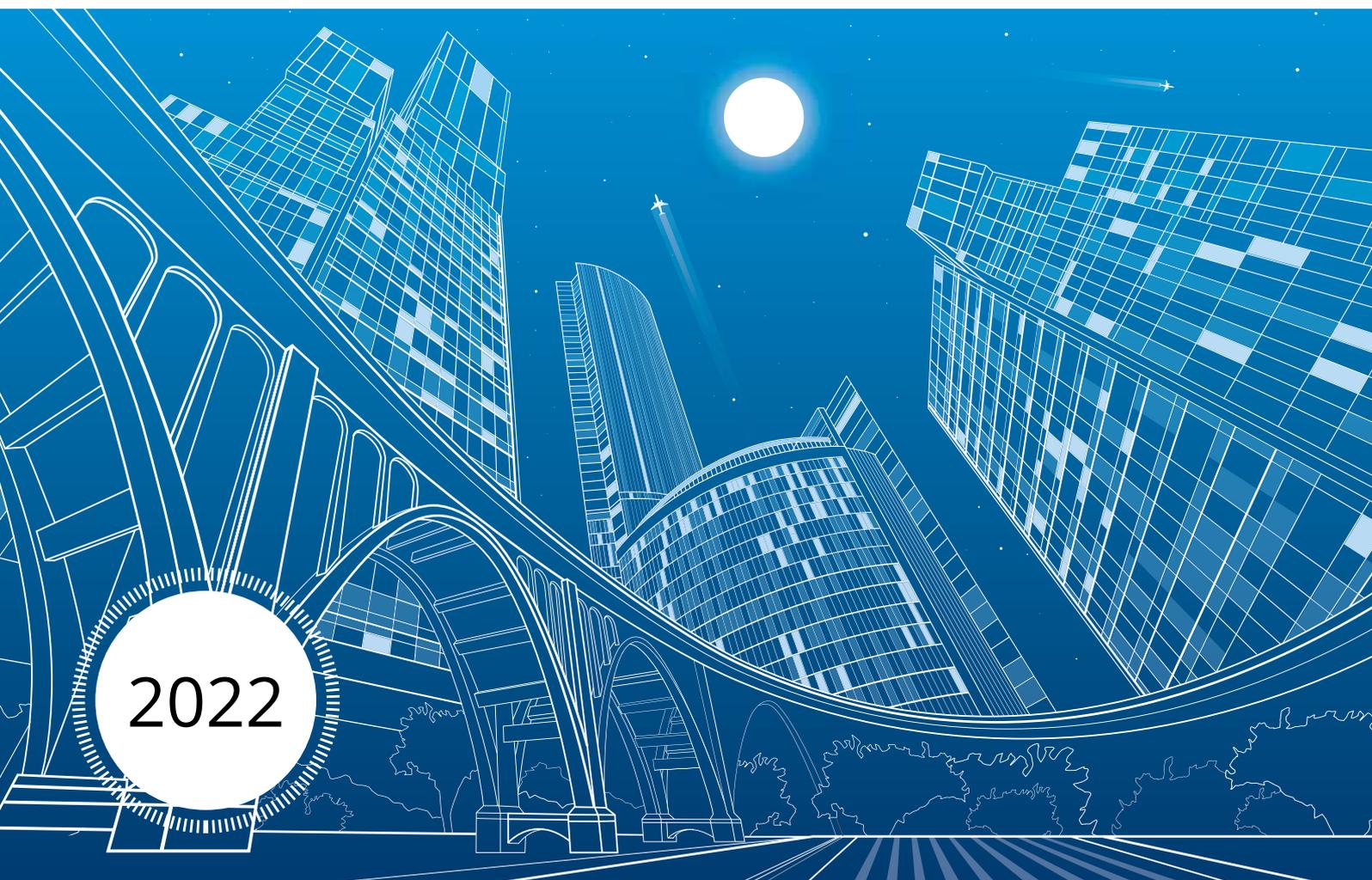


TUNGSRAM™

Innovation is our heritage
EST. 1896

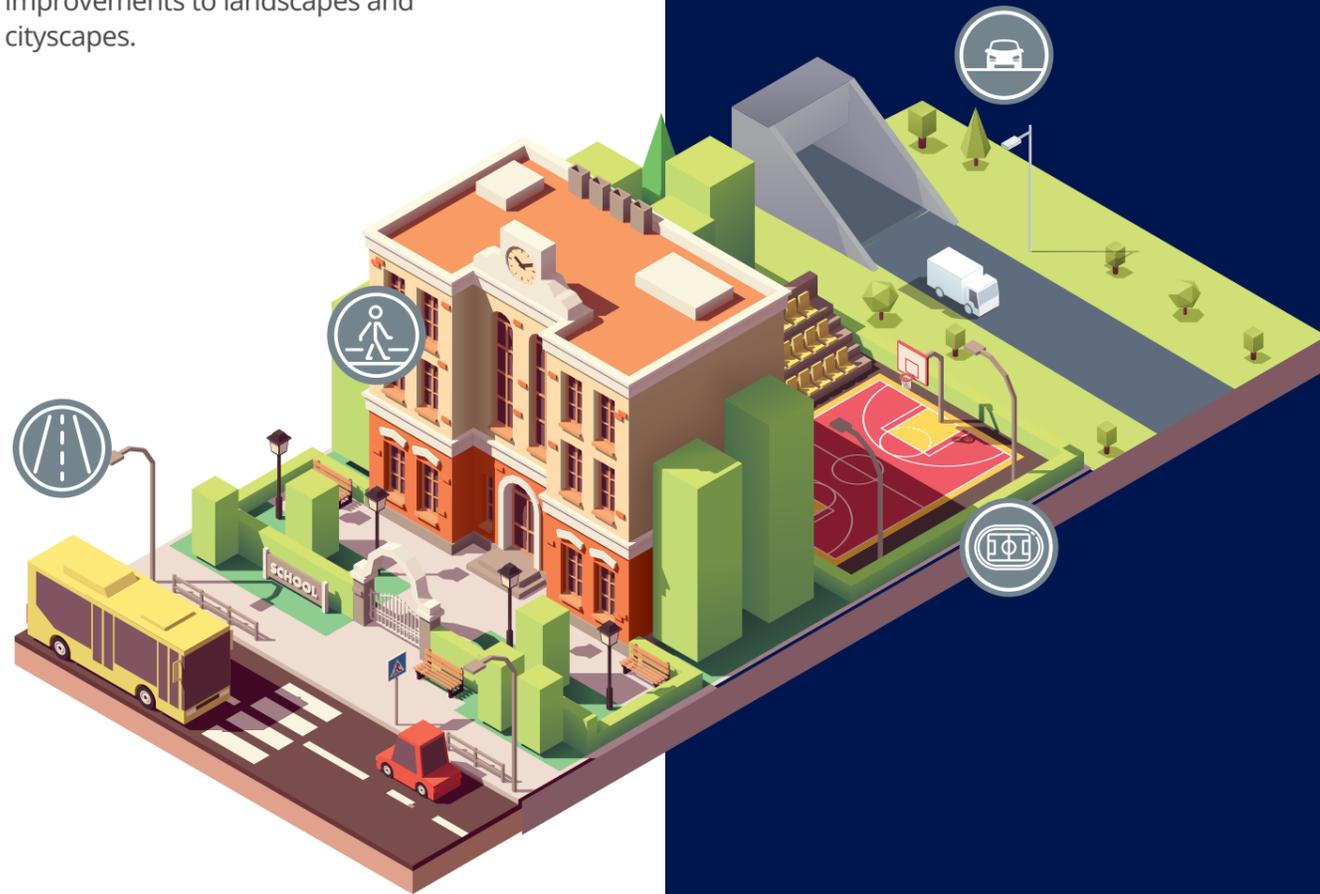
OUTDOOR FIXTURES

Product Catalogue



Join us in the new world of LED

LED Outdoor solutions deliver a light closer to natural daylight than the traditional lamps of the past. The latest LED lighting solutions provide an ideal upgrade path for public bodies looking to reduce energy costs and environmental impact. LED can make striking aesthetic improvements to landscapes and cityscapes.



The benefits of LED

- Increased sense of comfort and security
- Streets and car parks are better illuminated
- Enhanced CCTV through better facial recognition
- Improved road safety - faster responses
- Up to 70% higher energy efficiency
- Longer life and reduced maintenance
- Enhanced control/ dimming capabilities
- Colours are more vivid and more real in public areas
- Better light control, less light pollution



10 **Road & street lighting**

12 Inlumino (S, M, L, L+, XL)
24 SMix 2S
28 SMix
32 Piko
36 SLBt
40 SMBt



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82 TMBt
86 THBt

Light distributions and optics

Outdoor lighting Product overview

Whether it's traffic on the road or people on footpaths, in public areas or visiting shops and restaurants, effective outdoor lighting means greater visibility, which in turn helps to maximise public safety and sense of security, and breathe new life back into cities. Outdoor lighting has other benefits too, including the delivery of dramatic aesthetic benefits and a major savings in energy costs.

We have pioneered the development of efficient LED luminaires that have transformed the outdoor environment and enhanced the night time experience for millions.

The LED lighting is used everywhere from residential streets to highways, creating a bright white light that improves safety through improved visibility, while also reducing energy consumption and associated costs.

High performance area lighting is designed to ensure that the light is aimed directly where it's needed while also delivering optimum performance in terms of luminance, uniformity and glare.

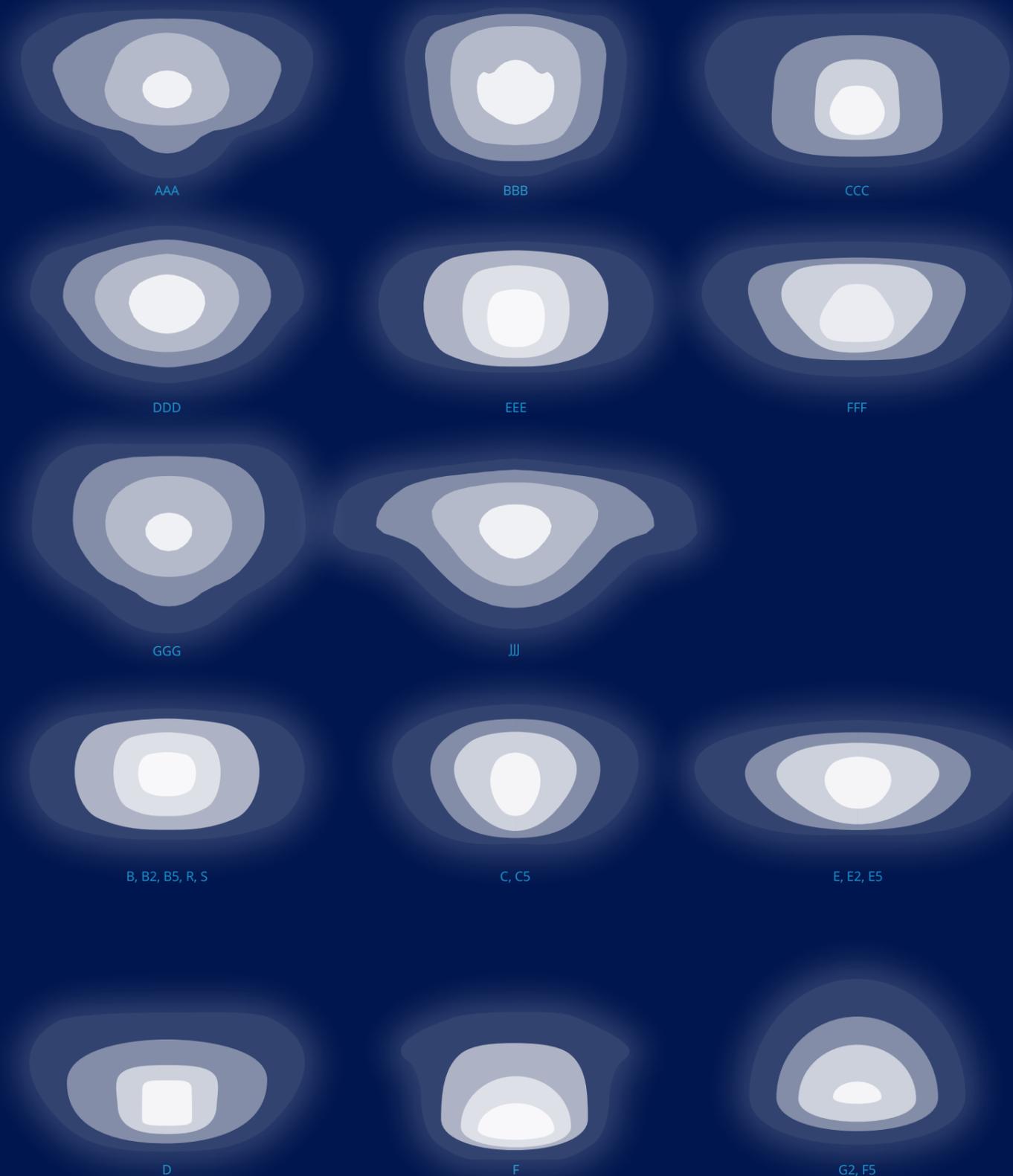
LED tunnel lighting fixtures combine excellent light quality with high levels of energy efficiency and reliability to deliver a safe and easy-to-maintain solution for tunnels, underpasses and industrial areas.

Outdoor lighting Lumen output characteristics

M3 to M6 and C Classes for road and street lighting.



For C, P and S Classes, wide residential street lighting for improved face recognition and safety.



Light distributions and optics

Outdoor lighting Lumen output characteristics

For C Classes
- Pedestrian
crosswalks,
P Classes
improved
backlight for
sidewalks.



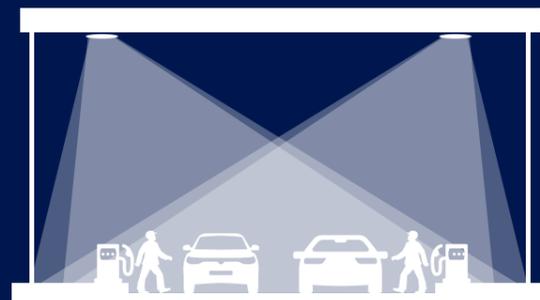
Asymmetrical
distribution
for P Classes
- Area, Square
and Park
lighting.



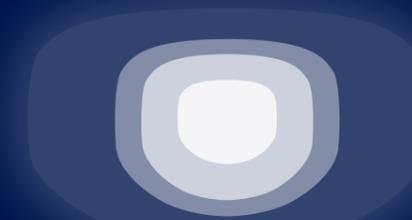
Symmetrical
distribution
for P Classes
- Area, Square
and Park
lighting.



Symmetrical
and
asymmetrical
distributions
for Canopy
lighting.



Symmetrical
distributions
for Tunnel
lighting.



P, P5



X5



Z5



Camila Post Top



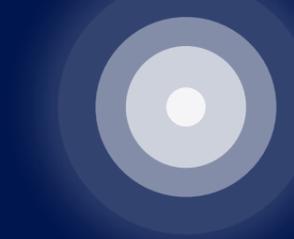
AFC, AWC, AW



AF



CE-Nobila



AWD, SWD, SWF



SFC, SWC



CC



AE



ANC, AN



SA, SB, SC, SD, SE



Y5

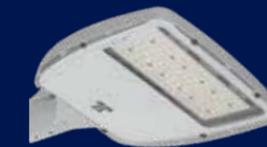
Outdoor lighting Product overview

Road & street lighting



Inlumino (S,M,L,L+,XL)

Wattage (W): 29 - 540
 CCT (K): 2200, 2700, 3000, 4000, 5000
 Lumen (lm): 2 500 - 75 000
 IP: IP66
 IK: IK09



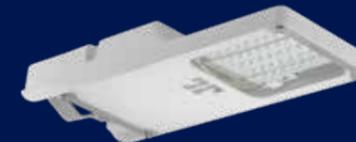
SMIx 2S

Wattage (W): 20 - 100
 CCT (K): 3000, 4000, 5000
 Lumen (lm): 3 000 - 13 500
 IP: IP66
 IK: IK08



SMIx

Wattage (W): 35 - 160
 CCT (K): 3000, 4000, 5000
 Lumen (lm): 5 000 - 22 000
 IP: IP66
 IK: IK08



Piko

Wattage (W): 12 - 28
 CCT (K): 3000, 4000, 5000
 Lumen (lm): 1 500 - 3 600
 IP: IP66
 IK: IK08



SLBt

Wattage (W): 15 - 70
 CCT (K): 2700, 3000, 4000
 Lumen (lm): 1 200 - 8 200
 IP: IP66
 IK: IK09



SMBt

Wattage (W): 50 - 160
 CCT (K): 3000, 4000
 Lumen (lm): 6 400 - 18 700
 IP: IP66
 IK: IK09

Decorative & pedestrian lighting



Navona

Wattage (W): 20 - 70
 CCT (K): 2700, 3000, 4000
 Lumen (lm): 1 700 - 7 600
 IP: IP66
 IK: IK08



Nobila

Wattage (W): 20 - 90
 CCT (K): 3000, 4000
 Lumen (lm): 2 700 - 10 600
 IP: IP66
 IK: IK08



Camila

Wattage (W): 25 - 75
 CCT (K): 2700, 3000, 4000
 Lumen (lm): 3 050 - 9 070
 IP: IP66
 IK: IK09

Canopy & Area lighting



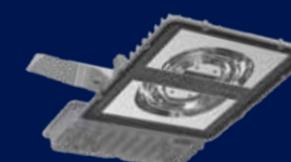
ALix

Wattage (W): 32 - 140
 CCT (K): 3000, 4000, 5000
 Lumen (lm): 3 600 - 17 600
 IP: IP66
 IK: IK08



AMix

Wattage (W): 55 - 150
 CCT (K): 3000, 4000
 Lumen (lm): 7 560 - 18 750
 IP: IP65
 IK: IK07



AHix

Wattage (W): 200 - 300
 CCT (K): 3000, 4000, 5000
 Lumen (lm): 21 000 - 37 600
 IP: IP66
 IK: IK08



Floodlights

Wattage (W): 20 - 150
 CCT (K): 3000, 4000, 6500
 Lumen (lm): 1 800 - 20 000
 IP: IP65, IP66
 IK: IK07, IK08

Tunnel lighting



Floodlights G3

Wattage (W): 10 - 200
 CCT (K): 3000, 4000, 6500
 Lumen (lm): 1150 - 24 000
 IP: IP65
 IK: IK07, IK08



Floodlight Symmetrical Value

Wattage (W): 10 - 100
 CCT (K): 3000, 4000
 Lumen (lm): 800 - 9000
 IP: IP65
 IK: IK05



TLBt / TMBt

Wattage (W): 32 - 175
 CCT (K): 3000, 4000, 5000
 Lumen (lm): 4 250 - 22 840
 IP: IP66
 IK: IK08



THBt

Wattage (W): 200 - 360
 CCT (K): 3000, 4000, 5000
 Lumen (lm): 27 000 - 50 000
 IP: IP66
 IK: IK09

Road & street lighting



Road and street lighting Inlumino



Product information

The new Tungfram luminaire, with its innovative and unique solutions, is an excellent choice for road and street applications. The key aspects of the lamp development are the simple and fast installation, the tool-free repair options and the diverse usage. The luminaire meets the expectations of the 21st century: sleek design, and high efficiency. Inlumino is also suitable for a variety of applications, as it can be installed as a light source or easily upgraded to an IoT data point. Take advantage of the innovation from Tungfram and optimize your outdoor lighting with the new range of Inlumino luminaires.

Application areas



Pedestrian street



Roadways and Highways



Details

Inlumino size S



Driver feature

- Electronic, dimmable driver
- Controls: 1-10V Analog, Dali, Autonomous dimming, CLO
- ThermalGuard

Structures and materials

- Housing material: die-cast aluminium body and coupler, with stainless steel screws.
- Optic material: Optical-grade polycarbonate
- Optical cover: Tempered glass
- Colour: RAL7021
- Impact Strength: IK09 (glass) / IK09 (housing) / IK08 (Shorting Cap)
- Ingress protection: IP66

Performance

- Rated luminous flux range: From 2 500 up to 24 500 lm
- Rated luminaire efficacy: From 137 lm/W to 153 lm/W (at 4000K and CRI70)
- Rated median useful life and the associated rated LM factor: L90B50 > 100.000 hours
- Rated useful life and the associated rated LM factor: L90B10 > >98.000 hours
- Rated abrupt failure value: < 10% at 100.000 hours
- Photometric code: 722/559, 727/559, 730/559, 740/559, 750/559, 827/559, 830/559, 840/559, 850/559
- Lumen maintenance code: 9
- Definitions and tolerances according to IEC62722-2-1:2014

Installation and maintenance

Mounting options

- Side mounting coupler for 30-76mm diameters and -15°, -10°, -5°, 0°, +5°, +10°, +15° tilt options
- Post top mounting coupler for 30-76mm diameters and -15°, -10°, -5°, 0°, +5°, +10°, +15° tilt options
- Weight: 8 kg
- Recommended mounting height: up to 15 m
- Only two hand-tools required for installing the fixture
- Tool-less maintenance, click and flip, twist and lock
- Tool-less hinged opening and lift-off head with automatic electrical disconnect
- Storage temperature from -40°C to +85°C
- Ambient temperature from -40°C to +50°C

Optics

Available photometric distributions:

100 different optic combinations would be available which are suitable for pedestrian streets to high traffic roads.

