LEDiL

Guide for office lighting optics

V1-0 / 2024

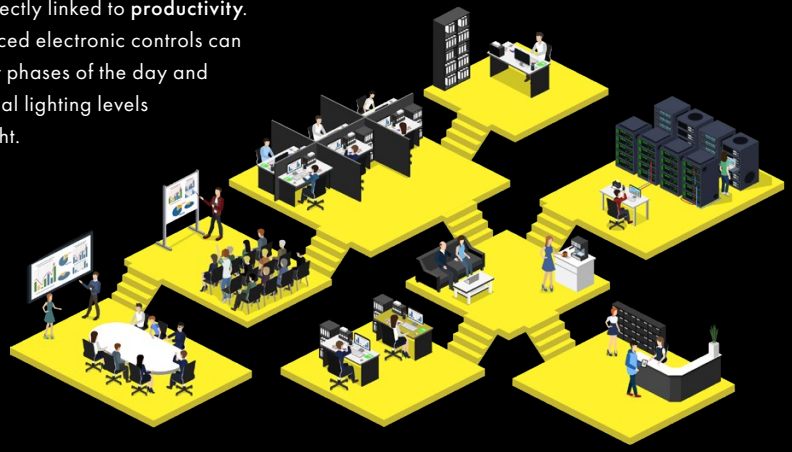
Office lighting in a nutshell

Offices consist of many different types of rooms and areas: work areas, public areas, hallways, meeting rooms, showrooms, kitchens, places for relaxation – each requiring a different kind of lighting. Some spaces must follow specific criteria while other areas can be illuminated with much more freedom.

Besides visual comfort, people's wellbeing and safety are important considerations and lighting can also be directly linked to **productivity**. Today's advanced electronic controls can follow different phases of the day and balance artificial lighting levels with natural light.

Using warmer tones and low intensity at the beginning and end of the day can lower stress, and using cooler tones during the day can be energizing.

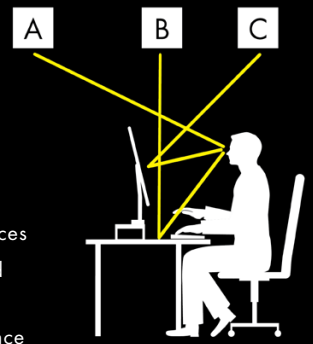
This is all part of **Human Centric Lighting** philosophy and is very important, even vital, especially indoors where we spend many hours a day in artificially lit environments.



Take visual performance, visual comfort and visual ambience into account to achieve the right light for specific space.

Glare

Glare is the sensation of visual discomfort caused by areas that are too bright within the field of vision, such as lit surfaces, parts of luminaires, windows and/or ceiling. Glare should be limited to avoid fatigue, discomfort and accidents.



Types of glare

Direct (A): Bright lamps – measurable and has a clear affect to performance

Reflected (B & C): Reflection of light on specular high gloss surfaces

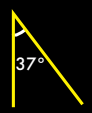
Disability: Affects visual performance – can be measured

Discomfort: Subjective evaluation; feels uncomfortable but doesn't necessarily affect visual performance

UGR
Discomfort glare criterion

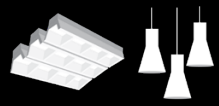
	13 Barely perceptible	19 Barely acceptable (for average eye tasks)	25 Barely comfortable (for simple eye tasks)
<10 Imperceptible	16 Perceptible (for accurate eye tasks)	22 Unacceptable (for moderate eye tasks)	>28 Uncomfortable

How to reduce glare

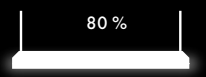


Beam
Limit light intensity above potential glare angles

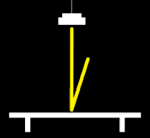
Surface
More uniform surface luminance with same lumen output



Visibility
Shading and shielding



Output
Decrease light output (might require adding more luminaires)



Placement
Avoid glare on task area and increase ambient light

Ambient light
Less contrast ▸ Eyes adapt to brightness more easily

5 Tips for modern and pleasant office lighting

1 Aim high

Studies show that good office lighting increases **productivity and wellbeing** as well as **boosting creativity**. They also show that people place great value on good workplace lighting and many are unhappy with their current office lighting. Controlling lighting to replicate natural daylight patterns helps peoples natural circadian rhythm improving overall wellbeing, motivation and productivity.

2 Design for the environment

Applying the traditional room-related lighting concept of a 500 lux blanket no longer meets the needs of the modern office or the modern worker, both of which require variety and contrast. Thanks to LED technology, office lighting can be designed to **enhance atmosphere and décor** as well as **create contrasts and different moods**. This in turn allows much greater flexibility when designing the overall office layout than would be possible with a traditional 500 lux blanket.

3 Dark Light, Bright Light, or indirect?

Office lighting can be classified into two types: Bright Light solutions, such as microprismatic extrusions, and Dark Light solutions, such as luminaires with shades and louvres. **Dark Light** solutions are great for premium office lighting with a **nearly invisible light source** that creates a comfortable environment. They also have a unique character making them suitable for certain architectural purposes. However, **Bright Light** solutions are often preferred due to their visible optical surfaces that provide **comfortable lighting from any angle**. Typically, individuals select one type of office lighting over the other based on **personal preference** and the **aesthetic appeal of the lighting solution**.

Indirect lighting can create **various moods and effects** depending on requirement and task, but it's often beneficial to combine it with direct lighting, such as **wall washers** and **up-lights**. This creates a bright and **airy atmosphere** while reducing glare.

