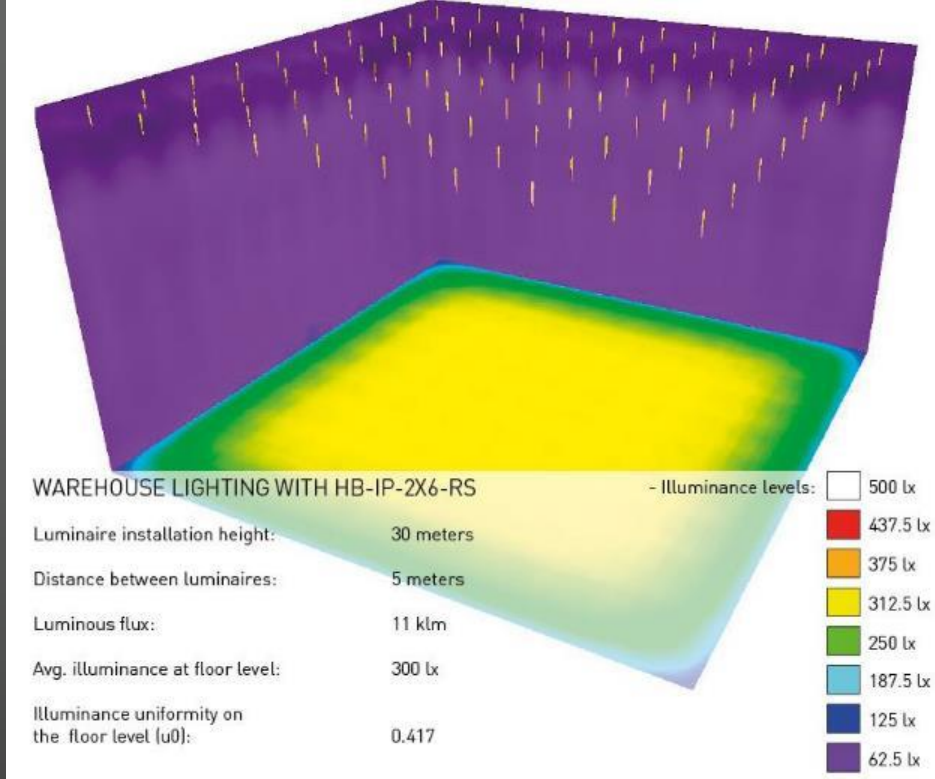
- ✓ Developed especially for high bay applications
- ✓ Ingress protection up to IP67 with integrated silicone gasket
- ✓ Optimized for high-power LEDs from leading manufacturers
- ✓ Compatible with up to XM-L sized LED packages

TYPICAL APPLICATIONS

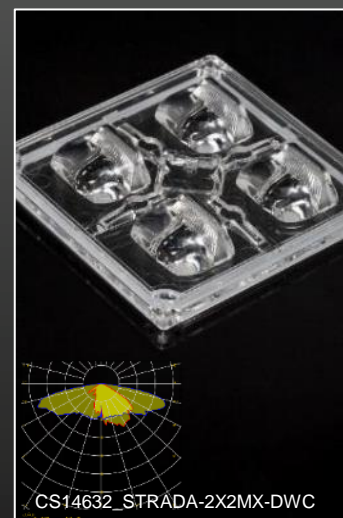
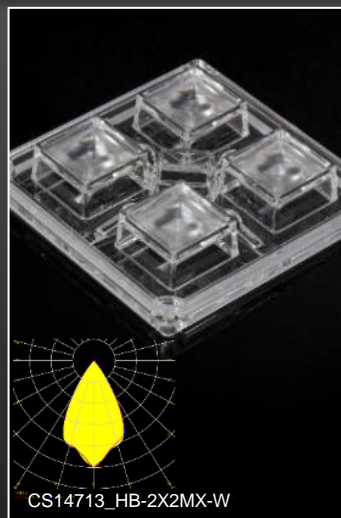
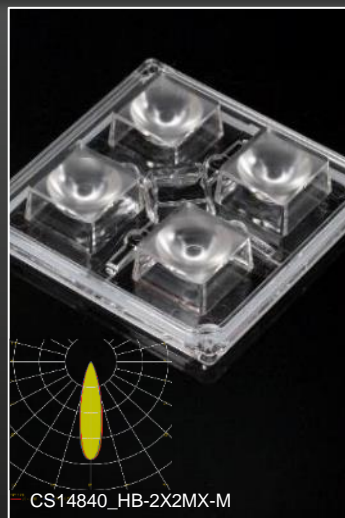
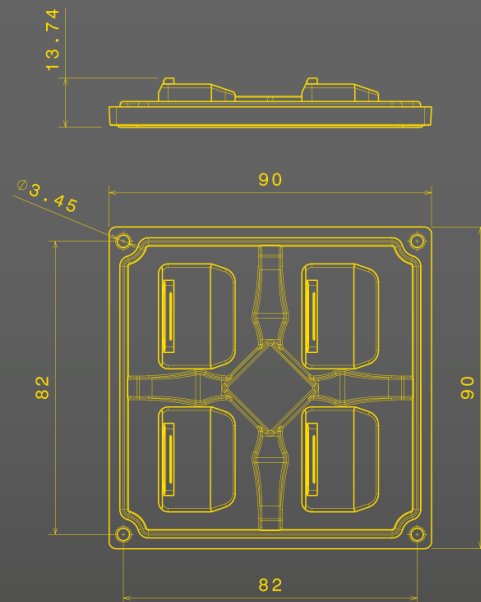
- ✓ Warehouses
- ✓ Commercial, industrial and manufacturing structures
- ✓ Sports arenas and stadiums