All symmetric optic combinations are valid eg. ABA, but ABC is not.

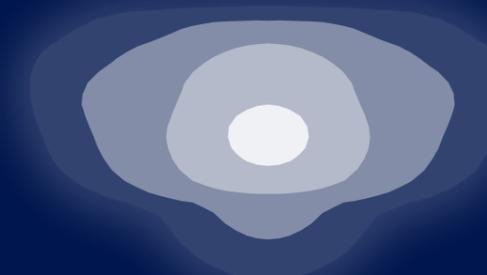
AAA
BBB
CCC
DDD
EEE
FFF
GGG
JJJ
KKK
LLL

Rated colour rendering index >70 or >80

Rated correlated colour temperatures: 2200K (available in CRI70 only), 2700K, 3000K, 4000K, 5000K
ULOR: 0

Rated initial chromaticity co-ordinate values:

- 2200K: CIE(x=0.5020, y=0.4156) 5SDCM(available in CRI70 only)
- 2700K: CIE(x=0.4577, y=0.4098) 5SDCM
- 3000K: CIE(x=0.4339, y=0.4032) 5SDCM
- 4000K: CIE(x= 0.3818, y= 0.3796) 5SDCM
- 5000K: CIE(x= 0.3446, y= 0.3551) 5SDCM



AAA

Electrical

Input voltage and frequency: 220-240V, 50-60Hz

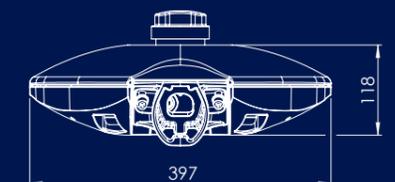
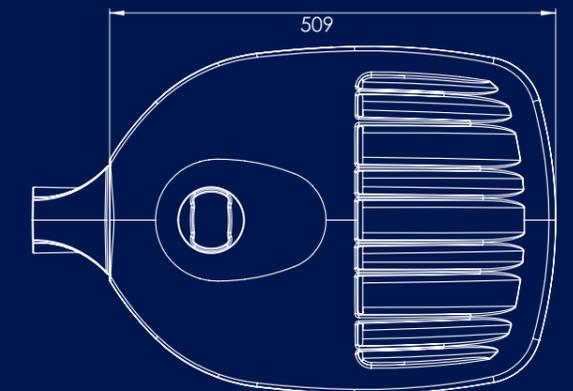
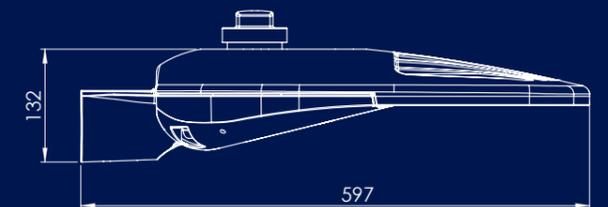
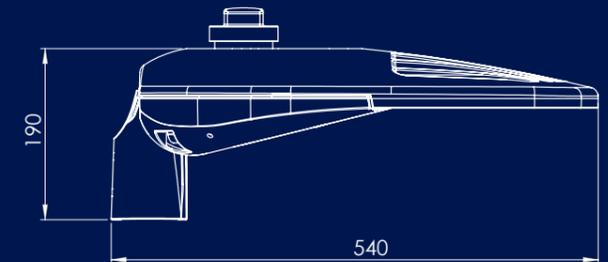
IEC protection class: Class I, Class II

Driver immunity: 10kV/5kA

Rated input power: 18 - 166W

Dimensions (mm)

SIZE "S"



Details

Inlumino size M



Driver feature

- Electronic, dimmable driver
- Controls: 1-10V Analog, Dali, Autonomous dimming, CLO
- ThermalGuard

Structures and materials

- Housing material: die-cast aluminium body and coupler, with stainless steel screws.
- Optic material: Optical-grade polycarbonate
- Optical cover: Tempered glass
- Colour: RAL7021
- Impact Strength: IK08 (glass) / IK09 (housing) / IK08 (Shorting Cap)
- Ingress protection: IP66

Performance

- Rated luminous flux range: From 22 900 up to 30 000 lm
- Rated luminaire efficacy: From 128 up to 163lm/W
- Rated median useful life and the associated rated LM factor: L90B50 > 331.000 hours
- Rated useful life and the associated rated LM factor: L90B10 > 324.000 hours
- Rated abrupt failure value: < 10% at 100.000 hours
- Photometric code: 722/559, 727/559, 730/559, 740/559, 750/559, 827/559, 830/559, 840/559, 850/559
- Lumen maintenance code: 9
- Definitions and tolerances according to IEC62722-2-1:2014

Installation and maintenance

Mounting options

- Side mounting coupler for 30-76mm diameters and -15°, -10°, -5°, 0°, +5°, +10°, +15° tilt options
- Post top mounting coupler for 30-76mm diameters and -15°, -10°, -5°, 0°, +5°, +10°, +15° tilt options
- Weight: 9 kg
- Recommended mounting height: 6-25 m
- Only two hand-tools required for installing the fixture
- Tool-less maintenance, click and flip, twist and lock
- Tool-less hinged opening and lift-off head with automatic electrical disconnect
- Storage temperature from -40°C to +85°C
- Ambient temperature from -40°C to +50°C

Optics

Available photometric distributions:

100 different optic combinations would be available which are suitable for pedestrian streets to high traffic roads.

All symmetric optic combinations are valid eg. ABA, but ABC is not.

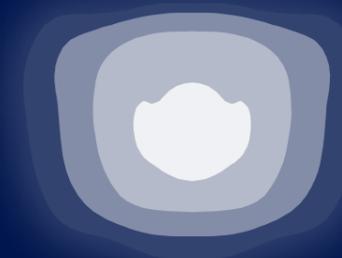
AAA
BBB
CCC
DDD
EEE
FFF
GGG
JJJ
KKK
LLL

Rated colour rendering index >70 or >80

Rated correlated colour temperatures: 2200K (available in CRI70 only), 2700K, 3000K, 4000K, 5000K
ULOR: 0

Rated initial chromaticity co-ordinate values:

- 2200K: CIE(x=0.5020, y=0.4156) 5SDCM (available in CRI70 only)
- 2700K: CIE(x=0.4577, y=0.4098) 5SDCM
- 3000K: CIE(x=0.4339, y=0.4032) 5SDCM
- 4000K: CIE(x=0.3818, y= 0.3796) 5SDCM
- 5000K: CIE(x=0.3446, y= 0.3551) 5SDCM



BBB

Electrical

Input voltage and frequency: 220-240V, 50-60Hz

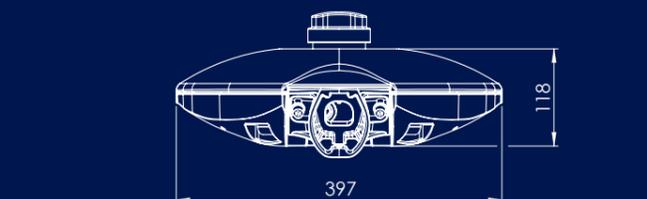
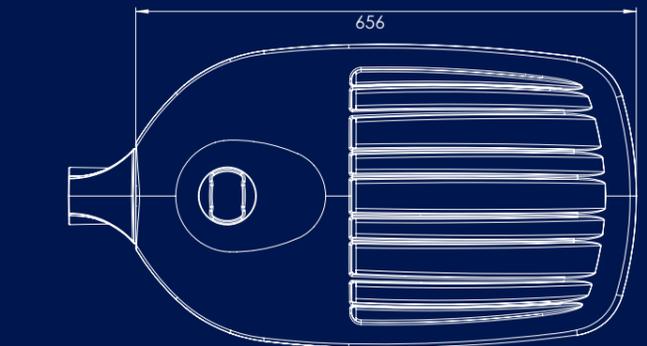
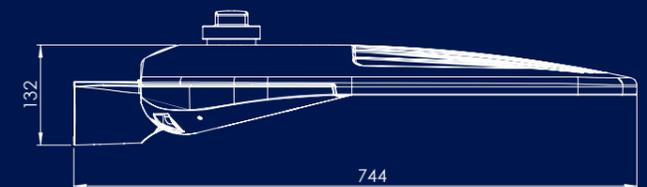
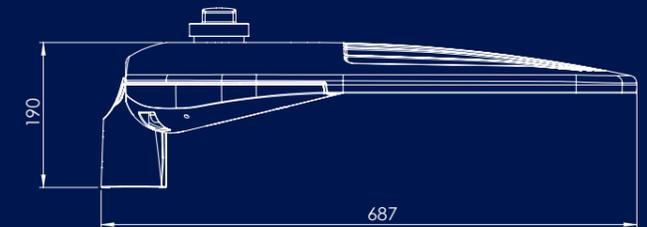
IEC protection class: Class I, Class II

Driver immunity: 10kV/5kA

Rated input power: 147W – 214W

Dimensions (mm)

SIZE "M"



Details

Inlumino size L



Driver feature

- Electronic, dimmable driver
- Controls: 1-10V Analog, Dali, Autonomous dimming, CLO
- ThermalGuard

Structures and materials

- Housing material: die-cast aluminium body and coupler, with stainless steel screws
- Optic material: Optical-grade polycarbonate
- Optical cover: Tempered glass
- Colour: RAL7021
- Impact Strength: IK09 (glass) / IK09 (housing) / IK08 (Shorting Cap)
- Ingress protection: IP66

Performance

- Rated luminous flux range: from 30 800 to 47 000 lm
- Rated luminaire efficacy: from 130 up to 152lm/W
- Rated median useful life and the associated rated LM factor: L90B50 > 350.000 hours
- Rated useful life and the associated rated LM factor: L90B10 > 343.000 hours
- Rated abrupt failure value: < 10% at 100.000 hours
- Photometric code: 722/559, 727/559, 730/559, 740/559, 750/559, 827/559, 830/559, 840/559, 850/559
- Lumen maintenance code: 9
- Definitions and tolerances according to IEC62722-2-1:2014

Installation and maintenance

Mounting options

- Side mounting coupler for 30-76mm diameters and -15°, -10°, -5°, 0°, +5°, +10°, +15° tilt options
- Post top mounting coupler for 30-76mm diameters and -15°, -10°, -5°, 0°, +5°, +10°, +15° tilt options
- Weight: 12.5 kg
- Recommended mounting height: 6-25 m
- Only two hand-tools required for installing the fixture
- Tool-less maintenance, click and flip, twist and lock
- Tool-less hinged opening and lift-off head with automatic electrical disconnect
- Storage temperature from -40°C to +85°C
- Ambient temperature from -40°C to +50°C

Optics

Available photometric distributions:

100 different optic combinations would be available which are suitable for pedestrian streets to high traffic roads.

All symmetric optic combinations are valid eg. ABA, but ABC is not.

AAA
BBB
CCC
DDD
EEE
FFF
GGG
JJJ
KKK
LLL

Rated colour rendering index >70 or >80

Rated correlated colour temperatures: 2200K (available in CRI70 only), 2700K, 3000K, 4000K, 5000K
ULOR: 0

Rated initial chromaticity co-ordinate values:

- 2200K: CIE(x=0.5020, y=0.4156) 5SDCM (available in CRI70 only)
- 2700K: CIE(x=0.4577, y=0.4098) 5SDCM
- 3000K: CIE(x=0.4339, y=0.4032) 5SDCM
- 4000K: CIE(x=0.3818, y= 0.3796) 5SDCM
- 5000K: CIE(x=0.3446, y= 0.3551) 5SDCM



CCC

Electrical

Input voltage and frequency: 220-240V, 50-60Hz

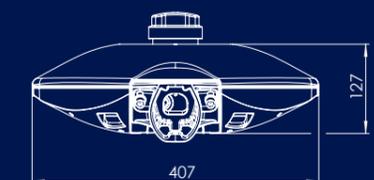
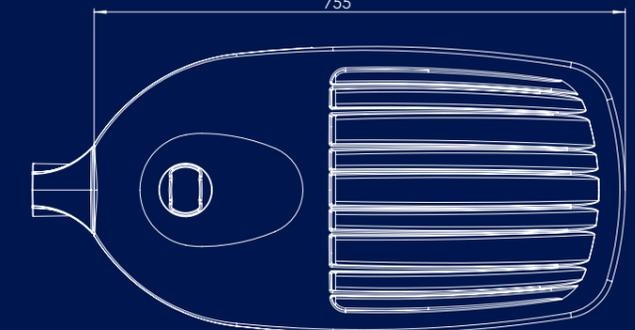
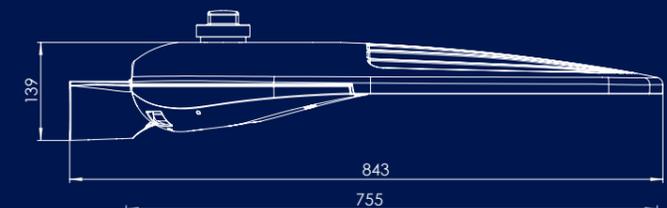
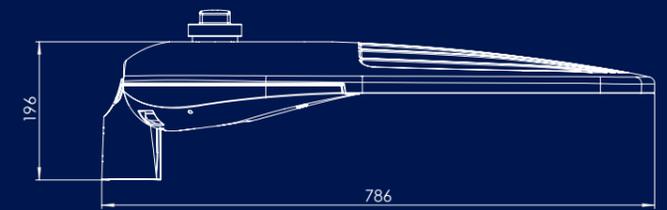
IEC protection class: Class I, Class II

Driver immunity: 10kV/5kA

Rated input power: 205W – 307W

Dimensions (mm)

SIZE "L"



Details

Inlumino size L+



Driver feature

- Electronic, dimmable driver
- Controls: 1-10V, DALI, Autonomous dimming, CLO
- Thermal protection

Structures and materials

- Housing material: die-cast aluminium body and coupler, with stainless steel screws
- Optic material: Optical-grade polycarbonate
- Optical cover: Tempered glass
- Colour: RAL7021
- Impact Strength: IK09 (glass) / IK09 (housing) / IK08 (Shorting Cap)
- Ingress protection: IP66

Performance

- Rated luminous flux range: Up to 50 000 lm
- Rated luminaire efficacy: Up to 158 lm/W at 5000K
- Rated median useful life and the associated rated LM factor: L90B50 > 140.000 hours, L80B50 > 330.000 hours
- Rated abrupt failure value: < 10% at 100.000 hours
- Photometric code: 727/559, 730/559, 740/559, 750/559
- Lumen maintenance code: 9
- Definitions and tolerances according to IEC62722-2-1:2014

Installation and maintenance

Mounting options

- Side mounting coupler for 30-76mm diameters and -15°, -10°, -5°, 0°, +5°, +10°, +15° tilt options
- Post top mounting coupler for 30-76mm diameters and -15°, -10°, -5°, 0°, +5°, +10°, +15° tilt options
- Weight: 13.5 kg
- Recommended mounting height: 6-25 m
- Only two hand-tools required for installing the fixture
- Tool-less hinged opening and lift-off head with automatic electrical disconnect
- Storage temperature from -40°C to +85°C
- Ambient temperature from -40°C to +50°C

Optics

Available photometric distributions:

64 different optic combinations would be available which are suitable for pedestrian streets to high traffic roads.

All symmetric optic combinations are valid eg. ABA, but ABC is not.

AAA
BBB
CCC
DDD
EEE
FFF
GGG
JJJ

Rated colour rendering index > 70

Rated correlated colour temperatures: 2700K, 3000K, 4000K, 5000K

ULOR: 0

Rated initial chromaticity co-ordinate values:

- 2700K: CIE(x=0.4582, y=0.4099) 5SDCM
- 3000K: CIE(x=0.4338, y=0.403) 5SDCM
- 4000K: CIE(x= 0.3818, y= 0.3797) 5SDCM
- 5000K: CIE(x= 0.34, y= 0.35) 5SDCM



JJJ

Electrical

Input: 90-305V, 47-63Hz

Rated input: 220-240V, 50-60Hz

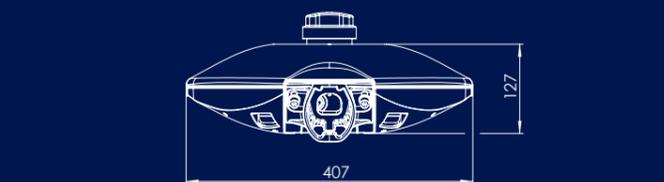
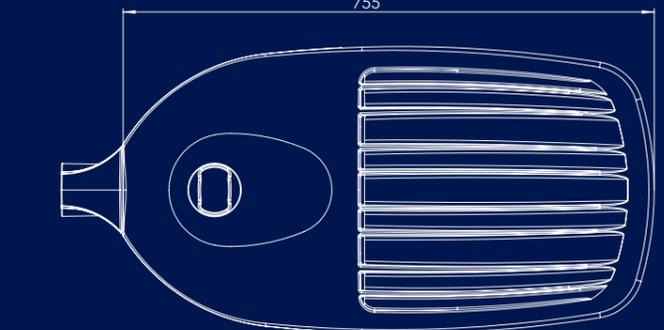
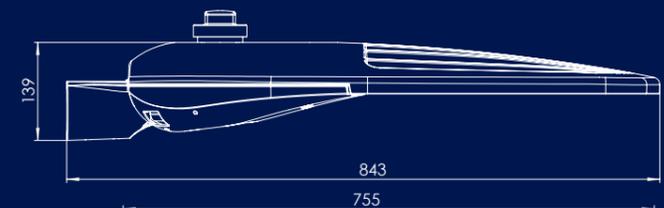
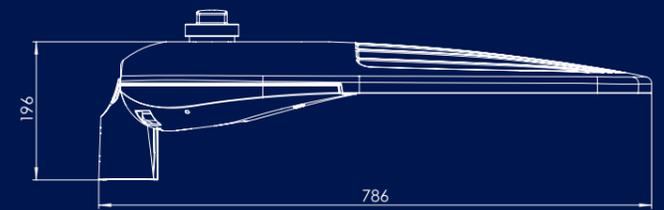
IEC protection class: Class I

Driver immunity: 10kV/5kA

Rated input power: Up to 367W

Dimensions (mm)

SIZE "L+"



Details

Inlumino size XL



Driver feature

- Electronic, dimmable driver
- Controls: DALI, 1-10V, Autonomous dimming, CLO
- ThermalGuard

Structures and materials

- Housing material: die-cast aluminium body and coupler, with stainless steel screws
- Optic material: Optical-grade polycarbonate
- Optical cover: Tempered glass
- Colour: RAL7021
- Impact Strength: IK09 (glass) / IK09 (housing) / IK08
- Ingress protection: IP66

Performance

- Rated luminous flux range: Up to 75 000 lm
- Rated luminaire efficacy: Up to 154lm/W at 4000K
- Rated median useful life and the associated rated LM factor: L80B50 > 350.000 hours
- Rated abrupt failure value: < 10% at 100.000 hours
- Photometric code: 727/559, 730/559, 740/559, 750/559
- Lumen maintenance code: 9
- Definitions and tolerances according to IEC62722-2-1:2014

Installation and maintenance

Mounting options

- Side mounting coupler for 30-76mm diameters and -15°, -10°, -5°, 0°, +5°, +10°, +15° tilt options
- Post top mounting coupler for 30-76mm diameters and -15°, -10°, -5°, 0°, +5°, +10°, +15° tilt options
- Weight: 19,5 kg
- Recommended mounting height: 18-25 m
- Only two hand-tools required for installing the fixture
- Click and flip, twist and lock
- Tool-less hinged opening and lift-off head with automatic electrical disconnect
- Storage temperature from -40°C to +85°C
- Ambient temperature from -40°C to +55°C

Optics

Available photometric distributions:

100 different optic combinations would be available which are suitable for pedestrian streets to high traffic roads.

All symmetric optic combinations are valid eg. ABA, but ABC is not.

