

Majelite

THE LIGHTING LANGUAGE



صنع في عُمان
Made in Oman

PRODUCT CATALOGUE





maJELite
THE LIGHTING LANGUAGE

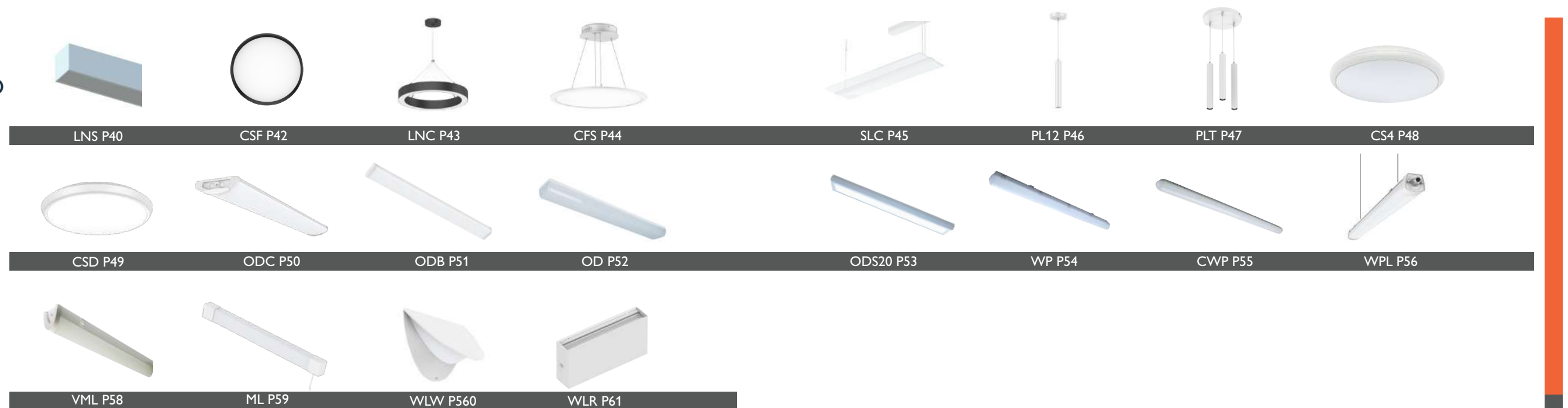
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MajELITE
THE LIGHTING LANGUAGE

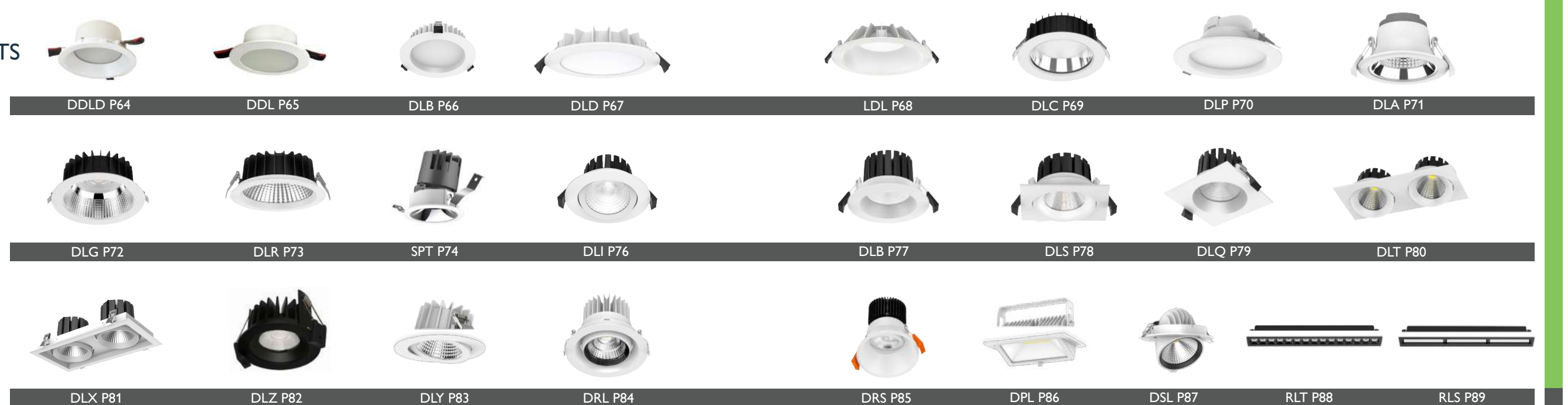
RECESSED MODULAR



SURFACE & SUSPENDED



DOWNLIGHTS



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MajELite
THE LIGHTING LANGUAGE

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With great pride, **MAJELITE** the manufacturer of highly engineered lighting fixtures and the provider of quality lighting solutions, presents its 8th edition product catalogue

It has been more than 25 years striving to attain a long term and sustainable position in the lighting field and to be associated with benefits of good and efficient lighting.

Today the name **MAJELITE** has a considerable weight in the local and international market place and we will continue the purposeful and consistent work to further develop our range of products and their quality and reliability.

MAJELITE will accord top priority to customer satisfaction by maintaining the highest manufacturing and quality standards.

This catalogue expresses our level of commitment towards our valuable customer.

The **MAJELITE** Team

TECHNICAL BACK-UP

Al MajeLite products are manufactured to the most stringent norms and standards and in collaboration with internationally renowned and world leading certified suppliers of lighting components and parts which form the backbone of our technical know-how.

Our quality control department not only constantly evaluates new and existing designs but also monitor and approve bought in components of particular interest to specifiers and users.

WHO ARE WE ?

- Majees Lighting Industries LLC is An ISO 9001:2015, 14001:2015, & ISO 45001:2018 certified limited liability company, established under the commercial laws of Oman, dully registered in March 1996.
- A national manufacturer of a wide range of highly engineered lighting fixtures produced in conformity with the most stringent international standards and norms at a comprehensive state of the art manufacturing facility at Sohar Industrial Estate on a site area of 8000 sq. mtr with an installed capacity of 150,000 fittings per annum.
- With products successfully installed in a large number of major projects in Oman and other GCC countries since 1996.
- **MAJELITE** a national manufacturer with market presence in over seven International markets,successfully covering various market segments.
- **MAJELITE** products are technically backed-up by internationally renowned and world's leading credited suppliers of lighting components and parts.The support provided by our technical partners ensure trouble free performance.
- At **MAJELITE** we are not only a specialized lighting manufacturer but we speak well the language of Light which is not simply about “on and off“,it is a much broader vocabulary,one rich enough to express feelings emotions and sensations.



MAJELITE
THE LIGHTING LANGUAGE

MAJELITE guarantees its customers a peace of mind and satisfaction on all purchased products. Our guarantee not only represents our level of commitment towards our valuable customers but also our confidence in our products. This guarantee is valid on all components of the product from the date of purchase against manufacturing defects. All our customers can rest assured that they are working with a top quality and reliable product and a company with a sense of responsibility.

STANDARDS & NORMS

MajeLite products and components are designed to comply with the safety, electrical, thermal and mechanical requirements of European norms :

- | | |
|-----------|-----------|
| • EN60598 | • EN62031 |
| • EN55015 | • EN62471 |
| • EN61000 | • EN62031 |
| • EN61347 | • EN62778 |
| • EN61547 | |

QUALITY POLICY

- To provide a range of lighting & electrical products under **MAJELITE** brand beyond the on-off and in compliance with customers specified and implied needs.
- To strive for greater customer awareness of our products and the language we speak very well – “The Language of Light”.
- To create a friendly environment which maximize the contribution of all employees and fosters a spirit of ‘Pride and Workmanship’.
- To operate in a safe, reliable and cost effective manner, whilst protecting the health of the people & conserving the environment.
- To develop and implement a company wide simple, clear and effective management system supported by essential documentation and to have it reviewed continuously to improve its effectiveness.

MISSION

To provide Quality and Cost Effective LIGHTING SOLUTIONS for all functional lighting needs and in return achieve total CUSTOMER SATISFACTION from a vibrant, trouble free & quality installation.

DESIGN & PRODUCT DEVELOPMENT

Production Processes

Metal Fabrication

Metal Fabrication is accomplished with an advance and fully automated CNC punching lines and metal forming machines in accordance to a pre-set CAM programs before its sent to chemical treatment and powder coating.

Chemical Treatment & Powder Coating

All metal housings under go a class II corrosion resistant pretreatment by spraying at 2.5 ba pressure (decreasing, water rinsing – Iron Phosphating / Chromating-cold water rinsing-hot water rinsing-drying at 100 C°) before it is electro-statically powder coated with an extremely durable polyurethane powder (for indoor luminaries) or polyester powder (for outdoor luminaries)

followed by a high temperature curing process at 200C°.

Zinc coating and other corrosion classes can also be satisfied on request.

Class 0 :	Very little corrosion risks, relative humidity under 60%. Corrosion.
Class I :	Little corrosion risks, well ventilated rooms. Cor rosion.
Class II :	Medium corrosion risk, fluctuating temperature and humidity. Corrosion.
Class III :	Large corrosion risk, for Coastal and Industrial area.
Class IV :	Very high corrosion risk, constant high humidity and near chemical & industries.

Assembly & Packaging

All assembly works are done manually on a fully automated transfer lines with an on-line quality checks as per majelite quality plan covering visual, mechanical, and electrical inspection checks before it is finally packed.

LIGHTING & LUMINAIRE DESIGN SOFTWARE

MAJELITE has an in-house state of the art lighting software to provide quality and cost effective lighting solutions and designs in full compliance with EN-12464-1 & EN12664 and achieve total customer satisfaction from a vibrant, trouble-free and quality installation. In addition, our luminaire design software for research and optimization of virtual luminaires allow a fast and accurate photometric and suitability analysis for most lighting applications and custom designed products.



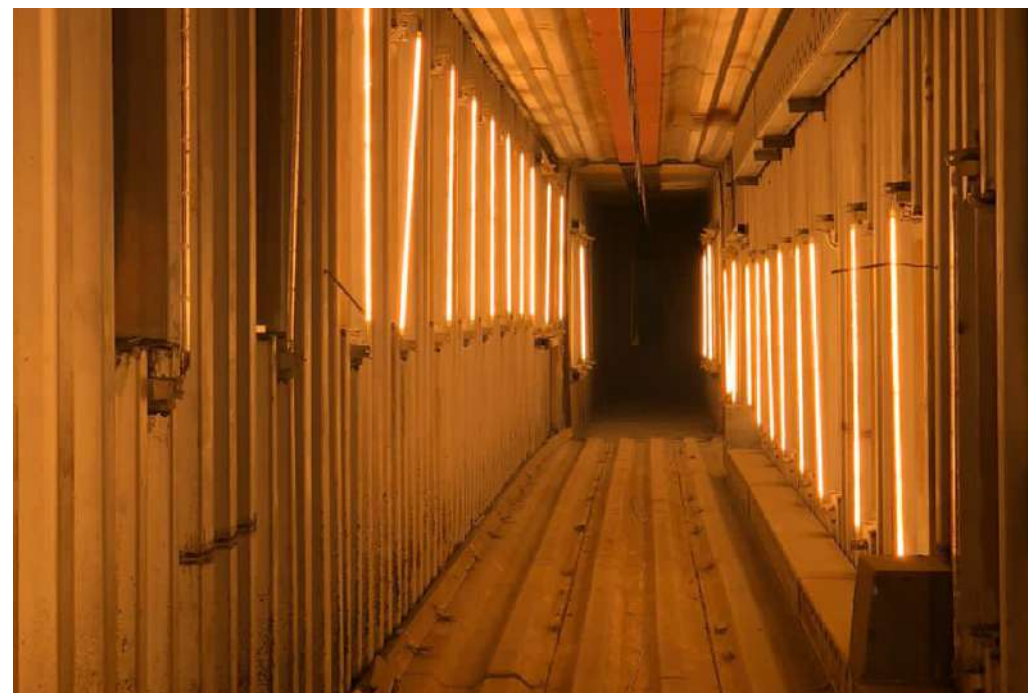
METAL FABRICATION



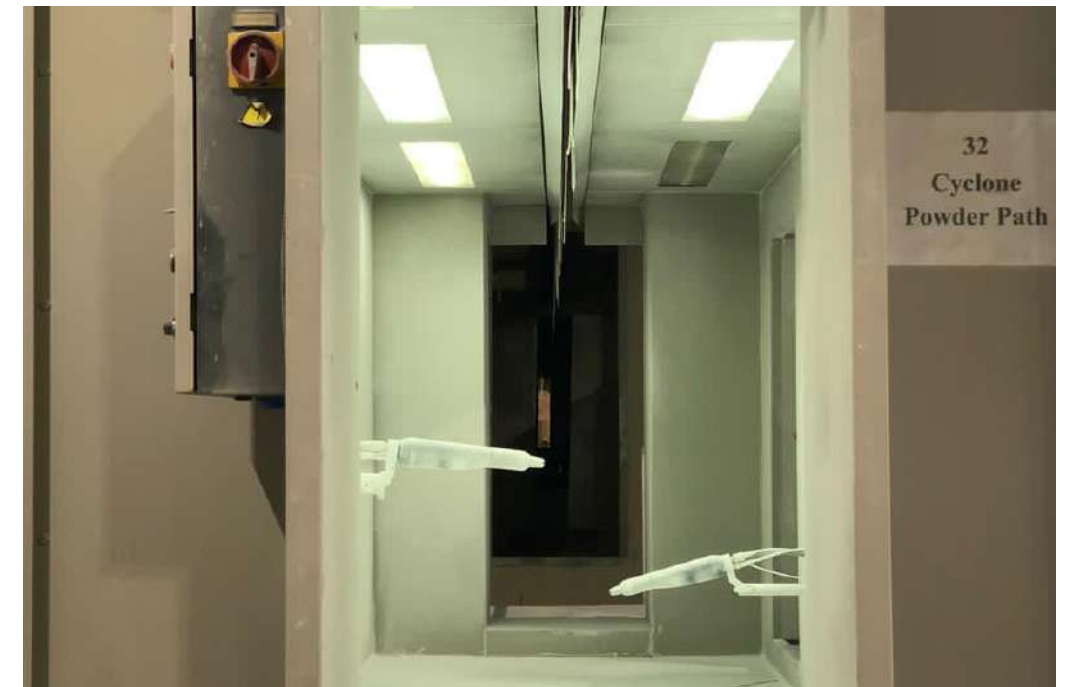
METAL FABRICATION



PRE-TREATMENT



POWDER COATING



ASSEMBLY



TESTING



PACKAGING



LABORATORY

Water Chamber



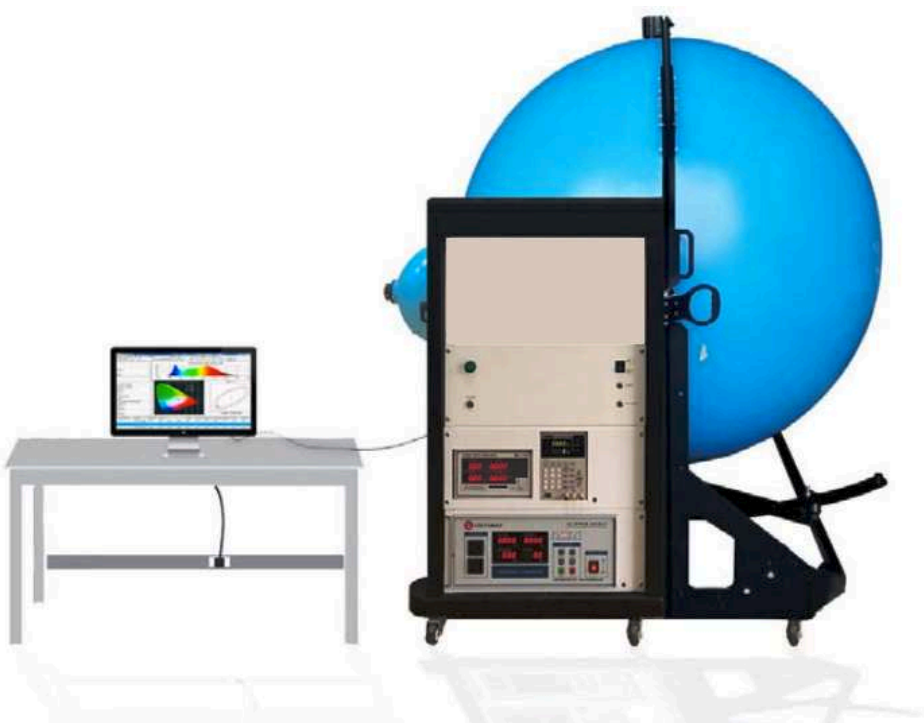
Thermal & Humidity Chamber



Dust Chamber



Light Spectrometer





RECESSED MODULAR

RLR

TECHNICAL

Materials of Optics	Polished/Matt/Coated Aluminium Reflector/PC diffuser
Materials of Housing	Trimmed sheet steel, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	73lm/W(Black reflector) 120lm/W(Bright silver) 110m/W(Matt silver)
CRI	≥80
Beam Angle(°)	65°(Black reflector) 65°(Bright silver) 75°(Matt silver)
UGR	<19
Lifetime(hr)	> 50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP40
Impact Resistance (IK Rating)	IK06
Power Factor (PF)	≥0.9
Certification	



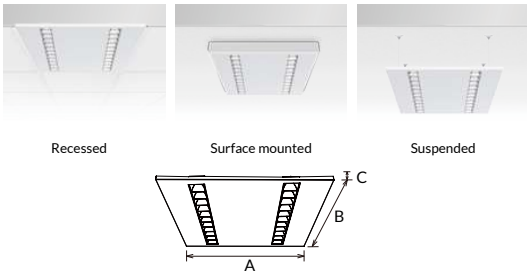
MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
RLR3060-15	15W	AC220-240V	295x295x315	570x270	1100lm (Black reflector) 1650lm (Matt silver) 1800lm (Bright silver)	1.47
RLR6060-30	30W	AC220-240V	595x595x31.5	570x570	2220lm (Black reflector) 3300lm (Matt silver) 3600lm (Bright silver)	2.70
RLR30120-30	30W	AC220-240V	295x1195x31.5	1170x270	3300lm (Matt silver) 3600lm (Bright silver)	2.74
RLR60120-55	55W	AC220-240V	595x1195x31.5	1170x570	4070lm (Black reflector) 6160lm (Matt silver) 6700lm (Bright silver)	5.28



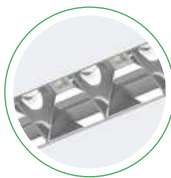
ACCESSORIES & DIMENSIONS



RLR



75°
Matt silver reflector
100lm/w



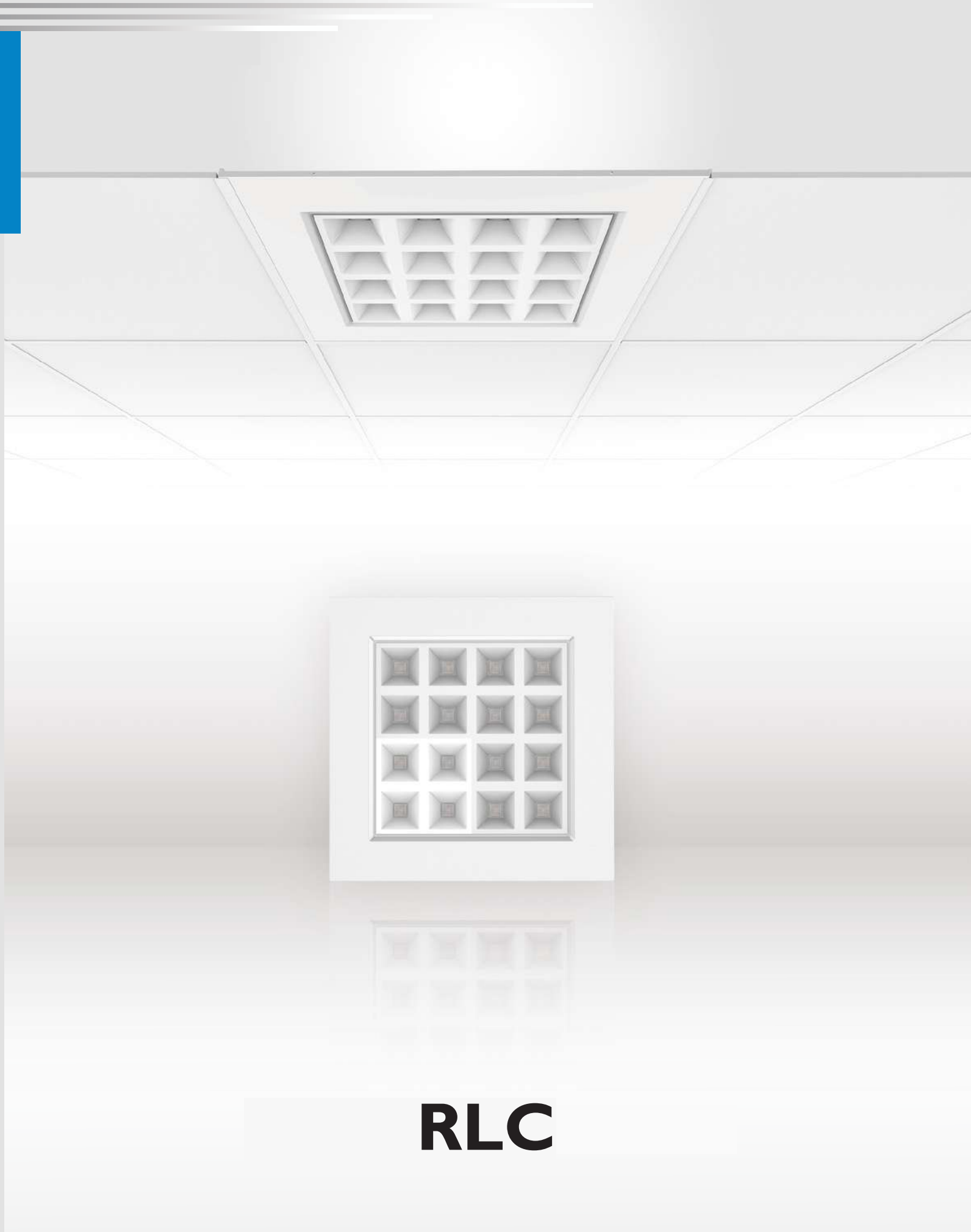
65°
Bright silver reflector
120lm/w



65°
Black reflector
73lm/w

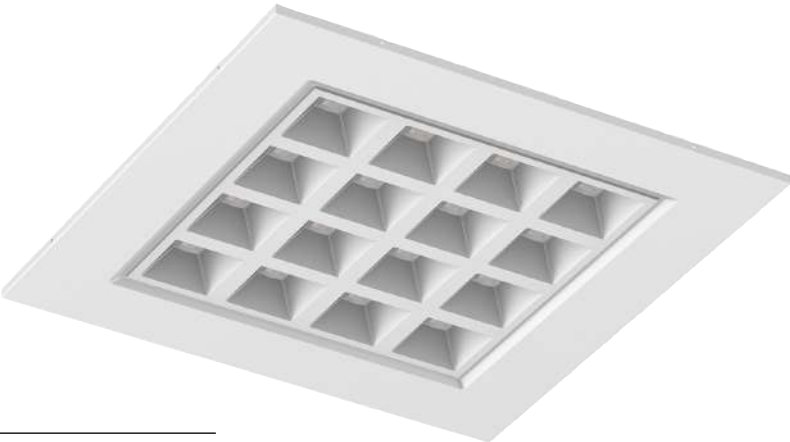
- louver reflectors design, UGR<19





RLC

RLC



TECHNICAL

Materials of Optics	PC
Materials of Housing	Trimmed sheet steel, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	110/120/140 lm/W
CRI	≥80
Beam Angle(°)	100°
UGR	<16
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP40
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
RLC3060-18	18W	AC220-240V	595x295x36	580x280	2010	1.55
RLC6060-25	25W	AC220-240V	595x595x36	580x580	3552	2.90
RLC6060-30	30W	AC220-240V	595x595x36	580x580	3660	2.90
RLC6060-36	36W	AC220-240V	595x595x36	580x580	3900	2.90
RLC30120-25	25W	AC220-240V	1195x295x36	1180x280	3552	2.95
RLC30120-30	30W	AC220-240V	1195x295x36	1180x280	3660	2.95
RLC30120-36	36W	AC220-240V	1195x295x36	1180x280	3900	2.95

ACCESSORIES & DIMENSIONS



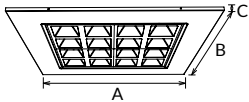
Recessed



Surface mounted



Suspended





RLO



RLO

TECHNICAL

Materials of Optics	PC
Materials of Housing	Trimmed sheet steel, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	100lm/W
CRI	≥80
Beam Angle(°)	90°
UGR	<19
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9
Certification	

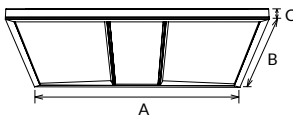


MODEL REF.