HB-IP-2X6-RS

Reaching for higher heights

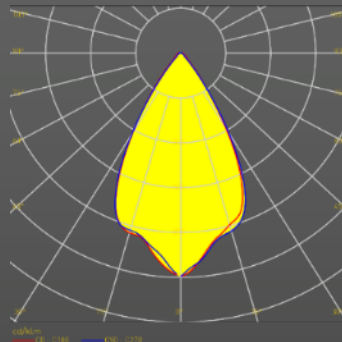
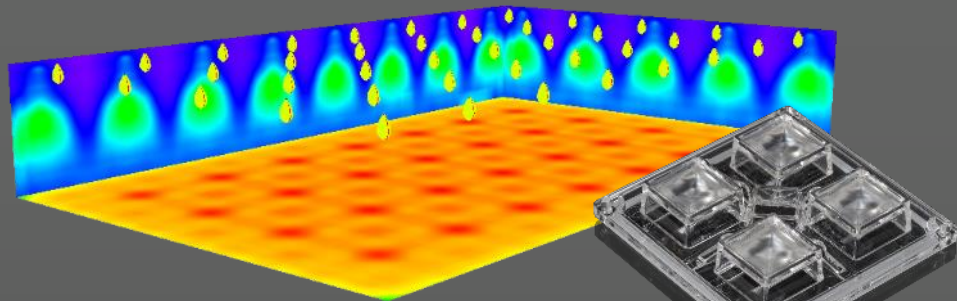


- ✓ 90 x 90 mm lens module family for super high power LEDs up to 7070 package sizes
- ✓ Modular structure enables wide compatibility and easy modification
- ✓ IP67+ with integrated gasket
- ✓ Simplified thermal design
- ✓ Silicone option available for enhanced thermal properties
- ✓ Standard LED positioning

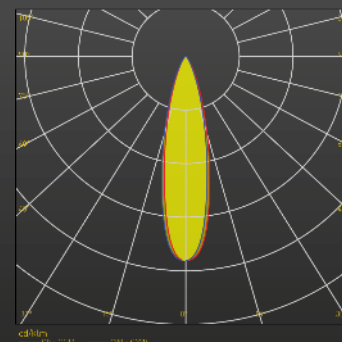


2X2MX – New platform for Luxeon M / MZ

- ✓ Same proven performance as existing HB-2X2 family
- ✓ Based on the same standard 2X2MX footprint as street lighting lenses
- ✓ For super high power LEDs up to 7070 package sizes
- ✓ Typical efficiency over 90%
- ✓ HB-2X2MX-M typical FWHM 30 °
- ✓ HB-2X2MX-W typical FWHM 58 °
- ✓ Upcoming: HB-2x2MX-WWW
- ✓ Extra extra wide distribution coming soon



CS14713_HB-2X2MX-W

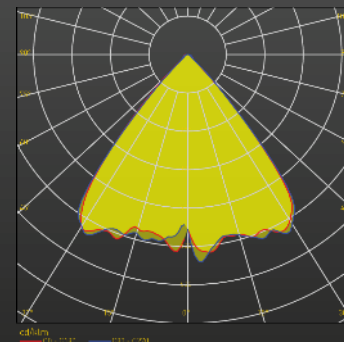


CS14840_HB-2X2MX-M

Industrial lighting with
CS14713_HB-2X2MX-W

- Luminous flux (lamps): 24000 lm
- Distance between luminaires: 8 m
- Maintenance factor: 0.8
- Room height: 10 m
- Average illuminance: 301 lx
- Emin: 229 lx
- Emax: 345 lx
- Illuminance uniformity (u0): 0.762

COMING SOON!