AAA
BBB
CCC
DDD
EEE
FFF
GGG
JJJ
KKK
LLL

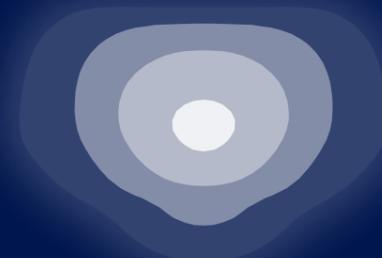
Rated colour rendering index > 70

Rated correlated colour temperatures: 2700K, 3000K, 4000K, 5000K

ULOR: 0

Rated initial chromaticity co-ordinate values:

- 2700K: CIE(x=0.458, y=0.410) 5SDCM
- 3000K: CIE(x=0.434, y=0.403) 5SDCM
- 4000K: CIE(x= 0.382, y= 0.3797) 5SDCM
- 5000K: CIE(x=0.345, y=0.355) 5SDCM



GGG

Electrical

Input voltage and frequency: 220-240V, 50-60Hz

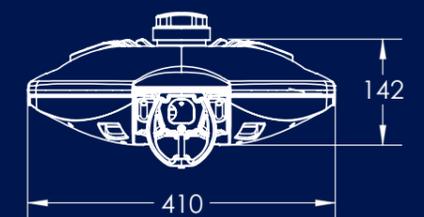
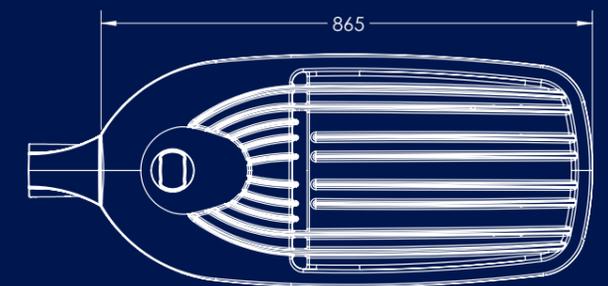
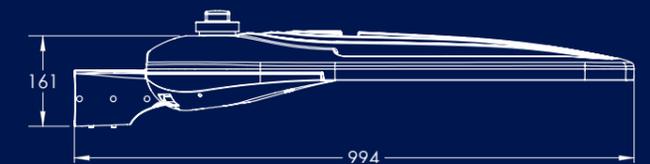
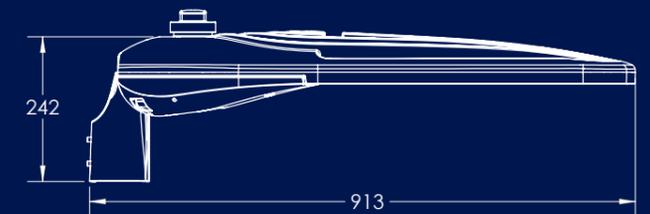
IEC protection class: Class I

Driver immunity: 10kV/5kA

Rated input power: Up to 535W

Dimensions (mm)

SIZE "XL"



Road and street lighting SMix 2S



Product information

SMix 2S offers an optimal solution for street lighting. Taking advantage of Tunsgam's proprietary modular refractive optic system, a wide range of light distributions can be achieved. The optimized mechanical design provides simple installation, adjustability, and reliability.

Application areas



Pedestrian street



Roadways and
Highways



Details SMix 2S



Driver feature

- Electronic, ddimmmable driver: Dali, DynaDim, CLO, Analog

Structures and materials

- Housing material: die-cast aluminium body and coupler, with stainless steel screws
- Optic material: Optical-grade polycarbonate
- Optical cover: Tempered glass
- Colour: RAL7035
- Impact Strength: IK08 (glass) / IK09 (housing) / IK08 (Shorting Cap)
- Ingress protection: IP66

Performance

- Rated luminous flux range: from 3 000 to 13 500 lm
- Rated luminaire efficacy: : from 135 to 150 lm/W
- Rated median useful life and the associated rated LM factor L80B50: > 121.000 hours
- Rated useful life and the associated rated LM factor: L80B10 > 115.000 hours
- Rated median useful life and the associated rated LM factor: L90B50 > 54.000 hours
- Rated useful life and the associated rated LM factor: L90B10 > 50.000 hours
- Rated abrupt failure value: < 10% at 100.000 hours
- Abrupt light output degradation (C) < 10 at 100.000 hours
- Photometric code: 730/559, 740/559, 750/559
- Lumen maintenance code: 9

Installation and maintenance

Mounting options

- Side mounting with coupler for 42-60 diameters and -15°, -10°, -5°, 0°, 5°, 10°, 15° tilt options
- Post top mounting with coupler for 42-60 diameters and -15°, -10°, -5°, 0°, 5°, 10°, 15° tilt options
- Side mounting with coupler for 30-48 diameters and -15°, -10°, -5°, 0° tilt options
- Post top mounting with coupler for 30-48 diameters and 0°, 5°, 10°, 15° tilt options
- Weight: 5 kg
- Recommended mounting height: 4 - 15m
- Only two hand-tools required for installing the fixture
- Storage temperature up to 85°C.
- Ambient temperature from -40°C to +50°C

Optics

Available photometric distributions:

- C: optimized for wide high traffic M class roads
- E: optimized for narrow P class roads
- F: optimized for wide P class roads
- Q: optimized for narrow high traffic M class roads

Rated colour rendering index >70

Rated correlated colour temperatures*: 3000K, 4000K, 5000K

ULOR: 0

Rated initial chromaticity co-ordinate values

- 3000K: CIE(x=0.43, y=0.403) 5SDCM
- 4000K: CIE(x= 0.38, y= 0.38) 5SDCM
- 5000K: CIE(x= 0.34, y= 0.35) 5SDCM



C: optimized for wide high traffic M class roads

Electrical

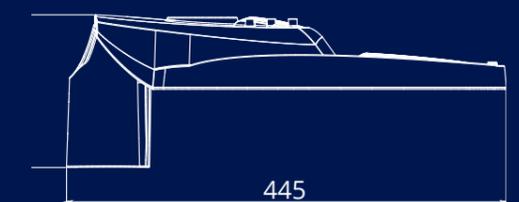
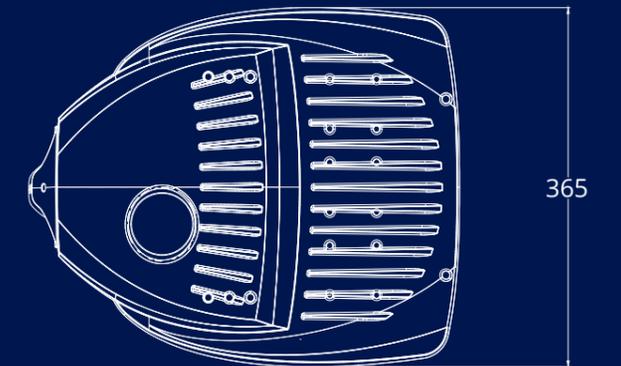
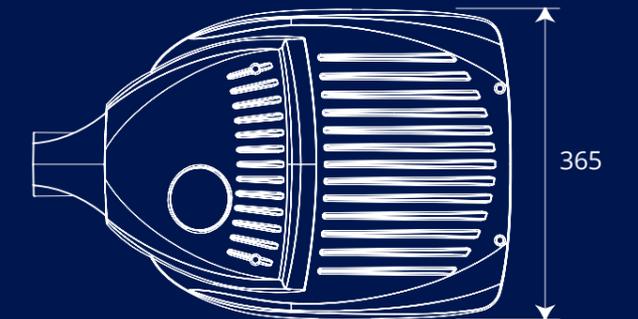
Input voltage and frequency: 220-240V, 50-60Hz
Class I

Surge immunity: 10kV/5kA

Rated input power: 20W to 100W

Power factor ≥ 0,9

Dimensions (mm)



Road and street lighting SMix



Product information

SMix offers an optimal solution for street lighting. Modular refractive optic system, a wide range of light distributions can be achieved. The optimized mechanical design provides simple installation, adjustability and reliability.

Application areas



Residential



Road and street
Motorways



Details SMIx



Driver feature

- Electronic, dimmable (DALI) driver with autonomous dimming: 35-160W

Structures and materials

- Housing material: die-cast aluminium body and UV stawal-grade polycarbonate
- Optical cover: Tempered glass
- Colour: RAL7035
- Impact Strength: IK08 on optical parts, IK09 on housing and coupler
- All materials used in this product are WEEE and ROHS compatible.
- Ingress protection: IP66

Performance

- Rated luminous flux range: from 5 000 to 22 000 lm
- Rated luminaire efficacy: Up to 153 lm/W at 4000K
- Rated median useful life and the associated rated LM factor L80B50: > 121.000 hours
- Rated abrupt failure value: 3.12 %*
- Photometric code: 730/559, 740/559, 750/559
- Lumen maintenance code: 9
- Rated ambient temperature (tq) related to performance for a luminaire: 25°C

Installation and maintenance

Mounting options

- Side-mounting coupler for 30-60mm diameters and -15°, -10°, -5°, 0° tilt options
- Post top mounting coupler for 30-60mm diameters and 15°, 10°, 5°, 0° tilt options
- Weight: 7,5 kg
- Recommended mounting height: 4 - 15m
- Only two hand-tools required for installing the fixture
- Storage temperature up to 85°C.
- Ambient temperature from -40°C to 50°C

Optics

Available photometric distributions:

- C: optimized for high traffic M class roads
- E: optimized for narrow S class roads
- F: optimized for wide S class roads

Rated colour rendering index >70

Rated correlated colour temperatures: 3000K, 4000K, 5000K

S/P rating for : 3000K: 1.24, 4000K: 1.47, 5000K:1.71
ULOR (Upward Light Output Ratio): 0

Rated initial chromaticity co-ordinate values

- 3000K: CIE(x=0.43, y=0.403) 5SDCM
- 4000K: CIE(x= 0.38, y= 0.38) 5SDCM
- 5000K: CIE(x= 0.34, y= 0.35) 5SDCM



C: optimized for high traffic M class roads

Electrical

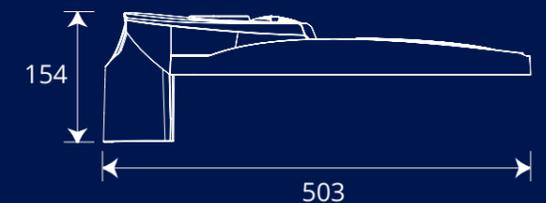
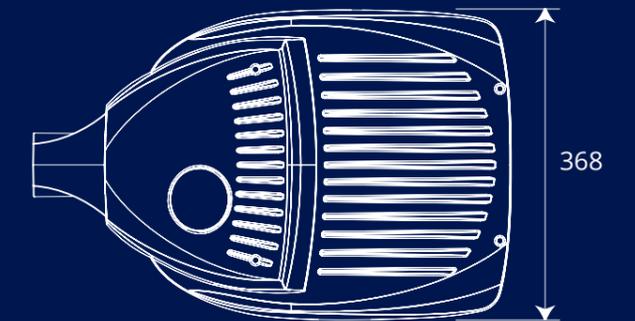
Input voltage and frequency: 220-240V, 50-60Hz

Class I: standard, Class II: on request

Surge protection: 10 kV

Rated input power: 35W to 160W

Dimensions (mm)



Road and street lighting Piko



Product information

Tungsrām's LED road and street fixture, the PIKO, which makes the advantages of outdoor LED lighting available for everyone, even those on tight budgets. Designed to replace 11-36 W CFL and 35-70 W HID fixtures, the PIKO is a great LED solution for minor roads, residential streets and other public spaces where modest levels of illumination are required.

Application areas

-  Street & residential road lighting
-  Car park
-  Pedestrian street
-  Public area



Details Piko



Driver feature

- Electronic, non-dimmable driver

Structures and materials

- Housing material: die-cast aluminium body, corrosion resistant screws
- Color: RAL7035
- Optical cover: tempered glass
- Impact strength: IK08
- Ingress protection: IP66

Performance

- Rated luminous flux range: from 1 500 to 3 600 lm
- Rated luminaire efficacy: Up to 140 lm/W
- Photometric code: 730/559, 740/559, 750/559
- Rated median useful life and the associated rated LM factor: L80B50 > 110.000 hours
- Rated median useful life and the associated rated LM factor: L80B10 > 110.000 hours
- Rated median useful life and the associated rated LM factor: L90B50 > 54.000 hours
- Rated abrupt failure value: 10% at 50.000 hours
- Lumen maintenance code: 9
- Rated ambient temperature (tq) related to performance for a luminaire: 25°C

Installation and maintenance

Mounting options

- Side mount $\varnothing 35\text{mm}-60\text{mm}$
- Recommended mounting height: 4-8m
- Weight: 2 kg
- Only two hand-tools required for installing the fixture
- Storage temperature up to 85°C.
- Ambient temperature from -40°C to +35°C

Optics

Available photometric distributions:

- C: optimized for low traffic M class roads
- E: optimized for narrow P class roads
- F: optimized for wide P class roads

Rated colour rendering index: >70

Rated correlated colour temperatures: 3000K, 4000K, 5000K

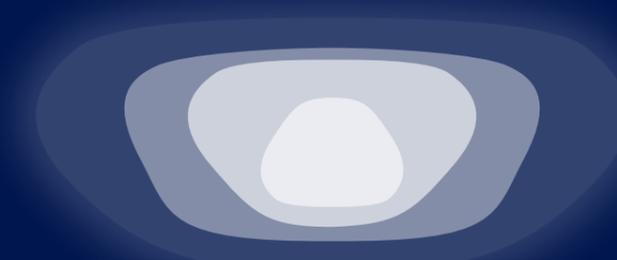
S/P rating for: 3000K - 1.33, 4000K - 1.56, 5000K - 1.78
ULOR: 0

Rated initial chromaticity co-ordinate values

3000K - CIE(x=0.43, y=0.403) 5SDCM

4000K - CIE(x= 0.38, y= 0.38) 5SDCM

5000K - CIE(x= 0.34, y= 0.35) 5SDCM



F: optimized for wide P class roads

Electrical

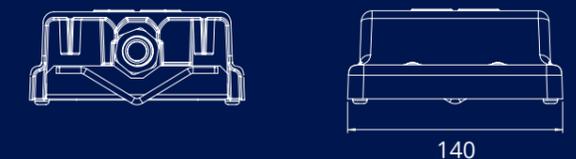
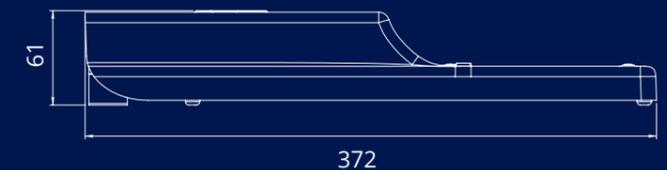
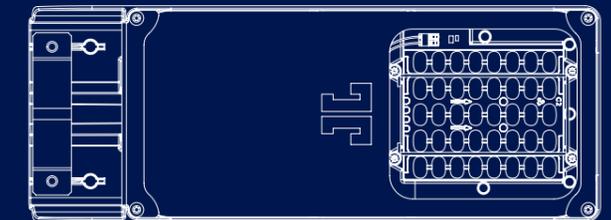
Input voltage and frequency: 220-240V, 50Hz

IEC Safety Classification: Class I, Class II

Driver surge immunity: 6kV

Rated input power: 12W to 28W

Dimensions (mm)



Road and street lighting SLBt



Product information

Introducing our latest LED road and street fixture, the SLBt, which makes the advantages of outdoor LED lighting available for everyone, even those on tight budgets. Designed to replace 35-100W HID and 24-36W CFL fixtures, the SLBt is a great LED solution for minor roads, residential streets and other public spaces where modest levels of illumination is required.

Application areas



Residential



Road and street
Motorways



Car park



Details SLBt



Driver feature

- Electronic, dimmable DALI driver with autonomous dimming: 15-70W.
- Constant Light Output (optional)

Structures and materials

- Housing material: die-cast aluminium body, corrosion resistant screws and brackets
- Optic material: coated polycarbonate or aluminium
- Colour: RAL7035
- Optical cover: UV stabilized polycarbonate
- All materials used in this product are WEEE and ROHS compatible.
- Impact strength: IK09
- Ingress protection: IP66

Performance

- Rated luminous flux range: from 1 200 to 8 200 lm at 4000K
- Rated luminaire efficacy: up to 122 lm/W at 4000K.
- Photometric code: 727/559 , 730/559, 740/559
- Rated median useful life and the associated rated LM factor L80B50: > 218.000 hours
- Rated abrupt failure value: 11.5 %
- Lumen maintenance code: 9
- Rated ambient temperature (tq) related to Performance for a luminaire: 25°C

Installation and maintenance

Mounting options

- Side mount bracket \varnothing 42mm-60mm
- Post top bracket \varnothing 48mm-76mm
- Universal coupler side \varnothing 35mm-76mm
- Universal coupler post \varnothing 35mm-76mm
- Bracket can be adjusted: 0°, +5° (with accessories -5° also available)
- Universal Coupler can be adjusted -15°, -10°, -5°, 0°, +5°, +10°, +15° by 5° degree steps
- Recommended mounting height: 4-15m
- Weight: 5 kg
- Only two hand-tools required for installing the fixture
- Storage temperature up to 85°C.
- Ambient temperature from -40°C to 35°C

Optics

Available photometric distributions:

- Narrow Asymmetric – medium (B, B2, B5)
- Asymmetric – short (C, C5)
- Asymmetric forward – very short (D)
- Asymmetric – medium (E, E2, E5)
- Forward asymmetric – medium (F, F5, G2)
- Narrow asymmetric – short (N)
- Narrow asymmetric with backlight – short (P, P5)
- Narrow asymmetric – medium (R)
- Narrow asymmetric – medium (S)
- Asymmetric – short (T)
- Asymmetric – medium (U)
- Pedestrian cross walk (X5, Z5)
- Symmetric – medium (Y5)

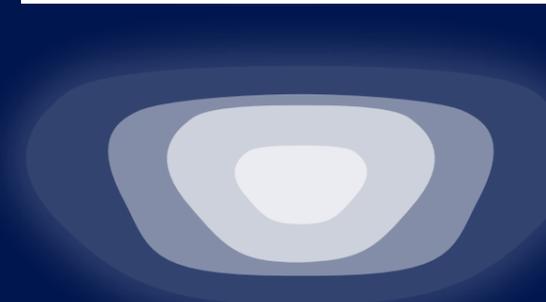
Rated colour rendering index:>70

Rated correlated colour temperatures*: 2700K, 3000K, 4000K

S/P rating for : 2700K: 1.09 , 3000K: 1.33, 4000K: 1.56
ULOR (Upward Light Output Ratio): 0

Rated initial chromaticity co-ordinate values

- 3000K: CIE(x=0.4578, y=0.4101) 5SDCM
- 4000K: CIE(x=0.43, y=0.403) 5SDCM
- 5000K: CIE(x=0.38, y=0.38) 5SDCM



Asymmetric – short

Electrical

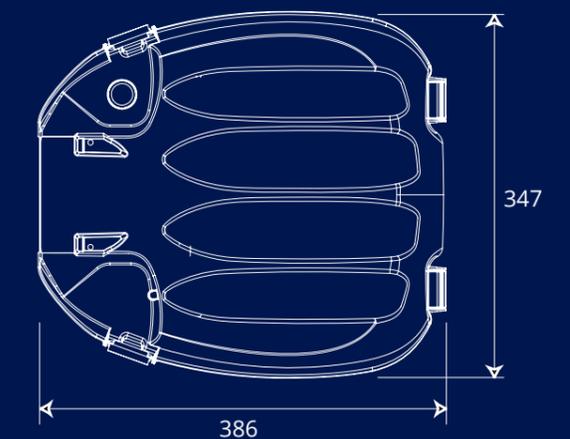
Input voltage and frequency: 220-240V, 50-60Hz

Class I: standard, Class II: on request

Surge protection: 10 kV

Rated input power: 15W to 70W

Dimensions (mm)



Road and street lighting SMBt



Product information

Our LED roadway lighting fixture makes all the advantages of LED lighting available for a wide audience. Designed to replace 35-150W HID fixtures, SMBt is a great LED solution for minor roads, residential streets and other public spaces where modest level of illumination is required.