Standard CCT 4000K

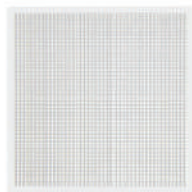
CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
RLO6060-36	36W	AC220-240V	595x595x40	580x580	3700	2.60
RLO30120-36	36W	AC220-240V	1195x295x40	1180x280	3700	2.99
RLO60120-60	60W	AC220-240V	1195x595x49	1180x580	6500	5.41

ACCESSORIES & DIMENSIONS





Opal diffuser



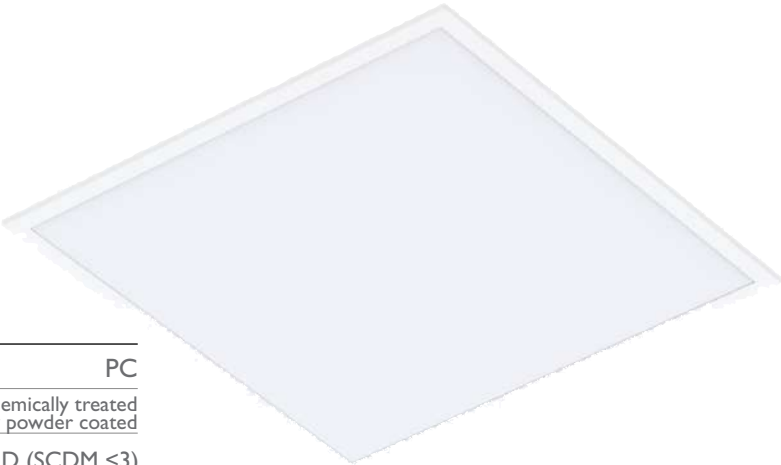
Prismatic diffuser

UGR<19



ODRP

ODRP



TECHNICAL

Materials of Optics	PC
Materials of Housing	Trimmed sheet steel, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K
Luminous Efficiency@4000K	120/140/180 lm/W
CRI	≥80
Beam Angle(°)	90°/120°
UGR	(<19 for option)
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP44
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9

Certification

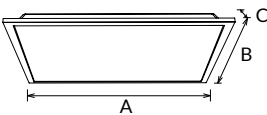


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
ODRP3030-10	10W	AC220-240V	295x295x32	280x280	120	0.65
ODRP3060-16	16W	AC220-240V	595x295x32	580x280	120	1.01
ODRP6060-36	36W	AC220-240V	595x595x32	580x580	120	1.56
ODRP60120-60	60W	AC220-240V	1195x595x32	1180x580	120	3.20
ODRP30120-36	36W	AC220-240V	1195x295x32	1180x280	120	1.72/2.05
ODRP6060-30	30W	AC220-240V	595x595x32	580x580	140	1.98/2.35
ODRP30120-30	30W	AC220-240V	1195x295x32	1180x280	140	1.72/2.05
ODRP30120-50	50W	AC220-240V	1195x595x32	1180x580	140	3.20/3.90
ODRP6060-20	20W	AC220-240V	595x595x32	580x580	180	1.56/1.90
ODRP30120-20	20W	AC220-240V	1195x295x32	1180x280	180	1.72/2.05
ODRP60120-40	40W	AC220-240V	1195x595x32	1180x580	180	3.20/3.90

ACCESSORIES & DIMENSIONS



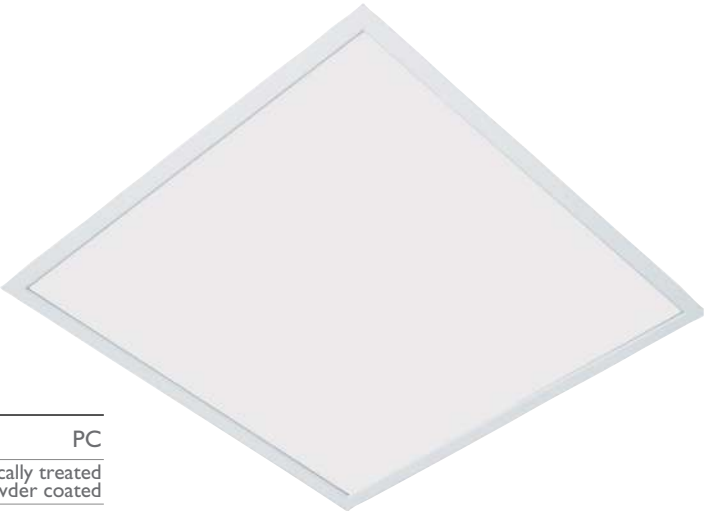


ODR

ODR

TECHNICAL

Materials of Optics	PC
Materials of Housing	Trimmed sheet steel, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K
Luminous Efficiency@4000K	140lm/w
CRI	>80
Beam Angle(°)	90 deg
UGR	
Lifetime(hr)	L80/B10 > 90000hrs @ 25°C
Product Finishing	White



FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP40/IP54/IP165
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.90
Certification	



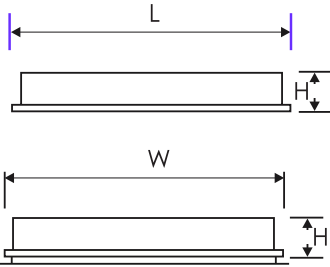
MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
ODR3030-13	13W	220-240V AC	297x297x90	1340	2.3
ODR6060-26	26W	220-240V AC	597x597x90	3600	4.2
ODR6060-39	39W	220-240V AC	597x597x90	4682	4.2
ODR30120-39	39W	220-240V AC	297x1197x90	4682	4.2
ODR30150-43	43W	220-240V AC	297x1467x90	5630	5.3
ORD60120-78	78W	220-240V AC	597x1197x90	9300	8.4
ODR60120-105	105W	220-240V AC	597x1197x90	11500	8.4

Note: IP54/65 options are available upon request.Add suffix IP54/65 to above codes.

ACCESSORIES & DIMENSIONS



ODRF

ODRF

TECHNICAL

Materials of Optics	PC
Materials of Housing	Trimmed sheet steel, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	100/130 lm/W
CRI	≥80
Beam Angle(°)	90°/120°
UGR	<22(<19 for option)
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

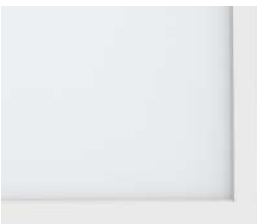
LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP40/IP65
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9
Certification	



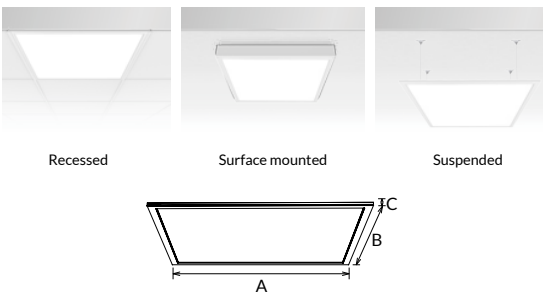
MODEL REF.

Standard CCT 4000K - IP40

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
ODRF3030-18	18W	AC220-240V	295x295x9	280x280	120	0.85
ODRF3060-20	20W	AC220-240V	595x295x9	580x280	120	1.35
ODRF30120-33	33W	AC220-240V	1195x295x9	1180x280	120	2.40
ODRF30120-42	42W	AC220-240V	1195x295x9	1180x280	120	2.40
ODRF6060-25	25W	AC220-240V	595x595x9	595x595x9	130	2.35
ODRF6060-33	33W	AC220-240V	595x595x9	580x580	120	2.35
ODRF6060-42	42W	AC220-240V	595x595x9	580x580	120	2.35
ODRF60120-60	60W	AC220-240V	1195x595x9	1180x580	120	5.30



ACCESSORIES & DIMENSIONS



Panel Light Installation Accessories

Assembled surface mounted frame



CF01



CF13

DIY surface mounted frame



CF04



CF11

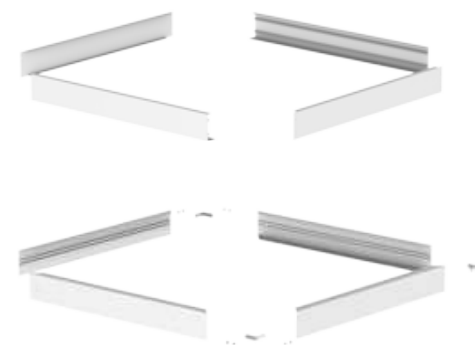
Assembled embedded mounted frame



RF01



RF02



Suspending Kits



Recessed Installation Clips



Integrated Recessed Installation Clips





LNR

TECHNICAL

Materials of Optics	PC
Materials of Housing	Trimmed aluminium, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K
Luminous Efficiency@4000K	140 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	
Lifetime(hr)	>50,000h
Product Finishing	White

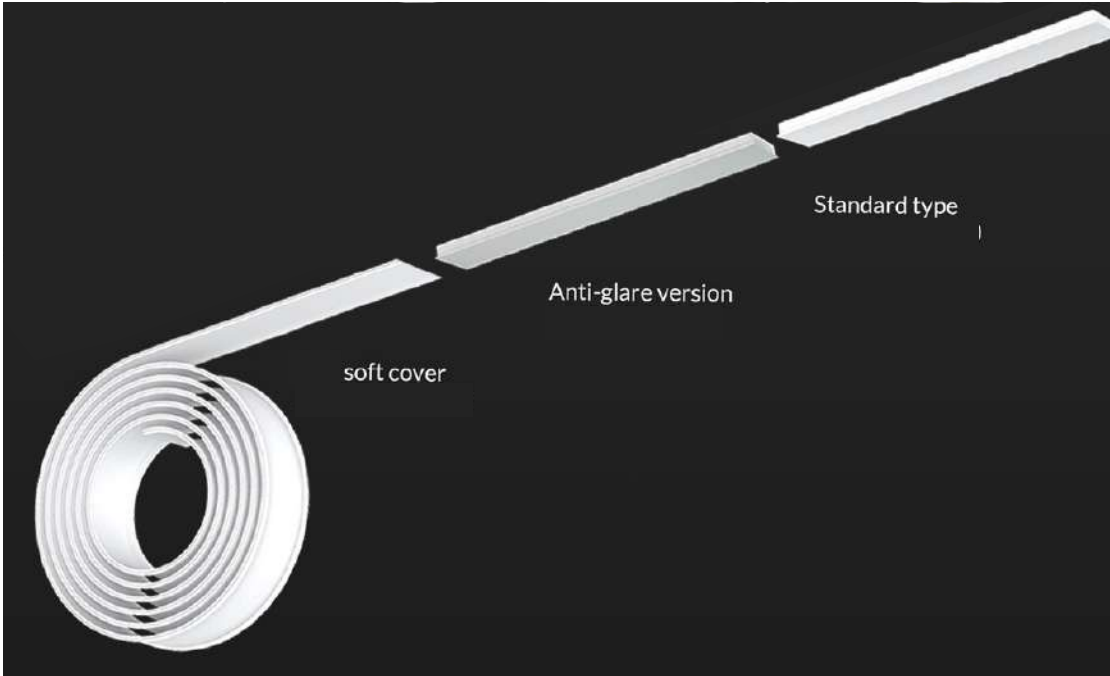
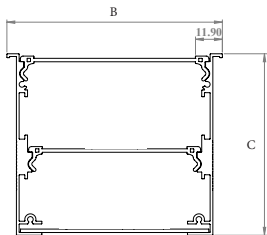
FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP40/IP54/IP65
Impact Resistance (IK Rating)	IK06
Power Factor (PF)	> 0.90

Certification



ACCESSORIES & DIMENSIONS



MODEL REF.

Standard CCT 4000K

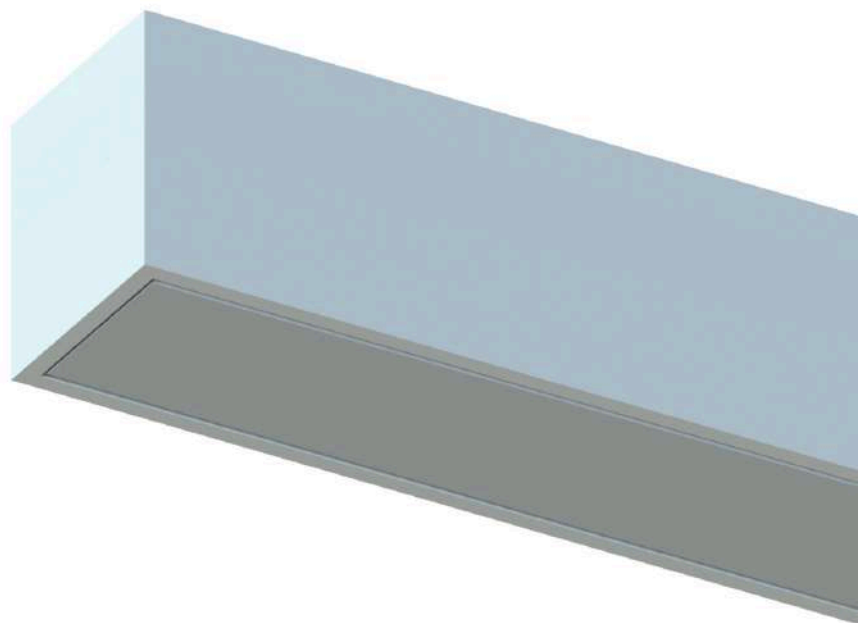
CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
LNR6560-17	17W	220-240V AC	583x65x80	2380	1.2
LNR6512-17	17W	220-240V AC	1160x65x80	2380	1.8
LNR6512-35	35W	220-240V AC	1160x65x80	4620	2.3
LNR6515-43	43W	220-240V AC	1460x65x80	6020	2.8
LNR8060-17	17W	220-240V AC	583x80x80	2380	1.2
LNR8012-17	17W	220-240V AC	1160x80x80	2380	1.8
LNR8012-35	33W	220-240V AC	1160x80x80	4620	2.3
LNR8015-43	43W	220-240V AC	1460x80x80	6020	2.8
LNR9560-17	17W	220-240V AC	583x95x80	2380	1.2
LNR9512-17	17W	220-240V AC	1160x95x80	2380	1.8
LNR9512-35	35W	220-240V AC	1160x95x80	4620	2.3
LNR9515-43	43W	220-240V AC	1460x95x80	6020	2.8

Note : Other custom designs and dimensions are available up on request.





SURFACE & SUSPENDED



LNS

TECHNICAL

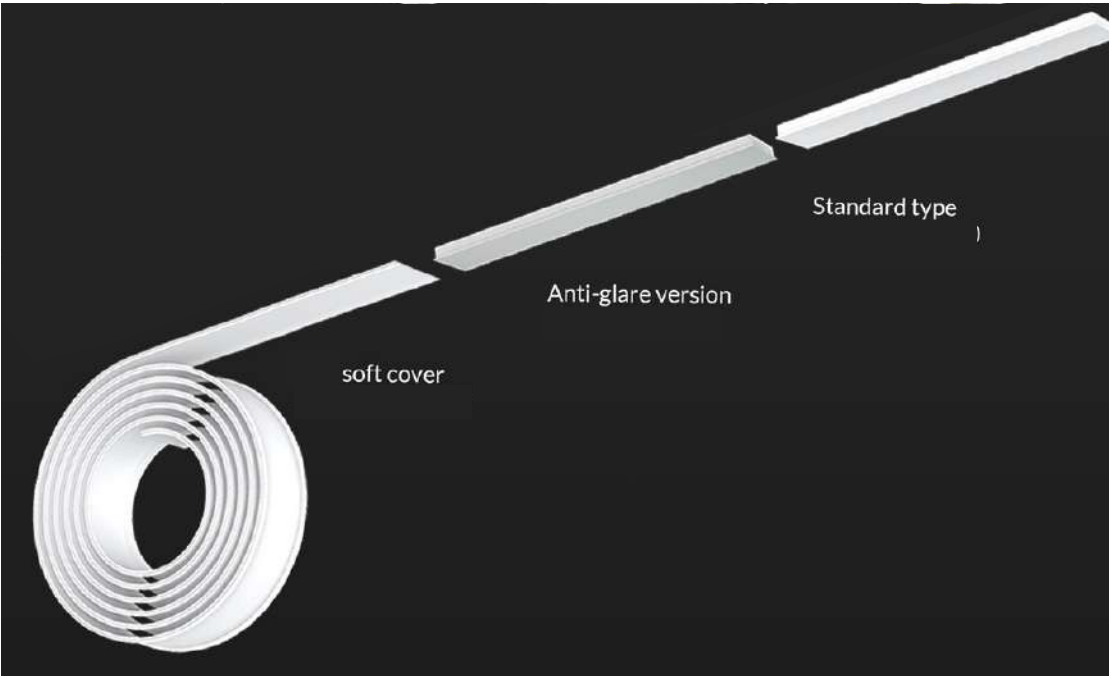
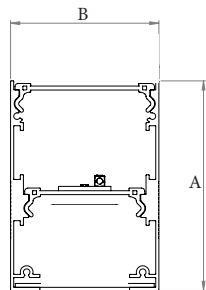
Materials of Optics	PC
Materials of Housing	Trimmed aluminium, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K
Luminous Efficiency@4000K	140lm/w
CRI	≥80
Beam Angle(°)	90 Deg
UGR	-(Standard opal cover) <19/ <22((Prismatic cover))
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	DALI/ 0-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP40/IP54/IP65
Impact Resistance (IK Rating)	IK06
Power Factor (PF)	≥0.9
Certification	



ACCESSORIES & DIMENSIONS



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
LNS6560-17	17W	220-240V AC	583x65x80	2380	1.2
LNS6512-17	17W	220-240V AC	1160x65x80	2380	1.8
LNS6512-35	35W	220-240V AC	1160x65x80	4620	2.3
LNS6515-43	43W	220-240V AC	1460x65x80	6020	2.8
LNS8060-17	17W	220-240V AC	583x80x80	2380	1.2
LNS8012-17	17W	220-240V AC	1160x80x80	2380	1.8
LNS8012-35	33W	220-240V AC	1160x80x80	4620	2.3
LNS8015-43	43W	220-240V AC	1460x80x80	6020	2.8
LNS9560-17	17W	220-240V AC	583x95x80	2380	1.2
LNS9512-17	17W	220-240V AC	1160x95x80	2380	1.8
LNS9512-35	35W	220-240V AC	1160x95x80	4620	2.3
LNS9515-43	43W	220-240V AC	1460x95x80	6020	2.8

Note : Other custom designs and dimensions are available up on request.





CSF

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	110lm/W
CRI	≥80
Beam Angle(°)	120°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White/Black

FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	DALI/1-10V
Functions	Adjustable Power
Ingress Protection (IP Rating)	IP40
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9

Certification

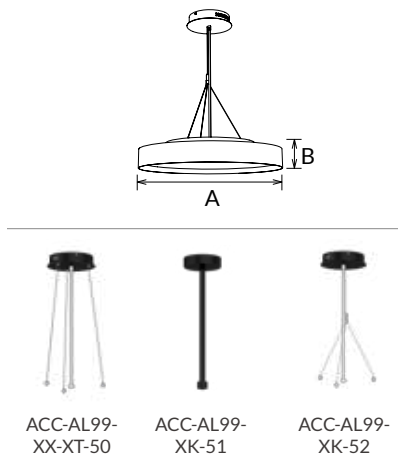


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBmm)	LUMEN(±5%)	N.W/pc(kgs)
CSF-12-24	30W	AC200-240V	300x58	3300lm	1.6
CSF-16-40	40W	AC200-240V	400x86	4300lm	3.20
CSF-24-60	60W	AC200-240V	600x86	6700lm	6.90
CSF-32-75	75W	AC200-240V	800x86	8000lm	11.00
CSF-40-100	100W	AC200-240V	1000x86	10700lm	16.20

ACCESSORIES & DIMENSIONS



LNC

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K/5700K
Luminous Efficiency@4000K	100 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White/Black

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.90

Certification

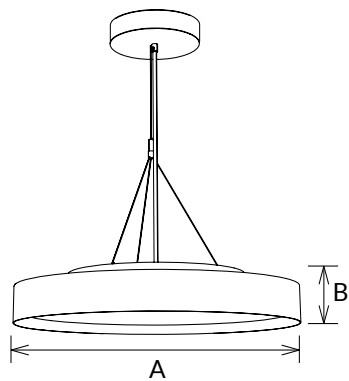


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
LNC-35	35W	220-240V AC	400x75	3600	3.1
LNC-54	54W	220-240V AC	600x75	5500	4.6
LNC-70	70W	220-240V AC	800x75	7100	6.4
LNC-84	84W	220-240V AC	1000x75	8500	7.5

ACCESSORIES & DIMENSIONS



CFS

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K/5700k
Luminous Efficiency@4000K	100 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	
Lifetime(hr)	>50,000h
Product Finishing	White



FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.90
Certification	

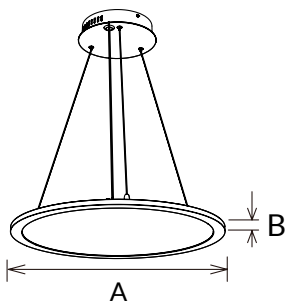


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
CFS300-18	18W	220-240V AC	300x11.5	1820	1.25
CFS400-35	35W	220-240V AC	400x11.5	3605	1.75
CFS500-40	40W	220-240V AC	500x11.5	4120	2.25
CFS600-60	60W	220-240V AC	600x11.5	6210	3.15

ACCESSORIES & DIMENSIONS



SLC

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K/5700K
Luminous Efficiency@4000K	140 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	
Lifetime(hr)	>50,000h
Product Finishing	White



FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	DALI/1-10V
Functions	
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.90
Certification	

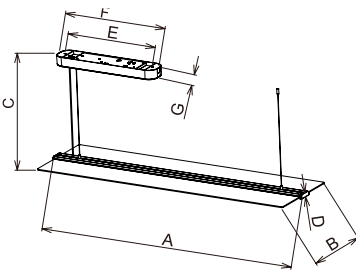


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
SLC-40	40W	220-240V AC	1200x350x1500	5500	4.50
SLC-60	60W	220-240V AC	1200x350x1500	8200	4.50

ACCESSORIES & DIMENSIONS



PL

TECHNICAL

Materials of Optics	PC/Glass
Materials of Housing	Trimmed aluminium, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K/5700K
Luminous Efficiency@4000K	140 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	<19
Lifetime(hr)	>50,000h
Product Finishing	White/Black



FEATURES & BENEFITS

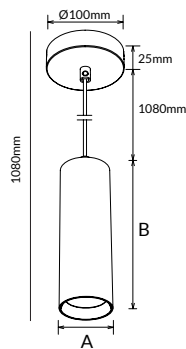
LED Driver	Built-In
Dimming Option	DALI/1-10V
Functions	
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.90
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
PL-300-5	5W	220-240V AC	39x300	500	0.51
PL-500-5	5W	220-240V AC	39x500	500	0.65
PL-180-10	10W	220-240V AC	58x180	1000	0.54



ACCESSORIES & DIMENSIONS

PLT

TECHNICAL

Materials of Optics	PC/Glass
Materials of Housing	Trimmed aluminium, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K/5700K
Luminous Efficiency@4000K	140 Lum/W
CRI	>80, >90, >97
Beam Angle(°)	90 deg
UGR	
Lifetime(hr)	>50,000h
Product Finishing	White/Black



FEATURES & BENEFITS

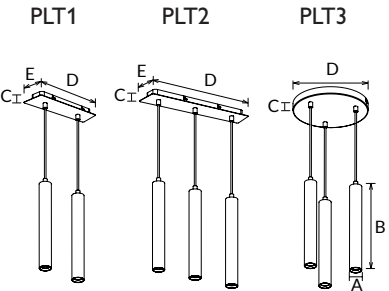
LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.90
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
PLT1-10	10W	220-240V AC	39x300x26	1100	1.20
PLT2-15	15W	220-240V AC	39x300x26	1650	1.80
PLT3-15	15W	220-240V AC	39x300x25	1650	1.80



ACCESSORIES & DIMENSIONS



CSU

TECHNICAL

Materials of Optics	PC
Materials of Housing	PC
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K/5700K
Luminous Efficiency@4000K	105lm/W
CRI	≥80/90
Beam Angle(°)	120°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	IK09
Power Factor (PF)	≥0.9

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
CSU-18	18W	AC220-240V	320x85	2100	1.8
CSU-25	25W	AC220-240V	320x85	2700	1.8



CSD

TECHNICAL

Materials of Optics	PC
Materials of Housing	PC
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	120lm/W
CRI	≥80
Beam Angle(°)	120°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP54
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9

Certification

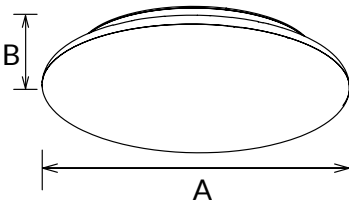


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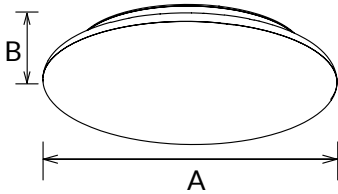
Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBmm)	LUMEN(±5%)	N.W/pc(kgs)
CSD-18	18W	AC200-240V	300x40	2200	1.5
CSD-25	25W	AC200-240V	300x40	3000	1.5
CSD-30	30W	AC200-240V	300x52	3500	1.5