CS14839_HB-2X2MX-WWW

2X2MX family – High Bay

TM **2X2**mx

- ✓ Symmetrical wide square beam (IESNA Type V Short)
- ✓ Good luminance uniformity
- ✓ High efficiency (94% typ.) optical design
- ✓ Typical luminaire classifying IESNA "Semi Cutoff" or G1-G2 luminous intensity class (EN13201)

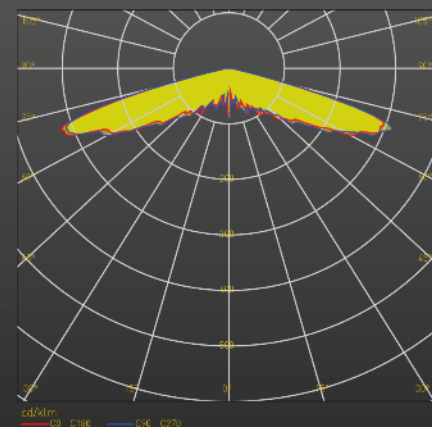
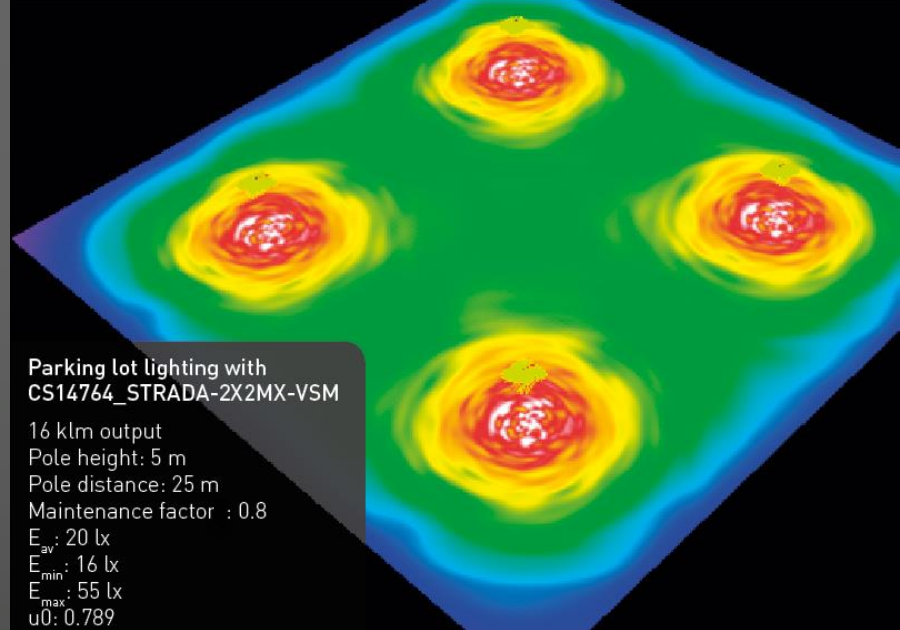
TYPICAL APPLICATIONS

- ✓ Wide area lighting
- ✓ Pedestrian areas
- ✓ Parking lots
- ✓ Street lighting



Parking lot lighting with
CS14764_STRADA-2X2MX-VSM

16 klm output
Pole height: 5 m
Pole distance: 25 m
Maintenance factor : 0.8
 E_{av} : 20 lx
 E_{min} : 16 lx
 E_{max} : 55 lx
 $u0$: 0.789