Application areas



Residential



Road and street
Motorways



Car park



Details SMBt



Driver feature

- Electronic, dimmable (DALI) driver with autonomous dimming: 50W-160W
- Minimum dimming level 20W
- Constant Light Output (optional)

Structures and materials

- Housing material: die-cast aluminium body, corrosion resistant screws and brackets
- Optic material: coated polycarbonate or aluminium
- Optical cover: glass
- Colour: RAL7035
- All materials used in this product are WEEE and ROHS compatible.
- Impact strength: IK08
- Ingress protection: IP66

Performance

- Rated luminous flux range: from 6 400 to 18 700 lm at 4000K
- Rated luminaire efficacy: Up to 146 lm/W at 4000K.
- Photometric code: 730/559, 740/559
- Rated median useful life and the associated rated LM factor L80B50: > 102.000 hours
- Rated abrupt failure value: 11.5 %
- Lumen maintenance code: 9
- Rated ambient temperature (tq) related to performance for a luminaire: 25°C

Installation and maintenance

Mounting options

- Side mount bracket \varnothing 42mm-60mm
- Post top bracket \varnothing 42mm-76mm
- Universal coupler side \varnothing 35mm-76mm
- Universal coupler post \varnothing 35mm-76mm
- Bracket can be adjusted: -5°, 0°, +5°
- Universal Coupler can be adjusted -15°, -10°, -5°, 0°, +5°, +10°, +15° by 5° degree steps
- Weight: 7,5 kg
- Storage temperature up to 85°C.
- Ambient temperature from -40°C to +50°C up to 140W
- +40°C up to 160W

Optics

Available photometric distributions:

- Narrow Asymmetric – medium (B, B2, B5)
- Asymmetric – short (C, C5)
- Asymmetric forward – very short (D)
- Asymmetric – medium (E, E2, E5)
- Forward asymmetric – medium (F, F5)
- Narrow asymmetric – short (N)
- Narrow asymmetric with backlight – short (P, P5)
- Asymmetric – short (T)
- Pedestrian cross walk (X5, Z5)
- Symmetric - (Y5)
- Asymmetric – medium (U)

Rated colour rendering index:>70

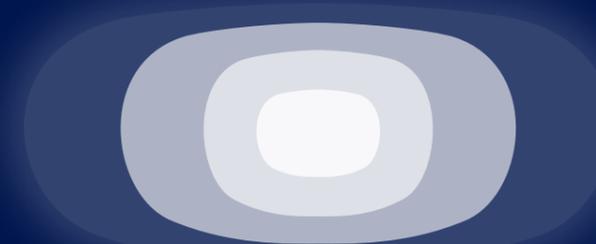
Rated correlated colour temperatures: 3000K, 4000K

S/P rating for : 3000K: 1.33, 4000K: 1.56

ULOR (Upward Light Output Ratio): 0

Rated initial chromaticity co-ordinate values

- 3000K: CIE(x=0.43, y=0.403) 5SDCM
- 4000K: CIE(x= 0.38, y= 0.38) 5SDCM



Narrow Asymmetric – medium

Electrical

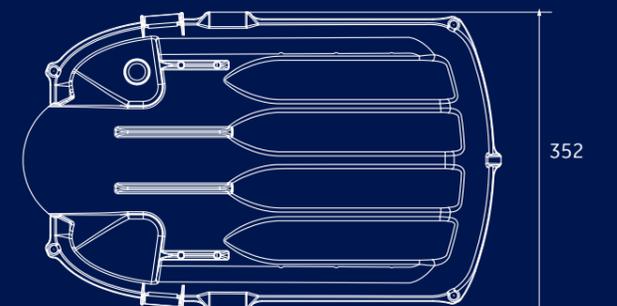
Input voltage and frequency: 220-240V, 50-60Hz

Class I: standard, Class II: on request

Surge protection: 10 kV

Rated input power: 52W to 158W

Dimensions (mm)



Decorative & Pedestrian lighting



Decorative &
Pedestrian lighting
Navona



Product information

Navona is a LED solution to replace traditional fixtures in parks, pedestrian areas, city centers. Timeless design incorporates the aesthetic necessities with the optimal optical distribution, providing several lumen packages with symmetrical and asymmetrical distribution and a power range from 16W to 72W to meet a wide range of lighting scenarios. Navona offers a major increase in both vertical and horizontal uniformity. Combined with the high chromatic reproduction contributed by LED technology (white light), this uniform quality facilitates face recognition and visual comfort. Its advanced optical design enables the light to be directed specifically where it is needed.

Application areas



Residential



City centres
(road classifications: from P2 to P6)



Parks



Details Navona



Driver feature

- Electronic, programmable & dimmable (DALI and 0-10V).
- Controllable driver with astronomical clock availability.
- Controls system inputs: Analog, DALI, Dynadim

Structures and materials

- Housing material: in three pieces (upper-housing, lowerhousing and arm with coupler), all made from die-cast aluminium with a polyester powder paint finish and oven cured.
- Surface finish: polyester powder coat
- Colour: RAL9007
- Optical cover: flat tempered glass
- All materials used in this product are WEEE and ROHS compatible.
- Impact strength: IK08
- Ingress protection: IP66

Performance

- Rated luminous flux range: 1 700 to 7 600 lm
- Rated luminaire efficacy: Up to 118 lm/W
- Rated median useful life and the associated rated LM factor L80B50: > 200.000 hours
- Rated abrupt failure value: 13.2 %*
- Photometric code: 727/559 , 730/559, 740/559
- Lumen maintenance code: 9
- Rated ambient temperature (tq) related to performance for a luminaire: 25°C

Installation and maintenance

Mounting options

- 1- and 2-arm through 42-48, 60, 76 mm standard post top mounting. Side mounting through 60 mm diameter pole.
- Weight: 11,2 kg
- Recommended mounting height: 4-6 m
- Ambient operating temperature: -30°C to 50°C
- Storage temperature: up to 85°C

Optics

Available photometric distributions:

- Asymmetric Forward Clear (AFC)
- Asymmetric Wide Clear (AWC)
- Asymmetric Narrow Clear (ANC)
- Asymmetric Wide Diffuser (AWD)
- Symmetric Wide Clear (SWC)
- Symmetric Wide Diffuser (SWD)
- Symmetric Forward Clear (SFC)

Rated colour rendering index >70

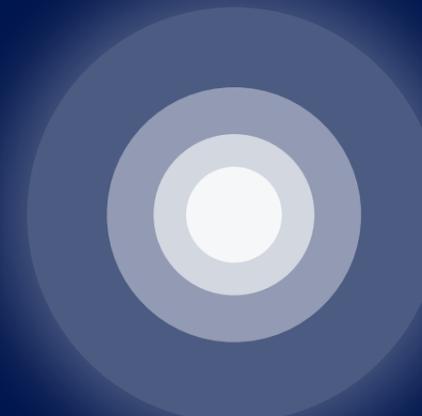
Rated correlated colour temperatures: 2700K, 3000K, 4000K

ULOR (Upward Light Output Ratio): 0

S/P rating for : 2700K: 1.09, 3000K: 1.24, 4000K: 1.47

Rated initial chromaticity co-ordinate values

- 2700K: CIE(x=0.4578, y=0.4101) 5SDCM
- 3000K: CIE(x=0.43, y=0.403) 5SDCM
- 4000K: CIE(x=0.38, y=0.38) 5SDCM



Symmetric Wide, Forward

Electrical

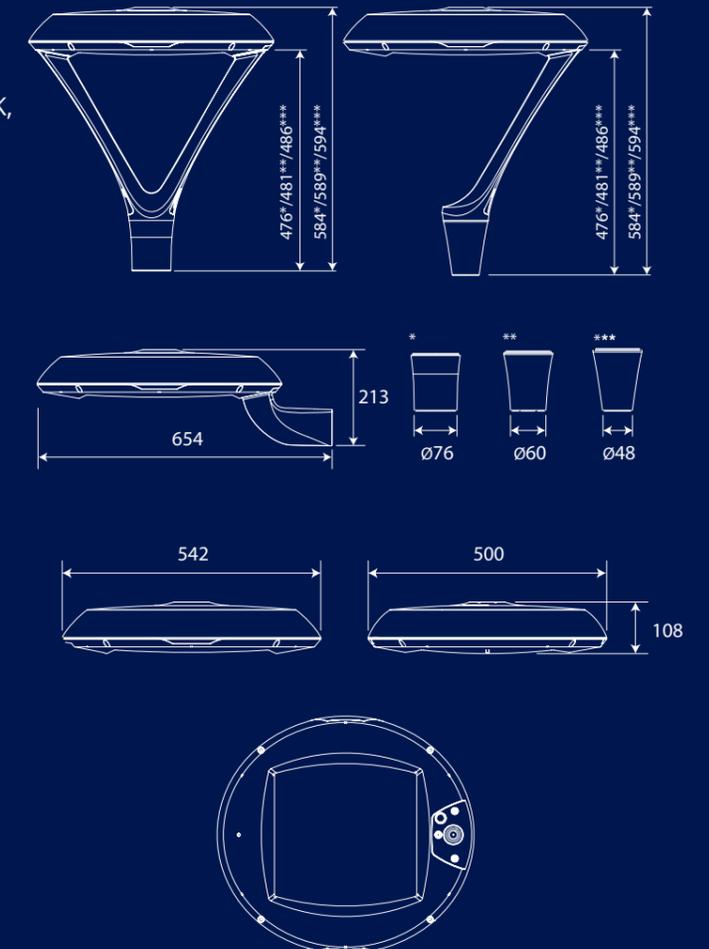
Input voltage and frequency: 220-240V, 50-60Hz

IEC Protection Class: Class I, Class II

Surge protection: 10 kV

Rated input power: 20W to 70W

Dimensions (mm)



Decorative &
Pedestrian lighting
Nobila



Product information

Introducing Tungsram's latest LED decorative fixture, the Nobila, which has the advantage of aesthetic outdoor luminaires with great performance. Designed to replace 35-100 W HID and 24-36 W CFL fixtures, the Nobila is a great LED solution for roads, where heritage style is needed.

Application areas



Pedestrian street



Car park



Street & residential road
lighting



Details Nobila



Driver feature

- Electronic, dimmable driver: Dali, CLO and dynadim from 20-90W
- minimum dimming level 5,5 W

Structures and materials

- Housing material: die-cast aluminium body, corrosion resistant screws
- Color: RAL9005 or any RAL color
- Optic material: coated polycarbonate
- Optical cover: UV stabilized polycarbonate
- Gear Tray material: galvanized steel
- Impact strength: IK08
- Ingress protection: IP66

Performance

- Rated luminous flux range: from from 2 600 to 9 700lm at 4000K
- Rated luminaire efficacy: Up to 135lm/W at 4000K
- Photometric code: 730/559, 740/559
- Rated median useful life and the associated rated LM factor L80B50: > 100.000 hours
- Rated abrupt failure value: <10% (100.000 hours)
- Lumen maintenance code: 9
- Rated ambient temperature (tq) related to performance for a luminaire: 25°C

Installation and maintenance

Mounting options

- Post top coupler Ø48mm-76mm
- Recommended mounting height: 4-15m
- Weight: 6,5 kg
- Only two hand-tools required for installing the fixture
- Storage temperature up to 85°C.
- Ambient temperature from -40°C to +50°C

Optics

Available photometric distributions:

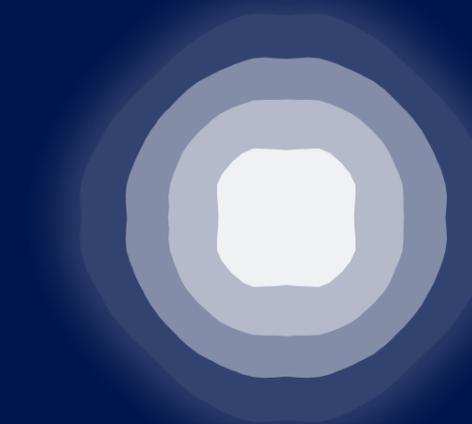
- C: optimized for high traffic M class roads
- E: optimized for narrow P class roads
- F: optimized for wide P class roads
- H: optimized for M class roads, low mounting height

- AC - asymmetric C
- AE - asymmetric E
- AF - asymmetric F
- AH - asymmetric H
- SC - symmetric C
- SE - symmetric E
- SF - symmetric F
- CC - circular C
- CE - circular E
- CF - circular F

Rated colour rendering index: >70
 Rated correlated colour temperatures: 3000K, 4000K
 S/P rating for: 3000K - 1.33, 4000K - 1.56
 ULOR: 0

Rated initial chromaticity co-ordinate values

3000K - CIE(x=0.43, y=0.403) 5SDCM
 4000K - CIE(x= 0.38, y= 0.38) 5SDCM

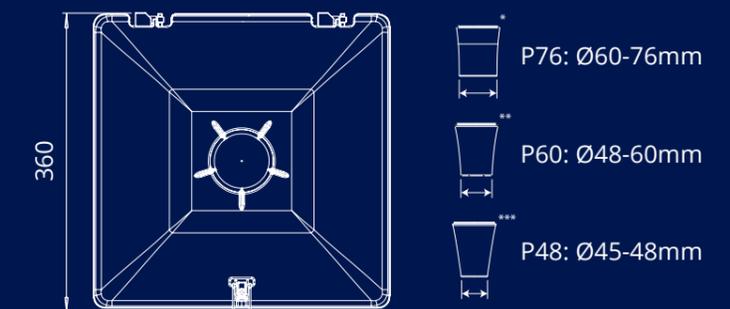
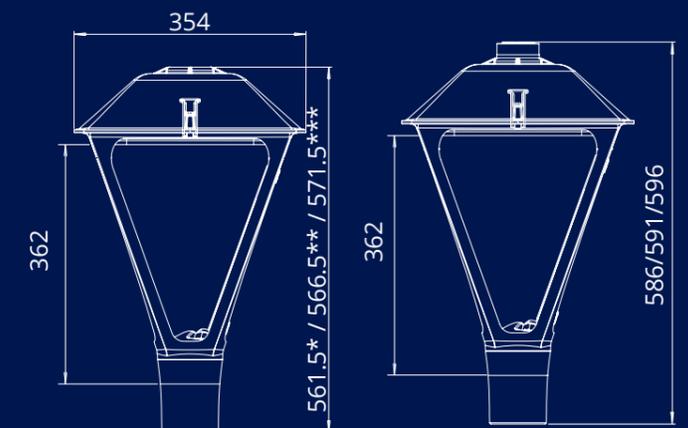


Circular E

Electrical

Input voltage and frequency: 220-240V, 50-60Hz
 Class I, Class II
 Surge protection: 10kV
 Rated input power: 21W to 94W

Dimensions (mm)



Decorative &
Pedestrian lighting
Camila

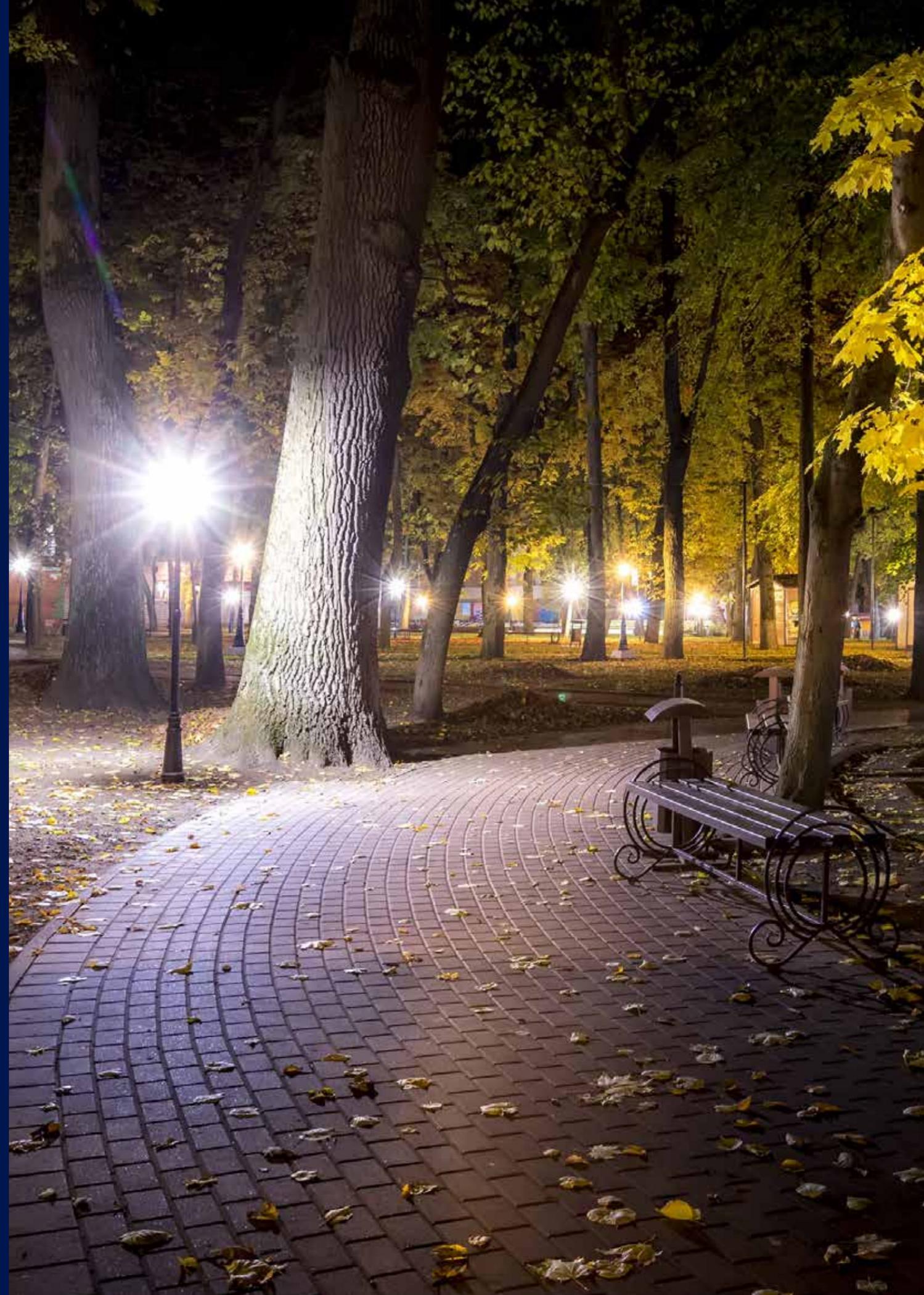


Product information

Introducing Tungsram's latest LED decorative fixture, the Camila, which has the advantage of aesthetic outdoor luminaires with great performance. The Camila is a great LED solution for roads, where heritage style is needed.

Application areas

-  Pedestrian street / Parks
-  Car park



Details Camila



Driver feature

- Electronic, dimmable driver with DALI control or static
- Minimum dimming level 0 W

Structures and materials

- Housing material: die-cast aluminium body
- Color: RAL9006
- Optic material: coated polycarbonate
- Optical cover: Tempered safety glass (5mm)
- Impact strength: IK09
- Ingress protection: IP66

Performance

- Rated luminous flux range: from 3 050 to 9 070 lm at 4000K
- Rated luminaire efficacy: Up to 130lm/W at 4000K
- Photometric code: 730/559, 740/559, 727/559
- Rated median useful life and the associated rated LM factor L80B50: > 100.000 hours
- Rated abrupt failure 0,3% at 50.000 hours
- Lumen maintenance code: 9
- Rated ambient temperature (tq) related to performance for a luminaire: 25°C

Installation and maintenance

Mounting options

- Post top coupler ø66mm
- Side mount: ø48-60 mm (pole)
- Recommended mounting height: 4-15m
- Weight: 9,5 kg
- Only two hand-tools required for installing the fixture
- Storage temperature up to 85°C.
- Ambient temperature from -40°C to +50°C
- Length of precable: 3m

Optics

Available photometric distributions:

- A: asymmetric
- S: symmetric

Rated colour rendering index: >80

Rated correlated colour temperatures: 2700K, 3000K, 4000K

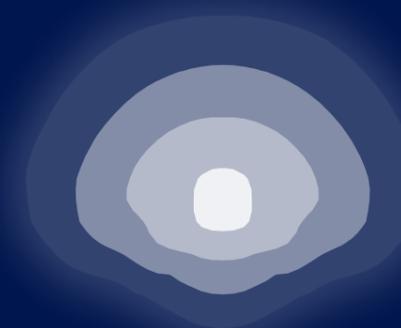
S/P rating: 2700K - 1.239, 3000K - 1.373, 4000K - 1.674
ULOR: 0

Rated initial chromaticity co-ordinate values

2700K - CIE(x=0.4578, y=0.4101) 5SDCM

3000K - CIE(x=0.43, y=0.403) 5SDCM

4000K - CIE(x= 0.38, y= 0.38) 5SDCM



Post-top asymmetric

Electrical

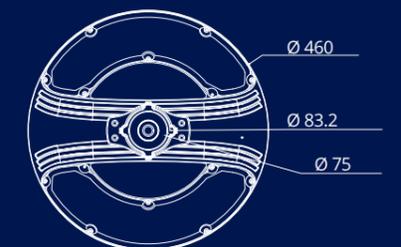
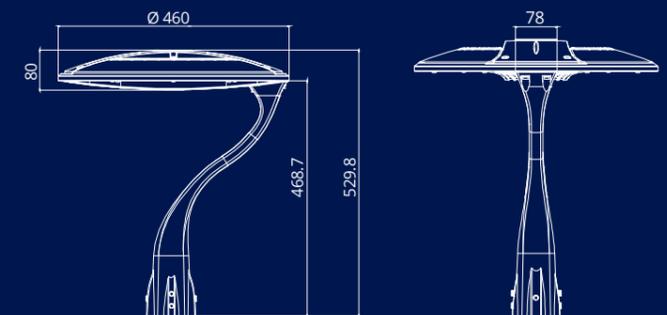
Input voltage and frequency: 100-277 V, 50-60Hz

IEC protection class: Class I

Extra surge protection (standard): 10kV

Rated input power: 25-75W

Dimensions (mm)



Area & Canopy lighting



Area lighting ALix



Product information

ALix LED outdoor luminaire delivers outstanding features, style and attractive form factor. This latest design offers excellent efficacy even at higher lumen outputs to meet a wide range of area lighting needs. Using reflective optic technology, Tungsram offers superior horizontal and vertical illuminance with high uniformity, while minimizing glare. This system delivers unusually low perceived glare when viewed from beneath. ALix provides reduced energy consumption, combined with a long rated life that virtually eliminates ongoing maintenance expenses, enabling significant operating cost benefits over the life of the fixture.