ACCESSORIES & DIMENSIONS



ACCESSORIES & DIMENSIONS





ODC

TECHNICAL

Materials of Optics	PC
Materials of Housing	Trimmed sheet steel, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K/5700K
Luminous Efficiency@4000K	110 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP44
Impact Resistance (IK Rating)	IK10
Power Factor (PF)	> 0.90
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
ODC60-17	17W	220-240V AC	595x171x63	1870	1.55
ODC120-30	30W	220-240V AC	1195x171x63	3300	2.88
ODC120-40	40W	220-240V AC	1195x171x63	4400	2.88
ODC150-36	36W	220-240V AC	1495x171x63	3960	3.52
ODC150-50	50W	220-240V AC	1495x171x63	5500	3.52

ODB

TECHNICAL

Materials of Optics	PC
Materials of Housing	Trimmed sheet steel, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K/5700K
Luminous Efficiency@4000K	100lm/W
CRI	>80
Beam Angle(°)	130°
UGR	
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

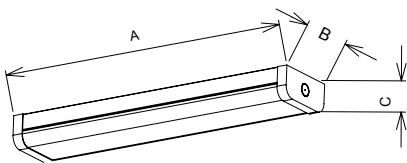
LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP40
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	> 0.90
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
ODB-60-20	20W	220-240V AC	600x124x60	2000	1.18
ODB-120-38	38W	220-240V AC	1200x124x60	3800	2.14
ODB-150-50	50W	220-240V AC	1500x124x60	5000	2.71
ODB-150-60	60W	220-240V AC	1500x124x60	6000	2.71



OD

TECHNICAL

Materials of Optics	PMMA
Materials of Housing	Trimmed sheet steel, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM<6)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	135 Lum/W
CRI	≥80
Beam Angle(°)	90 deg
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light output
Ingress Protection (IP Rating)	IP54
Impact Resistance (IK Rating)	IK10
Power Factor (PF)	> 0.90
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
OD60-17	17W	220-240V AC	650x107x75	2300	1.7
OD120-22	22W	220-240V AC	1256x107x75	2970	2.2
OD120-30	30W	220-240V AC	1256x107x75	4050	2.2
OD120-44	44W	220-240V AC	1256x107x75	5800	2.2



ODS20

TECHNICAL

Materials of Optics	PMMA
Materials of Housing	Trimmed sheet steel, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K/5700K
Luminous Efficiency@4000K	110lm/W
CRI	≥80
Beam Angle(°)	90 deg
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light output
Ingress Protection (IP Rating)	IP44
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
ODS60-17	17W	AC220-240V	595x171x63	1800lm	1.55
ODS120-30	36W	AC220-240V	1195x171x63	3300lm	2.88
ODS120-40	40W	AC220-240V	1195x171x63	4100lm	2.88
ODS150-40	40W	AC220-240V	1495x171x63	4100lm	3.52
ODS150-50	50W	AC220-240V	1495x171x63	5300lm	3.52





WP

TECHNICAL

Materials of Optics	PMMA
Materials of Housing	PC
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K/5700K
Luminous Efficiency@4000K	135 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	Grey

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK09
Power Factor (PF)	> 0.90
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
WP60-9	9W	220-240V AC	662x95x100	1215	2.2
WP120-17	17W	220-240V AC	1272x95x100	2295	2.2
WP120-35	35W	220-240V AC	1272x95x100	4725	2.2
WP120-48	48W	220-240V AC	1272x125x100	6500	2.2



CWP

TECHNICAL

Materials of Optics	PC
Materials of Housing	PC
Light Source	SMD (SDCM <6)
Color Temperature	3000K/4000K/5000K/5700K
Luminous Efficiency@4000K	120 Lum/W
CRI	≥80
Beam Angle(°)	90 deg
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	Grey

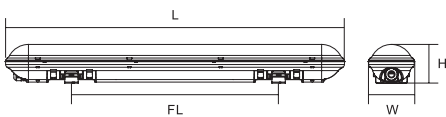
FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	IK09
Power Factor (PF)	≥0.9
Certification	SAA/ RoHS/ CE

MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
CWP-60-12	12W	220-240V AC	631x86x70	1440	1.85
CWP-60-17	17W	220-240V AC	631x86x70	2040	1.85
CWP-120-25	25W	220-240V AC	1231x86x70	3000	1.85
CWP-120-40	40W	220-240V AC	1231x86x70	4800	1.85





IP⁶⁵

150 lm/W



WPL



WPL

TECHNICAL

Materials of Optics	PC
Materials of Housing	PC
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	150lm/W
CRI	≥80
Beam Angle(°)	120°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	Grey

FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	≥0.9
Certification	

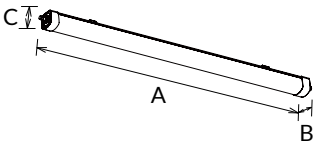


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
WPL120-38	38W	AC220-240V	1200x77x69	5700	1.70
WPL150-52	52W	AC220-240V	1500x77x69	8000	2.10
WPL150-68	68W	AC220-240V	1500x77x69	9800	2.10
WPL180-68	68W	AC220-240V	1800x77x69	10000	2.30

ACCESSORIES & DIMENSIONS



Suspension kit



VML

TECHNICAL

Materials of Optics	PMMA
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K
Luminous Efficiency@4000K	140 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

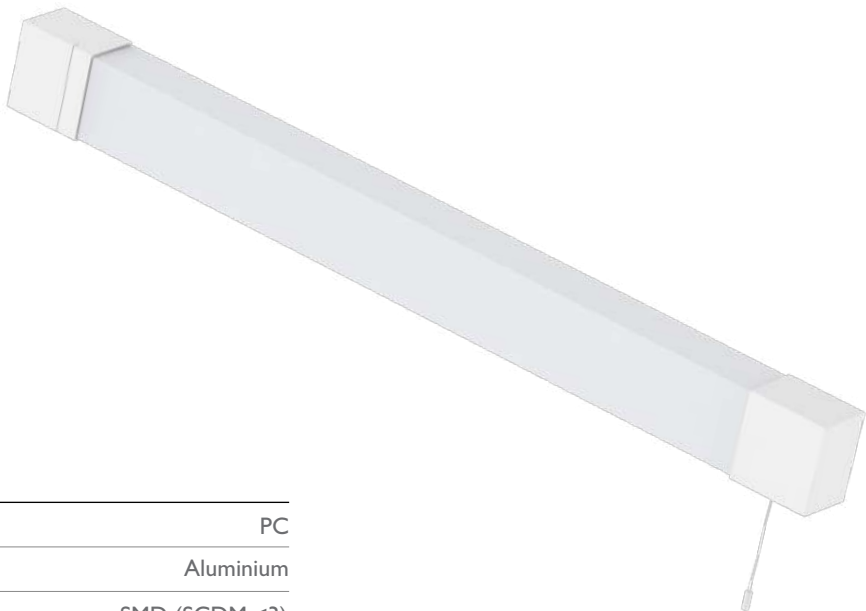
LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	
Ingress Protection (IP Rating)	IP44
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	> 0.90
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
VML30-4	4W	220-240V AC	300x65x75	600	0.8
VML60-9	9W	220-240V AC	580x65x75	1200	0.8
VML120-17	17W	220-240V AC	1140x65x75	2300	1.2
VML120-36	36W	220-240V AC	1140x65x75	4600	1.5



ML

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	140 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

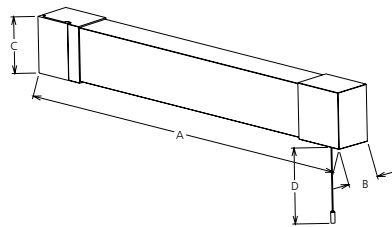
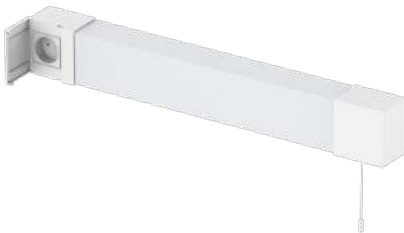
LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	
Ingress Protection (IP Rating)	IP44
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.90
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
ML-60-8	8W	220-240V AC	599x57x85	850	0.82
ML-90-10	10W	220-240V AC	899x87x85	1150	1.1





WLW

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminum
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	65lm/W
CRI	≥80
Beam Angle(°)	120°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	IK06
Power Factor (PF)	≥0.9
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
WLW-10	10W	AC220-240V	205x103x75	500	0.38



WL

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K
Luminous Efficiency@4000K	120lm/W
CRI	≥80
Beam Angle(°)	40°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White/Black

FEATURES & BENEFITS

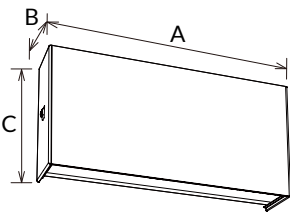
LED Driver	Built-in
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	≥0.9
Certification	



MODEL REF.

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
WL-180-8	2x4W	AC220-240V	180x38.5x90	960	0.50
WL-240-10	2x5W	AC220-240V	240x38.5x90	1200	0.65
WL-360-16	2x8W	AC220-240V	360x38.5x90	1920	0.90
WL-600-20	2x10W	AC220-240V	600x38.5x90	2400	1.23

ACCESSORIES & DIMENSIONS





DOWNLIGHTS



DDLD

TECHNICAL

Materials of Optics	PC + White Powdered Aluminium
Materials of Housing	Trimmed sheet steel, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	120 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	-
Lifetime(hr)	L80/B10 > 90000hrs @ 25°C
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-Out
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP44/IP54
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.90

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
DDLD-13	13W	220-240V AC	190x95x175	1500	1
DDLD-18	18W	220-240V AC	190x95x175	2192	1
DDLD-21	21W	220-240V AC	230x95x215	2632	1.3
DDLD-29	29W	220-240V AC	230x95x215	3500	1.23



DDL

TECHNICAL

Materials of Optics	PC + White Powdered Aluminium
Materials of Housing	Trimmed sheet steel, chemically treated and electrostatically powder coated
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	120 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	-
Lifetime(hr)	L80/B10 > 90000hrs @ 25°C
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-Out
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP44/IP54/IP65
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.90

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
DDL-13	13W	220-240V AC	170x60x160	1500	0.8
DDL-18	18W	220-240V AC	170x60x160	2192	0.8
DDL-21	21W	220-240V AC	220x60x210	2632	1.10
DDL-29	29W	220-240V AC	220x60x210	3550	1.20



DLB

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	100lm/W
CRI	>80
Beam Angle(°)	90 deg
UGR	
Lifetime(hr)	> 50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Dali/1-10V
Functions	
Ingress Protection (IP Rating)	IP54
Impact Resistance (IK Rating)	IK01
Power Factor (PF)	> 0.90

Certification

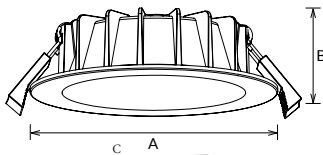


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
DLB-10	10W	220-240V AC	110x30x90	1000	0.25
DLB-13	13W	220-240V AC	110x30x90	1320	0.25
DLB-18	18W	220-240V AC	145x30x120	1980	0.35
DLB-25	25W	220-240V AC	190x30x160	2750	0.50
DLB-35	35W	220-240V AC	225x30x200	3900	0.65
DLB-42	42W	220-240V AC	225x30x200	4750	0.65

ACCESSORIES & DIMENSIONS



DLD

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	100lm/W
CRI	>80
Beam Angle(°)	90 deg
UGR	
Lifetime(hr)	> 50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Dali/1-10V
Functions	
Ingress Protection (IP Rating)	IP54
Impact Resistance (IK Rating)	IK06
Power Factor (PF)	> 0.90

Certification

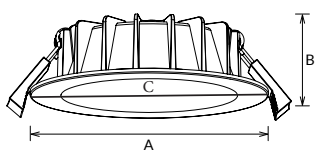


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
DLD-10	10W	220-240V AC	110x38x96	960	0.32
DLD-13	13W	220-240V AC	110x38x96	1180	0.32
DLD-18	18W	220-240V AC	170x45x140	1980	0.47
DLD-25	25W	220-240V AC	198x45x160	2630	0.81
DLD-35	35W	220-240V AC	228x45x20	3500	0.81

ACCESSORIES & DIMENSIONS





LDL

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	100lm/W
CRI	>80
Beam Angle(°)	90 deg
UGR	
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Dali/1-10V
Functions	
Ingress Protection (IP Rating)	IP44
Impact Resistance (IK Rating)	IK01
Power Factor (PF)	> 0.90

Certification

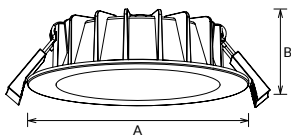


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
LDL-10	10W	220-240V AC	115x45x90	800	0.20
LDL-13	13W	220-240V AC	129x45x105	1000	0.30
LDL-18	18W	220-240V AC	152x48x125	1300	0.40
LDL-20	20W	220-240V AC	175x52x145	2000	0.40
LDL-25	25W	220-240V AC	203x56x175	2500	0.50
LDL-30	30W	220-240V AC	203x56x175	3000	0.65
LDL-33	33W	220-240V AC	228x63x205	3300	0.65
LDL-40	40W	220-240V AC	228x63x205	4000	0.65

ACCESSORIES & DIMENSIONS



DLC

TECHNICAL

Materials of Optics	PC+AL1070+Tempered glass
Materials of Housing	Die Cast Aluminium
Light Source	COB (SCDM <3)
Color Temperature	2700K/ 3000K/ 4000K/ 5000K
Luminous Efficiency@4000K	110lm/W
CRI	≥80
Beam Angle(°)	24/36/38/60 Deg (DL284A)
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IK65
Impact Resistance (IK Rating)	IK06/ IK08(DL284A)
Power Factor (PF)	≥0.9

Certification

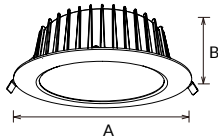


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
DLC-10	10W	AC220-240V	110x51x90	90-95	1050	0.34
DLC-13	13W	AC220-240V	110x51x90	90-95	1350	0.34
DLC-18	18W	AC220-240V	150x64x140	125-140 / 125-135	1950	0.62/0.72
DLC-25	25W	AC220-240V	150x64x140	125-140 / 125-135	2750	0.62/0.72
DLC-30	30W	AC220-240V	172x69x165	150-160 / 150-160	1950	0.79/0.90
DLC-35	35W	AC220-240V	235x81x220	200-220 / 200-210	3850	1.27/1.45

ACCESSORIES & DIMENSIONS





DLP

TECHNICAL

Materials of Optics	PC
Materials of Housing	Plastic Coated Aluminum
Light Source	SMD (SCDM <3)
Color Temperature	2700K/ 3000K/ 4000K/ 5000K
Luminous Efficiency@4000K	110lm/W
CRI	≥80
Beam Angle(°)	90°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP54
Impact Resistance (IK Rating)	IK06/ IK08(DL284A)
Power Factor (PF)	≥0.9

Certification

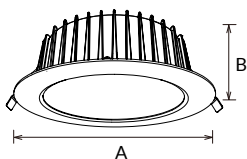


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
DLP-10	10W	AC220-240V	110x51x90	90-95	1050	0.34
DLP-13	13W	AC220-240V	110x51x90	90-95	1350	0.34
DLP-18	18W	AC220-240V	150x64x140	125-140 / 125-135	1950	0.62/0.72
DLP-25	25W	AC220-240V	150x64x140	125-140 / 125-135	2750	0.62/0.72
DLP-30	30W	AC220-240V	172x69x165	150-160 / 150-160	1950	0.79/0.90
DLP-35	35W	AC220-240V	235x81x220	200-220 / 200-210	3850	1.27/1.45

ACCESSORIES & DIMENSIONS



DLA

TECHNICAL

Materials of Optics	PC
Materials of Housing	PC/Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	100lm/W
CRI	>80
Beam Angle(°)	90 deg
UGR	<19
Lifetime(hr)	> 50,000h
Product Finishing	White

FEATURES & BENEFITS

Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP54
Impact Resistance (IK Rating)	-
Power Factor (PF)	> 0.90

Certification

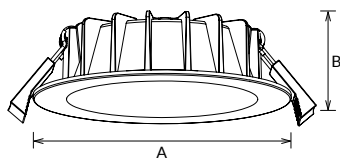


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
DLA-10	10W	220-240V AC	115x67x90	1000	0.25
DLA-13	13W	220-240V AC	115x67x90	1300	0.25
DLA-18	18W	220-240V AC	145x75x120	1800	0.30
DLA-25	25W	220-240V AC	170x85x140	2550	0.35

ACCESSORIES & DIMENSIONS



DLG

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	100lm/W
CRI	>80
Beam Angle(°)	24,36,60
UGR	< 19
Lifetime(hr)	> 50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP40 IP54
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9
Certification	



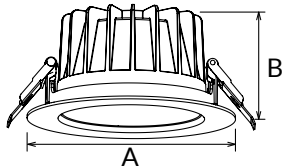
MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBmm)	LUMEN(±5%)	N.W/pc(kgs)
DLG-10	10W	AC200-240V	95x84x82	1120	0.23
DLG-13	13W	AC200-240V	110x54x90	1300	0.27
DLG-18	18W	AC200-240V	145x78x125	2250	0.48
DLG-25	25W	AC200-240V	172x90x150	2850	0.71
DLG-35	35W	AC200-240V	228x99x200	4000	1.14
DLG-10 (Drop glass)	10W	AC200-240V	172.5x97x125	1012	1.05
DLG-18 (Drop glass)	18W	AC200-240V	172.5x97x125	1980	1.05
DLG-25 (Drop glass)	25W	AC200-240V	197x109x150	2508	1.30
DLG-35 (Drop glass)	35W	AC200-240V	246x118x200	3520	1.80



ACCESSORIES & DIMENSIONS



DLR

TECHNICAL

Materials of Optics	PC+Tempered Glass
Materials of Housing	Die Cast Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	120 lm/W
CRI	>80
Beam Angle(°)	24/36/45/60 deg
UGR	
Lifetime(hr)	> 50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Dali/1-10V
Functions	
Ingress Protection (IP Rating)	IP54
Impact Resistance (IK Rating)	-
Power Factor (PF)	> 0.90
Certification	



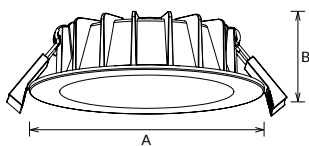
MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
DLR-10	10W	220-240V AC	110x33x90	1250	0.34
DLR-12	12W	220-240V AC	110x53x90	1500	0.34
DLR-18	18W	220-240V AC	145x65x120	2250	0.62/0.72
DLR-25	25W	220-240V AC	190x75x160	3125	0.79/0.90
DLR-33	33W	220-240V AC	190x75x160	3650	0.79/0.90
DLR-42	42W	220-240V AC	225x87x200	4950	1.27/1.45



ACCESSORIES & DIMENSIONS





SPT

TECHNICAL

Materials of Optics	PMMA/ PC
Materials of Housing	Die Cast Aluminium
Light Source	COB (SCDM <3)
Color Temperature	2700K/ 3000K/ 4000K
Luminous Efficiency@4000K	100lm/W
CRI	≥90
Beam Angle(°)	15°/20°/24°/36°/45°/50°/ 55°x36°x20°/22°x24°x5°
UGR	<19
Lifetime(hr)	50,000h
Product Finishing	Grey

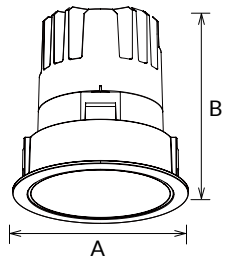
FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/DALI/1-10V
Functions	-
Ingress Protection (IP Rating)	IP20/IP144
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9

Certification



ACCESSORIES & DIMENSIONS



MODEL REF.

Standard CCT 4000K - Fixed

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
SPT-55-4.5	4.5W	AC220-240V	62x67	55-57	350lm	0.19
SPT-55-8	8W	AC220-240V	62x67	55-57	550lm	0.19
SPT-75-7.5	7.5W	AC220-240V	82x85	75x77	650lm	0.29
SPT-75-10	10W	AC220-240V	82x85	75x77	800lm	0.29
SPT-75-12	12W	AC220-240V	82x85	75-77	950lm	0.29
SPT-75-15	15W	AC220-240V	82x85	75-77	1100lm	0.29
SPT-105-14	14W	AC220-240V	114x120	105-107	1750lm	0.70
SPT-150-30	30W	AC220-240V	154x174	150-152	3100lm	1.75

Note: Add suffix A for adjustable or/and S for square or/and T for trimless.



DLI

TECHNICAL

Materials of Optics	PMMA
Materials of Housing	Die Cast Aluminium
Light Source	COB (SCDM <3)
Color Temperature	2700K/ 3000K/ 4000K/ 5000K
Luminous Efficiency@4000K	100lm/W
CRI	≥ 80/90
Beam Angle(°)	36°/ 60°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

DLE

TECHNICAL

Materials of Optics	PMMA
Materials of Housing	Die Cut Aluminium
Light Source	COB (SCDM <3)
Color Temperature	2700K/ 3000K/ 4000K/ 5000K
Luminous Efficiency@4000K	105lm/W
CRI	≥ 80/90
Beam Angle(°)	36°/60°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

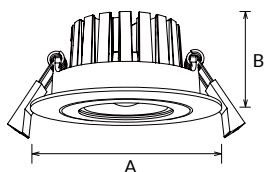
FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9

Certification



ACCESSORIES & DIMENSIONS



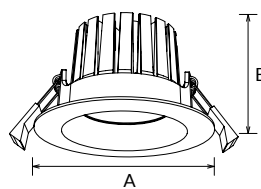
FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9

Certification



ACCESSORIES & DIMENSIONS



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
DLI-5	5W	AC220-240V	80x30	68-72	530	0.24
DLI-8	8W	AC220-240V	80x30	68-72	8151	0.24
DLI-10	10W	AC220-240V	90x39.3	75-80	1000	0.25
DLI-13	13W	AC220-240V	110x49.4	90-95	1350	0.40

MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
DLE-5	5W	AC220-240V	80x30	68-72	530	0.24
DLE-8	8W	AC220-240V	80x30	68-72	8151	0.24
DLE-10	10W	AC220-240V	90x39.3	75-80	1000	0.25
DLE-13	13W	AC220-240V	110x49.4	90-95	1365	0.40



DLS

TECHNICAL

Materials of Optics	PMMA
Materials of Housing	Die Cast Aluminium
Light Source	COB (SCDM <3)
Color Temperature	2700K/ 3000K/ 4000K/ 5000K
Luminous Efficiency@4000K	105lm/W
CRI	≥ 80/90
Beam Angle(°)	36°/60°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
DLS-5	5W	AC220-240V	80x80x30	68-72	530	0.22
DLS-8	8W	AC220-240V	80x80x30	68-72	8151	0.22
DLS-10	10W	AC220-240V	90x90x39	75-80	1000	0.26
DLS-13	13W	AC220-240V	110x110x64	90-95	1350	0.39

DLQ

TECHNICAL

Materials of Optics	PMMA
Materials of Housing	Die Cast Aluminium
Light Source	COB (SCDM <3)
Color Temperature	2700K/ 3000K/ 4000K/ 5000K
Luminous Efficiency@4000K	105lm/W
CRI	≥ 80/90
Beam Angle(°)	36°/60°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9
Certification	



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
DLQ-5	5W	AC220-240V	80x80x40	68-72	530	0.22
DLQ-8	8W	AC220-240V	80x80x40	68-72	815	0.22
DLQ-10	10W	AC220-240V	90x90x49	75-80	1000	0.28
DLQ-13	13W	AC220-240V	110x110x64	90-95	1000	0.39



DLT

TECHNICAL

Materials of Optics	PC+Tempered Glass
Materials of Housing	Die Cast Aluminium
Light Source	COB (SCDM <3)
Color Temperature	2700K/ 3000K/ 4000K/ 5000K
Luminous Efficiency@4000K	90lm/W
CRI	≥90
Beam Angle(°)	15°/24°/ 36°/ 60°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP20/IP40
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9

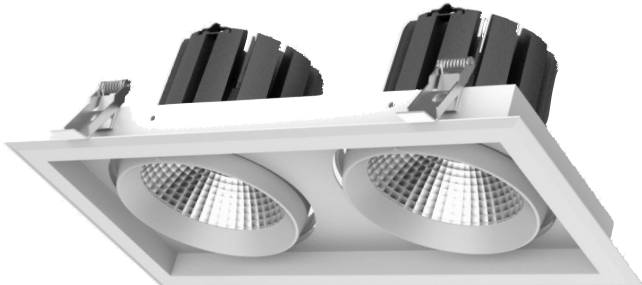
Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
DLT-10	10W	AC220-240V	95x95x95	82x88	770	0.34
DLT-20	20W	AC220-240V	190x95x95	182x85	1850	0.50



DLX

TECHNICAL

Materials of Optics	PC
Materials of Housing	Die Cast Aluminium
Light Source	COB (SCDM <3)
Color Temperature	2700K/ 3000K/ 4000K/ 5000K
Luminous Efficiency@4000K	100lm/W
CRI	≥80
Beam Angle(°)	15°/24°/36°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
DLX-30	30W	AC220-240V	175x175x110	160-160	3100	1.25
DLX-60	60W	AC220-240V	330x175x110	310-160	5800	2.25
DLX-90	90W	AC220-240V	475x175x110	455-160	8800	3.20

DLZ

TECHNICAL

Materials of Optics	PC with Glass
Materials of Housing	Die Cast Aluminium
Light Source	COB (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	100lm/W
CRI	>80
Beam Angle(°)	36/60 deg
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White/Black



FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.85

Certification

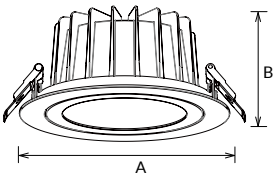


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
DLZ-5	5W	220-240V AC	82x58	600	0.17
DLZ-7	7W	220-240V AC	82x58	800	0.16
DLZ-10	10W	220-240V AC	82x58	1140	0.16

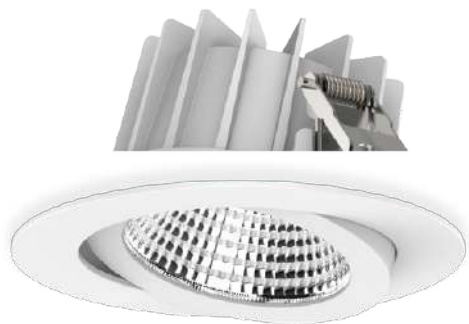
ACCESSORIES & DIMENSIONS



DLY

TECHNICAL

Materials of Optics	PC with Glass
Materials of Housing	Die Cast Aluminium
Light Source	COB (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	120 Lum/W
CRI	>80
Beam Angle(°)	15/20/24/36/45/60 deg
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White



FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac
Functions	-
Ingress Protection (IP Rating)	IP54
Impact Resistance (IK Rating)	-
Power Factor (PF)	> 0.90

Certification

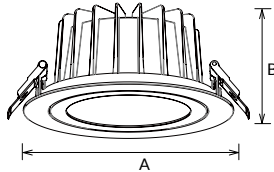


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
DLY-8	8W	220-240V AC	80x32 68-75	960	0.24
DLY-10	10W	220-240V AC	110x47 90-95	1200	0.38
DLY-13	13W	220-240V AC	110x47 90-95	1340	0.38
DLY-18	18W	220-240V AC	140x65 120-130	2200	0.56
DLY-25	25W	220-240V AC	140x65 120-130	2800	0.56
DLY-35	35W	220-240V AC	180x81 160-170	3700	0.88

ACCESSORIES & DIMENSIONS





DRL

TECHNICAL

Materials of Optics	PC with Glass
Materials of Housing	Die Cut Aluminium
Light Source	COB (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	120 Lum/W
CRI	>80
Beam Angle(°)	24/45/60 deg
UGR	<19
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac
Functions	-
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.90

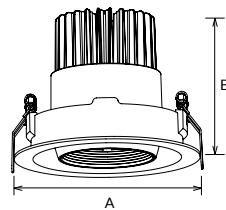
Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
DRL-18	18W	220-240V AC	150x116	130-140	2150	0.71
DRL-25	25W	220-240V AC	150x116	130-140	2800	0.71
DRL-35	35W	220-240V AC	185x130	160-170	3800	1.10
DRL-42	42W	220-240V AC	185x130	160-170	4200	1.10



ACCESSORIES & DIMENSIONS

DRS

TECHNICAL

Materials of Optics	PC with Glass
Materials of Housing	Die Cut Aluminium
Light Source	COB (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	91lm/w
CRI	>80
Beam Angle(°)	15/24/36 deg
UGR	< 19
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac
Functions	--
Ingress Protection (IP Rating)	IP40
Impact Resistance (IK Rating)	-
Power Factor (PF)	> 0.90

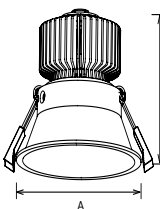
Certification



MODEL REF.