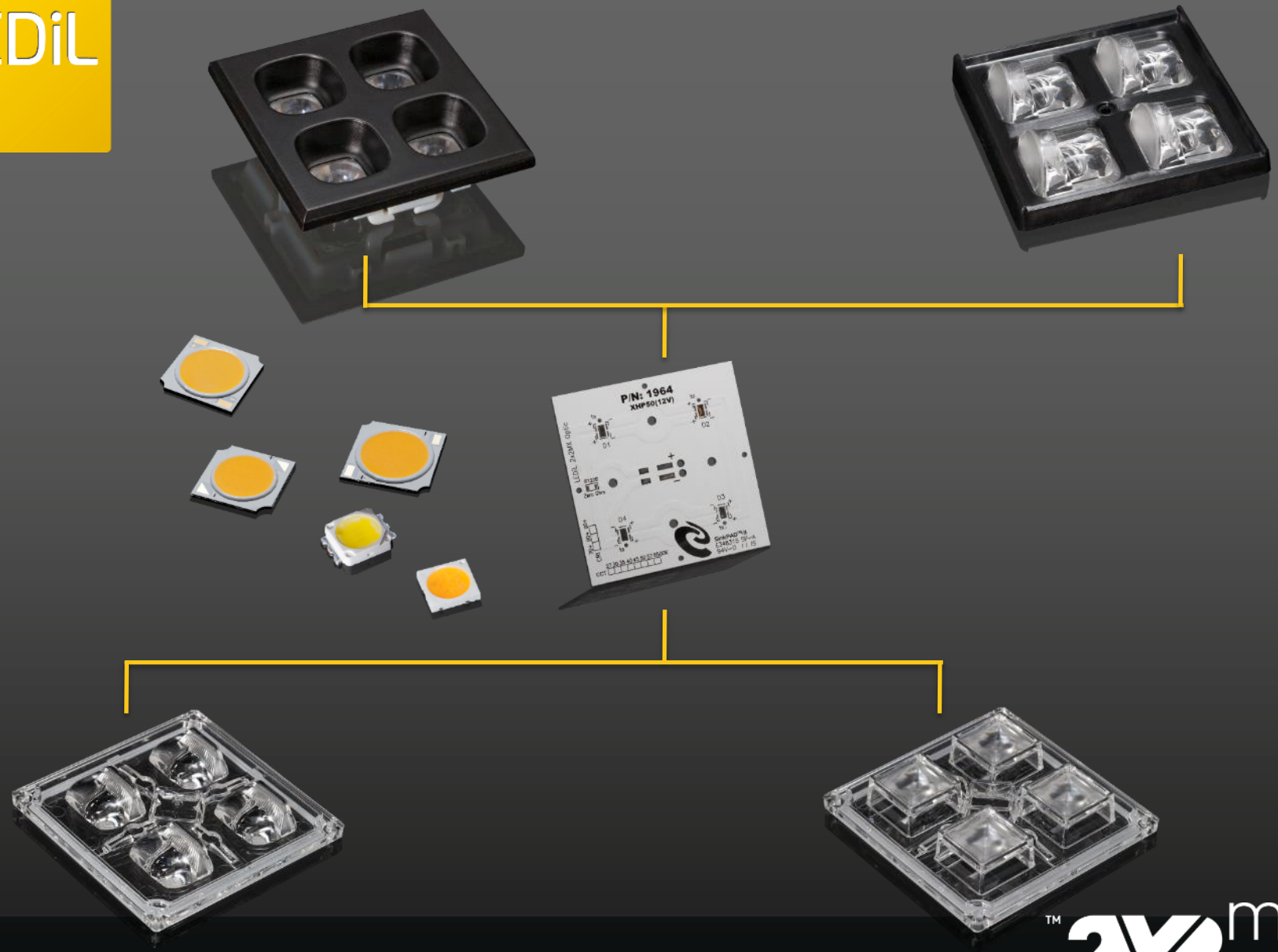
CS14764_STRADA-2X2MX-VSM

STRADA-2X2MX-VSM

More power with less costs

TM **2X2**mx

LEDiL[®]



Full range of applications – For COBs or LEDs

2X2TMmx

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LEDiL

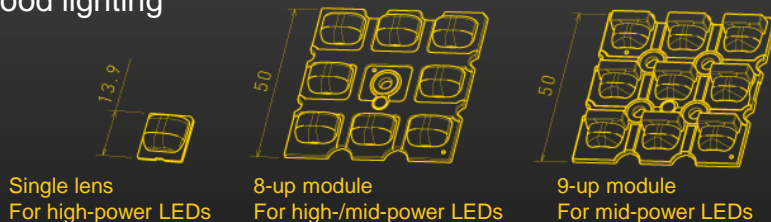
- ✓ The same dimensions and mounting hole as STRADA-2X2 family, but with 8 lenses in one
- ✓ Standard street lighting and high bay beams available
- ✓ Single lens available with the same beam angles

COMPATIBILITY

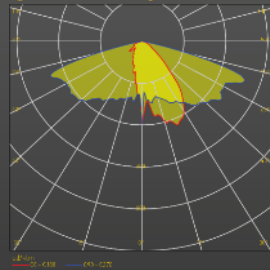
- ✓ STRADELLA-8UP: 3030 & 3535 size packages
- ✓ STRADELLA-9UP: CSP LEDs

TYPICAL APPLICATIONS

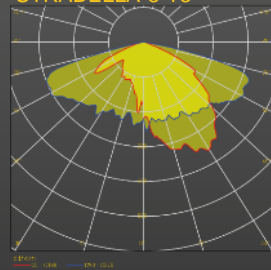
- ✓ Street lighting (ME, T2 & T3)
- ✓ High bay lighting (30, 60, 90)
- ✓ Flood lighting