Application areas

-  Car park
-  Industrial & logistic
-  Shopping centres
-  Pedestrian crossings



Details ALix



Driver feature

- Electronic, dimmable (DALI) driver with autonomous dimming: 32-140W
- Minimum dimming level 15W
- DynaDimmer
- Constant Light Output

Structures and materials

- Housing material: die-cast aluminium body, corrosion resistant screws and brackets
- Optic material: highly reflective aluminium coated plastic
- Optical cover: tempered glass
- Colour: RAL9007
- All materials used in this product are WEEE and ROHS compatible.
- Impact strength: IK08
- Ingress protection: IP65

Performance

- Rated luminous flux range: from 3 600 to 17 600 lm at 5000K
- Rated luminaire efficacy: Up to 140lm/W at 5000K.
- Photometric code: 730/559, 740/559, 750/559
- Rated median useful life and the associated rated LM factor L80B50 > 131.000 hours
- Rated abrupt failure value: 2.5 %
- Lumen maintenance code: 9
- Rated ambient temperature (tq) related to performance for a luminaire: 25°C

Installation and maintenance

Mounting options

- Coupler ø60mm for side-mount or post-top
- Adjustable bracket (between -85° and 85° from horizontal)
- Recommended mounting height: 8-15m
- Tool-less driver maintenance
- Storage temperature up to 85°C.
- Operating temperature from -40°C to 50°C
- Weight: 9 kg

Optics

Available photometric distributions:

- Asymmetric Forward (AF)
- Asymmetric Wide (AW)
- Asymmetric Narrow (AN)
- Asymmetric Extra Wide Flood (AEF)
- Asymmetric Forward Throw Narrow* (AFN)
- Symmetrical Wide Flood (SWF)
- Symmetrical Narrow Spot (SNS)

*AFN optics only available with Powers 100W & 140W

Rated colour rendering index:>70 at 4000K
 Rated correlated colour temperatures: 3000K, 4000K, 5000K
 S/P rating for : 3000K: 1.24, 4000K: 1.47, 5000K: 1.71
 ULOR (Upward Light Output Ratio): 0

Rated initial chromaticity co-ordinate values

- 3000K: CIE(x=0.43, y=0.403) 5SDCM
- 4000K: CIE(x= 0.38, y= 0.38) 5SDCM
- 5000K: CIE(x= 0.34, y= 0.35) 5SDCM

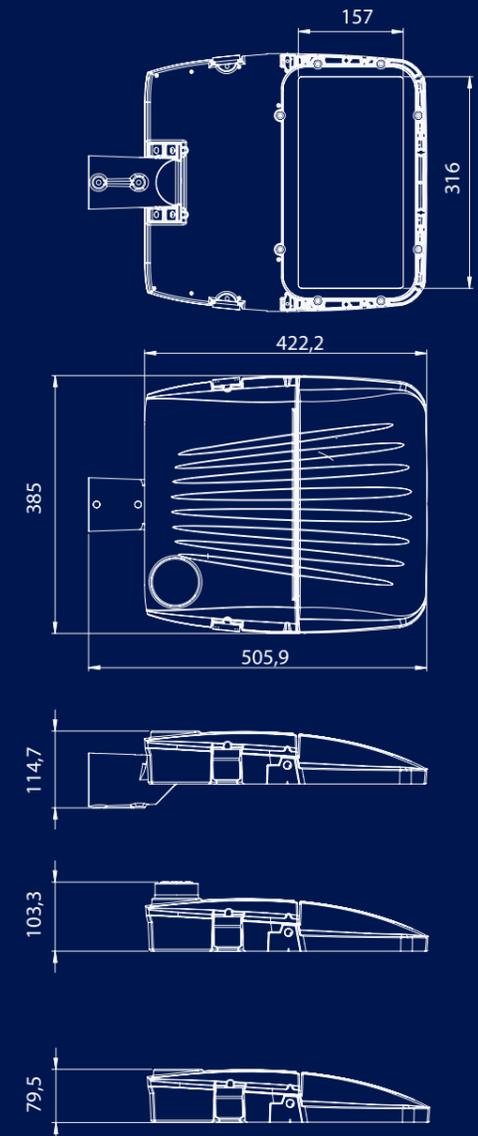


Asymmetric Narrow

Electrical

Input voltage and frequency: 220-240V, 50-60Hz
 Class I, Class II
 Surge protection: 10 kV
 Rated input power: 31W to 142W

Dimensions (mm)



Canopy lighting AMlx



Product information

The AMlx, Tungsram's latest LED canopy fixture, provides a flexible and rapid installation solution for petrol stations, high bays, low bays, parking garages, industrial areas and other area lighting application areas. The AMlx is ideally suited both for replacing traditional fixtures such as HID luminaires and for new installations.

Application areas

-  Parking garages
-  Petrol station
-  Industrial
High bay
-  Floodlighting



Details AMix

Driver feature

- Electronic, dimmable driver
- 150W with DALI control
- Power factor > 0,97

Structures and materials

- Housing material: die-cast and sheet metal aluminium body, stainless steel screws and brackets
- Surface finish: polyester powder coat
- Colour: RAL9003
- Optical cover: tempered low-iron glass
- All materials used in this product are WEEE and ROHS compatible
- Impact strength: IK07
- Ingress protection: IP65

Performance

- Rated luminous flux range: 7560 to 18,750 lm
- Rated luminaire efficacy: Up to 146 lm/W
- Rated median useful life and the associated rated LM factor L80B50: > 120.000 hours
- Rated useful life and the associated rated LM factor L90B10: > 105.000 hours
- Rated abrupt failure value: <10% at 100.000 hours
- Photometric code: 730/559, 740/559
- Lumen maintenance code: 9
- Rated ambient temperature (tq) related to performance for a luminaire: 25°C

Installation and maintenance

Mounting options

- Bezel, surface mount and flood
- Weight: 9kg
- Recommended mounting height: 4-6 m
- Ambient operating temperature: -40°C to +50°C
- Storage temperature: up to 85°C

Optics

Available photometric distributions:

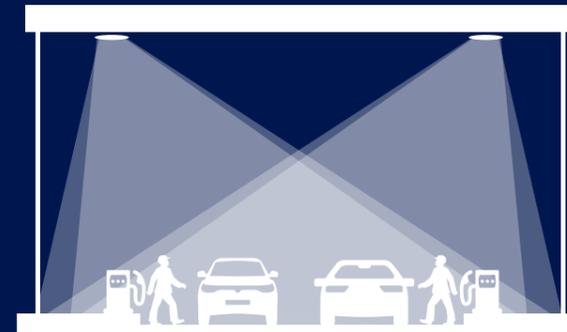
- AC - asymmetric C
- AE - asymmetric E
- AF - asymmetric F
- SC - symmetric C
- SE - symmetric E
- SF - symmetric F
- CC - circular C
- CE - circular E
- CF - circular F

Rated colour rendering index >70

Rated correlated colour temperatures*: 3000K, 4000K
ULOR: 0

Rated initial chromaticity co-ordinate values

- 3000K: CIE(x= 0.43, y= 0.403) 5SDCM
 - 4000K: CIE(x= 0.38, y= 0.38) 5SDCM
- S/P rating for 3000K: 1,33; 4000K: 1,56



Asymmetric

Electrical

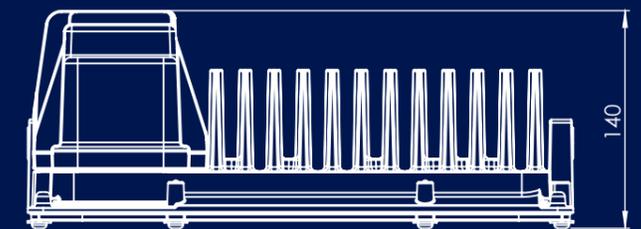
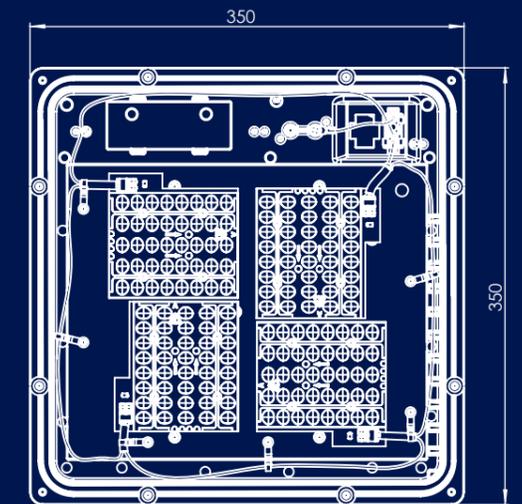
Input voltage and frequency: 220-240V, 50-60Hz

IEC Protection Class: Class I

Surge Immunity: 10kV

Rated input power: 55W to 146W

Dimensions (mm)



Area lighting AHlx

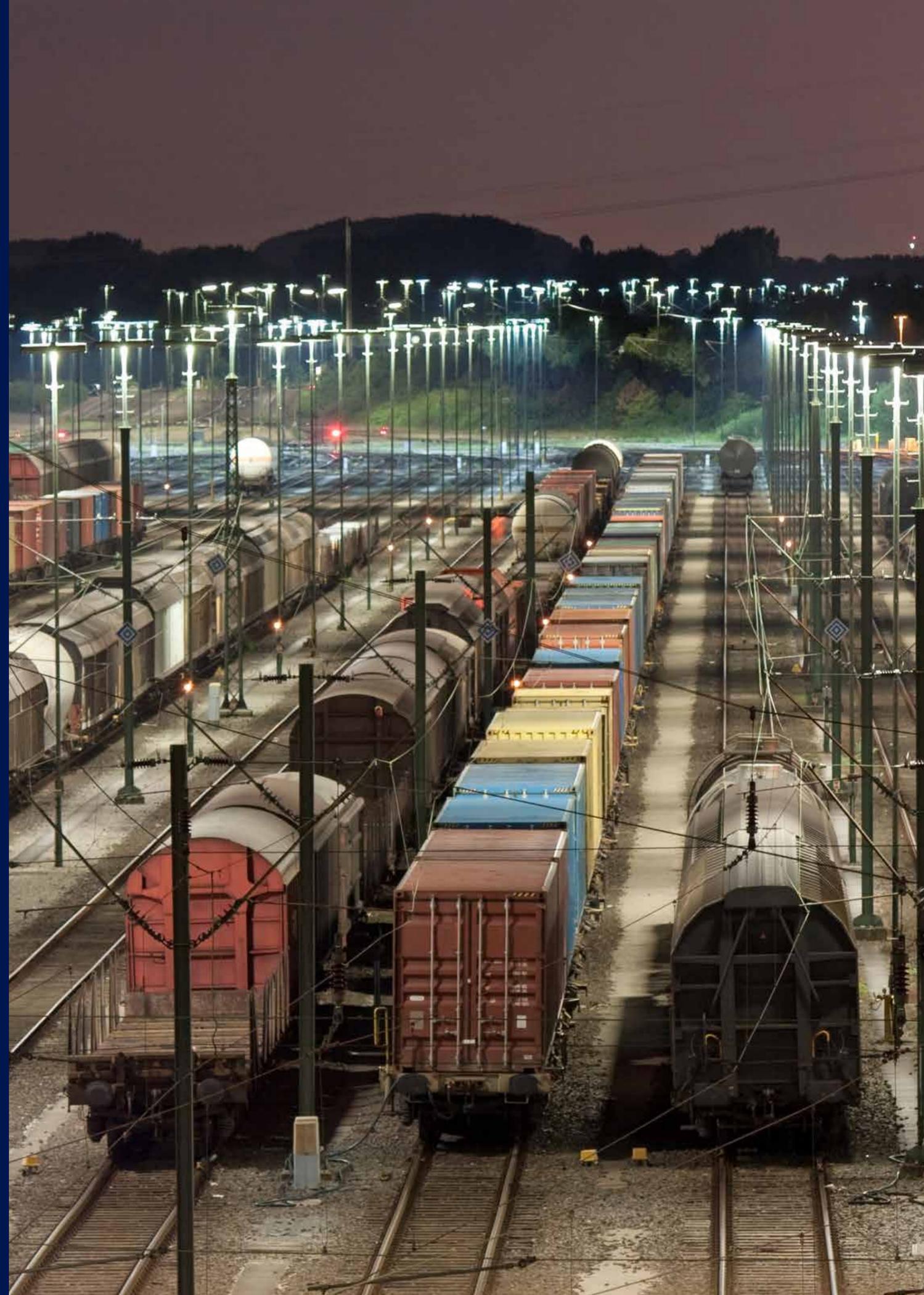


Product information

AHlx luminaire offers an optimal LED lighting solution for high lumen package applications. Tried and tested reflective optic technology, combined with the effective thermal management, excellent light efficiency can be maintained throughout the whole lifetime of the luminaire, even under extreme thermal conditions. A wide range of different light distributions makes this luminaire versatile and flexible for numerous application areas. AHlx is a perfect choice for high power LED lighting applications where optical flexibility and reliability are critical.

Application areas

-  Industrial & Maintenance
-  Logistical areas: airports, ports, trains
-  Car park
-  Sport



Details AHix



Driver feature

- Electronic dimmable Dali driver
- Minimum dimming level: 30%

Structures and materials

- Housing material: die-cast and sheet metal aluminium body, stainless steel screws and brackets
- Surface finish: polyester powder coat
- Colour: RAL9007
- Optical cover: tempered low-iron glass
- All materials used in this product are WEEE and ROHS compatible
- Impact strength: IK08
- Ingress protection: IP66

Performance

- Rated luminous flux range: 21 000 to 37 600 lm at 5000K
- Rated luminaire efficacy: Up to 133lm/W
- Rated median useful life and the associated rated LM factor L80B50: > 110.000 hours
- Rated abrupt failure value: 3.12 %*
- Photometric code: 740/559, 750/559
- Lumen maintenance code: 9
- Rated ambient temperature (tq) related to performance for a luminaire: 25°C

Installation and maintenance

Mounting options

- Adjustable stirrup
- Weight: 15kg
- Recommended mounting height: 10-40 m
- Ambient operating temperature: -40°C to 50°C
- Storage temperature: up to 85°C

Optics

Available photometric distributions:

- Asymmetric Forward (AF)
- Asymmetric Wide (AW)
- Asymmetric Narrow (AN)
- Asymmetric Extra Wide Flood (AEF)
- Asymmetric Forward Throw Narrow (AFN)
- Symmetric Wide Flood (SWF)
- Symmetric Narrow Spot (SNS)
- Symmetric Forward (SF)
- Symmetric Wide (SW)

Rated colour rendering index >70

Rated correlated colour temperatures: 3000K, 4000K, 5000K

ULOR (Upward Light Output Ratio): 0

Rated initial chromaticity co-ordinate values

- 3000K: CIE(x=0.43, y=0.403) 5SDCM
- 4000K: CIE(x= 0.38, y= 0.38) 5SDCM
- 5000K: CIE(x= 0.34, y= 0.35) 5SDCM



Asymmetric Wide



Asymmetric Forward

Electrical

Input voltage and frequency: 220-240V, 50-60Hz

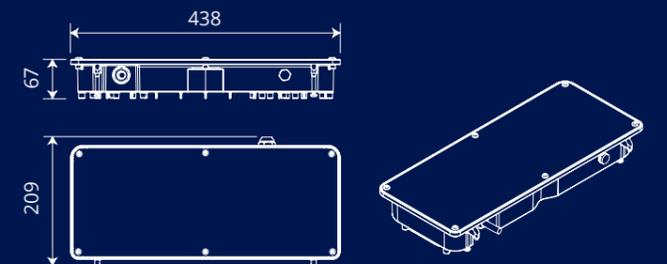
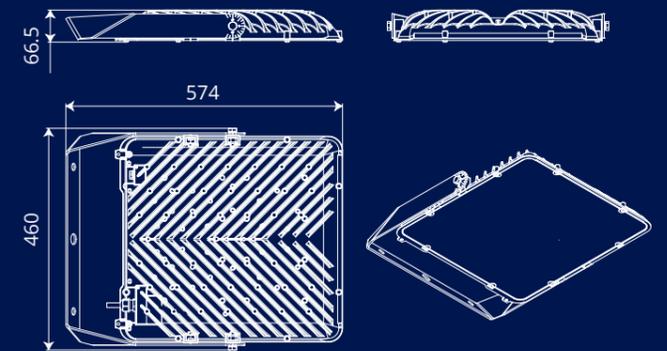
IEC Protection Class: Class I, Class II

Surge protection: 10 kV

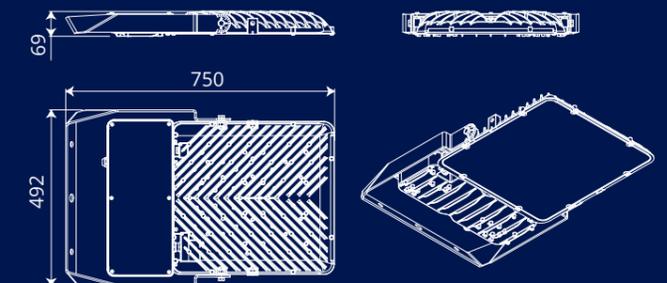
Rated input power: 200W to 300W

Dimensions (mm)

AHix Remote Driver Luminaire (RST and RSP Accessory Options)



AHix Integrated Luminaire (ST and SP Accessory Options)



Area lighting Floodlights



Product information

LED Floodlight is a universal, compact range of floodlights with six lumen output levels from 2.000 to 20.000lm and up to 130 LPW efficiency. The range is suitable for wall-mounted applications around building facades, ideal for the classic floodlighting of buildings, as well as lighting for gardens, paths near to buildings, garages or entrance ways. Tungsham LED Floodlight supplies immediate light without start-up or cooling-down times. Thanks to a robust aluminium housing and the safety glass cover, the floodlights are ideal for outdoor use.