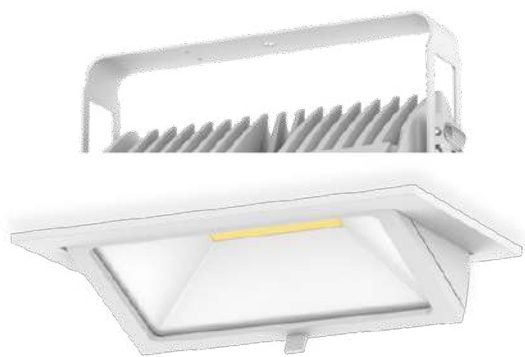
Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
DRS-10	10W	220-240V AC	80x87	910	0.26
DRS-13	13W	220-240V AC	100x94	1100	0.32



ACCESSORIES & DIMENSIONS

Note:Add A for adjustable head.



DPL

TECHNICAL

Materials of Optics	Mat Aluminium & Glass
Materials of Housing	Die Cast Aluminium
Light Source	COB/SMD
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	110 Lum/W
CRI	>80
Beam Angle(°)	120 deg
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	-
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.90

Certification

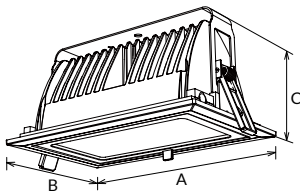


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(Ax BxCmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
DPL-35	35W	220-240V AC	235x145x117.4	220x130	3850	2.40
DPL-45	45W	220-240V AC	235x145x117.4	220x130	4900	2.40

ACCESSORIES & DIMENSIONS



DSL

TECHNICAL

Materials of Optics	Polished Aluminium & Glass
Materials of Housing	Die Cast Aluminium
Light Source	COB (SCDM <3)
Color Temperature	2700K/ 3000K/ 4000K/ 5000K
Luminous Efficiency@4000K	110lm/W
CRI	≥80
Beam Angle(°)	15°/24°/36°/60°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac
Functions	-
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9

Certification

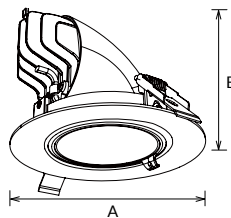


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
DSL-10	10W	AC220-240V	96x68	85x90	1100	0.20
DSL-15	15W	AC220-240V	145x102	120x130	1650	0.60
DSL-20	20W	AC220-240V	145x102	120x130	2200	1.05
DSL-35	35W	AC220-240V	180x128	165x170	3850	1.05
DSL-45	45W	AC220-240V	180x128	165x170	4950	1.05

ACCESSORIES & DIMENSIONS





RLTC

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	COB (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	100 Lum/W
CRI	>80
Beam Angle(°)	15/36 deg
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White/Black

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	IK06
Power Factor (PF)	> 0.90

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
RLTC-4	4W	220-240V AC	45×45×42 37×37	400	0.12
RLTC-6	6W	220-240V AC	76×45×51 68×37	600	0.16
RLTC-9	9W	220-240V AC	105×45×51 97×37	900	0.21
RLTC-11	11W	220-240V AC	75×75×51 67×67	1100	0.22
RLTC-13	13W	220-240V AC	147×45×51 139×37	1300	0.27
RLTC-23	23W	220-240V AC	105×105×51 97×97	2300	0.43
RLTC-25	25W	220-240V AC	280×45×51 272×37	2500	0.51
RLTC-37	37W	220-240V AC	413×45×51 405×37	3700	0.71



RLTS

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@4000K	100 Lum/W
CRI	>80
Beam Angle(°)	70/90/100 deg
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	White/Black

FEATURES & BENEFITS

LED Driver	Built-out
Dimming Option	Triac/ DALI/ 0-10V
Functions	-
Ingress Protection (IP Rating)	IP20
Impact Resistance (IK Rating)	IK06
Power Factor (PF)	> 0.90

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	CUT-OUT(mm)	LUMEN(±5%)	N.W/pc(kgs)
RLTS-9	9W	220-240V AC	105×45×55	97×37	900	0.21
RLTS-13	13W	220-240V AC	147×45×55	139×77	1300	0.27
RLTS-25	25W	220-240V AC	280×45×55	272×37	2500	0.51
RLTS-37	37W	220-240V AC	413×45×55	405×37	3700	0.70



AREA & SPORTS LIGHTING



FLC

TECHNICAL

Materials of Optics	PC Lens & Glass
Materials of Housing	Made of high pressure die cast aluminum alloy, chemically treated & polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	120lm/w
CRI	>80
Beam Angle(°)	90 deg
UGR	
Lifetime(hr)	L80 - 90000h
Product Finishing	Silver Grey

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK07
Power Factor (PF)	> 0.95

Certification



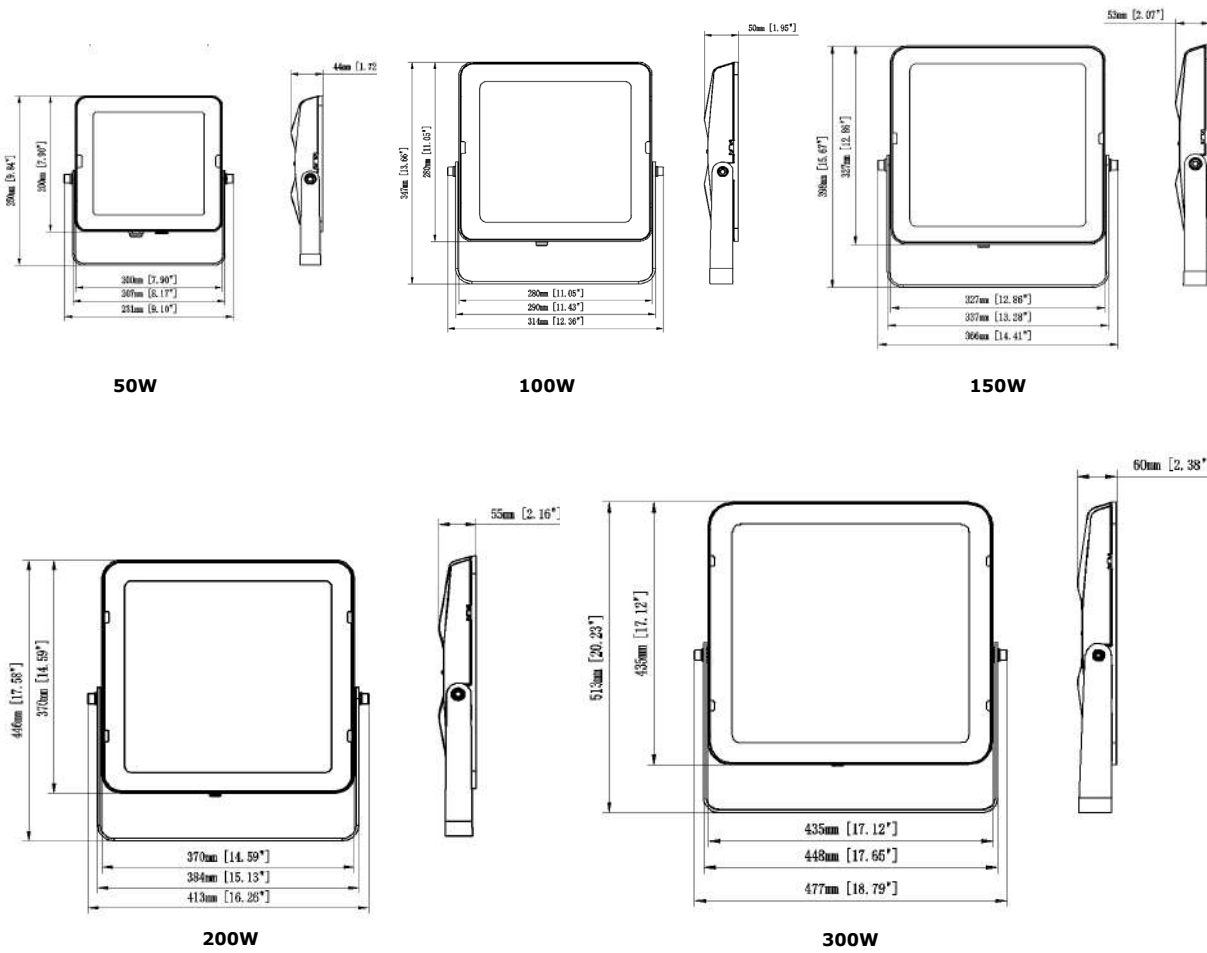
MODEL REF.

Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
FLC-50	50W	220-240V AC	250x231x44	6000	1.5
FLC-100	100W	220-240V AC	347x314x50	12000	3
FLC-150	150W	220-240V AC	398x366x53	18000	4.2
FLC-200	200W	220-240V AC	446x413x55	24000	5.5
FLC-300	300W	220-240V AC	513x477x60	36000	7.7



Dimensions





FLH

TECHNICAL

Materials of Optics	PC Lens & Glass
Materials of Housing	Die Cast Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	180lm/w
CRI	≥80
Beam Angle(°)	90°
UGR	-
Lifetime(hr)	>100000h
Product Finishing	Silver Grey



FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	> 0.91
Certification	



MODEL REF.

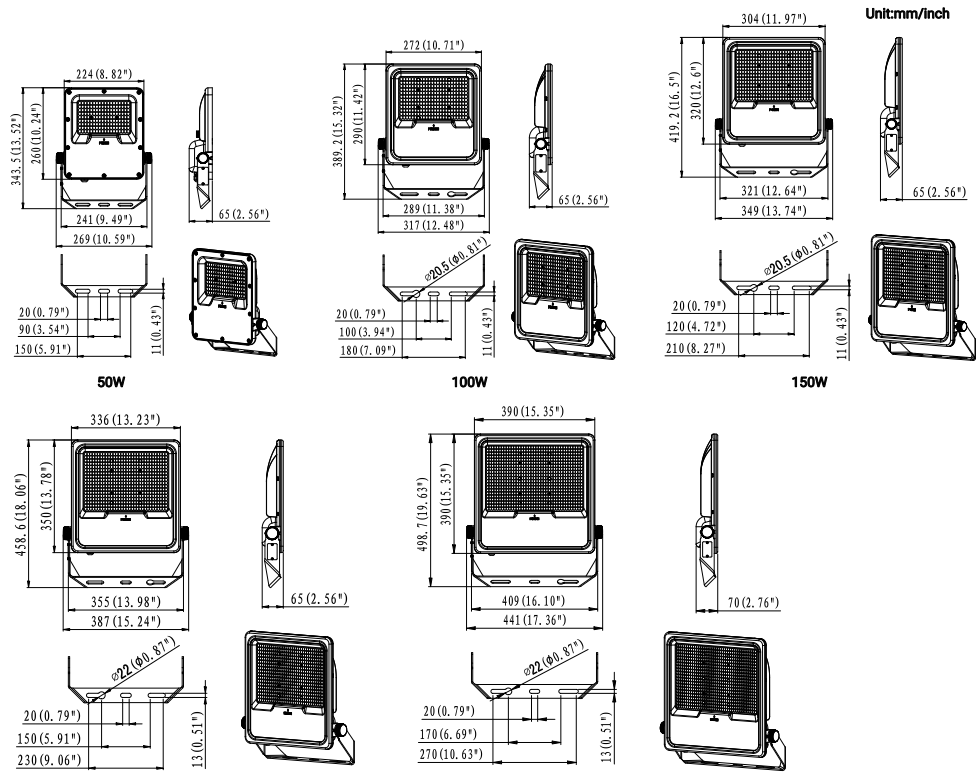
Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
FLH-50	50W	220-240V AC	344x269x65	9000	2.5
FLH-100	100W	220-240V AC	389x317x65	18000	3.7
FLH-150	150W	220-240V AC	419x349x65	27000	4.6
FLH-200	200W	220-240V AC	458x387x65	36000	6.2
FLH-240	240W	220-240V AC	498x441x65	43200	7.6
FLH-300	300W	220-240V AC	498x441x65	54000	8.1

Note : 50W is with PC cover



Dimensions



FLM

TECHNICAL

Materials of Optics	PC Lense & Glass
Materials of Housing	Die Cast Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	140lm/w
CRI	>80
Beam Angle(°)	90 deg
UGR	-
Lifetime(hr)	>100000h
Product Finishing	Marine Paint Grey



FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	> 0.90
Certification	

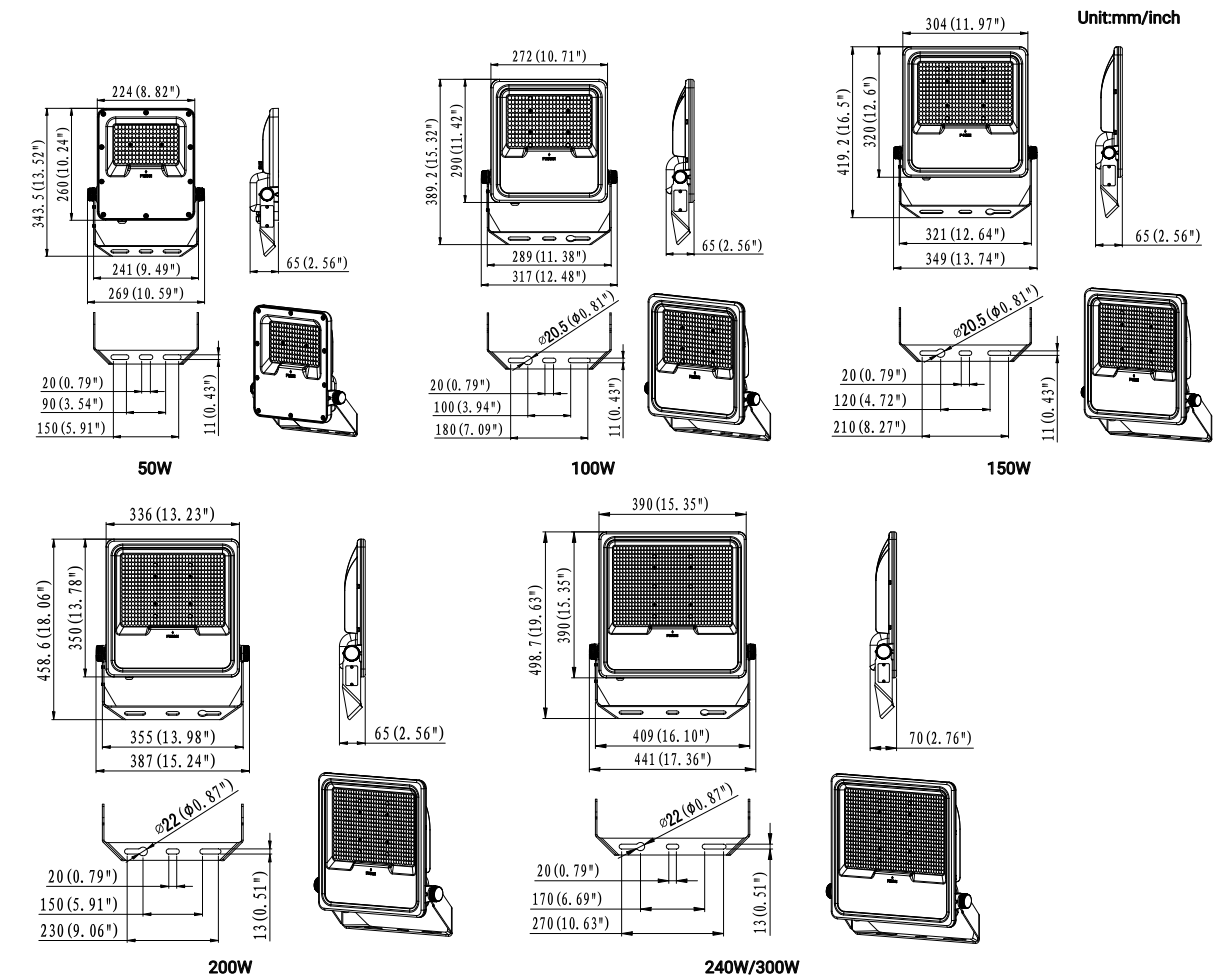


MODEL REF.

Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
FLM-050	50W	220-240V AC	267x228x55	7000	2.5
FLM-100	100W	220-240V AC	314x269x61	14000	3.7
FLM-150	150W	220-240V AC	360x302x67	21000	4.6
FLM-200	200W	220-240V AC	398x343x70	28000	6.2
FLM-300	300W	220-240V AC	470x406x80	42000	7.6
FLM-400	400W	220-240V AC	624x407x89	62000	8.1
FLM-500	500W	220-240V AC	624x407x89	77500	8.1

Dimensions





FLS

TECHNICAL

Materials of Optics	PC Lens & Glass
Materials of Housing	Made of high pressure die cast aluminum alloy, chemically treated & polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	135 Lum/W
CRI	>70
Beam Angle(°)	90°
UGR	-
Lifetime(hr)	>90,000h
Product Finishing	Grey

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	> 0.91

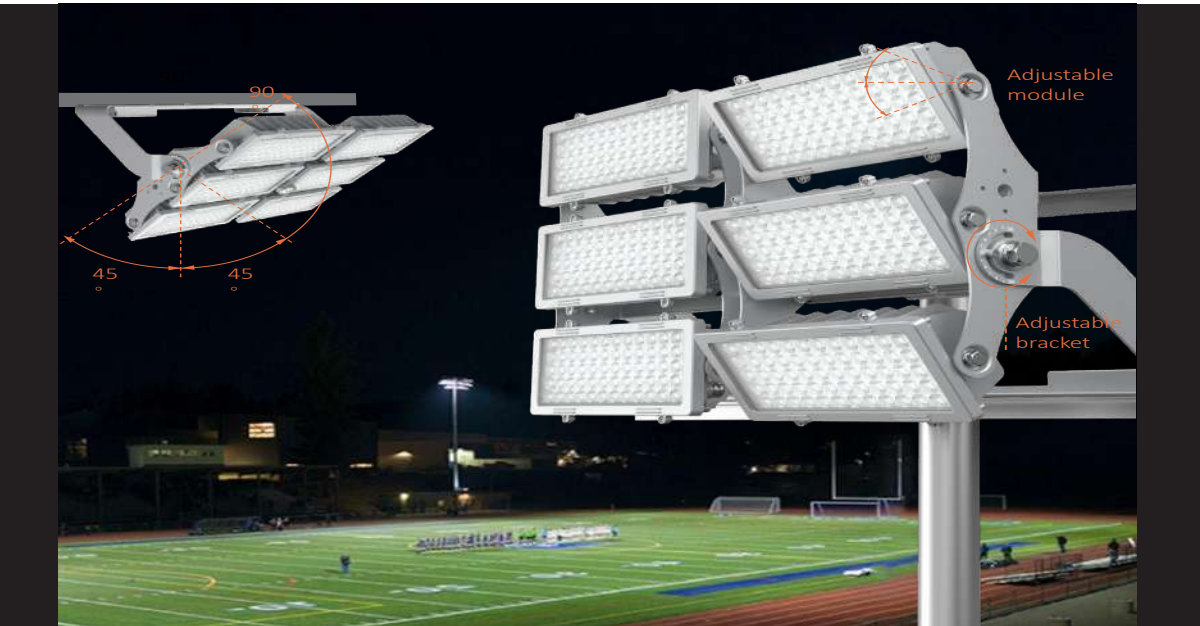
Certification



MODEL REF.