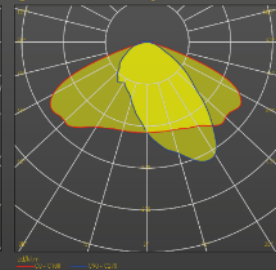
STRADELLA-8-T2



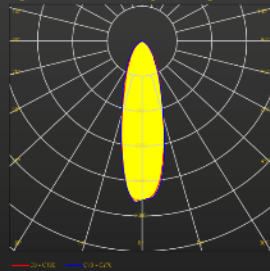
STRADELLA-8-T3



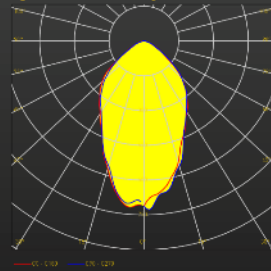
STRADELLA-9-AT



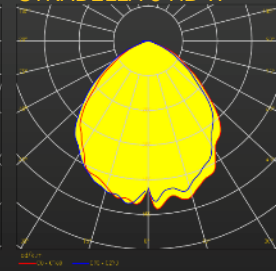
STRADELLA-8-HB-S



STRADELLA-8-HB-M



STRADELLA-8-HB-W



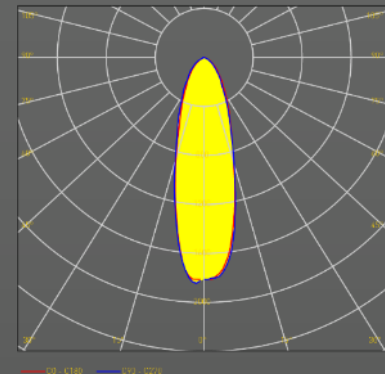
STRADELLA family

Mid power street lighting

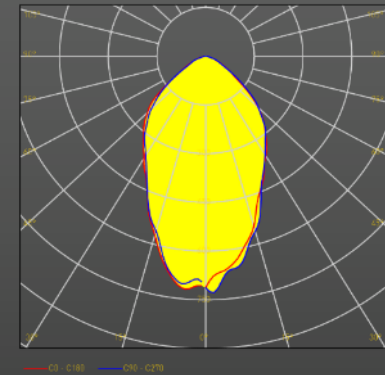
- ✓ High Bay versions based on STRADELLA 8-up street lighting lenses
- ✓ Same size as our existing 2X2 but twice the LEDs
- ✓ Allows very efficient luminaire constructions
- ✓ Tunneling system throughout optics to maintain better airflow and thermal control
- ✓ Three beam distributions:
 - Spot (typ. FWHM 30 degrees)
 - Medium (typ. FWHM 60 degrees)
 - Wide (typ. FWHM 90 degrees)



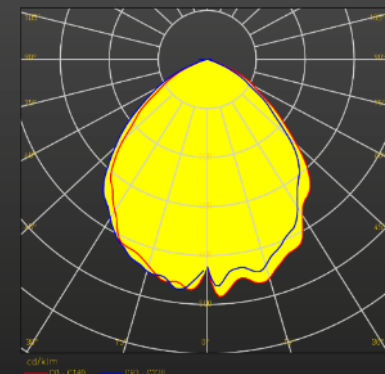
STRADELLA-8-HB-S



STRADELLA-8-HB-M



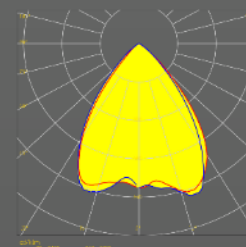
STRADELLA-8-HB-W



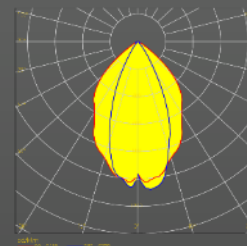
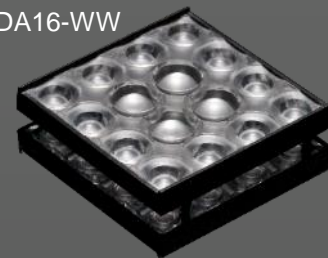
STRADELLA-8 High Bay

STRADELLA-8-HB-S, -M & -W

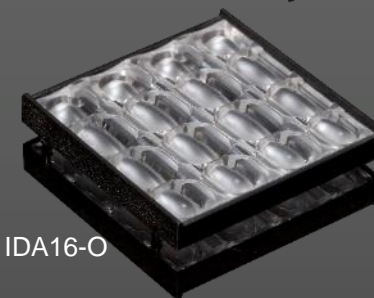
- ✓ 50 x 50 x 6.3 mm 16-up lens array with optional clip-on frame
- ✓ Modular system: optics held in place with installation frame
- ✓ Optional frames with integrated shades (UGR) planned
- ✓ Lens has two location pins in bottom for exact assembly to light engine.
- ✓ Possibility to use only lens (glue needed)
- ✓ Optic array with 12.5 mm spacing, spacing can remain same if more than one units in row.