Application areas

-  Industrial
-  Public areas
-  Building facades
-  Retail
-  Car park



Details Floodlights

Driver feature

- High performance with outstanding efficiency with 6 lumen packages – up to 130 lm/W
- 50.000 hours L80B10 lifetime @ 25C
- 3 Color temperature: 3000K, 4000K and 6500K
- Color rendering (CRI) is ≥ 80
- Robust aluminium die-cast luminaire with high protection rating IP65 (20-50W) or IP66 (75-150W) and high impact resistance of IK07 (20-50W) or IK08 (75-150W)
- Suitable for operation in ambient temperature of -20°C to $+40^{\circ}\text{C}$ (20-50W) or -30°C to $+50^{\circ}\text{C}$ (75-150W)
- Static built-in driver
- PF $> 0,9$
- THD $< 20\%$
- Nominal Voltage: 220-240V and 100-277V Direct shipment version
- Operating frequency: 50-60Hz
- Insulation Class I
- Breather valve to maintain good ingress protection in case of over pressurization for 75-150W products
- IP65 infrared motion & daylight sensor optional for up to 50W products. Detection range of motion sensor (3M/180° or 12M/110°), detection range of daylight sensor (0-1000lux) and switching time can be modified
- High quality Samsung chips
- Photobiological risk level is RG0 (no photobiological risk)
- SDCM ≤ 5

Structures and materials

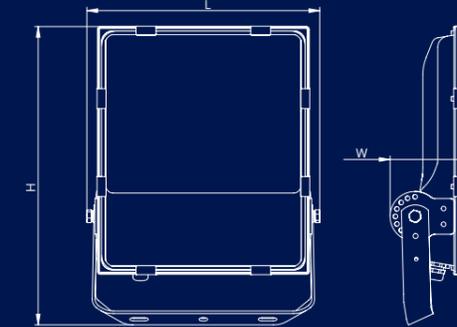
- Body: housing made of die cast aluminium with tempered glass cover
- Colour: black
- Fixtures are pre-wired with 0.3 meter (20-50W) or 1 meter (75-150W) H05RN-F rubber cable
- Easy mounting with bracket included in the package (angle max 160°)

Benefits

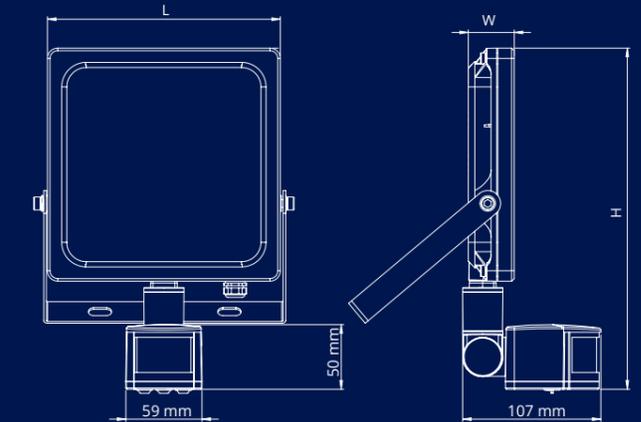
- Replacement for floodlight luminaires with halogen lamps (up to 1500W)
- Energy savings up to 90% (compared to luminaires that use halogen)
- Homogenous light
- High resistance against ambient air with humidity and high particle loads

Dimensions (mm)

Standard version



Sensor version



Product Description	Product Code	Wattage (W)	Lumen (lm)	CCT (K)	System Efficiency (lm/W)	IP	Dimensions (mm)	Beam Angle (°)	Weight (kg)
Floodlight Symmetrical - Static driver									
LED Flood G1 TU S 20W 830 SY ST BN	93115907	20	1 800	3000	90	65	163x36x163	100 without reflector	0.62
LED Flood G1 TU S 20W 840 SY ST BN	93101677	20	2 000	4000	100	65	163x36x163		0.62
LED Flood G1 TU S 20W 865 SY ST BN	93107561	20	2 000	6500	100	65	163x36x163		0.62
LED Flood G1 TU S 30W 830 SY ST BN	93115908	30	2 800	3000	93	65	203x36x202		0.97
LED Flood G1 TU S 30W 840 SY ST BN	93101678	30	3 000	4000	100	65	203x36x202		0.97
LED Flood G1 TU S 30W 865 SY ST BN	93107562	30	3 000	6500	100	65	203x36x202		0.97
LED Flood G1 TU S 50W 830 SY ST BN	93115909	50	5 600	3000	110	65	223x36x216		1.14
LED Flood G1 TU S 50W 840 SY ST BN	93101679	50	6 000	4000	120	65	223x36x216		1.14
LED Flood G1 TU S 50W 865 SY ST BN	93107563	50	6 000	6500	120	65	223x36x216		1.14
LED Flood G1 TU S 75W 830 SY ST BN	93115910	75	9 000	3000	120	66	286x91x368		3.29
LED Flood G1 TU S 75W 840 SY ST BN	93101680	75	10 000	4000	133	66	286x91x368	3.29	
LED Flood G1 TU S 75W 865 SY ST BN	93107564	75	10 000	6500	133	66	286x91x368	3.29	
LED Flood G1 TU S 115W 830 SY ST BN	93115911	115	14 000	3000	122	66	337x91x419	120 without reflector	4.20
LED Flood G1 TU S 115W 840 SY ST BN	93101681	115	15 000	4000	130	66	337x91x419		4.20
LED Flood G1 TU S 115W 865 SY ST BN	93107565	115	15 000	6500	130	66	337x91x419		4.20
LED Flood G1 TU S 150W 830 SY ST BN	93115912	150	18 500	3000	123	66	373x91x450		5.33
LED Flood G1 TU S 150W 840 SY ST BN	93101683	150	20 000	4000	133	66	373x91x450		5.33
LED Flood G1 TU S 150W 865 SY ST BN	93107566	150	20 000	6500	133	66	373x91x450		5.33
LED Flood G1 TU S 20W 840 SY ST BM *	93107575	20	2 000	4000	100	65	263x36x163	100 without reflector	0.62
LED Flood G1 TU S 20W 865 SY ST BM *	93107576	20	2 000	6500	100	65	263x36x163		0.62
LED Flood G1 TU S 30W 840 SY ST BM *	93107577	30	3 000	4000	100	65	303x36x202		0.97
LED Flood G1 TU S 30W 865 SY ST BM *	93107578	30	3 000	6500	100	65	303x36x202		0.97
LED Flood G1 TU S 50W 840 SY ST BM *	93107579	50	6 000	4000	120	65	323x36x216		1.14
LED Flood G1 TU S 50W 865 SY ST BM *	93107580	50	6 000	6500	120	65	323x36x216		1.14
LED Flood G1 TU S 20W 840 SY ST BDD **	93118605	20	2 000	4000	100	65	163x36x163		0.62
LED Flood G1 TU S 30W 840 SY ST BDD **	93118616	30	3 000	4000	100	65	203x36x202		0.97
LED Flood G1 TU S 50W 840 SY ST BDD **	93118617	50	6 000	4000	120	65	223x36x216		1.14
Floodlight Asymmetrical - Static driver									
LED Flood G1 TU S 115W 840 AS ST BN	93101682	115	14 375	4000	125	66	373x91x450	45x85 asym.	5.33
LED Flood G1 TU S 150W 840 AS ST BN	93101684	150	18 000	4000	120	66	373x91x450		5.33

Accessories

IP68 connector for Floodlight/DL01-3A 93118306

* With Motion Sensor

** Dusk till Dawn Floodlight



Details Floodlights G3

Driver feature

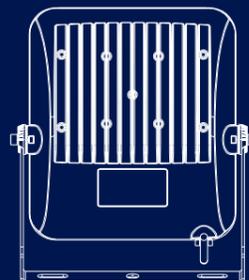
- Power: from 10W to 200W
- Luminous flux: up to 24.000 lm
- Efficiency: Up to 130lm/w
- CCT: 3000K, 4000K, 6500K
- Lifetime: 50.000 hours @ L80/B10
- 5 - Year Warranty
- IP65
- IK08 for 50W, 70W, 100W, 150W, 200W and IK07 for 10W, 20W and 30W impact protection class
- Motion sensor combined with daylight sensor option and daylight sensor only options
- Multivoltage driver for all non-sensor version and 220V-240V driver for the sensor versions
- High quality Samsung chips
- Aluminium diecast housing with strengthened glass

Benefits

- High impact and ingress protection level
- High efficiency up to 130lm/W
- Robust, reliable design
- Multivoltage driver for all products without sensor.
- CCT: 3000K, 4000K and 6500K options
- Long life: 50 000h @ L80B20

Dimensions (mm)

150W



Product Description	Product Code	Wattage (W)	Lumen (lm)	System Efficiency (lm/W)	CCT (K)	IK	Beam angle (°)	Voltage (V)	Dimensions (mm)
Floodlight G3 Symmetrical									
LED Flood G3 TU S 10W 830 SY MV BN	93119420	10	1150	115	3000	IK07	110	110-240	143x117x33
LED Flood G3 TU S 10W 840 SY MV BN	93119421	10	1200	120	4000	IK07	110	110-240	143x117x33
LED Flood G3 TU S 10W 865 SY MV BN	93119422	10	1200	120	6500	IK07	110	110-240	143x117x33
LED Flood G3 TU S 20W 830 SY MV BN	93119423	20	2300	115	3000	IK07	110	110-240	134x158x34
LED Flood G3 TU S 20W 840 SY MV BN	93119424	20	2400	120	4000	IK07	110	110-240	134x158x34
LED Flood G3 TU S 20W 865 SY MV BN	93119425	20	2400	120	6500	IK07	110	110-240	134x158x34
LED Flood G3 TU S 30W 830 SY MV BN	93119426	30	3450	115	3000	IK07	110	110-240	174x199x44
LED Flood G3 TU S 30W 840 SY MV BN	93119427	30	3600	120	4000	IK07	110	110-240	174x199x44
LED Flood G3 TU S 30W 865 SY MV BN	93119428	30	3600	120	6500	IK07	110	110-240	174x199x44
LED Flood G3 TU S 50W 830 SY MV BN	93119429	50	6250	125	3000	IK08	110	110-240	229x261x48
LED Flood G3 TU S 50W 840 SY MV BN	93119430	50	6500	130	4000	IK08	110	110-240	229x261x48
LED Flood G3 TU S 50W 865 SY MV BN	93119431	50	6500	130	6500	IK08	110	110-240	229x261x48
LED Flood G3 TU S 70W 830 SY MV BN	93119432	70	8750	125	3000	IK08	110	110-240	272x315x60
LED Flood G3 TU S 70W 840 SY MV BN	93119433	70	9100	130	4000	IK08	110	110-240	272x315x60
LED Flood G3 TU S 70W 865 SY MV BN	93119434	70	9100	130	6500	IK08	110	110-240	272x315x60
LED Flood G3 TU S 100W 830 SY MV BN	93119435	100	12500	125	3000	IK08	110	110-240	272x315x60
LED Flood G3 TU S 100W 840 SY MV BN	93119436	100	13000	130	4000	IK08	110	110-240	272x315x60
LED Flood G3 TU S 100W 865 SY MV BN	93119437	100	13000	130	6500	IK08	110	110-240	272x315x60
LED Flood G3 TU S 150W 830 SY MV BN	93119438	150	18750	125	3000	IK08	110	110-240	297x351x60
LED Flood G3 TU S 150W 840 SY MV BN	93119439	150	19500	130	4000	IK08	110	110-240	297x351x60
LED Flood G3 TU S 150W 865 SY MV BN	93119440	150	19500	130	6500	IK08	110	110-240	297x351x60
LED Flood G3 TU S 200W 830 SY MV BN	93119441	200	23000	115	3000	IK08	110	110-240	347x408x60
LED Flood G3 TU S 200W 840 SY MV BN	93119442	200	24000	120	4000	IK08	110	110-240	347x408x60
LED Flood G3 TU S 200W 865 SY MV BN	93119443	200	24000	120	6500	IK08	110	110-240	347x408x60
Floodlight G3 Asymmetrical									
LED Flood G3 TU S 100W 830 AS MV BN	93119454	100	11000	110	3000	IK08	40x80	110-240	272x315x60
LED Flood G3 TU S 100W 840 AS MV BN	93119456	100	11500	115	4000	IK08	40x80	110-240	272x315x60
LED Flood G3 TU S 150W 830 AS MV BN	93119455	150	16500	110	3000	IK08	40x80	110-240	297x351x60
LED Flood G3 TU S 150W 840 AS MV BN	93119457	150	17250	115	4000	IK08	40x80	110-240	297x351x60
Floodlight G3 Symmetric with Motion sensor									
LED Flood G3 TU S 10W 840 SY MV BM	93119444	10	1200	120	4000	IK07	110	220-240	-
LED Flood G3 TU S 20W 840 SY MV BM	93119445	20	2400	120	4000	IK07	110	220-240	-
LED Flood G3 TU S 20W 865 SY MV BM	93119446	20	2400	120	6500	IK07	110	220-240	-
LED Flood G3 TU S 30W 840 SY MV BM	93119447	30	3600	120	4000	IK07	110	220-240	-
LED Flood G3 TU S 30W 865 SY MV BM	93119448	30	3600	120	6500	IK07	110	220-240	-
LED Flood G3 TU S 50W 840 SY MV BM	93119449	50	6500	130	4000	IK08	110	220-240	-
LED Flood G3 TU S 50W 865 SY MV BM	93119450	50	6500	130	6500	IK08	110	220-240	-
Floodlight G3 Symmetric with Dusk till Dawn sensor									
LED Flood G3 TU S 20W 840 SY MV BDD	93119451	20	2400	120	4000	IK07	110	220-240	-
LED Flood G3 TU S 30W 840 SY MV BDD	93119452	30	3600	120	4000	IK07	110	220-240	-
LED Flood G3 TU S 50W 840 SY MV BDD	93119453	50	6500	130	4000	IK07	110	220-240	-

Details

Floodlight Symmetrical Value



Driver feature

- Ultra slim
- Light-weight, up to 2.23kg (100W)
- Operating temperature -20°C to +40°C
- UV-free & IR-free
- Rated lumen up to 9000 lm
- L70B50 25.000 hours lifetime at 25°C
- Nominal voltage: 220-240V
- Fixed mounting, 1 meter pre-cable connected to the fixture
- Built-in static driver
- Operating frequency: 50/60Hz
- Colour temperatures: 3000, 4000 and 5000K
- Colour rendering index: CRI 80+
- Beam angle 115°

Structures and materials

- housing made of die-cast aluminium with tempered glass
- housing colour: grey

Benefits

- Replace halogen lamps with floodlight luminaires (up to 750W)
- Energy savings up to 80% (compared to luminaires that use halogen)
- Homogenous light
- High resistance against ambient air with humidity and high particle loads (IP65)

Product Description	Product Code	Wattage (W)	Lumen (lm)	CCT (K)	System Efficiency (lm/W)	Dimensions (mm)	Weight (kg)
Floodlight Symmetrical Value - Static driver							
LED Flood G2 TU S 10W 830 SY ST GN	93115851	10	800	3000	80	103x97x23.5	0.28
LED Flood G2 TU S 10W 840 SY ST GN	93115847	10	850	4000	85	103x97x23.5	0.28
LED Flood G2 TU S 30W 830 SY ST GN	93115852	30	2 550	3000	85	242x190x41	1.09
LED Flood G2 TU S 30W 840 SY ST GN	93115848	30	2 700	4000	90	242x190x41	1.09
LED Flood G2 TU S 50W 830 SY ST GN	93115853	50	4 250	3000	85	285x225x48	1.53
LED Flood G2 TU S 50W 840 SY ST GN	93115849	50	4 500	4000	90	285x225x48	1.53
LED Flood G2 TU S 100W 830 SY ST GN	93115854	100	8 500	3000	85	340x262x48	2.22
LED Flood G2 TU S 100W 840 SY ST GN	93115850	100	9 000	4000	90	340x262x48	2.22



Tunnel lighting



Tunnel lighting TLBt & TMBt

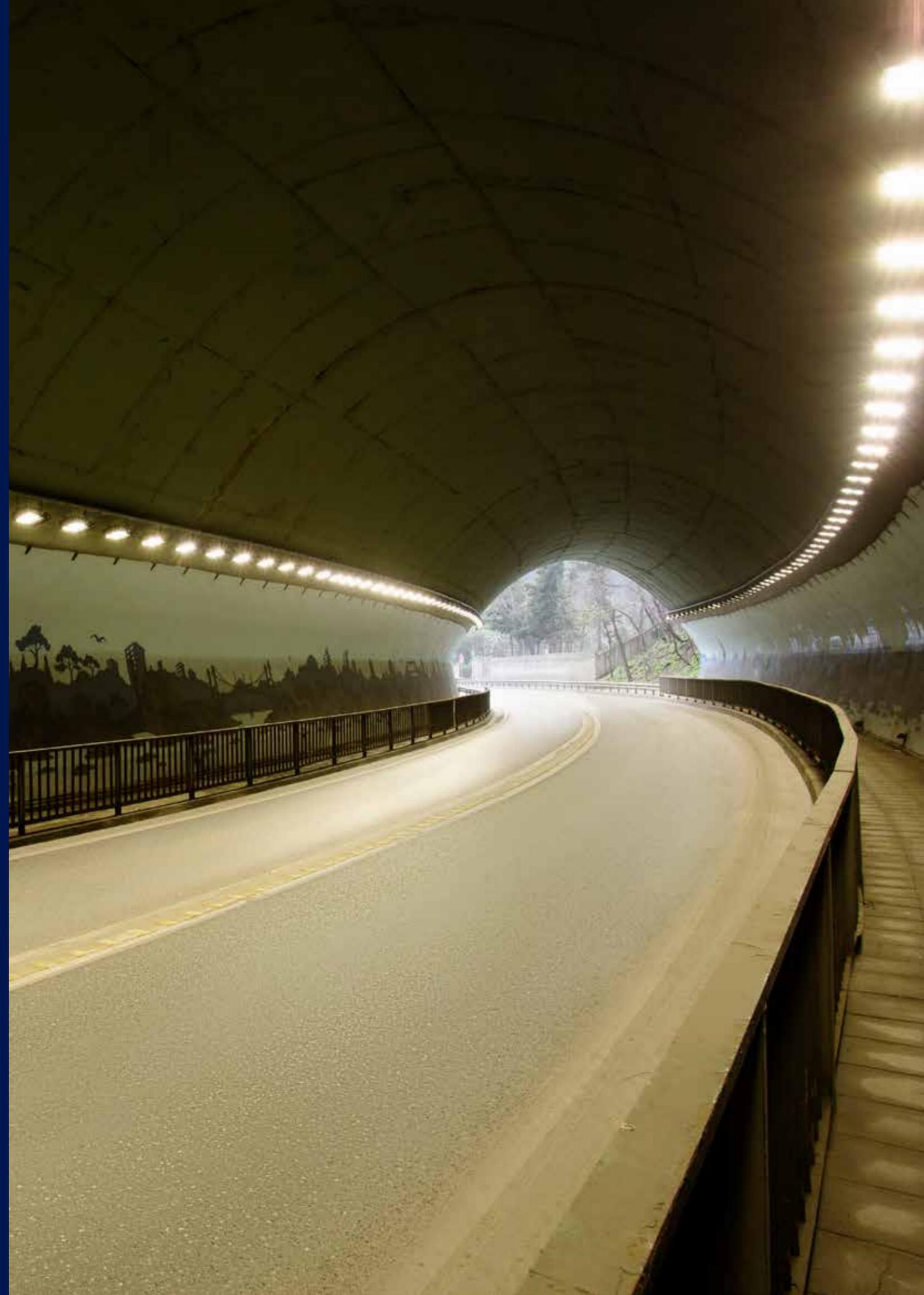


Product information

Bring great light from Tungsram into your tunnels with the TLBt and TMBt, Tungsram's new single and double module tunnel lighting fixtures. The TLBt & TMBt are available in a range of optical combinations for flexibility across a wide range of applications such as low and high speed tunnels, underpasses and industrial areas. Maintenance in a tunnel environment can cause a headache not only for the operators but for the users as well. Tungsram' engineers therefore put major focus on developing a highly durable and reliable product with a long lifetime, providing an easy and rapid tool-less maintenance solution to speed up installation and reduce disruptive maintenance, as well as its costs. Safety is another important aspect regarding tunnels in which lighting has a key role. Our tunnel lighting solution can increase light quality and therefore safety through better visibility for drivers, who can react more rapidly to emergencies and other situations in tunnels, where every second matters.

Application areas

- Industrial
- Floodlight
- Underpasses



Details

TLBt & TMBt

Driver feature

- Drivers available from 75 up to 165 Watts with dynadim, AMPdim and DALI control
- Minimum dimming level: 15W for TLBt and 30W for TMBt

Structures and materials

- Housing material: die-cast aluminium
- Optical material: aluminised plastic or aluminium
- Optical cover: tempered glass
- Colour: RAL9005
- All materials used in this product are WEEE and ROHS compatible
- Impact strength: IK08
- Ingress protection: IP66

Performance

- Rated luminous flux: from 4 250 to 22 840 lm
- Rated luminaire efficacy: up to 143 lm/W
- Photometric code: 730/559, 740/559, 750/559
- Rated median useful life and the associated rated LM factor: L80B50 > 181.000 hours
- Rated useful life and the associated rated LM factor: L90B10 > 78.000 hours (TMBt)
L90B10 > 79.000 hours (TLBt)
- Rated abrupt failure value: value < 10% at 100.000 hours*
- Lumen maintenance code: 9
- Rated ambient temperature (tq) related to performance for a luminaire: 25°C

Installation and maintenance

Mounting options

- Two types of fixing bracket are available: short arm for ceiling mounting, and long arm for wall mounting. Additional mounting solutions are available on request.
- Weight: 9 Kg
- Recommended mounting height: 4-8 m
- The LED light engine and driver are replaceable without the need of tools, enabling a quick and easy maintenance solution
- Recommended maintenance factor for lighting design: 0.8
- Ambient temperature from -40°C to +50°C
- Storage temperature up to 85°C

Optics

Available photometric distributions:

- Extra narrow Asymmetric – medium (A)
- Narrow Asymmetric – medium (B, B5, AQ)
- Asymmetric – short (C)
- Asymmetric forward – very short (D)
- Asymmetric – medium (E, E5)
- Extra narrow Symmetric – medium (SA)
- Narrow Symmetric – medium (SB, SB5)
- Symmetric – short (SC)
- Symmetric forward – very short (SD)
- Symmetric – medium (SE, SE5, Y)

Rated colour rendering index:>70

Rated correlated colour temperatures*: 3000k, 4000K, 5000K

S/P rating for: 3000K - 1.22, 4000K - 1.5, 5000K - 1.71

ULOR: 0

Rated initial chromaticity co-ordinate values

- 3000K: CIE(x=0.4338, y=0.403) 5SDCM
- 4000K: CIE(x= 0.3818, y= 0.3797) 5SDCM
- 5000K: CIE(x= 0.34, y= 0.35) 5SDCM



Symmetric Medium

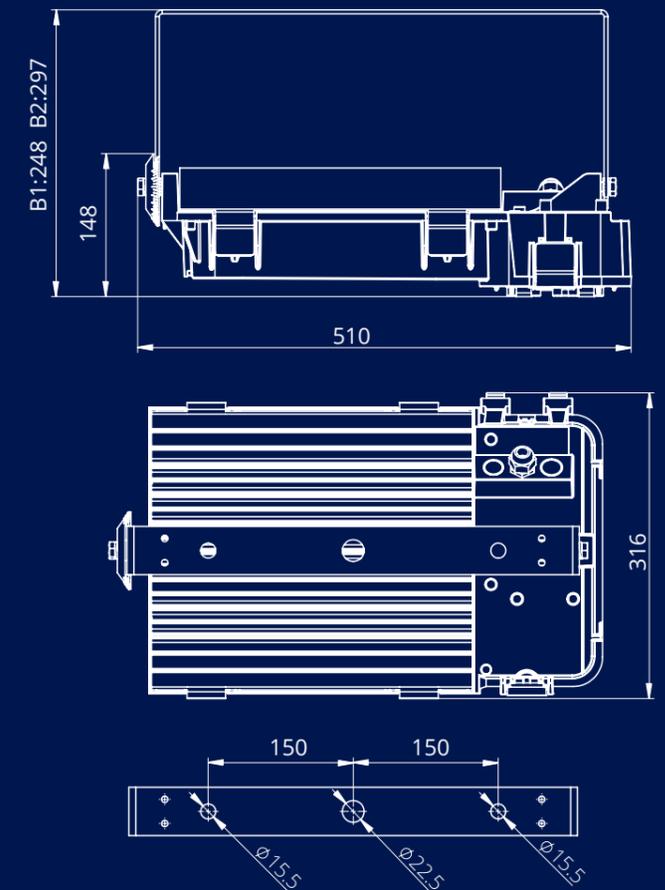
Electrical

Input voltage and frequency: 220-240V, 50-60Hz
Class I, Class II

Surge immunity: minimum 10kV in Class I, minimum 6kV in Class II

Rated input power: 33W to 176W

Dimensions (mm)



Tunnel lighting THBt



Product information

Tungrams' THBt with its high efficiency and lumen package provides the required solution for tunnel lighting. The High Wattage Tunnel LED is available in a range of optical combinations for flexibility across a wide range of applications such as low and high speed tunnels, underpasses and industrial areas. Maintenance in a tunnel environment can cause a headache not only for the operators but for the users as well. Tungram' engineers therefore put major focus on developing a highly durable and reliable product with a long lifetime, providing an easy and rapid tool-less maintenance solution to speed up installation and reduce disruptive maintenance, as well as its costs. Safety is another important aspect regarding tunnels in which lighting has a key role. Our tunnel lighting solution can increase light quality and therefore safety through better visibility for drivers, who can react more rapidly to emergencies and other situations in tunnels, where every second matters.