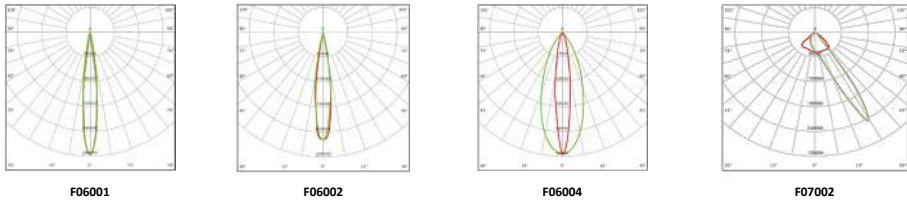
Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
FLS-200	200W	220-240V AC	322x305x120	27000	4.3
FLS-400	400W	220-240V AC	440x335x159	54000	14.8
FLS-600	600W	220-240V AC	562x335x163	81000	18
FLS-800	800W	220-240V AC	456x668x270	112000	24.6
FLS-1200	1200W	220-240V AC	578x668x270	168000	31.8

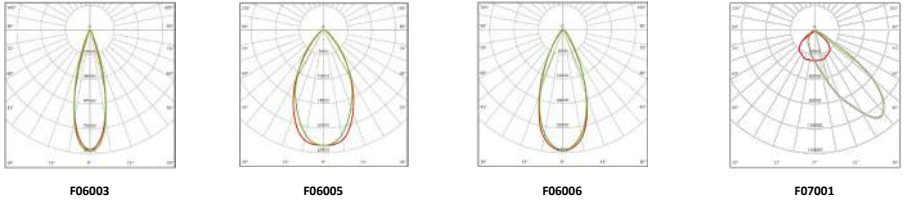


Photometry

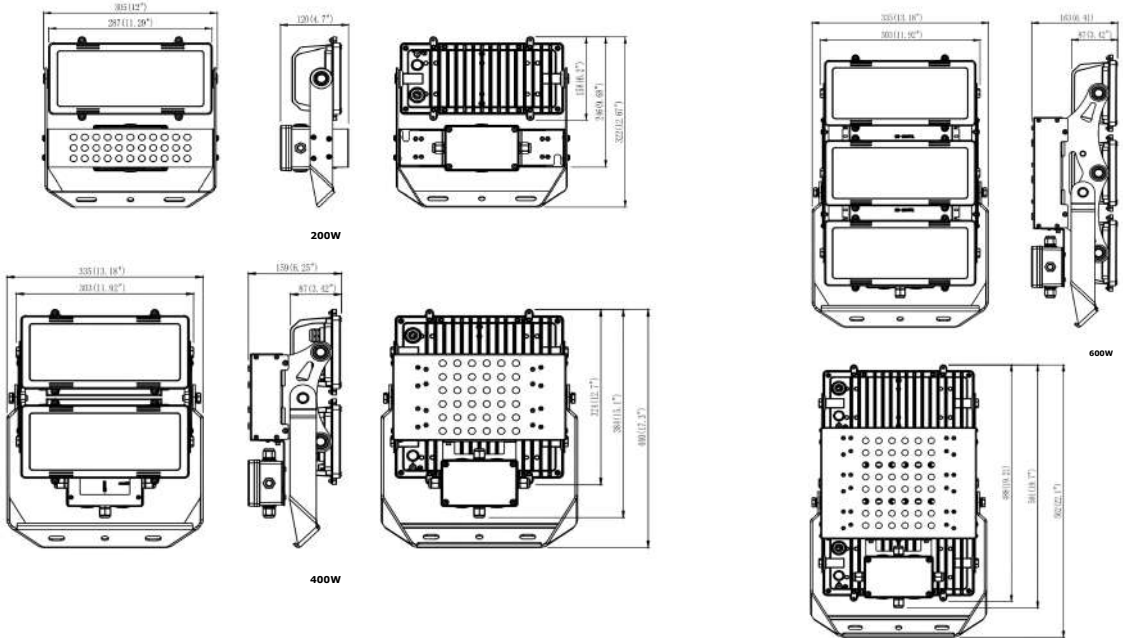
LED3737

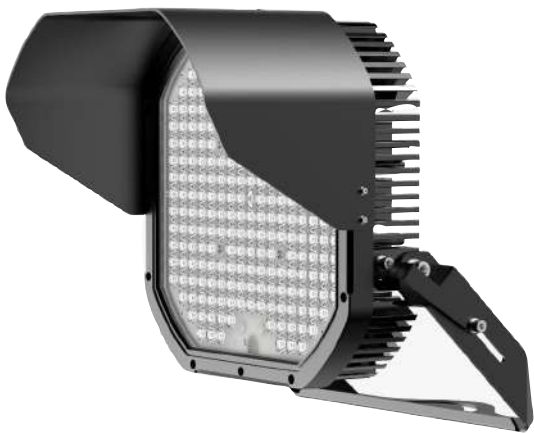


LED5050



Dimensions





FLR

TECHNICAL

Materials of Optics	PC Lens & Glass
Materials of Housing	Made of high pressure die cast aluminum alloy, chemically treated & polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	140 Lum/W
CRI	>80
Beam Angle(°)	10/15 Deg
UGR	-
Lifetime(hr)	>94,000h
Product Finishing	Black

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK08/IK10
Power Factor (PF)	> 0.92
Certification	

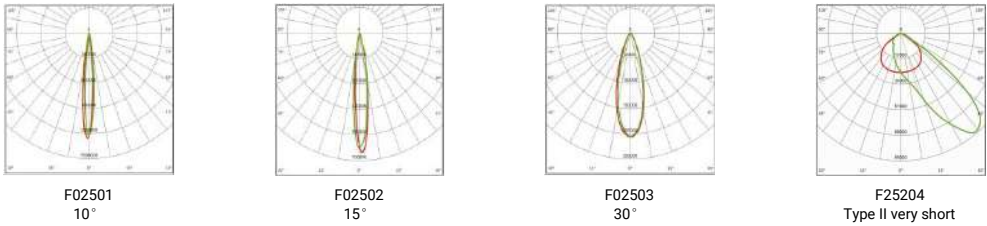


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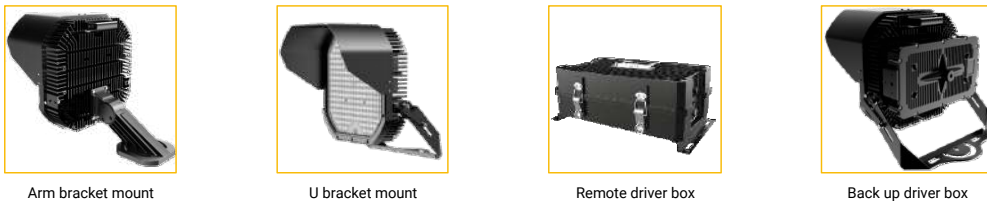
Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
FLR-600	600W	220-240V AC	411x583x436	84000	12.8
DRIVER BOX(600W)	600W	220-240V AC	458x278x159	-	9.7
DRIVER BOX (1200W)	1200W	220-240V AC	458x278x159	-	13.5

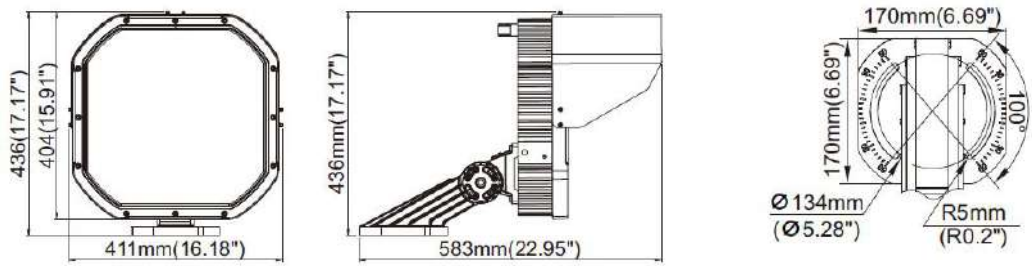
Photometry



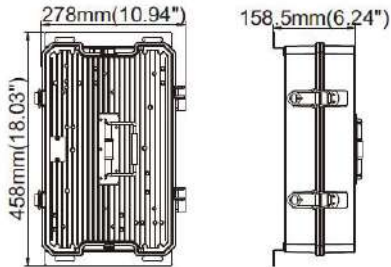
Mounting Options



Dimensions



Fixture



600W/1200W Driver box



CHBL

TECHNICAL

Materials of Optics	PC
Materials of Housing	Made of high pressure die cast aluminum alloy, chemically treated & polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency	150 Lum/W
CRI	>80
Beam Angle(°)	H00176, H00175
UGR	28
Lifetime(hr)	>100,000h
Product Finishing	Black



FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	> 0.95

Certification



MODEL REF.

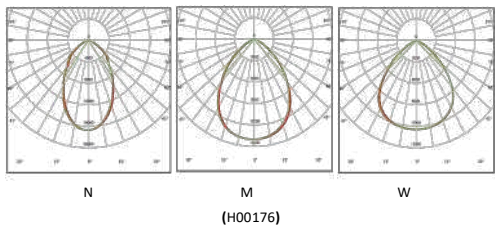
Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
CHBL-100	100W	220-240V AC	269x181	15000	1.9
CHBL-120	120W	220-240V AC	269x181	18000	1.9
CHBL-150	150W	220-240V AC	295x181	22500	3.1
CHBL-200	200W	220-240V AC	295x181	30000	3.5

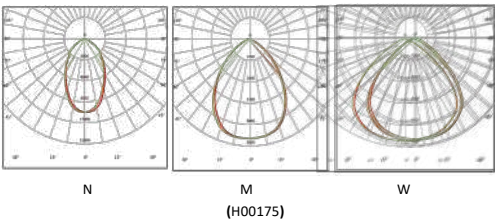


Photometry

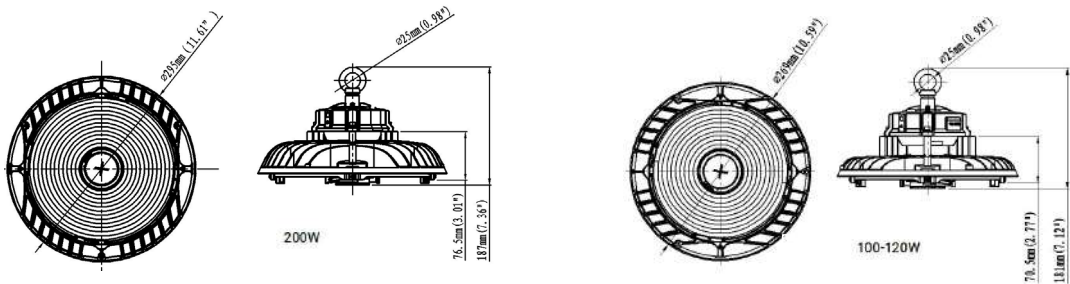
100W/120W (Selectable) beam angle



150W/200W (Selectable) beam angle



Dimensions



HBW

TECHNICAL

Materials of Optics	PC Lens /Glass
Materials of Housing	Made of high pressure die cast aluminum alloy, chemically treated & polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency	155 Lum/W
CRI	>70
Beam Angle(°)	90 deg
UGR	-
Lifetime(hr)	L80/B10 > 90000h
Product Finishing	Silver Grey

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK09
Power Factor (PF)	> 0.90

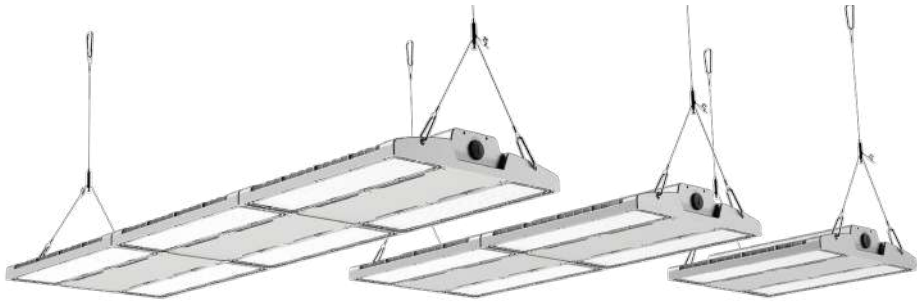
Certification



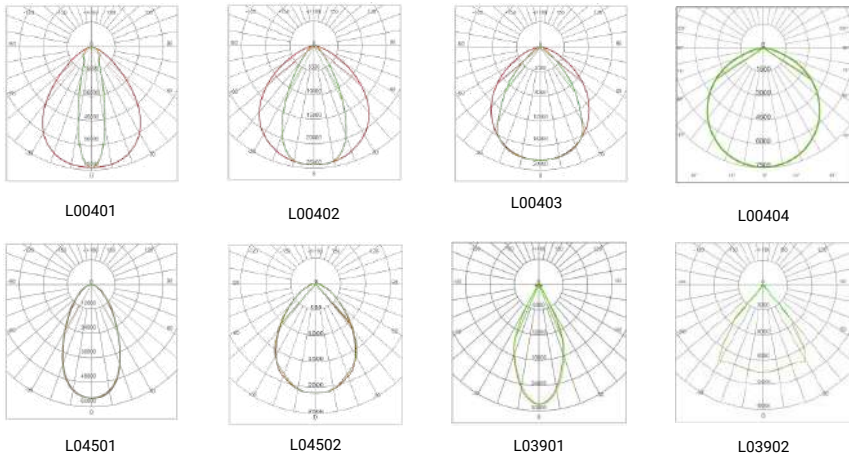
MODEL REF.

Standard CCT 5000K

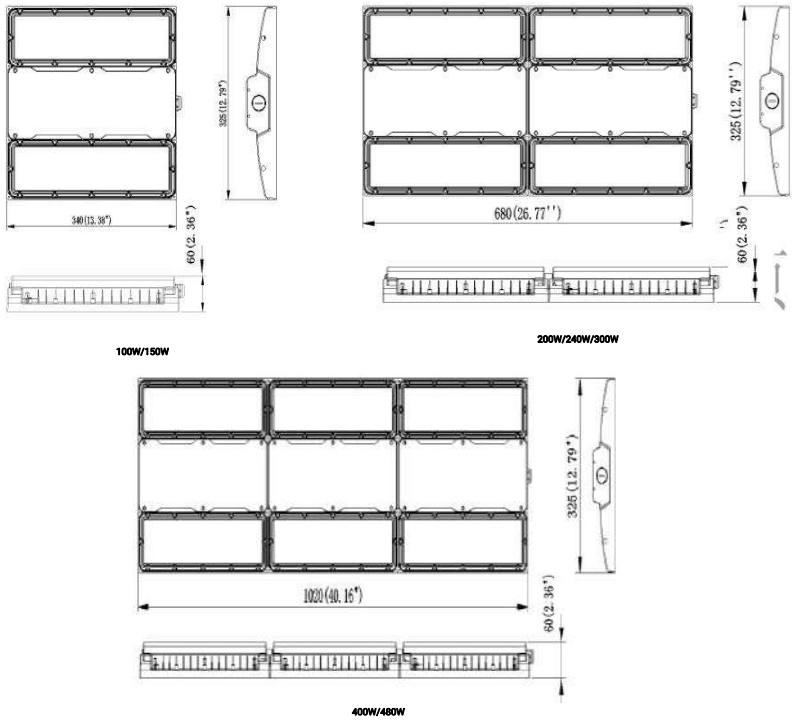
CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
HBW-100	100W	220-240V AC	340x325x60	15500	3.5
HBW-150	150W	220-240V AC	340x325x60	23250	3.7
HBW-200	200W	220-240V AC	680x325x60	31000	6.7
HBW-240	240W	220-240V AC	680x325x60	37200	6.8
HBW-300	300W	220-240V AC	680x325x60	46500	7.8
HBW-400	400W	220-240V AC	1020x325x60	62000	10.7
HBW-480	480W	220-240V AC	1020x325x60	72000	11.1



Photometry



Dimensions





LHB

TECHNICAL

Materials of Optics	PC Lens & Glass
Materials of Housing	Made of extruded aluminum alloy, chemically treated & polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency	135 Lum/W
CRI	>80
Beam Angle(°)	60/90/120 deg
UGR	-
Lifetime(hr)	L80/B10 > 90000h
Product Finishing	Black

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	IK10
Power Factor (PF)	> 0.90
Certification	



MODEL REF.

Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
LHB-50	50W	220-240V AC	280x137x102	6750	1.9
LHB-100	100W	220-240V AC	480x137x102	13500	3.4
LHB-200	200W	220-240V AC	948x137x102	27000	6.9
LHB-240	240W	220-240V AC	1178x137x102	32400	5.7



HBF

TECHNICAL

Materials of Optics	PC Lens / Glass
Materials of Housing	Made of high pressure die cast aluminum alloy, chemically treated & polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency	140 Lum/W
CRI	>80
Beam Angle(°)	60/90/120 deg
UGR	-
Lifetime(hr)	L80/B10 > 90000h
Product Finishing	Silver Grey

Applications:
Animal farms, Swimming Pool (Chlorine gas),
Chemical factory, Food Industries.

FEATURES & BENEFITS

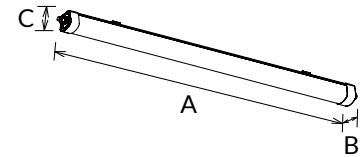
LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK06
Power Factor (PF)	> 0.90
Certification	



MODEL REF.

Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
HBF-20	20W	220-240V AC	600x84x120	2800	3.5
HBF-40	40W	220-240V AC	1128x84x120	5600	4.5
HBF-50	50W	220-240V AC	1390x84x120	7000	6





ROAD LIGHTING & SOLAR

RLL-G

TECHNICAL

Materials of Optics	PC Lens / Temp Glass
Materials of Housing	Made of extruded aluminum alloy, chemically treated, and polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K
Luminous Efficiency	140 lm/w
CRI	>80
Beam Angle(°)	Asymmetric
UGR	-
Lifetime(hr)	L80/B10 >100,000h
Product Finishing	Grey

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V/Midnight
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK09
Power Factor (PF)	> 0.90
Certification	



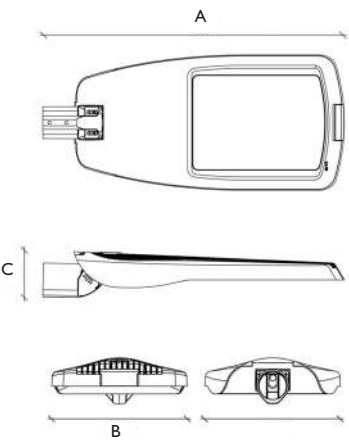
MODEL REF.

Standard CCT 5000K

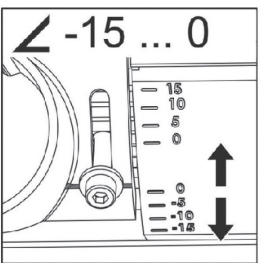
CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
RLL-G-80-60	60W	220-240V AC	523x240x102	8400	4
RLL-G-90-75	75W	220-240V AC	642x280x126	10500	6
RLL-G-90-110	110W	220-240V AC	642x280x126	15400	6
RLL-G-100-120	120W	220-240V AC	726x340x135	16800	8
RLL-G-100-150	150W	220-240V AC	726x340x135	21000	8
RLL-G-100-180	180W	220-240V AC	726x340x135	25200	8
RLL-G-112-250	250W	220-240V AC	891x400x135	35000	12
RLL-G-112-300	300W	220-240V AC	891x400x135	42000	12



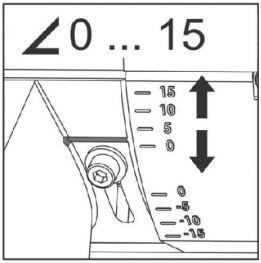
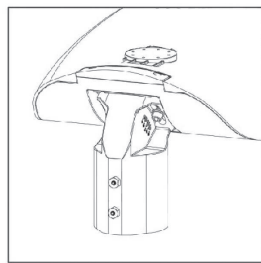
ACCESSORIES & DIMENSIONS



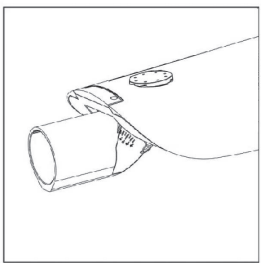
ANGLE POSITION DIMENSIONS



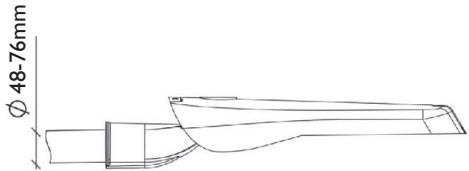
VERTICAL ENTRY



HORIZONTAL ENTRY



CONSOLE DIMENSIONS



ACCESSORIES



Microwave Motion Sensor
Detailed Product Description
Operating Voltage: 120-277Vac, 50/60Hz
HF System: 5.8GHz±75MHz,ISM Wave Band
IP Rating: IP65
Rated Load: 120Vac 4A Electronic/magnetic Ballast
277Vac 3A Electronic/magnetic Ballast
Operation Temperature: -25℃-55℃
Function: 2 Step/3 Step Dimming/On Off Function
Mounting Height: 6-15m
Cover Color: Blank Or White
Hold Time: 5s/30s/1 min/3min/5min/1 Omin/20min/30min



Surge Protection device
The unique solution for Outdoor lighting systems offering full protection against high surges in insulation Class I/II installations,Provides high surge protection of up to 10KV/10KA for all lighting technologies.



Shorting Cap
Standard: ANSI C136.10-1996



Photocell
Standard: ANSIC136.10-2010



Nema Socket
Standard: ANSIC136.10



Zhaga Connector
□Contacts rating: 1.5A,30V(24V typical)
□Meets 10KV dielectric withstand voltage to mounting surface
□4 pole contacts
-pin 1: 24Vdc
-pin 2: DALI (or DALI based protocol) -/common ground
-pin 3: DALI (or DALI based protocol)+
-pin 4: General 1/0



IRL

TECHNICAL

Materials of Optics	PC
Materials of Housing	Made of extruded aluminum alloy, chemically treated, and polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K
Luminous Efficiency	140 Lum/W
CRI	>80
Beam Angle(°)	Asymmetric
UGR	-
Lifetime(hr)	>90000hrs
Product Finishing	Grey

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK08/IK10
Power Factor (PF)	> 0.92

Certification



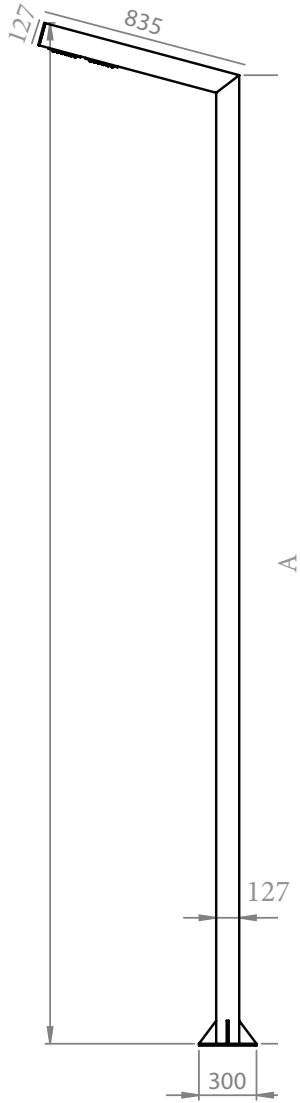
MODEL REF.

Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
IRL-35	35W	220-240V AC	4000x120x120	4800	12Kg
IRL-65	65W	220-240V AC	5000x120x120	9600	12Kg
IRL-89	89W	220-240V AC	6000x120x120	12700	12Kg
IRL-110	110W	220-240V AC	6000x120x120	15700	12Kg



ACCESSORIES & DIMENSIONS





ST

TECHNICAL

Materials of Optics	PC Lens / Temp Glass
Materials of Housing	Made of cast aluminum alloy, chemically treated, and polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency	150 Lum/W
CRI	>80
Beam Angle(°)	F25201(10°) , F25202(15°)
UGR	-
Lifetime(hr)	>94,000h
Product Finishing	Black

UST

TECHNICAL

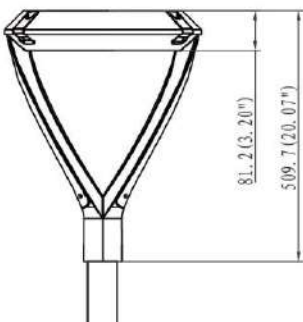
Materials of Optics	PC Lens / Temp Glass
Materials of Housing	Made of cast aluminum alloy, chemically treated, and polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency	120 Lum/W
CRI	>80
Beam Angle(°)	RO1201, RO1203, RO1204
UGR	-
Lifetime(hr)	>94,000h
Product Finishing	Black

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	> 0.90
Certification	



ACCESSORIES & DIMENSIONS



MODEL REF.

Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
ST-30	30W	220-240V AC	400x81	4500	6.8
ST-50	50W	220-240V AC	400x81	7500	6.8
ST-60	60W	220-240V AC	400x81	9000	6.8
ST-75	75W	220-240V AC	400x81	11250	6.8

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	Power adjustable for different light outputs
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	> 0.90
Certification	



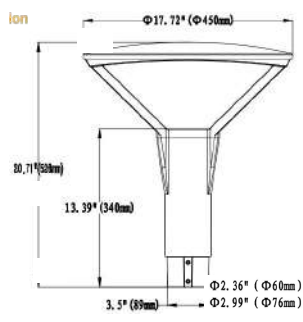
MODEL REF.

Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
UST-40	40W	220-240V AC	450x526	4800	7.5
UST-60	60W	220-240V AC	450x526	7200	7.9
UST-75	75W	220-240V AC	450x526	9000	7.95
UST-100	100W	220-240V AC	450x526	11250	8.0

Note:Add suffix for fixing arrangement.

ACCESSORIES & DIMENSIONS





ST50

TECHNICAL

Materials of Optics	PC
Materials of Housing	Made of cast aluminum alloy,chemically treated, and polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency	200 Lum/W
CRI	>80
Beam Angle(°)	80 deg
UGR	
Lifetime(hr)	>94000hrs
Product Finishing	Grey

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	> 0.90

Certification



MODEL REF.

Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
ST50-30	30W	Solar	422x795	6000	11.5
ST50-40	40W	Solar	422x1100	8000	8.7
ST50-60	60W	Solar	422x1282	12000	11.5
ST50-80	80W	Solar	422x1282	16000	8.7
ST50-100	100W	Solar	422x1282	20000	8.7

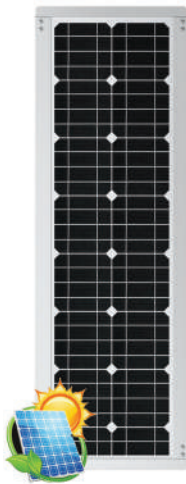


Mono-crystalline photovoltaic with a higher conversation efficiency

Battery and controller inside the fixture, easier to transport and install. Ours solar street light adoptsLiFePO4 battery, high temperature resistance, large current discharge, life cycle more than 2000 times.

With 21% conversion rate mono-crystalline solar panel, the panel could help store more energy in rainy day, lifespan is much longer and lighting output performance is better.

LiFePO4 Battery, with longer lifetime,charge for 8 hours which can continuous work for 3 days.



Bring you a concise and full series solar street light without mess.



