

# LEDiL

Guide for office lighting optics

V1-0 / 2023



# Office lighting in a nutshell

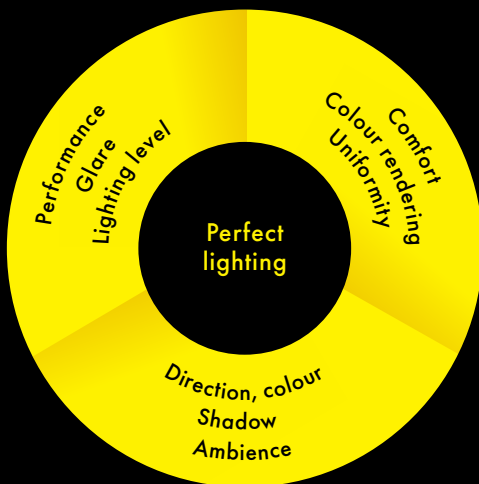
Offices consist of many different types of rooms and areas: work areas, public areas, hallways, meeting rooms, showrooms, kitchens, places for relaxation – each requiring a different kind of lighting. Some spaces must follow specific criteria while other areas can be illuminated with much more freedom.

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.

# 5 Tips for modern and pleasant office lighting

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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**.

# Dare not to glare.

DESIGNED  
FOR OFFICE  
LIGHTING

## DAISY

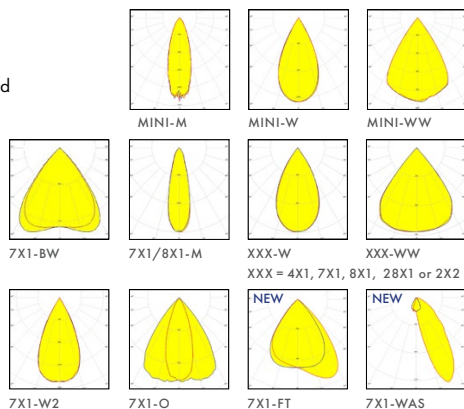
Premium Dark Light family for unobtrusive, discrete lighting designs.

- Low glare ( $\leq \text{UGR } 19$ ) Dark Light optics with a nearly invisible light source and premium appearance
- Discreet direct light for recessed, surface mounted and suspended office luminaires.
- High efficiency  $>85\%$  (even with the shade)
- Available in black, white and metal with gloss or matt finish

**Sizes:** MINI-14X1: 280 x 21 mm  
 MINI-3X1: 59.7 x 21 mm  
 4X1: 180 x 40 mm  
 7X1: 280 x 40 mm  
 8X1: (12") 305 x 40 mm  
 28X1: 1140 x 40 mm  
 2X2: 79.4 x 79.4 mm

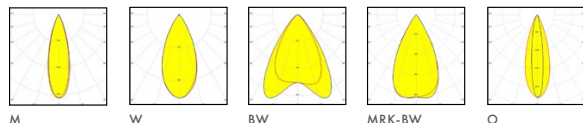
**Compatibility:** Optimized for 2835 LED clusters

PATENTED



## FLORENTINA

- Discreet direct light for meeting rooms, receptions, task lights and down lights.
- Part of LEDil's Dark Light ( $\text{UGR} \leq 16$ ) product family.
- A hybrid design of black reflector and lens for high visual comfort in various shapes.



# Enjoy the lighter side of office life

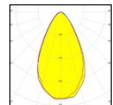
DESIGNED  
FOR OFFICE  
LIGHTING

## BRIANNA

PATENTED

Beautiful Bright Light family for comfortable office lighting from any angle

- Low glare (UGR  $\leq 19$ ) 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



BRIANNA-7X1/  
14X1/28X1-W

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

**Compatibility:** Optimized for 2835 LED clusters

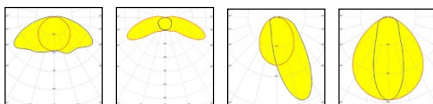
## LINDA

Seamless linear extrusion lenses with excellent optical control and innovative installation.

**Sizes:** LINDA-40: 1140 x 40 mm  
LINDA-24: 1140 x 26 mm  
LINDA-10: 1140 x 10 mm

**Compatibility:** LINDA-24 and -40: single row mid-power up to 24 and 40 mm wide Zhaga PCBs

LINDA-10: 8–10 mm LED strips and 2835, 3030 and 5630 mid power LEDs



UP

UP2

ZT25

OVAL



### 3 Linear office lighting setups



Details

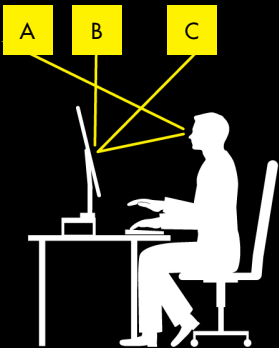


# Glare

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



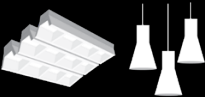
### Beam

Limit light intensity above potential glare angles



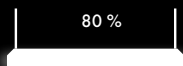
### Surface

More uniform surface luminance with same lumen output



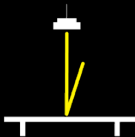
### Visibility

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

# Typical office luminaires

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**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

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

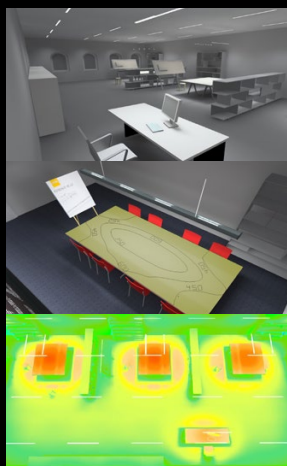
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