Application areas

- Underpasses
- Industrial
- Floodlight



Details THBt



Driver feature

- 330 Watt driver with dynadim, AMPdim and DALI control.
- Minimum dimming level: 35W

Structures and materials

- Housing material: die-cast aluminium
- Optical material: polycarbonate
- Optical cover: tempered glass
- Colour: RAL9005
- All materials used in this product are WEEE and ROHS compatible.
- Impact strength: IK09
- Ingress protection: IP66

Performance

- Rated luminous flux: from 27 000 to 50 000 lm
- Rated luminaire efficacy: up to 156 lm/W
- Photometric code: 730/559, 740/559, 750/559
- Rated median useful life and the associated rated LM factor: L80B50 > 181.000 hours
- Rated useful life and the associated rated LM factor: L90B10 > 78.000 hours
- Rated abrupt failure value: value < 10% at 100.000 hours*
- Lumen maintenance code: 9
- Rated ambient temperature (tq) related to performance for a luminaire: 25°C

Installation and maintenance

Mounting options

- Three types of fixing bracket are available: short arm for ceiling mounting, long arm for wall mounting and remote driver placement.
- Additional mounting solutions are available on request.
- Weight: 22 Kg
- Recommended mounting height: 4-8 m
- The driver is replaceable without the need of tools, enabling a quick and easy maintenance solution
- Recommended maintenance factor for lighting design: 0.8
- Ambient temperature from -40°C to +50°C (200W to 280W: Ta=50°C; 281W to 360W, Ta=35°C)
- Storage temperature up to 85°C

Optics

Available photometric distributions:

- Extra narrow Asymmetric – medium (AA)
- Narrow Asymmetric – medium (AB)
- Asymmetric – short (AC)
- Asymmetric – medium (AE)
- Narrow Symmetric – medium (SB)
- Symmetric – short (SC)
- Symmetric – medium (SE)

Rated colour rendering index:>70

Rated correlated colour temperatures*: 3000k, 4000K, 5000K

S/P rating for: 3000K - 1.22, 4000K - 1.5, 5000K - 1.71
ULOR: 0

Rated initial chromaticity co-ordinate values

- 3000K: CIE(x=0.4338, y=0.403) 5SDCM
- 4000K: CIE(x= 0.3818, y= 0.3797) 5SDCM
- 5000K: CIE(x= 0.34, y= 0.35) 5SDCM



Symmetric Medium

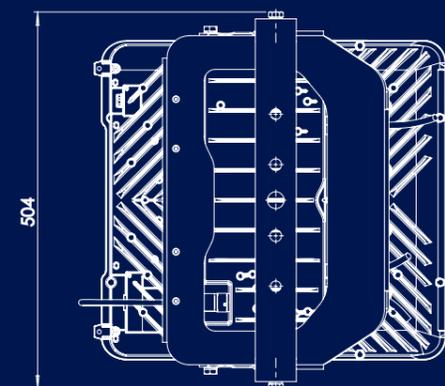
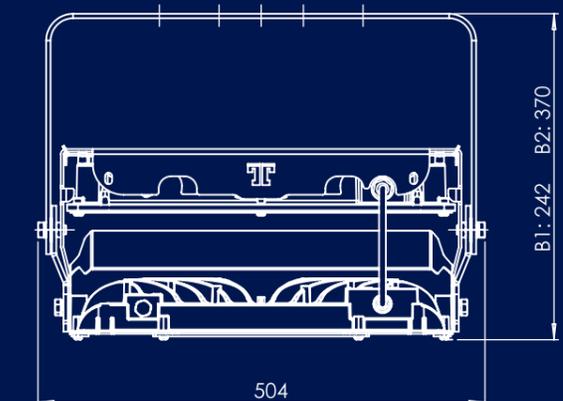
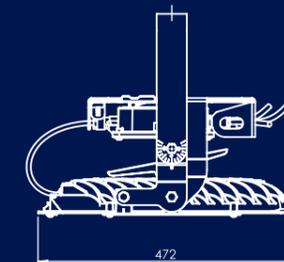
Electrical

Input voltage and frequency: 220-240V, 50-60Hz
Class I, Class II

Surge immunity: minimum 10kV

Rated input power: 200W to 360W

Dimensions (mm)



Tunnel lighting overview

What you need to know about tunnel lighting

Tunnel Lighting should provide the driver with the same safety and comfort as driving on an open road. There should be a smooth lighting transition from approaching, transiting and exiting the tunnel, to help the drivers see all obstacles in the environment and the behaviour of other road users.

Tunnel lighting

Good tunnel lighting takes care of good visibility conditions for the road users, this requires lighting levels that are matched with the adaptation level of the users' eyes. As this adaptation level gradually changes while travelling through the tunnel, for lighting purposes the tunnel can be divided lengthwise into five zones: the access, threshold, transition, interior and exit zone.

The decision whether a tunnel or underpass has to be lit during the day depends on

- the length of the tunnel
- the visibility of the exit
- the amount of natural light in the tunnel
- the traffic density.

The access zone

The access zone is not a part of the tunnel itself, but the approach road immediately before the tunnel entrance. The drivers' vision will have to adapt to the conditions in the tunnel. It is very important that the drivers should be able to see any obstacles or any kind of danger even from this access zone, so that they can react on time.

The threshold zone

The required luminance level in the first section of the threshold zone of the tunnel, which length is equal to the safe stopping distance, will proportionally reduce the amount of light and energy needed. In the second half of the threshold zone the luminance level is decreased rapidly to 40 % of the initial level.

Transition zone

In the transition zone the lighting level is gradually reduced further. The reduction speed is related to the adaptation speed of the eyes but the steps of the reduction should not exceed a ratio of 3:1.

Interior zone

In the interior zone the required lighting levels are related to the structure and size of the tunnel, the speed of the traffic and the traffic density.

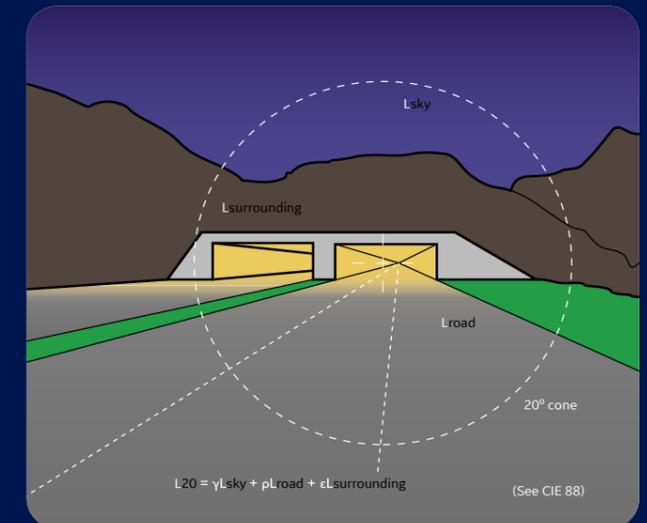
Exit zone

In the exit zone the tunnel lighting has to prepare the eye of the drivers for the outside conditions. Even though visual adaptation from low to high level takes place instantaneously, but there are other reasons for installing an increased lighting level in the exit zone:

- to make following cars more visible in the rear-view mirror of a car leaving the tunnel
- to prepare the driver in case of an emergency when exiting the tunnel.

Emergency lighting

Emergency lighting is usually part of the lighting system and guarantees minimal light when the power supply is interrupted.

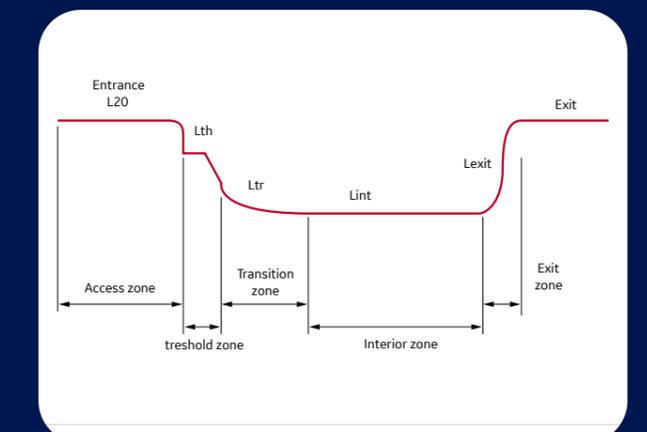
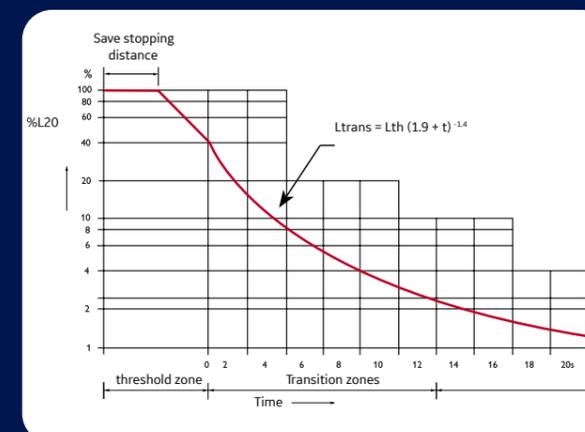


Recommended threshold/access zone luminance ratios

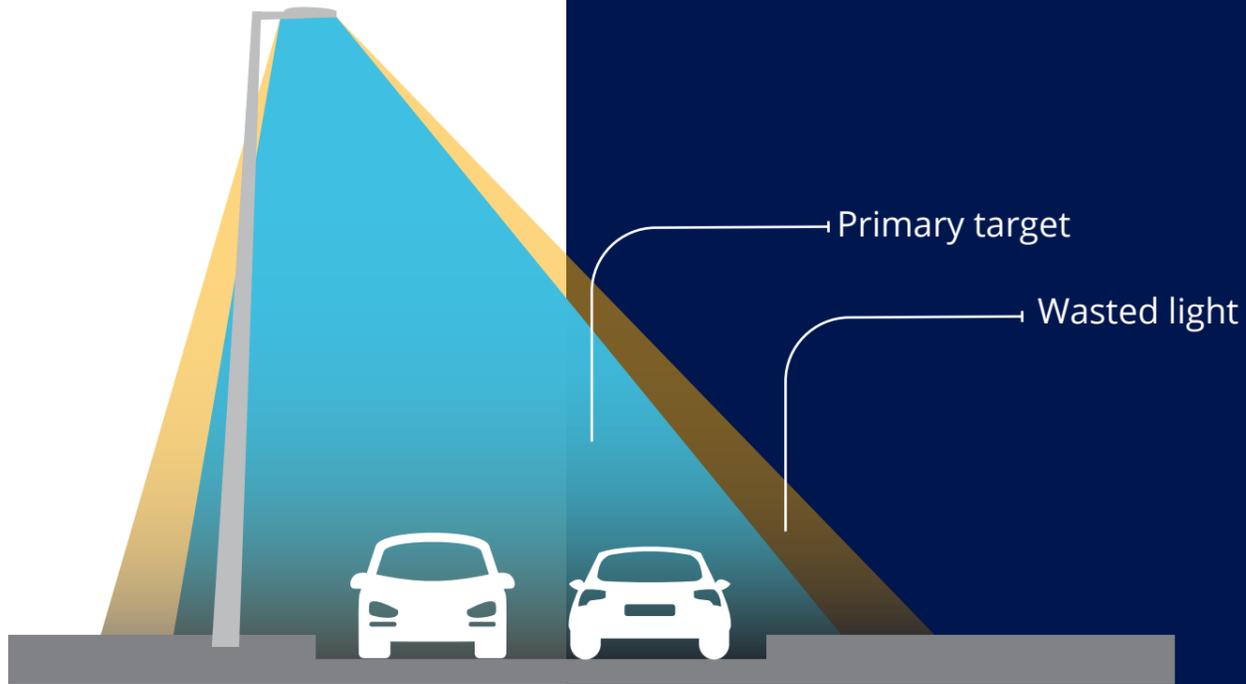
Stopping distance (m)	Symmetrical lighting system Lth/ L20	Counter-beam lighting system Lth/ L20
60	0.05	0.04
100	0.06	0.05
160	0.10	0.07

Recommended interior zone luminances (cd/m2)

Stopping distance (m)	Traffic density		
	<100 veh/h	100<veh/h<1000	>1000 veh/h
60	0.05		0.04
100	0.06		0.05
160	0.10		0.07



Reflective vs Refractive
Great utilisation factor



The perceived direct glare of refractive optics is greater than reflective optics.

Reflective Strengths

- Application efficiency
- Colour dispersion
- Longevity

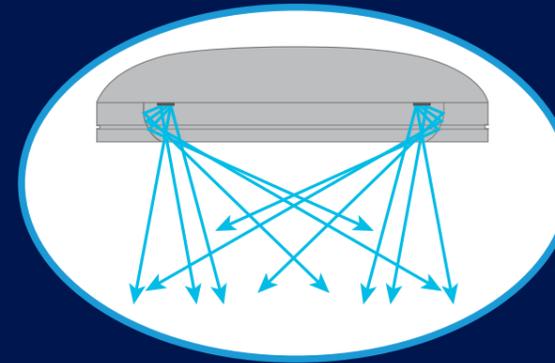
Refractive Strengths

- Thermal behavior
- Luminaire size

Like for like

- Uniformity
- Maintenance
- Manufacturing

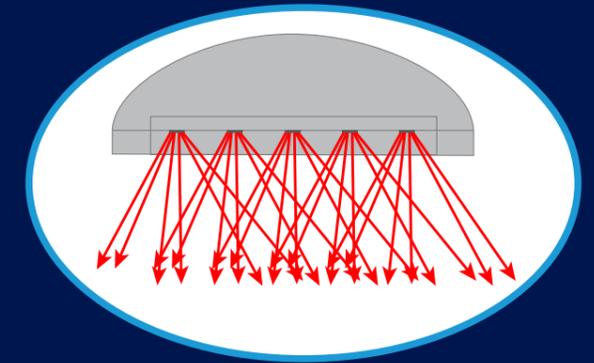
Reflective



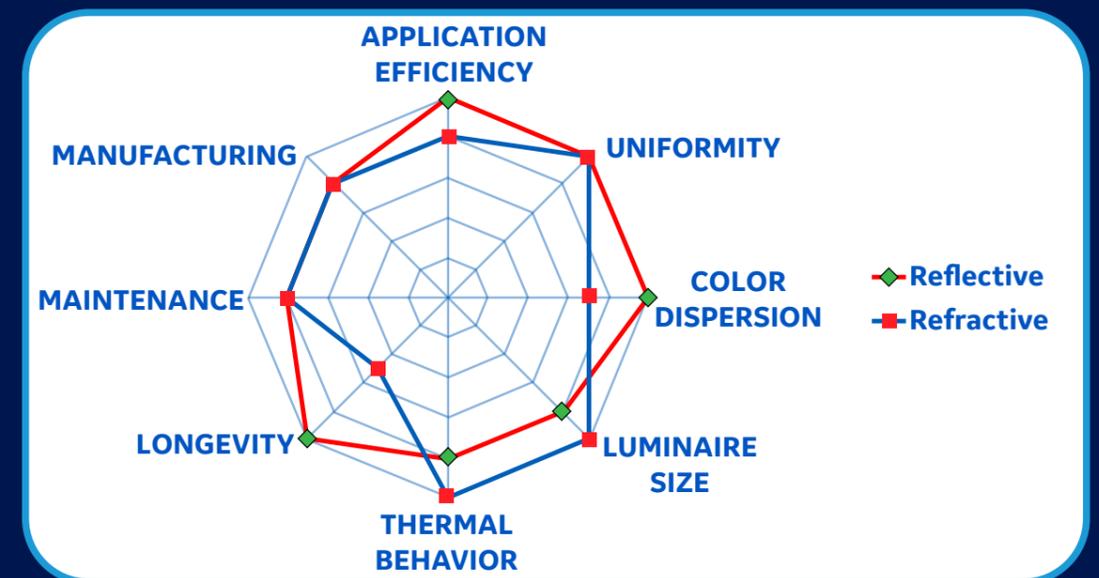
Minimized visibility to LED light source, creating non-pixelated appearance to driver's field of view



Refractive

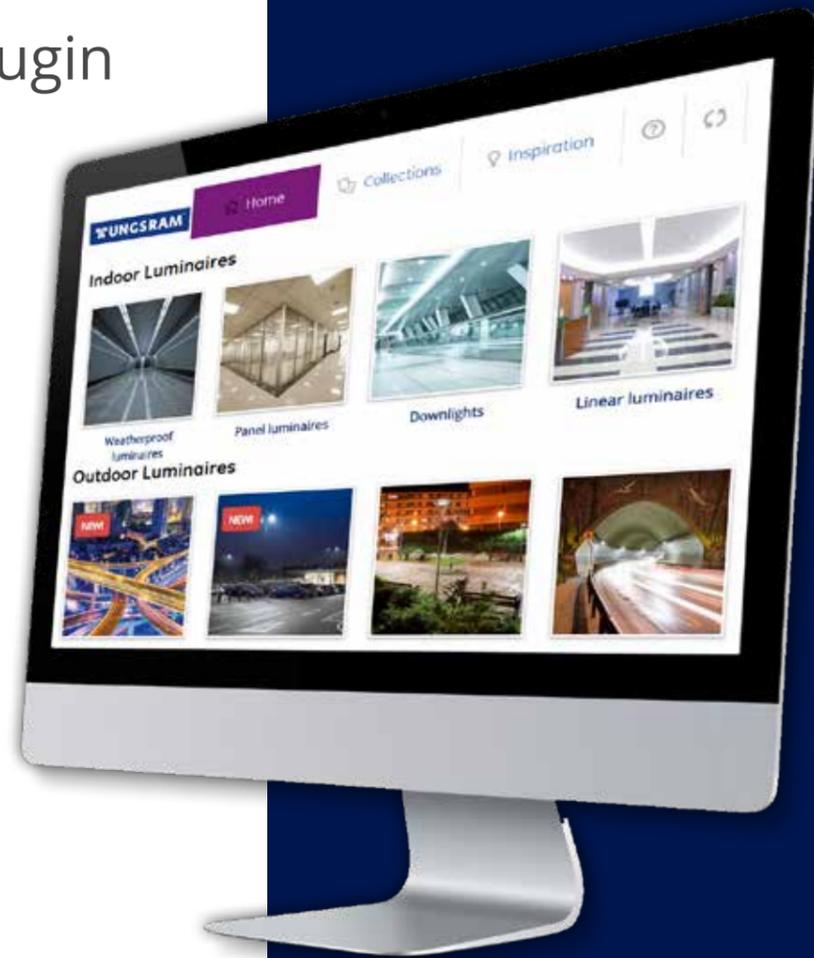


Visibility to every LED, creating a pixelated appearance and increased glare to driver's field of view



DIALux

Lighting Designer software
Dialux
Offline plugin



You can carry out simple and professional light planning by using the Dialux plug-in. Save time through a new user experience. The plugin is filled with plenty of additional solutions like customizable collections, inspirational materials and a completely up-to-date product catalogue.