4 Luminaire placement

Luminaires in a typical open office are often placed next to walls to achieve sufficient lighting levels on the walls. However, when desks are placed in the office lighting is not always a consideration, and some employees might find they are subjected to direct and indirect glare. A good office and lighting design plan is essential to ensure light can be **adjusted** according to the task and the individual.

5 Miniaturization

LEDs enable smaller, modern and fresh designs for a lower cost. However such designs can be too bright and cause glare if suitable optics designed for office environments are not used. Miniaturized designs with a full range of beams gives you the tools to **be more creative than ever.**

3 Linear office lighting setups

Details

1 Room related lighting concept with recessed direct light

2 Task related lighting concept with suspended luminaires

3 Task related office lighting with freestanding luminaires

Dare not to glare.

DESIGNED FOR OFFICE LIGHTING

Enjoy the lighter side of office life

DESIGNED FOR OFFICE LIGHTING

DAISY

PATENTED

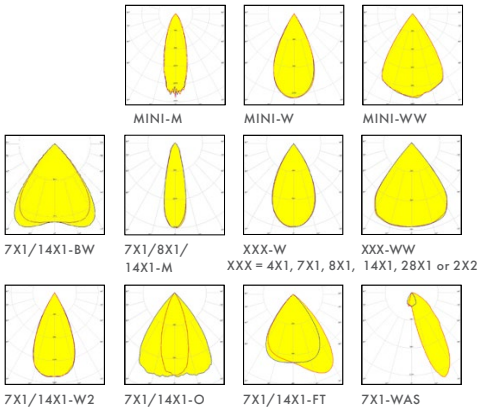
Premium Dark Light optics in several form factors

- **Low glare (≤UGR 19)** Dark Light optics with a nearly invisible light source and premium appearance
- Delivers **elegant, human centric lighting**
- **Seamless design** in several lengths, colours and form factors designed to fit in different luminaires
- New 7X1-SHD3 shade with **circular openings** for tailored luminaire designs.

Sizes:

	MINI-14X1:	280 x 21 mm
	MINI-3X1:	59.7 x 21 mm
	1X1:	40 x 40 mm
NEW	4X1:	180 x 40 mm
	7X1/14X1:	280 x 40 mm
NEW	7X1-CRV:	r: 200 x 40 mm
NEW	8X1:	305 x 38 mm (12''), LED pitch 1.5''
	28X1:	1140 x 40 mm
	2X2:	79.4 x 79.4 mm

Compatibility: Optimised for 2835 LED clusters

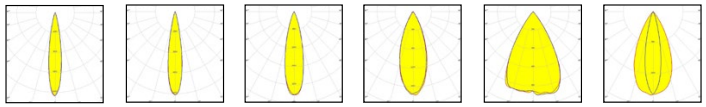


DARCY

COMING

Versatile Dark Light for superior architectural lighting with HP LEDs

SIZE:
DARCY-4X1: d: 94 x 25.8 mm / h: 21 mm



BRIANNA

PATENTED

Beautiful Bright Light family for comfortable office lighting from any angle

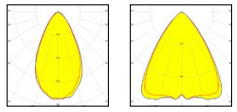
- Low glare (UGR ≤19) Bright Light optics with **astonishing visual appearance and comfort**
- For **sleek** recessed, surface mounted and suspended office luminaires **without any gaps**
- Can be used as such or with a shade available in black and white with matt finish
- **Compatible with DAISY family luminaires** using the BRIANNA shade

Sizes:

7X1:	280 x 36 mm
14X1:	560 x 36 mm
28X1:	1120 x 36 mm

Compatibility: Optimised for 2835 LED clusters

COMING



LINDA

Seamless linear extrusion lenses with excellent optical control and innovative installation

LINDA-10: 40°+85° / 55°+95° / 35°+85° 145°+100° / ZT25 / F
LINDA-24: 60°+ 90° / 40°+100° / 70°+100°/ 90°+100° / 110°+100° / 145°+100° (UP)
165°+130° (UP2) / ZT25 / Z2T25
LINDA-40: 60° / 90° / 40°+86° / ZT25 Z2T25/ DL / MP

FLORENTINA

A hybrid design of a black reflector and a lens for high visual comfort in various shapes

SIZES:

FLORENTINA-12X1:	d: 29 x 287 mm / h: 25.1mm
FLORENTINA-1:	d: 40 x 40 mm / h: 31.9 mm
FLORENTINA-2X2:	d: 95.6 x 95.6 mm / h: 28.5mm
FLORENTINA-4X2:	d: 175.6 x 55.6 mm / h: 28.5 mm

Typical office luminaires

Direct lighting
Recessed or surface mounted

Indirect lighting
Suspended luminaire

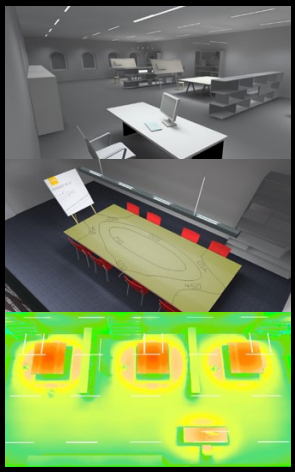
Direct / indirect lighting
Suspended luminaire

Task lighting
Track light, downlight or free standing

Wall-washing
Recessed, surface mounted or cove light

Technical support

- Simulations to show optic performance in real applications
- Guides and tips for installations
- Thermal analysis for luminaire designs



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