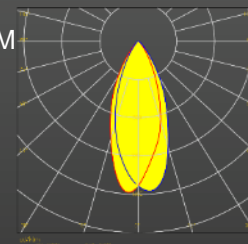
IDA16-WW



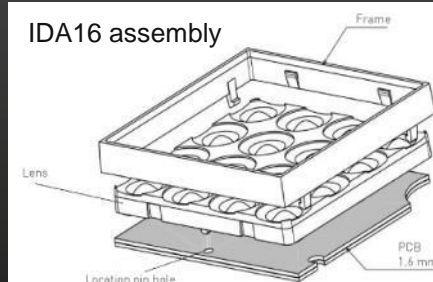
IDA16-O



IDA16-M

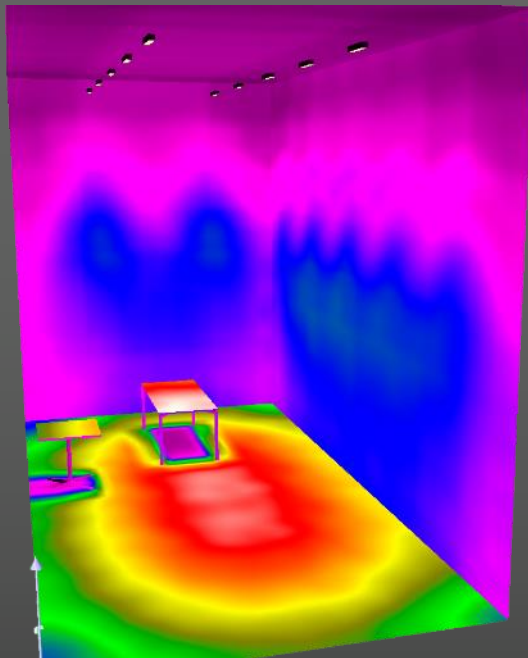


IDA16 assembly



Code	Beam type	FWHM	Efficiency
IDA16-M	Narrow	40°	92%
IDA16-WW (Batwing)	Very Wide Flood	71° (sim.)	93% (sim.)
IDA16-O	Oval	90°+33° (sim.)	92% (sim.)

LEDiL's new IDA
16-up module family for mid-power LEDs

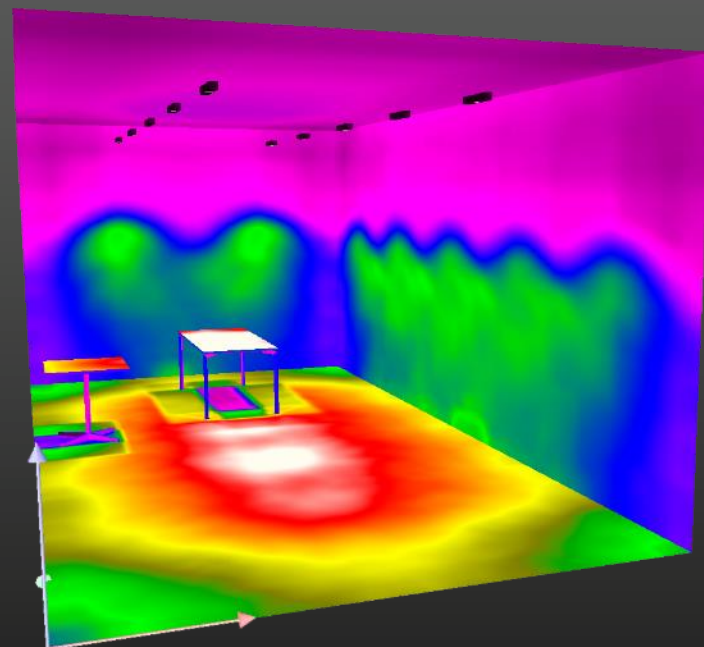


IDA16-M

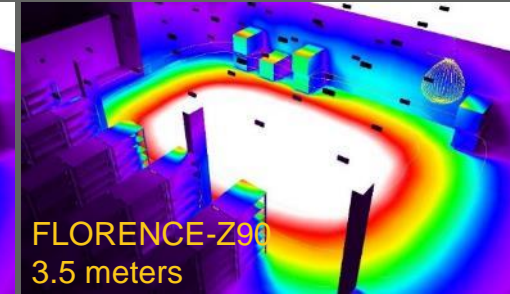
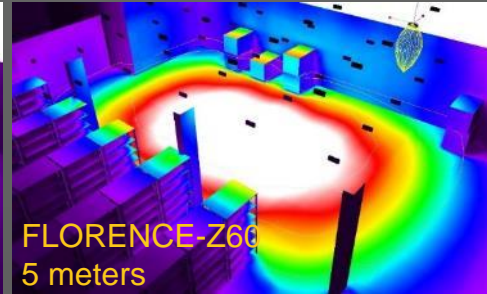
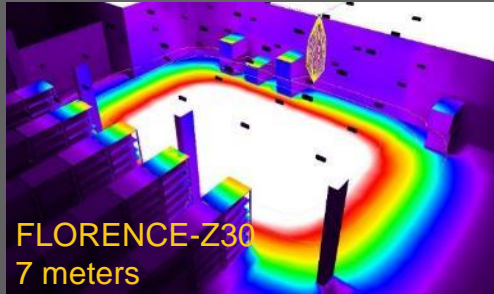
- 4 x 8 m room, 5 m high
- Task area 500 lx
- 7 pcs IDA16-M optics per fixture
- 10 fixtures installed 1.5 m spacing
- 2114 lm each fixture
- Eav: 463 lx
- Emax: 614 lx