Integrated solar street Light
Simple all-in-one design
Fast installation
Low shipping cost



Traditional solar street light+external solar panel
Complicated structure
High installation cost
High shipping cost



RLS

TECHNICAL

Materials of Optics	PC Lens / Temp Glass
Materials of Housing	Made of cast aluminum alloy, chemically treated, and polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency	120 Lum/W
CRI	>80
Beam Angle(°)	-
UGR	-
Lifetime(hr)	50,000h
Product Finishing	Black

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK09
Power Factor (PF)	> 0.90

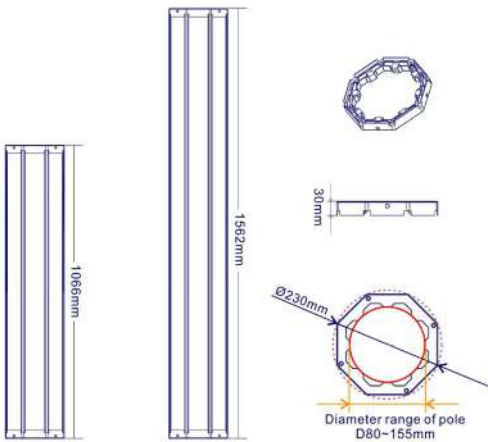
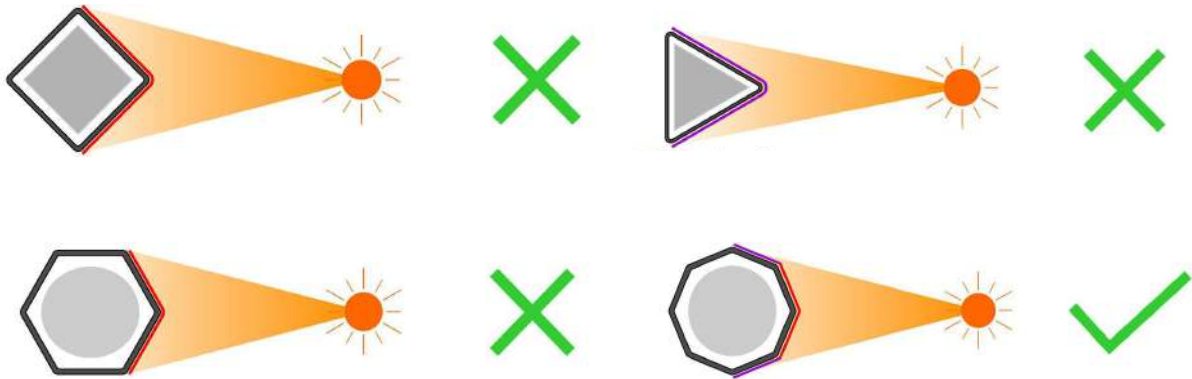
Certification



MODEL REF.

Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)
RLS-40	40W	Solar	4000x120x120	4800
RLS-60	60W	Solar	6000x120x120	7200
RLS-80	80W	Solar	8000x120x120	9600
RLS-120	120W	Solar	1000x120x120	14400



Solar pole structural drawings

Solar pole exploded view

Solar pole module connector
Modular design, easy to connect
Die-casting aluminum

High-efficiency silicon solar cells
High-efficiency A-Grade monocrystalline silicon solar cells
Smallest area, collect more sunlight

Plug & play technology
Plug & play design
Easy and fast installation



Product Features

- High performance in low light conditions, allowing the module to operate in mornings, evenings and cloudy days
- Cylindrical structure, 360° sunlight reception
- High performance cell efficiency of
- Anodized aluminium alloy frame, which is strengthened to avoid freezing or warping
- Sturdy frame allows mounting in portrait or landscape orientations
- Vertical installation, can resist strong wind, and can avoid the accumulation of dust, rain, snow and fallen leaves
- Each individual module has a working indicator light
- Anti-backcharging device

High power output

- High quality monocrystalline photovoltaic modules, which deliver exceptional performance and yield
- It applies to UPS, traffic monitoring, and communication devices that consume large amounts of electricity
- Cells matched for electrical uniformity produce high power output and reliability
- Easy installation and suitable for various load environments

Solar panel material list

Solar cell	Mono cell
Glass	3.2 Cloth super white tempered glass
EVA	High light transmittance, anti-oxidation, anti-corrosion
TPE(white)	High temperature resistance, fatigue resistance, creep resistance, impact resistance
Aluminum frame	High tension resistance, corrosion resistance, abrasion resistance

SBOL

TECHNICAL

Materials of Optics	PC Lens / Temp Glass
Materials of Housing	Made of cast aluminum alloy, chemically treated, and polyester powder coated.
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency	150/100/130 Lum/W
CRI	>80
Beam Angle(°)	R0321(Type V)/R03202(TypeIV)/R0203(Type V)
UGR	-
Lifetime(hr)	50,000h
Product Finishing	Black



FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK07
Power Factor (PF)	> 0.90

Certification



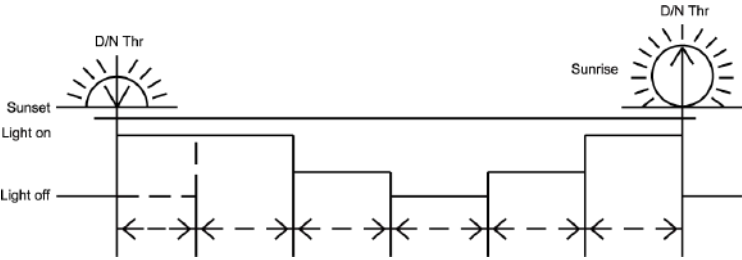
MODEL REF.

Standard CCT 5000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)
SBOL-3	3W	Solar	230x520	400
SBOL-3	3W	Solar	230x920	400

Working mode

Five-stage Night Mode



Lighting scheme	Time 1	Time 2	Time 3	Time 4	Time 5	Energy consumption	Working hours in rainy days
1 (Factory default)	4H×1 00%	0H×1 00%	0H×1 00%	0H×0 %	0H×1 00%	14Wh	2.7Days
Set the modes Time 1-5 and lighting levels by remote control. Battery capacity:38.4Wh, solar panel wattage: 5W. Battery charging capacity:24Wh /Day. Recommended battery energy consumption ≤20Wh /Day.							

* Avoid being shaded by trees and buildings, or battery charging will be affected.



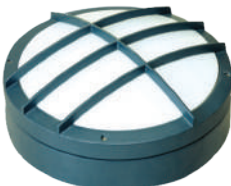
WALL & FACADE LIGHTS



BH

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/4000K/5000K
Luminous Efficiency	140 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	-
Lifetime(hr)	> 50,000h
Product Finishing	White/Black/Grey



G

H

FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	> 0.90

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
BH-18	18W	220-240V AC	275x95	2000	1.8
BH-29	29W	220-240V AC	350x148	3350	2.2

Note:Add suffix for front cover.

BHF

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	100lm/W
CRI	≥80
Beam Angle(°)	110°
UGR	-
Lifetime(hr)	> 50,000h
Product Finishing	White/Black/Grey

FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	Triac/ DALI/ 0-10V
Functions	Sensor/ Emergency/ Adjustable Power
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	IK10
Power Factor (PF)	≥0.9

Certification

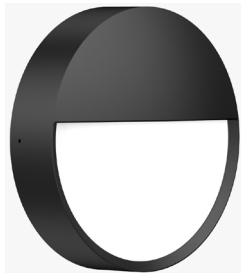


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
BHF-12	12W	220-240V AC	250x58	1250	1.05
BHF-18	18W	220-240V AC	250x58	1850	1.15

Note:Add suffix for front cover.

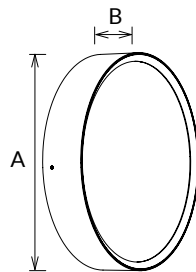


H



HR

ACCESSORIES & DIMENSIONS



WP01

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	135 Lum/W
CRI	≥80
Beam Angle(°)	RO8401
UGR	-
Lifetime(hr)	>90,000h
Product Finishing	Black



FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	>0.90

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBmm)	LUMEN(±5%)	N.W/pc(kgs)
WP01-40	40W	AC220-240V	296x150x223	5400	1.15
WP01-70	70W	AC220-240V	296x150x223	9400	1.81

UWP

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	125 Lum/W
CRI	≥80
Beam Angle(°)	U04201, RO8401
UGR	-
Lifetime(hr)	>90,000h
Product Finishing	Black



FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP166
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	>0.90

Certification

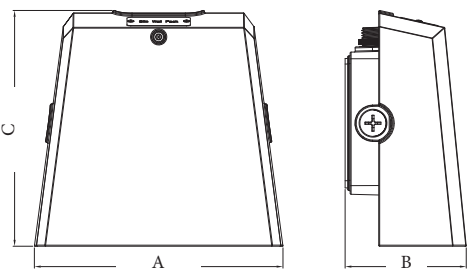


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBmm)	LUMEN(±5%)	N.W/pc(kgs)
UWP-10	10W	AC220-240V	196x96x186	1250	1.39
UWP-20	20W	AC220-240V	196x96x186	2500	1.44
UWP-30	30W	AC220-240V	196x96x186	3760	1.48
UWP-40	40W	AC220-240V	282x125x205	5000	2.82
UWP-70	70W	AC220-240V	282x125x205	8750	3.04

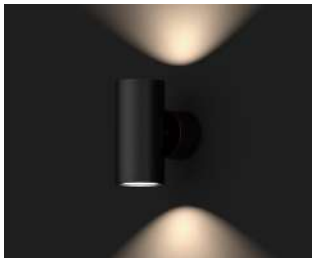
ACCESSORIES & DIMENSIONS



UD

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	2700K/ 3000K/ 4000K/ 5000K
Luminous Efficiency@5000K	110lm/W
CRI	≥80
Beam Angle(°)	15°/24°/36°/60°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	Black



FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	-
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
UD-10	10W	AC220-240V	170x60x105	900	0.60
UD-20	20W	AC220-240V	200x76x121	2200	0.90
UD-27	27W	AC220-240V	230x100x145	3200	1.20

WD

TECHNICAL

Materials of Optics	PC/ Glass
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	75lm/W
CRI	≥80
Beam Angle(°)	60°x115°x40°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	Black



FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	Triac
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	-
Power Factor (PF)	≥0.9

Certification

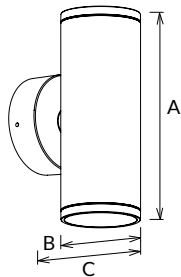
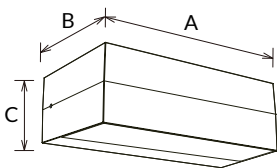


MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
WD-10	10W	AC220-240V	200x100x60	750	0.71
WD-15	15W	AC220-240V	300x100x60	1100	1.09

ACCESSORIES & DIMENSIONS





CWL

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	87lm/W(WL90A) 75lm/W(WL90B)
CRI	≥80
Beam Angle(°)	320°(WL90A)/360°(WL90B)
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	Black

FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	Triac
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	≥0.9

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
CWL-8	8W	AC220-240V	100x142x230	700	1.00



BOL1

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	87lm/W(NL90A) 75lm/W(NL90B)
CRI	≥80
Beam Angle(°)	320°(WL90A)/360°(WL90B)
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	Black

FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	Triac
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	≥0.9

Certification



MODEL REF.

Standard CCT 4000K

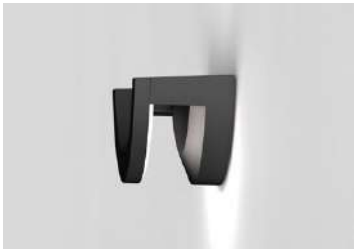
CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBmm)	LUMEN(±5%)	N.W/pc(kgs)
BOL1-400	8W	AC220-240V	100x400	700	1.15
BOL1-750	8W	AC220-240V	100x750	700	1.81
BOL1-1000	8W	AC220-240V	100x1000	700	2.29



WLM

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	53lm/W
CRI	≥80
Beam Angle(°)	50°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	Black



FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	-
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	≥0.9

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
WLM-10	10W	AC200-240V	204x81x78	530	0.50



BOL2

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	53lm/W
CRI	≥80
Beam Angle(°)	50°
UGR	-
Lifetime(hr)	>50,000h
Product Finishing	Black

FEATURES & BENEFITS

LED Driver	Built-in
Dimming Option	-
Functions	-
Ingress Protection (IP Rating)	IP65
Impact Resistance (IK Rating)	IK08
Power Factor (PF)	≥0.9

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(AxBxCmm)	LUMEN(±5%)	N.W/pc(kgs)
BOL2-500	10W	AC200-240V	249x121x500	530	2.34
BOL2-1000	10W	AC200-240V	249x121x1000	530	4.03

BOL3

TECHNICAL

Materials of Optics	PC
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	SMD <3
Luminous Efficiency@5000K	85 Lum/W
CRI	>80
Beam Angle(°)	Asymmetric
UGR	-
Lifetime(hr)	L80/B10 >90,000h
Product Finishing	Black



FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP66
Impact Resistance (IK Rating)	IK10
Power Factor (PF)	> 0.50

Certification



MODEL REF.

Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(Ax BxCmm)	LUMEN(±5%)	N.W/pc(kgs)
BOL3-500-14	14W	220-240V AC	165x500	1190	4.5
BOL3-500-24	24W	220-240V AC	165x500	1920	4.5
BOL3-900-14	14W	220-240V AC	165x900	1190	6.16
BOL3-900-24	24W	220-240V AC	165x900	1192	6.16

BOL4

TECHNICAL

Materials of Optics	Die-casting aluminium body in powder coated
Materials of Housing	Aluminium
Light Source	SMD (SCDM <3)
Color Temperature	3000K/ 4000K/ 5000K/ 5700K
Luminous Efficiency@5000K	90 Lum/W
CRI	>80
Beam Angle(°)	90 deg
UGR	-
Lifetime(hr)	50,000h
Product Finishing	Black



FEATURES & BENEFITS

LED Driver	Built-In
Dimming Option	Dali/1-10V
Functions	-
Ingress Protection (IP Rating)	IP54
Impact Resistance (IK Rating)	IK03
Power Factor (PF)	> 0.80

Certification

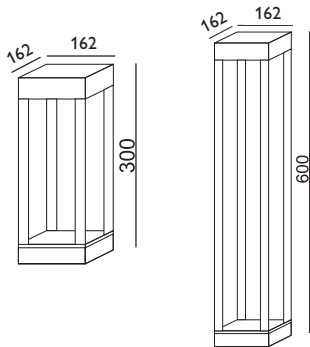


MODEL REF.

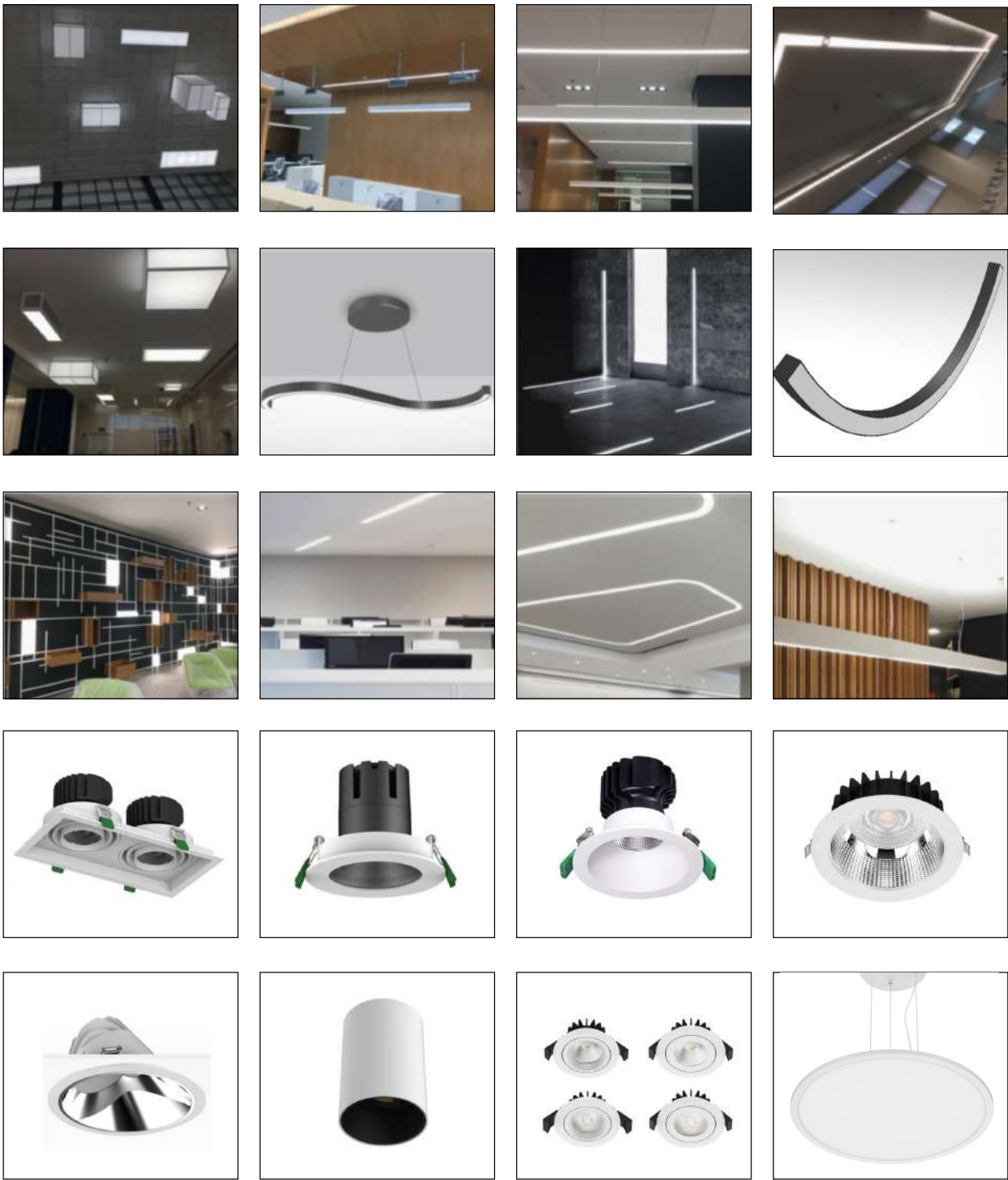
Standard CCT 4000K

CODE	WATT	INPUT VOLTAGE(V)	SIZE(Ax BxCmm)	LUMEN(±5%)	N.W/pc(kgs)
BOL4-600	12W	220-240V AC	600x162x56	1100	2.60
BOL4-300	12W	220-240V AC	300x162x56	1100	2.99

ACCESSORIES & DIMENSIONS



Custom Designs



In addition to our well established relation with some reputable foundries and plastic specialists for proto type castings and mouldings **MAJELITE** has an in house luminaire design software for research and optimization of virtual luminaries allowing a fast and accurate photometric and suitability analysis for most lighting applications which enable us to offer a wide range of custom made fixtures, beyond the standard range listed in this catalogue, to suit the special needs and requirements of architects and consultants.

At **MAJELITE** we assure our valuable customers of being a one stop supplier for all their lighting requirements. We simply outsource the castings and mouldings and complete the design process to a finished, tested and guaranteed product.

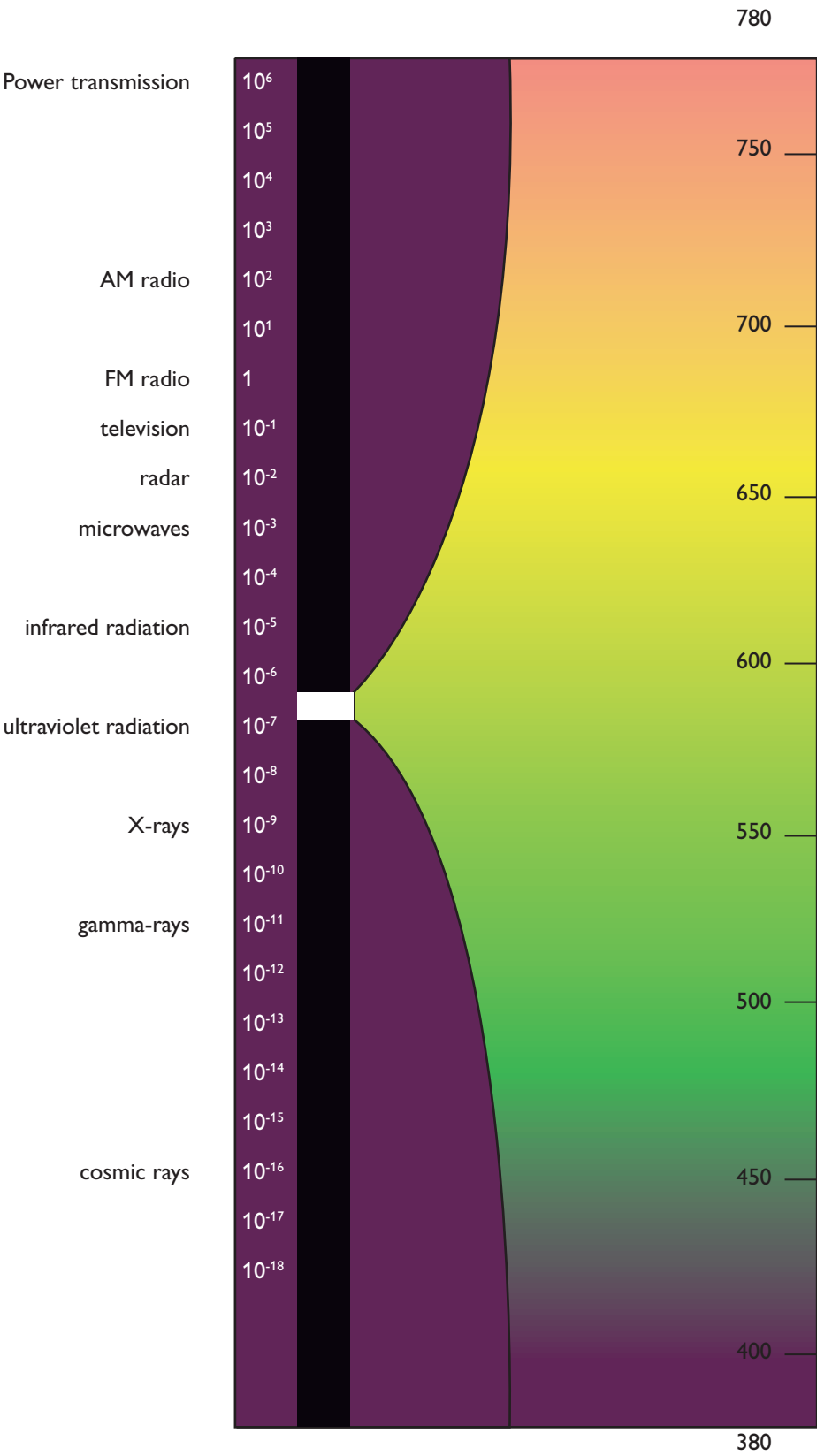
We at **MAJELITE** speak the Lighting Language very well.



THE LIGHTING LANGUAGE

The spectrum of electromagnetic radiation.

The extent of visible light is shown to the right, much enlarged.

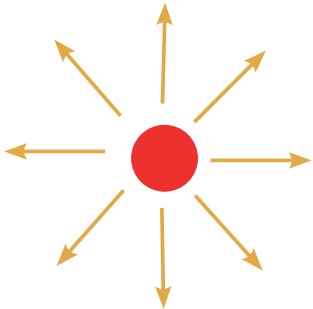


Technical Aspects

Lighting Concepts and Mangnitudes.

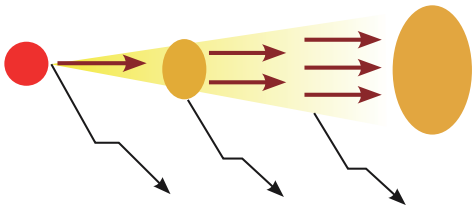
Light Flux

Symbol- Φ
Unit - Lumen (lm)
Light flux is the total quantity of light emitted per second by a light source.
The value of the light flux emitted by each type of lamp is given by the manufacturers in their catalogues:



Light intensity

Symbol-1
Unit - Candela (cd)
Light flux emitted in a particular direction from a given light source. It can also be defined as a light flux irradiated through a tri-dimensional angle directed by the magnitude of the referred angle.



$$\frac{\Phi}{\omega}$$

Illuminance

Symbol - E
Unit - lux(lx) lx=Lumen/m2
Illuminance is the quantity of incidental light falling onto a given surface, divided by the value of the said surface, taking into consideration that it is uniformly illuminated.

E =

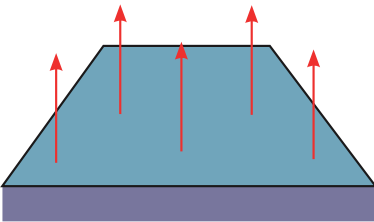
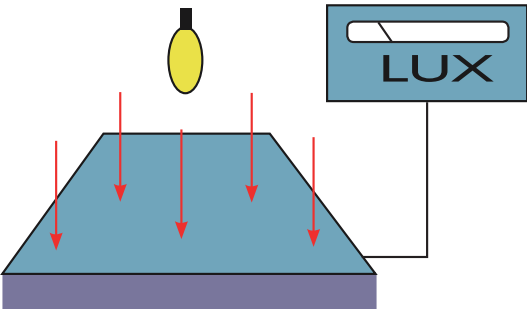
$$\frac{\Phi}{\text{Surface}}$$

Luminance or brightness

Symbol - L
Unit - candela per square meter (cd/m2)
Luminance is the sensation of brightness that the eye perceives from a surface and is directly connected with the luminous intensity absorbed by this surface as well as its reflection factor.