IDA16 Batwing

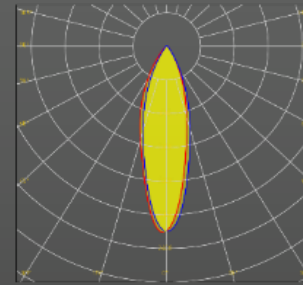
- 4 x 8 m room, 3 m high
- Task area 500 lx
- 7 pcs IDA16 Batwing optics per fixture
- 10 fixtures installed 1.5 m spacing
- 2135 lm each fixture
- Eav: 522 lx, Emax: 705 lx



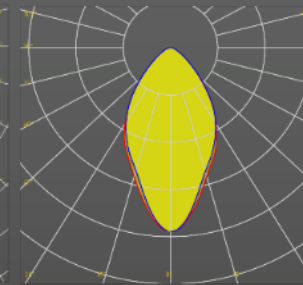
LEDiL's new IDA
16-up module family for mid-power LEDs



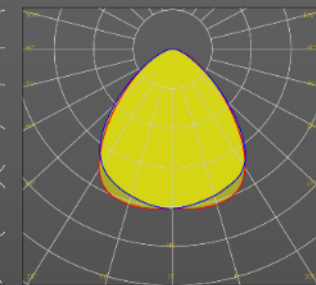
- ✓ Z30(30 deg), Z60(60deg) and Z90(90deg) provide uniform and low glare light distribution in advanced low bay environments with >90% efficiency.
- ✓ No light wasted on the ceiling and walls
- ✓ Suggested installation heights in industrial applications:
 - Z90 ~3...5 meters
 - Z60 ~4...6 meters
 - Z30 ~7 meters
- ✓ Substantially lower W/m² achievable



FLORENCE-Z30



FLORENCE-Z60



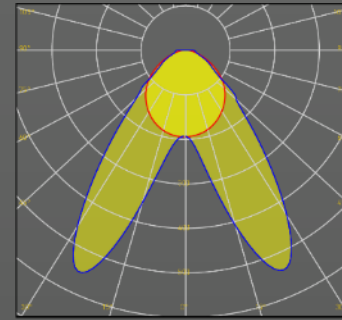
FLORENCE-Z90



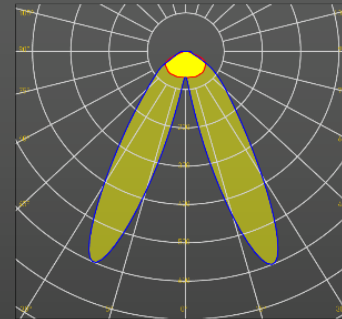
FLORENCE-3R light distributions

FLORENCE-Z30, Z60 and –Z90

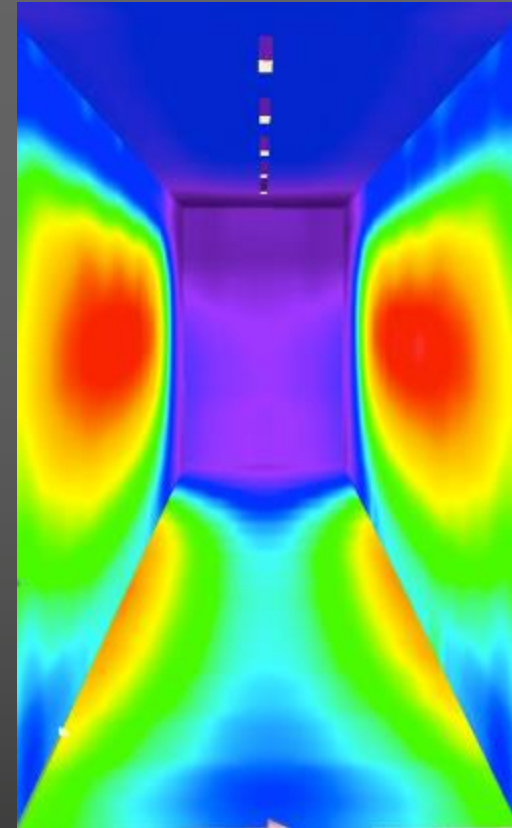
- ✓ ZT25 for double sided store environments with items on shelves both sides of the aisle.
- ✓ Provides uniform double sided oval beam with some intensity in the aisle center as well.
- ✓ Simplified assembly example; 1.5m distance between lamps, height 3.2m, aisle width 2m



FLORENCE-ZT25



FLORENCE-ZT25



5 pcs Philips Fortimo LED Line 1100 lm modules with FLORENCE- ZT25 optics installed



FLORENCE-3R light distributions

FLORENCE-ZT25 and -Z2T25

- ✓ Optional FLORENCE-shades are available in two colors, black and grey and they snap easily into place
- ✓ The Unified Glare Rating below 19 is achievable with the additional shades
- ✓ FLORENCE-PF-3R is designed for electrical appliances where accessing and opening of the product needs to be restricted
- ✓ FLORENCE-PF-3R features tamper proof luminaire assembly and class 1 light fitting

FLORENCE-PF-3R

- ✓ Press fit assembly to M4 sized holes
- ✓ For tamper proof luminaire assembly
- ✓ Class 1 light fitting

FLORENCE-3R SHADES

UGR

≤16 = Good for most lighting applications

≤19 = Good for most office lighting etc.

Spacing – 0.25 x height

Minimum “defacto” installation spacing for low glare beams.



C14592_FLORENCE-3R-SHD-BLK

C14453_FLORENCE-3R-SHD-GR



C14437_FLORENCE-PF-3R

Spacing	FLORENC E-3R-Z90	FLORENC E-3R-Z60	FLORENC E-3R-Z60	FLORENC E-3R-Z60
0.25	>20	20	<19	>22
0.50	<16	<16	<16	<16

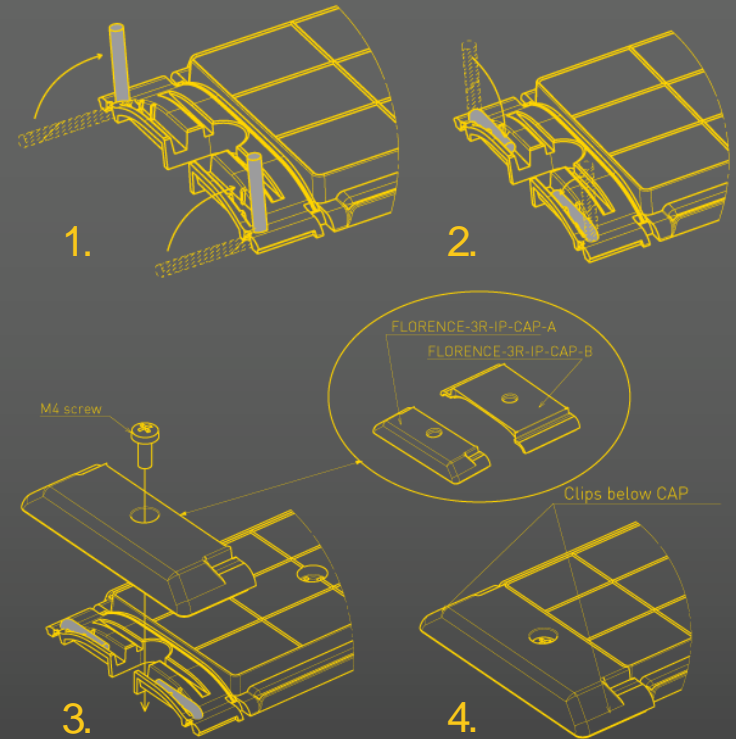
Can be used for office lighting etc.

FLORENCE-3R Accessories

Manage your lighting and simplify your assembly

Assembly

- Set foamed silicon stripe under both sides of the lens
- Insert foamed silicon to gap, which are located at the ends of the lens on each side (1). Turn the remaining silicone into the slot (2).
- Place the CAP-A or CAP-B in its place (3) and press the CAP into place on each side (4)



- ✓ Modified FLORENCE structure to enable ingress protection
- ✓ Protects the luminaire from dirt
- ✓ Silicone sealing strips goes on both sides of the module
- ✓ End part for the lens (F14759_FLORENCE-3R-IP-CAP-A) seals the lens ends
- ✓ Joint part (F14758_FLORENCE-3R-IP-CAP-B) provides sealing between lenses when more than one lenses are assembled in row
- ✓ Dimensions: 333,6 x 79,1 mm (321 x 75 mm without the connective parts)
- ✓ Height: 10,5 mm
- ✓ Fastening with M4 screws
- ✓ First model to be released with Z90 optics (F14757_FLORENCE-3R-IP-Z90)



PRELIMINARY

F14757_FLORENCE-3R-IP-Z90
FLORENCE-3R with Ingress Protection

- Оптика LEDiL позволяет снижать себестоимость светильников разными методами:
- - снижением количества исходной пластмассы в изделии, и как следствие цены готовой линзы,
- - за счет высокой эффективности линзы LEDiL уменьшают количество светодиодов, линз, вес радиатора и мощность драйвера при сохранении необходимого светового потока
- - удешевляет технологию производства светильников, сокращая трудоемкость сборки светильников
- - сокращает номенклатуру деталей и корпусных элементов нужных для производства широкого модельного ряда светильников, за счет широкого ассортимента световых диаграмм линз с унифицированными габаритами

The background of the slide is a close-up, high-contrast photograph of an LED strip light. The strip is populated with numerous small, square LED chips, each encased in a clear, protective lens. The strip is mounted on a dark, textured substrate, possibly a metal heat sink. The lighting is dramatic, with bright highlights reflecting off the lenses and the metallic surface, creating a sense of depth and texture. The overall color palette is dominated by dark greys and blacks, with the yellow of the text and logo providing a strong contrast.

LEDiL

Thank you!