L =

$$\frac{I}{\text{Surface}}$$



5a Correlated Colour Temperature CCT (in K)

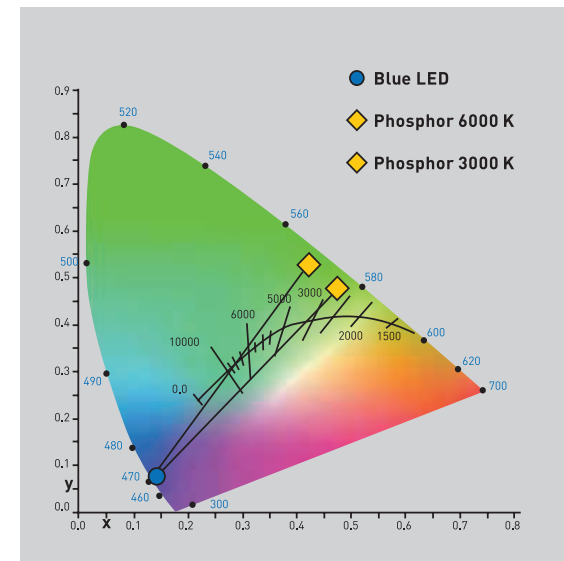
The light colour of white light is defined by correlated colour temperature T_{cp} expressed in K (Kelvin). Temperatures are described as warm white up to 3,300 K, neutralwhite from 3,300 K to 5,300 K and daylight white over 5,300 K (Fig. 3). Correlated colour temperatures should be declared rounded to 100 K (recommendation). In a typical design assignment, care should be taken to ensure that only light sources with similar colour temperatures (100 K tolerance) are used.

5b Colour Rendering Index CRI

Despite identical light colour, light sources can have different colour rendering characteristics because of the different spectral composition of their beam. The general colour rendering index, R_a , was introduced to provide a benchmark for identifying the colour rendering characteristics of a light source objectively. It indicates how closely the perceived colour of an object matches its appearance under a particular reference light source.

According to EN 12464-1, sources with a colour rendering index below 80 should not be used for work areas in which people spend a significant length of time.

Fig. 3: CIE chromaticity diagram



To identify the light colour and colour rendering characteristics of light sources clearly in addition to manufacturers' descriptions, a manufacturer-neutral three-digit colour code has been introduced internationally (see Table 1). The code number 840, for instance, denotes a colour rendering index of 80 to 89 and a colour temperature of 4,000 K, which is within the neutral-white light colour range.

Fig. 4: Example of good colour rendering

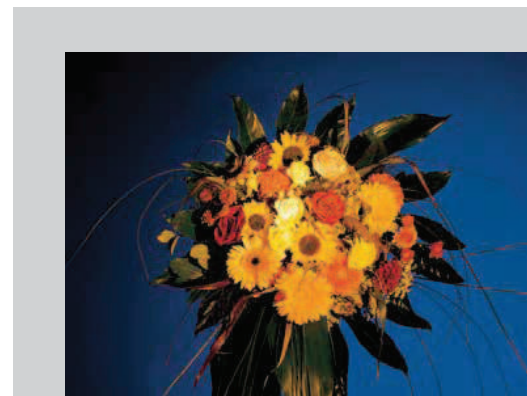


Fig. 5: Example of poor colour rendering



5c Colour Tolerance

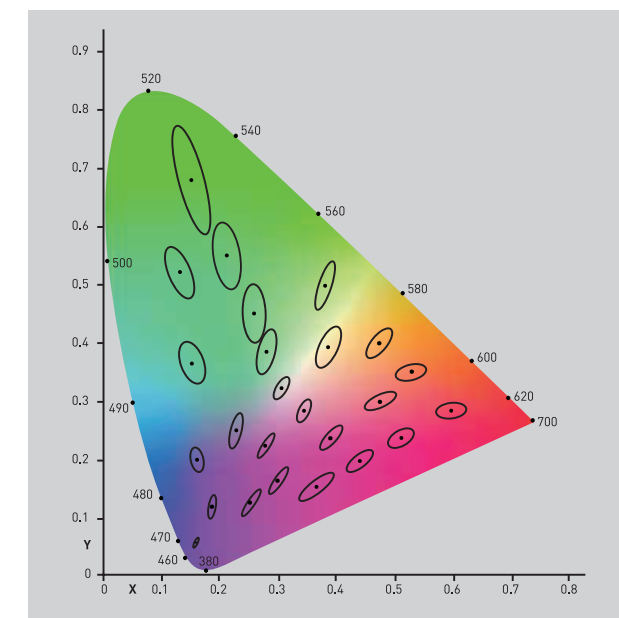
The chromatic coordinates of a particular colour can be defined precisely by x and y coordinates in the CIE Chromaticity Diagram (according to the 1931 CIE Colour Space; DIN 5033). The coordinates of the achromatic locus (white), for example, are $x = 0.3333$ and $y = 0.3333$.

MacAdam ellipses refer to a region on the CIE Chromaticity Diagram that contains all the colours that the human eye cannot distinguish from the colour at the centre of the ellipse. The contour of the ellipse indicates the colours that can just be distinguished.

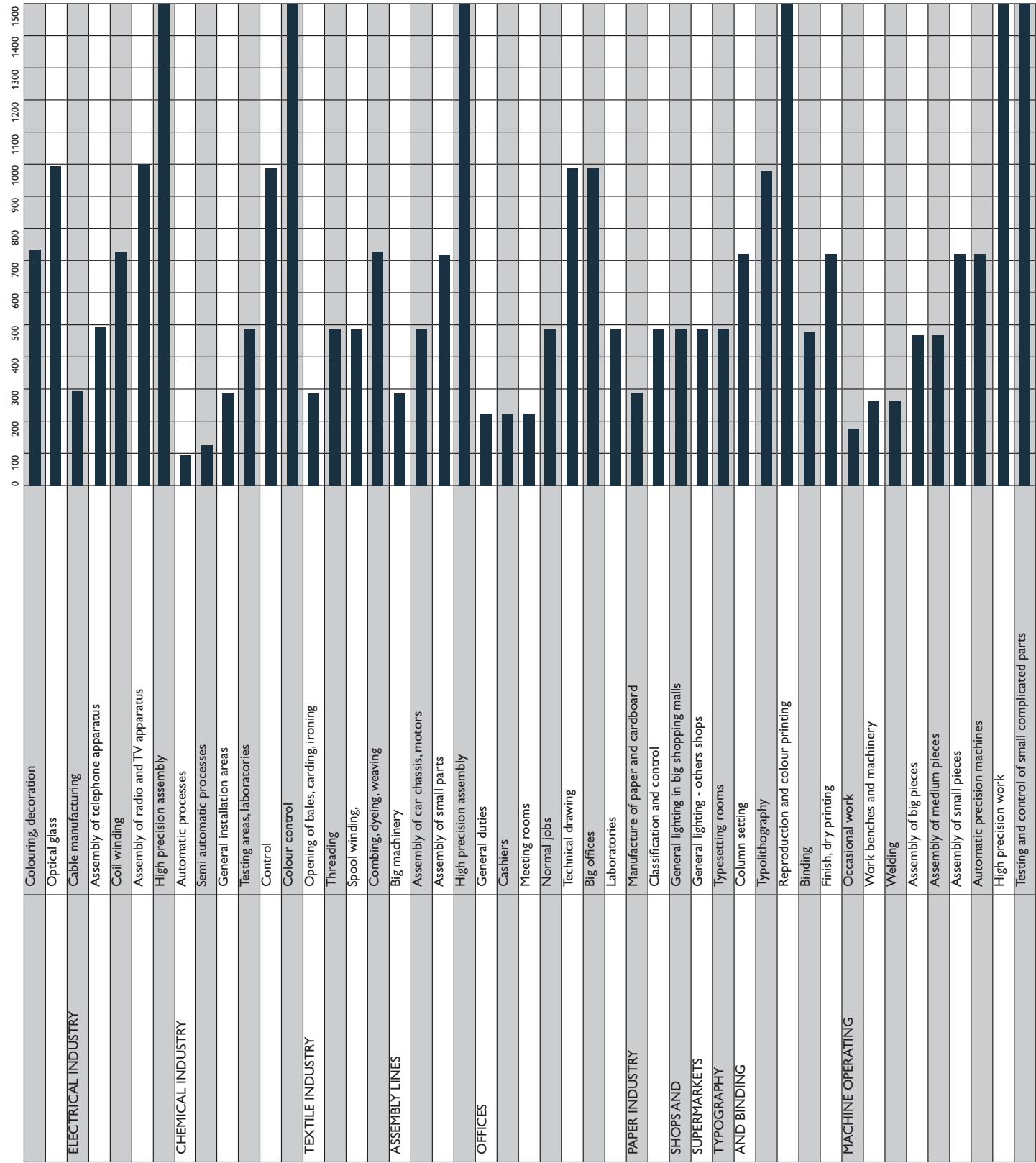
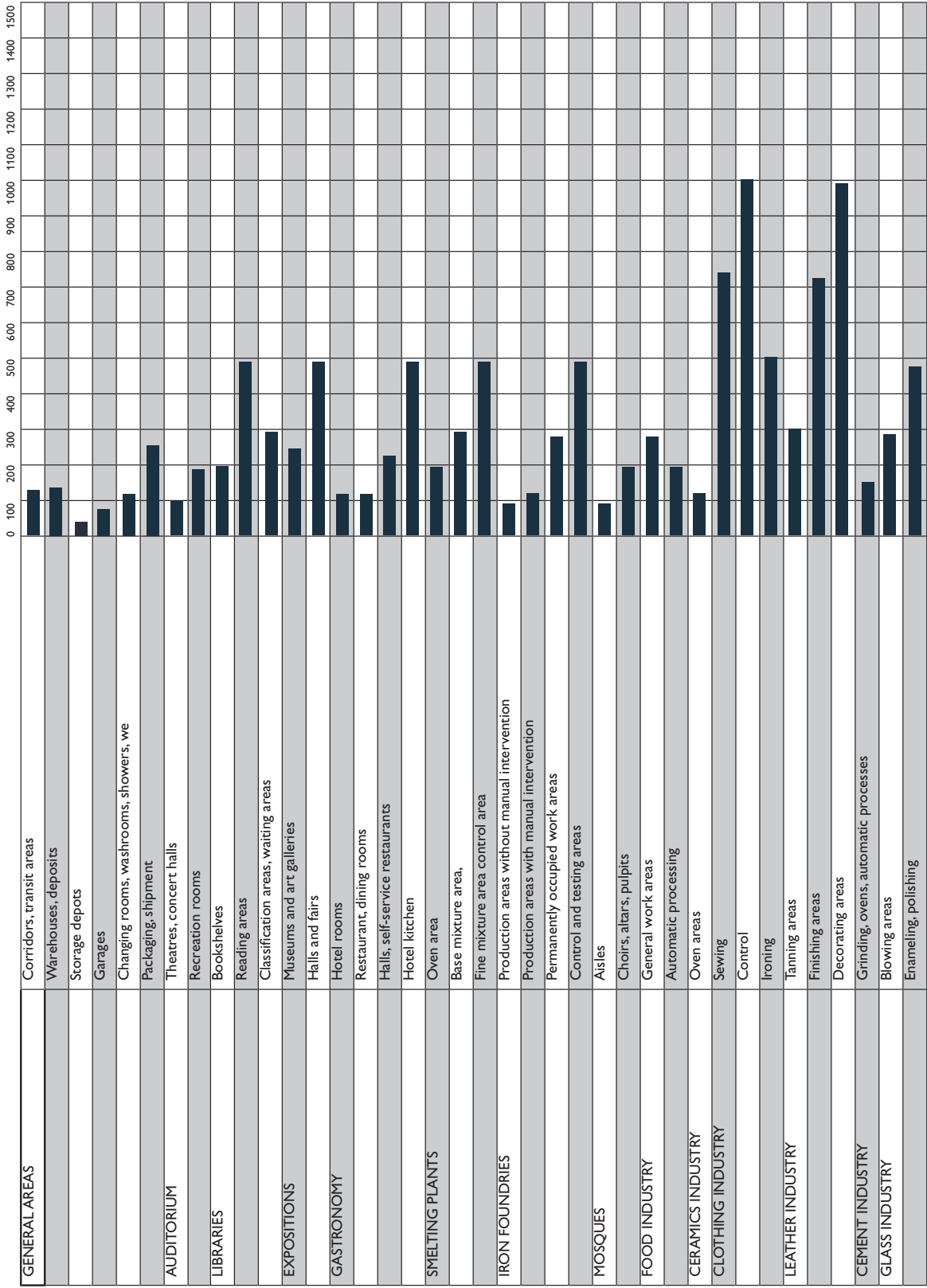
MacAdam ellipses are often extended, e.g. to three, five or seven times their original diameter. These 3, 5 or 7-step MacAdam ellipses are used to differentiate between two light sources, the steps representing the range of colour difference. Light sources with a 3-step- MacAdam ellipse colour difference will show less marked differences than light sources with a colour difference spanning a 5-step MacAdam ellipse.

Care should be taken to ensure small colour differences – especially for lighting applications where individual light sources are not far apart and can be seen simultaneously.

Fig. 6: MacAdam ellipses in the CIE chromaticity diagram

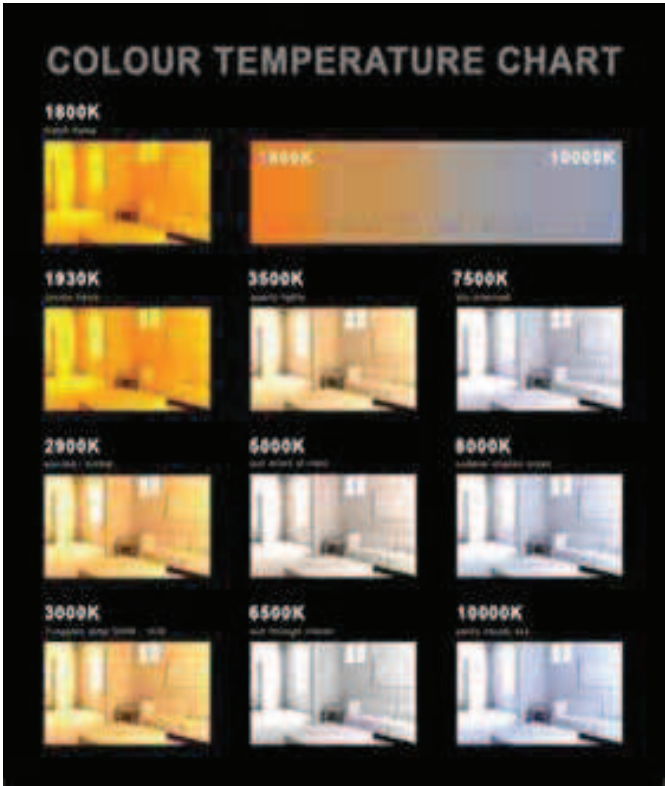


Recommended Indoor
illumination levels



Tab. 1: Identification of LED light sources in terms of colour rendering index and colour temperature

1 st numeral indicates colour rendering		2 nd and 3 rd numerals indicate light colour	
1 st digit	R _a -range	2 nd and 3 rd numeral	Colour temperature
9	90 – 100	27	2,700 K
8	80 – 89	30	3,000 K
7	70 – 79	40	4,000 K
6	60 – 69	50	5,000 K
5	50 – 59	60	6,000 K
4	40 – 49	65	6,500 K



IP Rating Explanation

Rate	Dust Protection 1st Digit	Moisture Protection 2nd Digit
0	No protection against ingress of solid	No protection against water
1	Protection against ingress of large sized, solid foreign bodies. Objects equal to or greater than 50 mm	Protection against vertical drops of liquid.
2	Protection against ingress of medium sized, solid foreign bodies. Objects equal to or greater than 12.50 mm.	Protection against drops of liquid. Drops of liquid shall have no harmful effect when the luminaire is tilted at any angle up to 150 from the vertical.
3	Protection against ingress of small, solid foreign bodies. Objects equal to or greater than 2.50 mm.	Protection against rain. Rain falling at an angle equal to or less than 600 from the vertical shall have no harmful effect
4	Protection against small particles. Objects equal to or greater than 1.00 mm.	Protection against splashing. Liquid splashed from any direction shall have no harmful effect.
5	Protection against harmful deposits of dust. The ingress of dust is not totally prevented, but dust cannot enter in an amount sufficient to interfere with satisfactory operation of the equipment. Dust protected	Protection against jet water. Water projected by a nozzle from any direction under stated conditions shall have no harmful effects
6	Protection against ingress of dust. The ingress of dust is totally prevented. Dust tight.	Protection against heavy seas and powerful water jets.
7		Protection against immersion in water. It must not be possible for water to enter the luminaire under stated conditions of pressure and time.

LED Modules Rated Values and their Use

Definitions of thermal, electrical and photometric characteristics have been set out in international standards to characterise light sources and luminaires.

Certain thermal, electrical and photometric data are published with a rated value – a quantitative value for a given light source or luminaire characteristic under specified operating conditions. The relevant values and conditions are set out in standards or defined by manufacturers or responsible vendors. This is vital if rated values are to be comparable. Many manufacturers' documents contain nominal values, which are approximations of (more precise) rated values.

To take account of possible differences in manufacturers' product designs or differences in components and tolerances in manufacturing processes, the rated value should be published with upper and lower thresholds. This should help to ensure reliable operating conditions and optimal information about the relevant characteristics of light sources and luminaires.

Typical examples of rated values are lamp voltage and lamp current. A typical example of a nominal value is the wattage on the packaging of conventional lamps.

The connection between the different values can be explained by taking a conventional high-pressure discharge lamp HCI-T 35 W (IEC nomenclature: MT 35) as an example:

- The nominal input power of the lamp is 35 W – practically the name of the lamp.
- The rated input power of the lamp, however, is 39 W – the power for which the lamp was designed.
- The measured input power of the lamp may be 38 W – actual tolerances are shown in the lamp specification sheets.

1 Rated Luminaire Input Power P (in W)

Rated input power is the effective power of the luminaire in terms of rated voltage. It is used for planning the energy consumption of the luminaire and includes the power consumed by all components (including control gear) incorporated in the luminaire and required for its operation.

Input power is measured at the rated ambient temperature t_a after thermal stabilisation.

Effective power is measured at 100% of the light output (defined operating point). In the case of dimmable luminaires, dimmed settings are not taken into account at present.

The electrical input power of the LED luminaire as a whole is declared in Watts (W).

For luminaires with constant luminous flux technology, effective power at rated life L_x (see 7a) needs to be additionally declared.

2 Rated Luminaire Luminous Flux Φ_v (in lm)

The rated luminous flux of a luminaire is the total power radiated in all directions within the visible spectrum; it always refers to the initial luminous flux emitted by the semiconductor light sources in the luminaire under defined operating conditions.

The initial luminous flux values measured for luminaires must be no more than ten percent lower than the rated luminous flux of the reference luminaire for which the data is published.

Unless stated otherwise, the luminous flux value given for the luminaire as a whole is based on an ambient temperature of 25 °C.

It is not customary for luminaire luminous flux to be measured and published for luminaires with traditional light sources (non-LED). In such cases, the lamp luminous flux (of the lamps used) is normally multiplied by the luminaire light output ratio (LOR). In LED technology, the separate declaration of luminaire light output ratios is less common.

3 LED Luminaire Efficacy η_v (in lm/W)

Luminaire efficacy is the quotient of radiant luminous flux and electrical power consumed.

The measured initial luminous flux is divided by the measured initial input power of the same LED luminaire. Luminaire efficacy is expressed as lumens per Watt (lm/W).

Note: Luminaire efficacy is occasionally used to rate energy efficiency. For an assessment of energy efficiency, it is generally not enough to consider this parameter alone because it also includes stray light that does not help illuminate the target area. This applies particularly in the case of narrow beam luminaires and streetlights.

4 Luminous Intensity Distribution of Luminaires

The spatial distribution of the luminous intensity of a light source is indicated by intensity distribution curves. Fig. 1 shows the luminous intensity distribution of an interior luminaire and Fig. 2 that of a streetlight.

Fig. 1: Example of the luminous intensity distribution of an interior luminaire

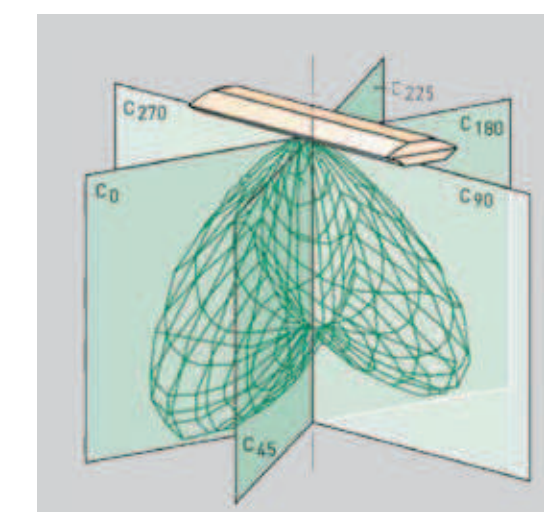
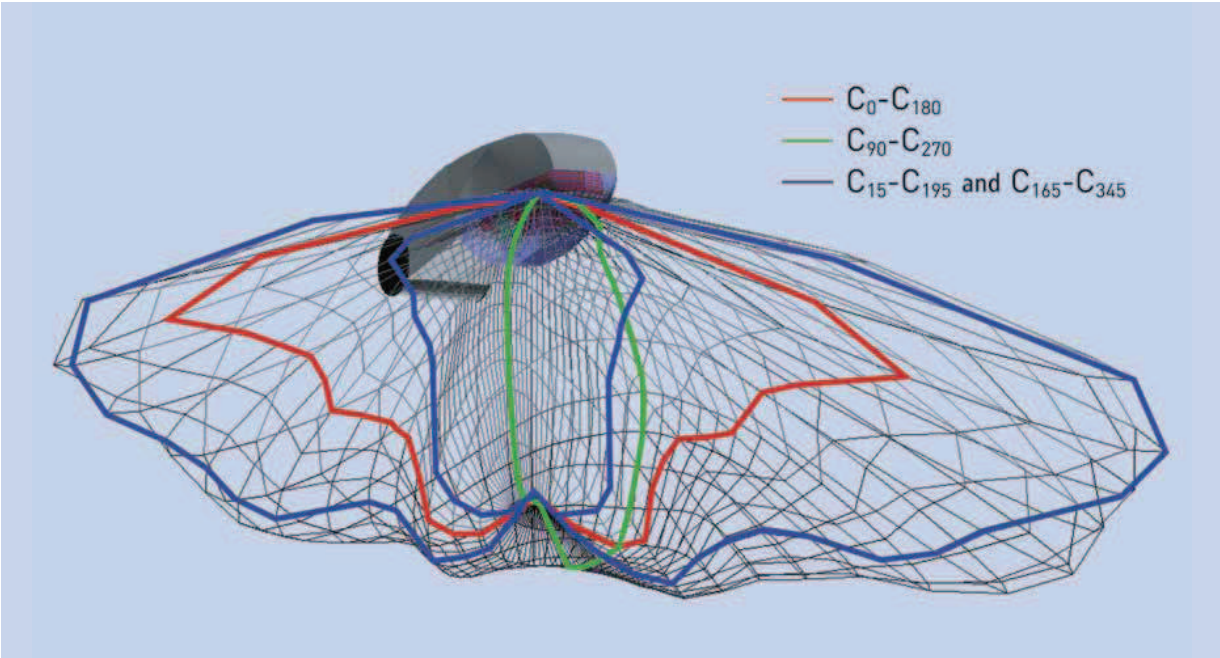


Fig. 2: Example of the luminous intensity distribution of a streetlight



Sections through the vertical axis are represented by intensity distribution curves (IDCs) for C planes plotted on polar coordinates. They are based on luminous intensity values in standard luminaire operating conditions (e.g. normal position of use, ambient temperature 25 °C). The values are expressed as cd (candela).

Depending on the shape and symmetry of the luminous intensity distributed by a luminaire, a distinction is made between narrow angle, wide angle, symmetrical and asymmetrical intensity distribution. In the case of luminaires,

a distinction is also made between direct and indirect radiation. Intensity distribution curves are created using a goniophotometer and disclosed in lighting design documents.

5 Colour Quality

The colour quality of white light is defined by the following characteristics:

- a light colour, expressed as a correlated colour temperature
- b colour rendering, expressed as rendering index
- c colour tolerance, expressed in Mac Adam ellipses

6 Rated Ambient Temperature for Luminaires

Luminaire performance is influenced by ambient temperature.

The rated ambient temperature T_a is the high-est sustained temperature in which the luminaire may be operated under normal operating conditions.

T_c : maximum case temperature as provided by module manufacturer.

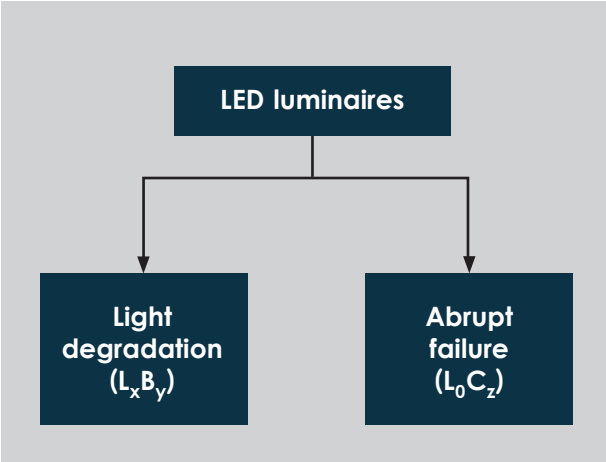
T_p : the temperature at which the data is provided.

7 Longevity Criteria for LED Lighting Products

LED lifespans are not measured only to the point of abrupt failure: up to a certain point, the majority of LEDs do not actually fail at all; their luminosity decreases over time (light degradation). The lifespan of LEDs, modules and luminaires is thus limited by the failure of the relevant electronics or by the luminous flux falling below a predefined minimum level. Fig. 7 shows the two longevity criteria, abrupt failure and light degradation, as defined in current IEC draft standards:

In the case of LEDs, the two parameters essentially depend on the permissible current and the temperature inside the LED. LED manufacturers need to declare the relevant information so that module or luminaire manufacturers can determine the life expectancy of their products.

Fig. 7: LED luminaire longevity criteria



In the case of LED modules, light degradation and abrupt failure are also influenced by the electrical interconnection of the LEDs, the temperature at the t_c or t_p point and other characteristics of the module. Temperature at the t_c point (marking on housing or PCB) is the maximum temperature permitted for safety under normal operating conditions. The t_p point temperature is the temperature at which the performance parameters are estimated. The temperatures at t_c and t_p points can differ. Module manufacturers must therefore make this information available to luminaire manufacturers so that the latter may determine the life expectancy of their products.

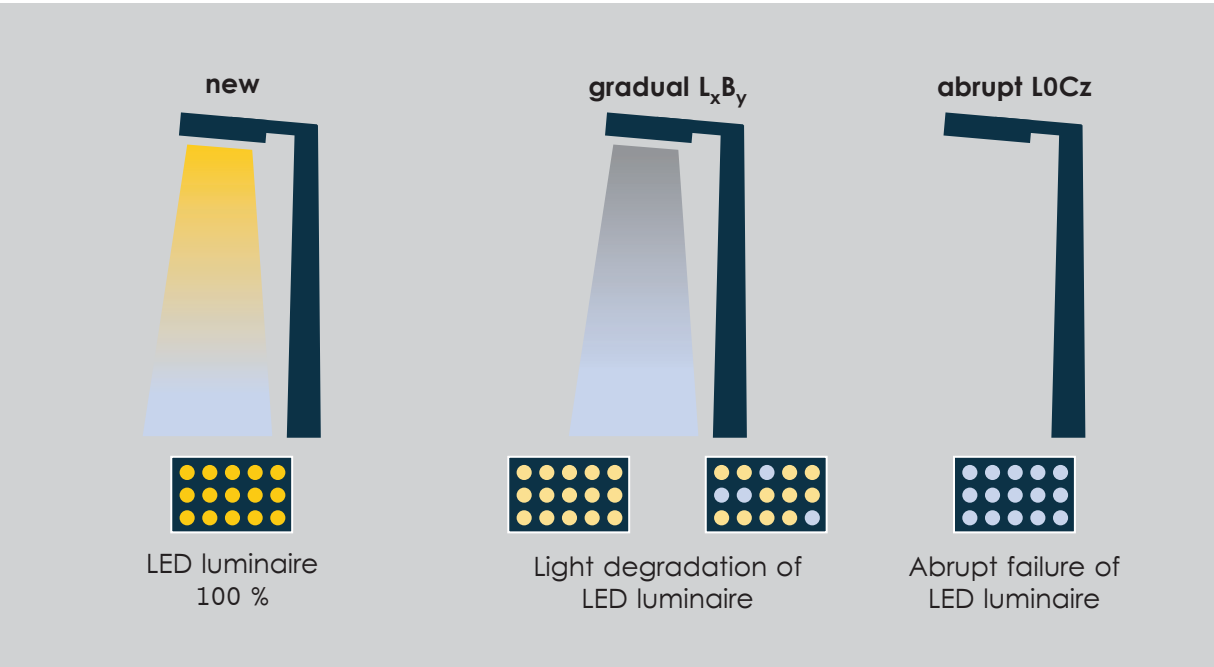
This guide presents comparable quality criteria that facilitate the assessment of technical claims for LED luminaires. LED modules and individual LEDs are not considered in greater depth below.

7.1 Longevity Criteria for LED Luminaires

In the case of LED luminaires, degradation and abrupt failure depend additionally on the electrical operating data of the LEDs or modules in the luminaires, the ambient temperature for the application and other characteristics of the LED luminaires. Luminaire manufacturers must declare the relevant information so that the user or designer of a lighting installation can determine when the installation requires maintenance.

Fig. 8 shows the original state, degradation and abrupt failure of a luminaire (terminology from current draft standard):

Fig. 8: Failure state of a luminaire (original state, degradation and abrupt failure)

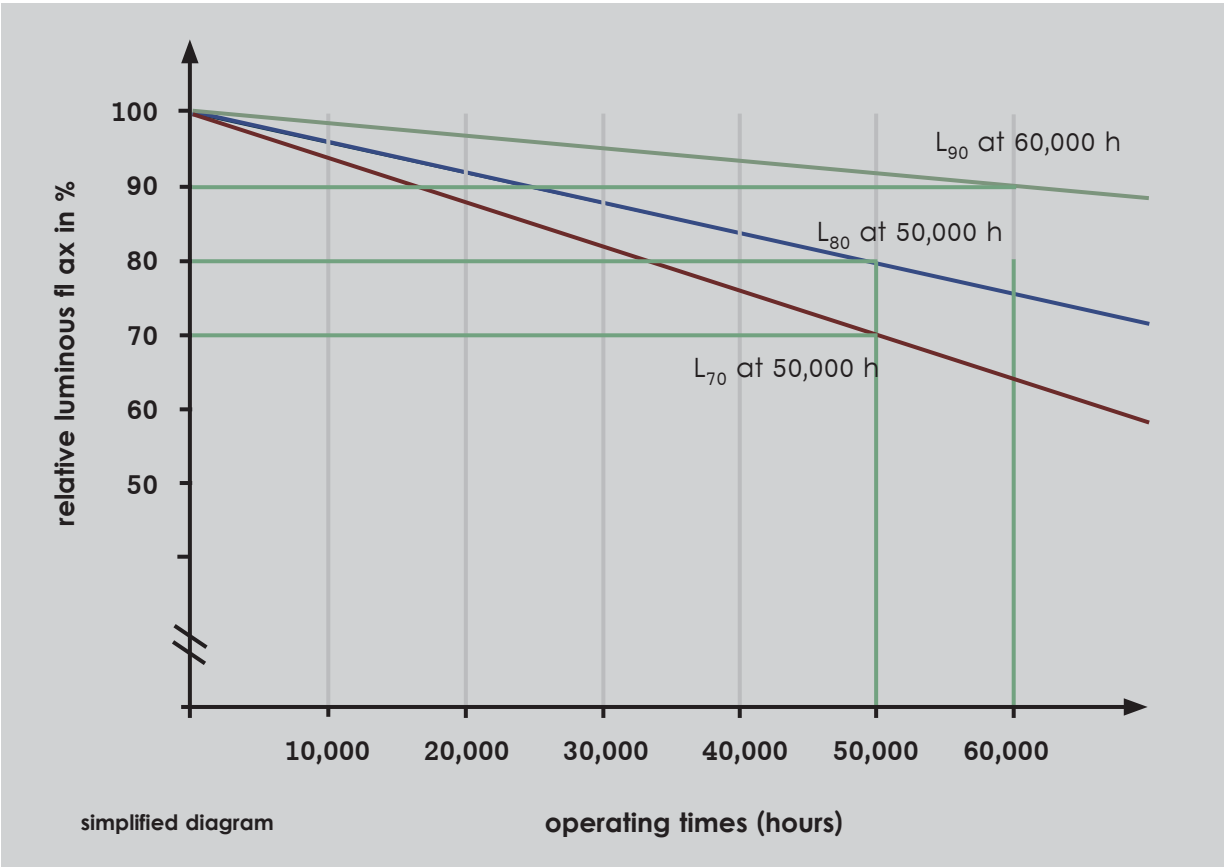


7a Rated Life (Lx) (useful life)

The light degradation of LED luminaires is indicated by rated or useful life Lx, where luminous flux declines to a percentage x of initial luminous flux.

Typical values of 'x' are 70 (L70) or 80 percent (L80) for a given rated or useful life.

Fig. 9: Schematic representation of the change in luminous flux over operating time



7b Taking Account of Lumen Loss (By)

The percentage of LED luminaires that fall below the target luminous flux of x percent (see x of Lx) at the end of their designated life is expressed by the 'gradual failure fraction' (By, see Fig. 8) (percentage of failures as a result of gradual loss of luminous flux). Gradual lumen loss refers to the product considered – LED luminaire or LED module – and can occur as a result of a gradual decline in luminous flux or the abrupt failure of individual LEDs on the module (see Fig. 8).

The value B50 thus means that 50 percent of a number of LEDs of the same type fail to deliver the declared percentage 'x' of luminous flux at the end of rated life 'L'. Occasionally, for certain applications, B10 may be of interest, i.e. the point in time when only ten percent of the LED luminaires fail to deliver the declared percentage 'x' of their initial luminous flux.

The B₅₀ criterion (median value) is used to indicate the average luminous flux of LED luminaires functioning at the end of the rated median useful life Lx (x = percentage of initial value).

The B_y criterion says nothing, however, about the luminous flux of the individual LED luminaires or their precise distribution.

WHAT IS A DRIVER AND WHAT IS IT USED FOR?

Operating an LED module always requires control gear (a ballast), which in the field of LEDs is called a driver.

Current can only flow in one direction through an LED (diode). A rise in internal temperature during operation can lead to a rise in current and with that power uptake within the LED, which in turn leads to a further increase in temperature. Failing to limit this vicious circle can lead to the destruction of an LED. Preventing this from happening is one of the tasks performed by a driver.

LED modules can be operated with one of two different supply sources (drivers) depending on gearshift assembly:

- a constant current source
- a constant voltage source

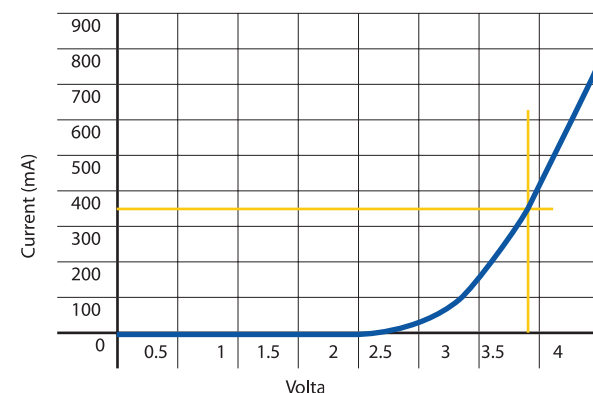
DRIVERS FOR CONSTANT CURRENT OR CONSTANT VOLTAGE OPERATION

If an LED module is operated using a constant voltage source but without current limitation, the current will increase up to the thermal destruction of the LED. To avoid this effect, LED modules for operation with constant voltage are fitted with integrated current control.

When operating an LED using a constant current source, the current operating the LED is kept at a constant level, with current control being integrated in the driver. Constant current sources can feature either transistors or integrated circuits. The use of a constant current source is more efficient.

Characteristic curve of a white high-performance LED

Nominal current 350 mA, Voltage 3.4 V



Operating point = intersection of the yellow auxiliary lines

Tolerance values for output currents constitute a qualitative criterion and a value of $\pm 5\%$ is typical for high-quality devices, while a value of $\pm 10\%$ is characteristic of low-cost devices.

AC OR DC

The primary or mains connection side of universal drivers should be suitable for use with both AC (alternating current) and DC (direct current). This makes it possible to supply these devices both with 230 V AC mains power during normal operation and with 220 V DC battery power during emergency operation. The driver's secondary side always provides direct voltage, since LEDs are semi-conductors that only let current pass in one direction.

SELV OR NOT SELV

Standing for "Safety Extra Low Voltage", SELV describes low voltages with safe isolation, e.g. with an isolation transformer. SELV ensures an enhanced degree of protection against electrical shock, as laid down in the requirements of the basic safety standard IEC 61140 "Protection against electric shock – Common aspects for installation and equipment", which, as a European standard, also has the status of a German standard (EN 61140). This standard is applicable with regard to affording protection against electric shock to humans and livestock. The standard intends to lay down principles and requirements that together will apply to electrical appliances, systems and control gear or that are required for their coordination. The standard applies to equipment, systems and control gear without voltage limitation. The requirements of the standard are applicable only if they have been integrated into other standards or if in such standards reference is made to these requirements. The standard is not designed to act as an independent standard. SELV devices feature special insulation to parts conducting mains voltage, which constitutes safe isolation. The permissible magnitude of SELV voltages that carry a risk of accidental contact is specified in the respective applications. Should these

maximum voltages be exceeded, protection against direct contact is required. As a rule of thumb it can be said that SELV devices are more technically sophisticated than non-SELV devices. But they also provide optimum protection.

POWER FACTOR AND EFFICIENCY

In the field of electrical engineering, the power factor ϕ expresses the ratio of real power P to apparent power S (see formula): $\lambda = P / S$

Real power P is a physical value that constitutes the amount of transferred power. Apparent power S is a product of effective voltage and effective current, and thus more of an "artificial" concept that serves to specify the loads acting on means of transfer (e.g. conductors). As a result, the power factor λ is always a positive value of ≤ 1 . It thus defines the degree to which power is converted into usable energy in a device.

In accordance with the IEC 62384 performance standard, the power factor for LED drivers will be displayed on the type label as follows: $\lambda = 0.95$

The efficiency of a device is defined using its power efficiency value η . The power efficiency factor of a device is defined as the output power P_{out} divided by the input power P_{in} . The respective measuring procedure for LED drivers will be defined in the IEC 62442-3 standard, which is currently under preparation. High-quality devices feature a power efficiency factor upwards of 85% ($\eta \geq 0.85$).

RIPPLE

Ripple refers to alternating voltage superimposed on direct voltage. The corresponding ripple current leads to a rise in temperature inside LED modules and decrease the light quality. Two factors are decisive in this respect: the magnitude of the current and its frequency.

The ripple value is a clear performance marker. High-quality drivers will come with a value of approx. 10%, while lower-performance drivers will have values of $\geq 30\%$.

NO-LOAD, OVERLOAD AND SHORT-CIRCUIT PROTECTION

The above-mentioned operational states can impair driver functions

or even lead to driver destruction. It is therefore important to ensure that such devices are fitted with sufficient short-circuit and overload protection, and are suitable for no-load operation.

Before they exceed the upper temperature limit, high-quality devices limit current consumption and, by reducing the power supply, thus reduce the internal temperature. Should the devices continue to be overloaded, a safety cut-out will activate and switch the devices off. From a technical point of view, this is achieved using an NTC (negative temperature coefficient) resistor or an electronic circuit. When overloaded, low-performance devices simply switch off and remain switched off or even break down completely.

A difference is made between short-term and permanent short circuits. Devices for both types are available on the market. In this regard, it is important to note that ensuring permanent short-circuit resistance is more technically sophisticated, but also provides the highest level of protection. No-load operation can also lead to the destruction of devices without protection. For this reason, devices must also be resistant to no-load operation.

SERVICE LIFE AND FAILURE RATE

When used in combination with LED modules, a driver's service life and failure rate are further decisive criteria. In real-life applications, care should be taken to ensure components perfectly match to prevent damaging the system due to the presence of an "inferior" component. High-quality drivers provide a service life of $\geq 50,000$ hours with a failure rate of 0.2% per 1,000 hours. Low-performance devices come with a service life of 30,000 hours and failure rates of 0.5% per 1,000 hours.

EMC

EMC (electromagnetic compatibility) not only covers outgoing interference, but also immunity against such interference and the creation of mains current and mains voltage irregularities. To ensure the most diverse electrical and electronic devices can work alongside each other without causing problems, it is important that limit values for radio disturbance are not exceeded and that minimum requirements for immunity to in-

interference are satisfied. Observing specified limit values forms the basis for this. Proof is furnished by applying the European standard EN 55015: "Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment", which is based on the IEC/CISPR standard of the same name.

THERMAL BEHAVIOUR

To ensure that electronic components function safely, it is important to observe their maximum thermal loads. Normally, the manufacturer will specify a precise point on the driver for temperature measuring purposes. To avoid shortening the service life of a device, the specified highest temperature must not be exceeded at this so-called t_c point. This measuring point is defined by testing the driver during normal operation at the maximum permissible ambient temperature t_a . As both the design-related ambient temperature and the driver's level of self-heating, which is dependent on the power supply, can greatly vary, the casing temperature should be measured at the t_c point under realistic installation conditions. The difference between the t_c and the t_a value is a measure for the level of self-heating and thus the driver's power loss. The lower this difference in value is, the higher the quality of the driver. Good air circulation can improve thermal behaviour and positively influence the driver's service life.

SPIKE RESISTANCE

In practice, mains power supply networks are susceptible to transients and do not correspond to the clean sinus wave pattern they should theoretically display. Such irregularities in mains power can, for instance, be caused by switching large inductive or capacitive loads. Voltage spikes, in particular, pose a particular challenge for control gear.

To ensure drivers can withstand such voltage spikes, they must be designed in accordance with IEC 61547 "Equipment for general lighting purposes – EMC immunity requirements". The standard lays down requirements for the electromagnetic immunity of lighting systems. The provisions of this standard are based on the requirements for residential, commercial and industrial environments, as set out in IEC 61000-6-1, but adapted to suit real-life conditions for operating lighting technology.

In line with EN 61547, drivers are tested with a test voltage of 1 kV for inputs ≤ 25 W and 2 kV for inputs > 25 W between power and earth. However, manufacturers of high-quality devices normally conduct such tests with higher voltages. The requirements for outdoor applications are much more stringent, demanding test voltages of 2–8 kV between phase and neutral conductor, depending on the respective manufacturer's classification.

DEGREE OF PROTECTION AND MARK OF CONFORMITY

Together with the mark of conformity issued by testing institutes, the pertinent approbations are a "MUST" for all kinds of control gear. In this regard, a difference is made between safety tests (EN 61347), performance tests (EN 62384), energy consumption tests (EN 62442-3), EMC tests (EN 55015, EN 61547, EN 61000-3-2) and tests regarding the assessment of electromagnetic fields (EN 62493). For drivers, the ENEC mark serves to document that relevant safety and performance requirements have been met. The degree of protection of control gear is expressed by an IP number. IP20 devices are suitable for integration in indoor luminaires without special requirements. IP65 devices are, for instance, used for outdoor lighting applications.

PROTECTION CLASS I AND PROTECTION CLASS II



All electrically conductive casing parts must be protected by connection to electrical earth for Protection Class I (see symbol) devices. Devices designed for independent operation must feature a mechanical cable grip for the power supply cable.



Devices of Protection Class II (see symbol) feature double or reinforced insulation between the mains power circuit and the output side or the metal casing. If a cable with a protective earth conductor is used, this must not be connected to the casing.

BUILT-IN AND INDEPENDENT OPERATION

Drivers for LEDs can be suitable for two different kinds of operation:

1. Built-in

Permanent integration in a luminaire or a casing that performs a task that is similar to a luminaire.

2. Independent Operation

As for instance when installed in a false ceiling.



Stricter EMC test methods apply for devices destined for independent operation since cable lengths can vary in such cases. With regard to devices designed for independent use, care must be taken to ensure that they feature the symbol shown on the left.

DIMMABLE DRIVERS

Dimming LED lighting using light control systems and dimmable drivers provides several advantages:

- Energy and cost savings due to reduced power consumption
- Less environmental impact due to lower CO₂ emissions
- More convenient thanks to flexible light scenes to suit any occasion

From technical point of view, there are various ways to address a driver, in which regard a basic difference is made between digital and analogue control options. When it comes to ways of effecting digital control, DALI (Digital Addressable Lighting Interface) is becoming ever more established. DMX is a further digital control protocol and often used for RGB and effect lighting. Analogue control is effected with the help of a 1–10 V control voltage interface. Directly addressing the 230 V mains voltage side enables phase-cutting control.

TUNEABLE WHITE

In a manner similar to the way that light intensity can be varied by dimming, Tuneable White enables infinite adjustment of the light temperature. From "warm white" to "cool" daylight, light-colour

moods ranging between, e.g., 1,700 K and 6,500 K are possible.

This function provides the advantage of customising lighting moods even further. Different times of the day or seasons can be recreated and dynamically reproduced. State-of-the-art drivers and light control devices make it possible to precisely adjust light temperatures to suit the given circumstances, not only in retail and office environments, but also in medical facilities and in private applications. The positive effect of adjustable light, as enabled by suitable control gear, is always at the forefront.

STANDARDS AND DIRECTIVES

Within the EU, the general rule applies that electrical control gear is allowed to retail on the market only if the basic requirements of the applicable European directives (adopted as national laws) have been met. Control gear used for lighting applications is subject to the EC low-voltage directive, the EMC directive and the ErP directive (and possibly further directives as well). As a result, safety, EMC, EMF, eco-design, etc. requirements must be satisfied by products and documentation must be ensured.

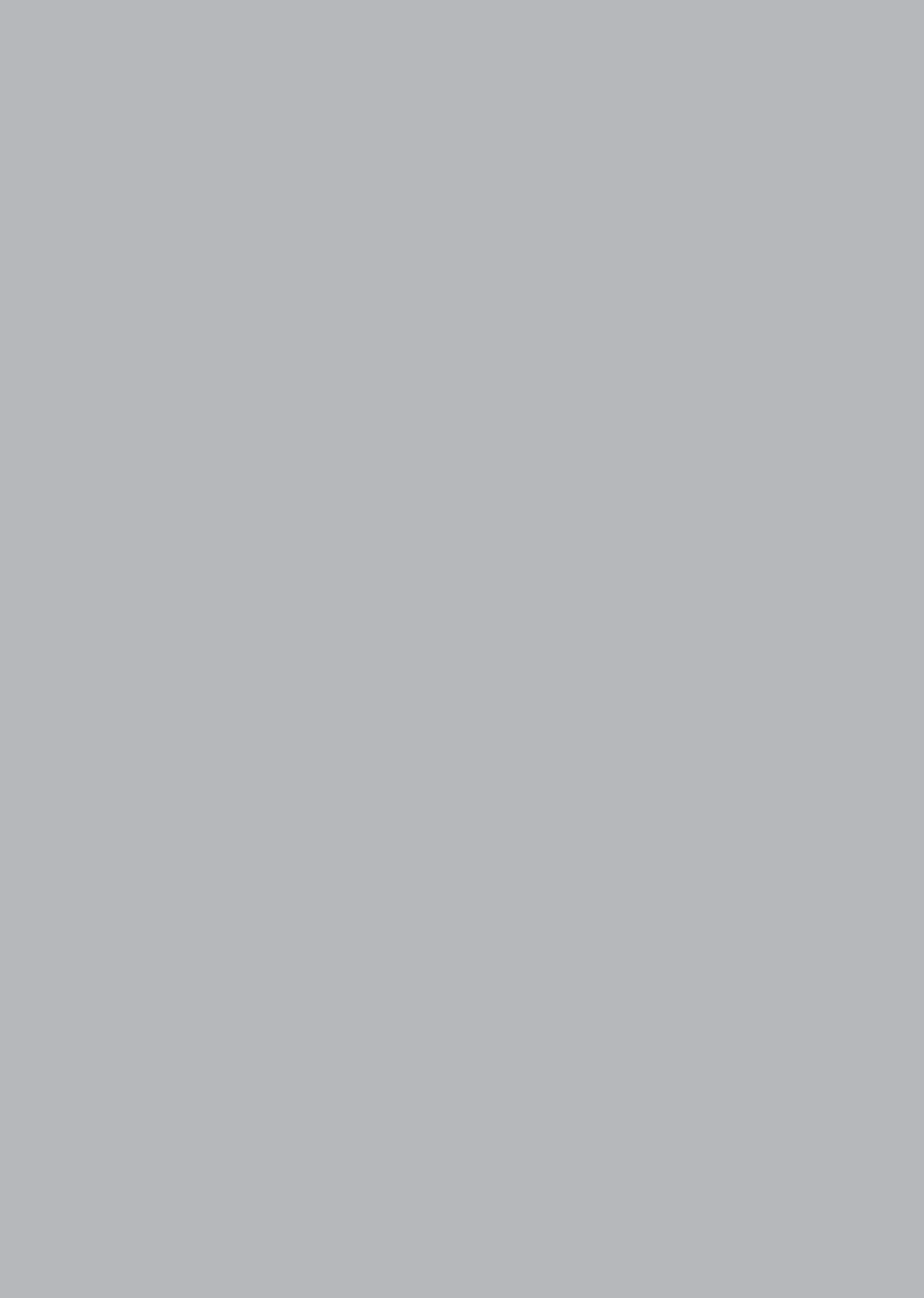
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