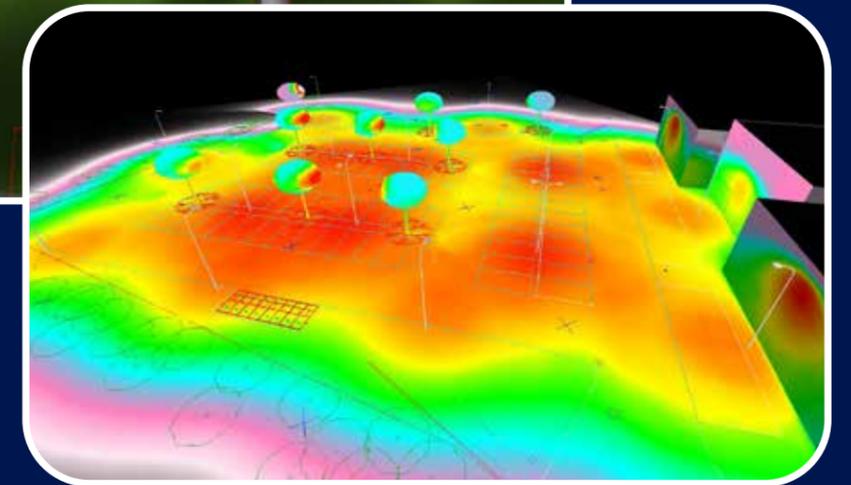
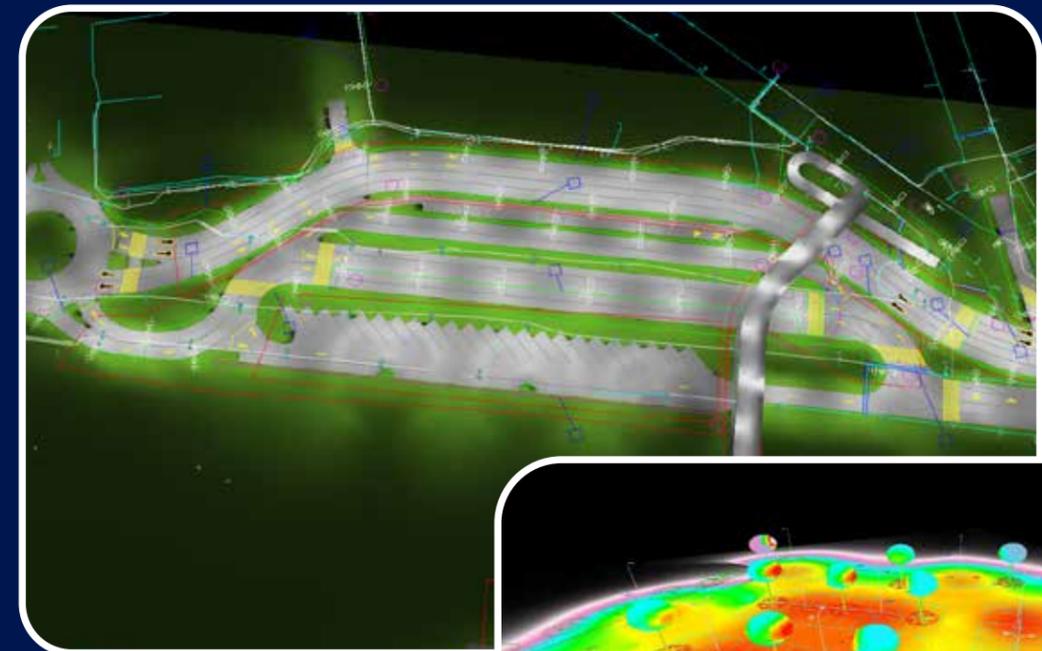
Key plug-in features

- Fast and efficient
- Up to date product info
- Custom collection
- Inspiration material
- New interface
- Industry relevant news

With the plugin you will have the chance to find the products you need quickly and create a digital design of your ideas with Dialux. It's simple and efficient – just like the professional lighting solutions.

What are the benefits of Dialux?

- Simple, effective and professional light planning
- Latest “state of the art” software, always available free of charge
- Fits perfectly into designers' existing workflow.
- Energy evaluation is simple and quick
- Colored light scenes with LED or other luminaires



You can find all our indoor and outdoor luminaires and the related technical files in our eCatalogue as part of our website – www.tungsr.com .

Order logics

Name	Gen.	Nominal Lumen (lm)	Optics	CCT (K)	Option list	Accessories	Control	IEC Protection Classes	Precabbling	Mounting	Color
INS	1	4000	AAA	730 -	S N E	NO - No Accessory FU - Fuse SP - Extra surge protection FS - Fuse + extra surge protection	N - No control D - DALI external	C1 - Class I C2 - Class II	NP - No precabbling PC - Precabbling with XX meters	48 - Universal 30-48mm 60 - Universal 42-60mm	R7021 Rxxxx
		6000	BBB	3000K 70 CRI			Yxx - Dynadim				
		8000	CCC	740 -			NL - No control+CLO				
		10000	DDD	4000K 70 CRI			DL - DALI+CLO				
		12000	EEE	750 -			YLxx - Dynadim+CLO				
		14000	FFF	5000K 70 CRI							
		16000	GGG								

Example: INS1-8000EEE750-NSPD-C1PC60

Name	Gen.	Nominal Lumen (lm)	Optics	CCT (K)	Option list	Accessories	Control	IEC Protection Classes	Precabbling	Mounting	Color
INM	1	14000	AAA	730 -	S N E	NO - No Accessory FU - Fuse SP - Extra surge protection FS - Fuse + extra surge protection	N - No control D - DALI external	C1 - Class I C2 - Class II	NP - No precabbling PC - Precabbling with XX meters	48 - Universal 30-48mm 60 - Universal 42-60mm	R7021 Rxxxx
		16000	BBB	3000K 70 CRI			Yxx - Dynadim				
		18000	CCC	740 -			NL - No control+CLO				
		20000	DDD	4000K 70 CRI			DL - DALI+CLO				
		22000	EEE	750 -			YLxx - Dynadim+CLO				
		24000	FFF	5000K 70 CRI							
		26000	GGG								

Example: INM1-22000CCC740-SSPD-C1PC60

Name	Gen.	Nominal Lumen (lm)	Optics	CCT (K)	Option list	Accessories	Control	IEC Protection Classes	Precabbling	Mounting	Color
INL	1	25000	AAA	730 -	S N E	NO - No Accessory FU - Fuse SP - Extra surge protection FS - Fuse + extra surge protection	N - No control D - DALI external	C1 - Class I C2 - Class II	NP - No precabbling Pxx - Precabbling with XX meters	48 - Universal 30-48mm 60 - Universal 42-60mm	R7021 Rxxxx
		27500	BBB	3000K 70 CRI			Yxx - Dynadim				
		30000	CCC	740 -			NL - No control+CLO				
		32500	DDD	4000K 70 CRI			DL - DALI+CLO				
		35000	EEE	750 -			YLxx - Dynadim+CLO				
		37500	FFF	5000K 70 CRI							
		40000	GGG								

Example: INL1-25000AAA740-SNOD-C1NP60

Name	Gen.	Nominal Lumen (lm)	Optics	CCT (K)	Option list	Accessories	Control	IEC Protection Classes	Precabbling	Mounting	Color	Customer
INL+	1			727 -	S - Standard N - NEMA	NO - No Accessory SP - Extra surge protection	N - No control A - Analog 1-10V Control D - DALI external	C1 - Class I	N - No precabbling Pxx - Precabbling with XX meters	U48 - Universal 30-48mm U60 - Universal 42-60mm U76 - Universal 60-76mm	R7021 Rxxxx	XX
		40000	AAA	3000K 70 CRI			Yxx - Autonomous dimming					
		42500	BBB	740 -			NL - No control + CLO					
		45000	CCC	4000K 70 CRI			ALxx - 1-10V + CLO					
		47500	DDD	750 -			DL - DALI+CLO					
		50000	EEE	5000K 70 CRI			YLxx - Autonomous dimming+ CLO					
			FFF									

Example: INL+1-40000AAA740-NSPD-C1NU60

Name	Gen.	Nominal Lumen (lm)	Optics	CCT (K)	Option list	Accessories	Control	IEC Protection Classes	Precabbling	Mounting	Color	Customer
INXL	1	50000	AAA	730 - 3000K 70 CRI	S - Standard	NO - No Accessory	N - No control	C1 - Class I	N - No precabbling	U48 - Universal 30-48mm	R7021 Rxxxx	XX
		55000	BBB				D - DALI external					
		60000	CCC	740 - 4000K 70 CRI	N - NEMA	SP - Extra surge protection	Yxx - Dynadim		Pxx - Precabbling with XX meters	U60 - Universal 42-60mm		
		65000	DDD				NL - No control+ CLO			U76 - Universal 60-76mm		
		70000	EEE	750 - 5000K 70 CRI	E - ECO	DL - DALI+CLO						
		75000	GGG			YLxx - Dynadim+ CLO						
			JJJ									

Example: INXL1-75000AAA740-NSPD-C1NU60

Name	Gen.	Optics	Power (W)	CCT (K)	Control	Accessories	IEC protection classes	Precabbling	Mounting	Color	Customer			
SMix	2S	CCC	20 - 100	30 - 3000	Nx - No control	ST - Standard, 10kV Surge immunity (built-in the driver, EN 61547)	C1 - Class I	PX- Pre cabling with X meters	U48 - Universal coupler 30-48 mm	R7035 Rxxxx	XXX			
		CEC			D - DALI									
		CFC			A - 1-10 V									
		CQC			Yx - DynaDIM									
		ECE			Yix - Autonomous Dimming									
		EEE			NL - No control + CLO							SP - Enhanced Surge Voltage Protection	PCX- Pre cabling with X meters and connector	U60 - Universal coupler 42-60 mm
		EFE			NILx - No control + CLO, non NFC driver									
		EQE			LS - NEMA socket with Shorting Cap									
		FCF			LSP - NEMA socket with Shorting Cap + Enhanced Surge Voltage Protection									
		FEF			DL - DALI + CLO									
		FFF			AL - 1-10 V + CLO									
		FQF			YLx - DynaDIM + CLO									
		QCQ			YILx - Autonomous Dimming + CLO									
		QEQ												
QFQ														
QQQ														

Example: SMix/2S/CFC/65/40/D/ST/C1/P1/U60



Name	Gen.	Optics	Power (W)	CCT (K)	Control	Accessories	IEC protection classes	Precabbling	Mounting
SMix	2	CFC	35	30 - 3000K 40 - 4000K 50 - 5000K	N - No control	ST - 6kV Surge immunity (built-in the driver) SP - Enhanced surge voltage protection 10kV/5kA LSP - NEMA socket with Shorting Cap + Enhanced Surge Voltage Protection 10kV/5kA	C1 - Class I C2 - Class II	PX- Pre cabling with X meters PCX- Pre cabling with X meters and connector	U48 - Universal coupler 30-48 mm U60 - Universal coupler 50-60 mm
		CEC	50		D - DALI				
		CCC	65		Yxx - DynaDIM				
		FCF	80		NL - No control + CLO				
		FEF	100		DL - DALI + CLO				
		EEE	120		YLxx - DynaDIM + CLO				
		ECE	140						
		EFE	160						
		FFF							

Example: SMix/2/FFF/140/40/D/ST/C1/PC3/U60/R7035

Name	Gen.	Optics	Power (W)	CCT (K)	Control	Accessories	IEC Protection Classes	Precabbling	Mounting
PIKO	1	C E F	12	3 - 3000K	N - No control	ST - Standard F - Fuse	C1 - Class I C2 - Class II	Px - Precabbed with x meters PCx - Precabbed with connector with x meters	S35 - Coupler 35-40mm S60 - Coupler 40-60mm
			18	4 - 4000K					
			21	5 - 5000K					
			28						

Example: PIKO/1/C/21/4/N/ST/C1/P1/S60

Name	Gen.	Front Glass	Optics	Power (W)	CCT (K)	Control	Accessories	IEC Protection Classes	Precabbling	Mounting
SLBt	3	F-Flat Glass	B	15 20 30 35 40 50 55 70	27-2700 30-3000 40-4000	N - No control D - DALI Yxx - DynaDim NL - No control with CLO DL - Dali with CLO YLxx - DynaDim with CLO	ST - Standard type M3 - Minicell 35lux SP - Extra Surge protection F - Fuse LS - 7 pin NEMA socket LSP - 7 pin NEMA socket + Surge protection SR - Smart ready connector	C1 - Class I C2 - Class II	N - No precabbling PXX - Precabbling with XX meters	S60 - Side mount bracket 42-60mm P76 - Post top bracket 48-76mm U35 - Universal coupler 35-42 mm U50 - Universal coupler 42-55 mm U60 - Universal coupler 50-60 mm U76 - Universal coupler 55-76 mm
			C							
			D							
			E							
			F							
			N							
			P							
			R							
			S							
			T							
			U							
			B2							
			B5							
			C5							
			E2							
			E5							
			F5							
G2										
P5										
X5										
Y5										
Z5										

Example: SLBT/3/F/B/20/40/N/ST/C1/N/S60

Name	Gen.	Front Glass	Optics	Power (W)	CCT (K)	Control	Accessories	IEC Protection Classes	Precabbling	Mounting
SMBt	3	F-Flat Glass	B	50 65 80 95 105 120 140 160	30-3000 40-4000	N - No control D - Dali Yxx - Dynadim NL - No control with CLO DL - Dali with CLO YLxx - DynaDim with CLO	ST - Standard type M3 - Minicell 35lux SP - Extra surge protection F - Fuse LS - 7 pin NEMA socket SR - Smart ready connector	C1 - Class I C2 - Class II	N - No precabbling PXX - Precabbling with XX meters	S60 - Side mount bracket 42-60mm P76 - Post top bracket 48-76mm U35 - Universal coupler with insert 35-42 mm U50 - Universal coupler with insert 42-55 mm U60 - Universal coupler with insert 50-60 mm U76 - Universal coupler 55-76 mm
			C							
			D							
			E							
			F							
			P							
			R							
			S							
			T							
			N							
			U							
			B2							
			E2							
			B5							
			C5							
			E5							
			F5							
P5										
Y5										

Example: SMBT/3/F/B/75/40/N/ST/C1/N/S60

Name	Gen.	Optics	Power (W)	CCT (K)	Control	Accessories	IEC Protection Classes	Precabbling	Arm Type	Coupler
NAVONA	3	AFC AWC ANC AWD SWC SWD SFC	20	27-2700 30-3000 40-4000	N - No control D - Dali Yxx - Dynadim NL - No control + CLO DL - Dali + CLO YLxx - Dynadim + CLO	ST - Standard type 10kv Surge immunity (built in driver) LS - 7 pin NEMA Socket	C1 - Class I C2 - Class II	N - No precabbling PXX - Precabbling with XX meters	1 - 1 arm 2 - 2 arms 5 - side	48 - 42-48 mm 60 - 54-60mm 70 - 70-76mm
			29							
			30							
			40							
			50							
			60							
			70							

Example: NA/3/AFC/20/30/D/ST/C1/N/1/60

Name	Gen.	Optics	Power (W)	CCT (K)	Control	Accessories	IEC Protection Classes	Precabbling	Mounting
NBL	1	CC CE CF AC AE AF SC SE SF	20	3 - 3000 4 - 4000	N - No control D - DALI Yxx - DynaDIM NL - No control + CLO DL - DALI + CLO YLxx - DynaDIM + CLO	ST - Standard version LS - 7-pin NEMA socket	1 - Class I 2 - Class II	Px - Precabbed with x meters	P60 - Ø48-60mm P76 - Ø60-76mm
			30						
			40						
			50						
			60						
			70						
			80						
			90						

Example: NOBILA/1/CC/40/3/N/ST/1/P1/P60

Brand	Family	Generations	Optic	Power	CRI + CCT	Control	Accessories	Mounting Options	Color	Shipment
TU	Camila	G1 - Generation 1	A - Asymmetric	25W	827 - 80 CRI + 2700K	D - Dali S - Static	ST - Standard Type	SE - Side Entry 40-64mm	R9006 Rxxxx	DS - Direct Shipment
			S - Symmetric	50W	830 - 80 CRI + 3000K			P1 - Post Top 1 50-64mm		
				75W	840 - 80 CRI + 4000K			P2 - Post Top 2 60-75mm		

Example: TU Camila G1 A 50W 830 D ST P1 R9006

Name	Gen.	Front Glass	Optics	Power (W)	CCT (K)	Control	Accessories	IEC Protection Classes	Precabbling	Mounting	Special Options
ALIX	3	F-Flat Glass	AF - Asymmetric Forward	32 50 70 100 140	3-3000 4-4000 5-5000	N - No control	ST - 6kV surge protection Sp - Enhanced surge protection LS - 7 pin NEMA socket with SP	1 - Class I 2 - Class II	N - No precabbling PXX - Precabbling with XX meters	C - 60mm Coupler B - Bracket	ST - Standard version A - 2 cable gland cable entries
			AW - Asymmetric Wide			D - DALI external					
			AN - Asymmetric Narrow			Yxx - Dynadim					
			AEF - Asymmetric Extra Wide Flood			NL - Constant Light					
			AFN - Asymmetric Forward Throw Narrow			DL - DALI +CLO					
			SWF - Symmetrical Wide Flood			YLxx - Dynadim +CLO					
			SNS - Symmetrical Narrow Spot								

Example: ALIX/3/F/AEF/140/4/D/ST/1/P10/C/R9005/A

Name	Gen.	Front Glass	Optics	Power (W)	CCT (K)	Control	IEC Protection Classes	Precabbling	Mounting	Color
AMix	3	F-Flat Glass	AC - asymmetric C	55 65 80 100 120 150	730-3000 740-4000	N - No control D - DALI	C1 - Class I	N - No precabbling P - Precabbling PC - Precabbling with quick connector	B - Bezel SM - Surface Mount FL - Flood-light N - no mounting kit	R9003
			AE - asymmetric E							
			AF - asymmetric F							
			SC - symmetric C							
			SE - symmetric E							
			SF - symmetric F							
			CC - circular C							
			CE - circular E							
			CF - circular F							

Example: AMix/3/F/S25/100/740/D/C1/N/B

Name	Gen.	Front Glass	Optics	Power (W)	CCT (K)	Control	Accessories	IEC Protection Classes	Precabbling	Mounting
AHix	2	F-Flat Glass	AF - Asymmetric Forward	200 250 285 300	4-4000 5-5000	N - No control	ST - Standard Luminaire, Driverbox mounted on luminaire RST - Remote Driver Luminaire, Driverbox separated from luminaire	C1 - Class I C2 - Class II	N - No precabbling PX - Precabbling with XX meters	B1 - Bracket (Long) B2 - Bracket (Short) B3 - Bracket (Coupler Ø60mm)
			AN - Asymmetric Narrow			D - DALI				
			AW - Asymmetric Wide			Yxx - Dynadim				
			AEF - Asymmetric Extra Wide Flood			NL - No control + CLO				
			AFN - Asymmetric Forward Throw Narrow			DL - DALI + CLO				
			SWF - Symmetrical Wide Flood			YLxx - Dynadim + CLO				
			SNS - Symmetrical Narrow Spot							
			SW - Symmetrical Wide							
			SF - Symmetrical Forward							

Example: AHix/2/F/AF/200/4/D/ST/C1/N/B1

Internal Code	Gen.	Brand	Control	System	CRI	CCT	Reflector	Voltage	Housing color	Special	Shipment
LED Flood	G1 - Generation 1	TU - Tungsram	S - Static	20W	8 - 80	30 - 3000K	SY - Symmetrical AS - Assymetrical	SA - 100-277V ST - 220-240V	B - Black	N - Standard version M - Sensor version	DS - Direct shipment
				30W		40 - 4000K					
				50W		65 - 6500K					
				75W							
				115W							
				150W							

Example: LED Flood G1 TU S 50W 840 SY ST BN

Gen1 50W 4000K Floodlight, Static, 220-240V built-in driver, standard version with black housing and symmetrical optic

Internal Code	Gen.	Brand	Control	System	CRI	CCT	Reflector	Voltage	Housing color	Special	Shipment
LED Flood	G2 - Generation 2	TU - Tungsram	S - Static	10W	8 - 80	30 - 3000K	SY - Symmetrical	ST - 220-240V	G - Grey	N - Standard version	DS - Direct shipment
				30W		40 - 4000K					
				50W		50 - 5000K					
				100W							

Example: LED Flood G2 TU S 30W 840 SY ST GN

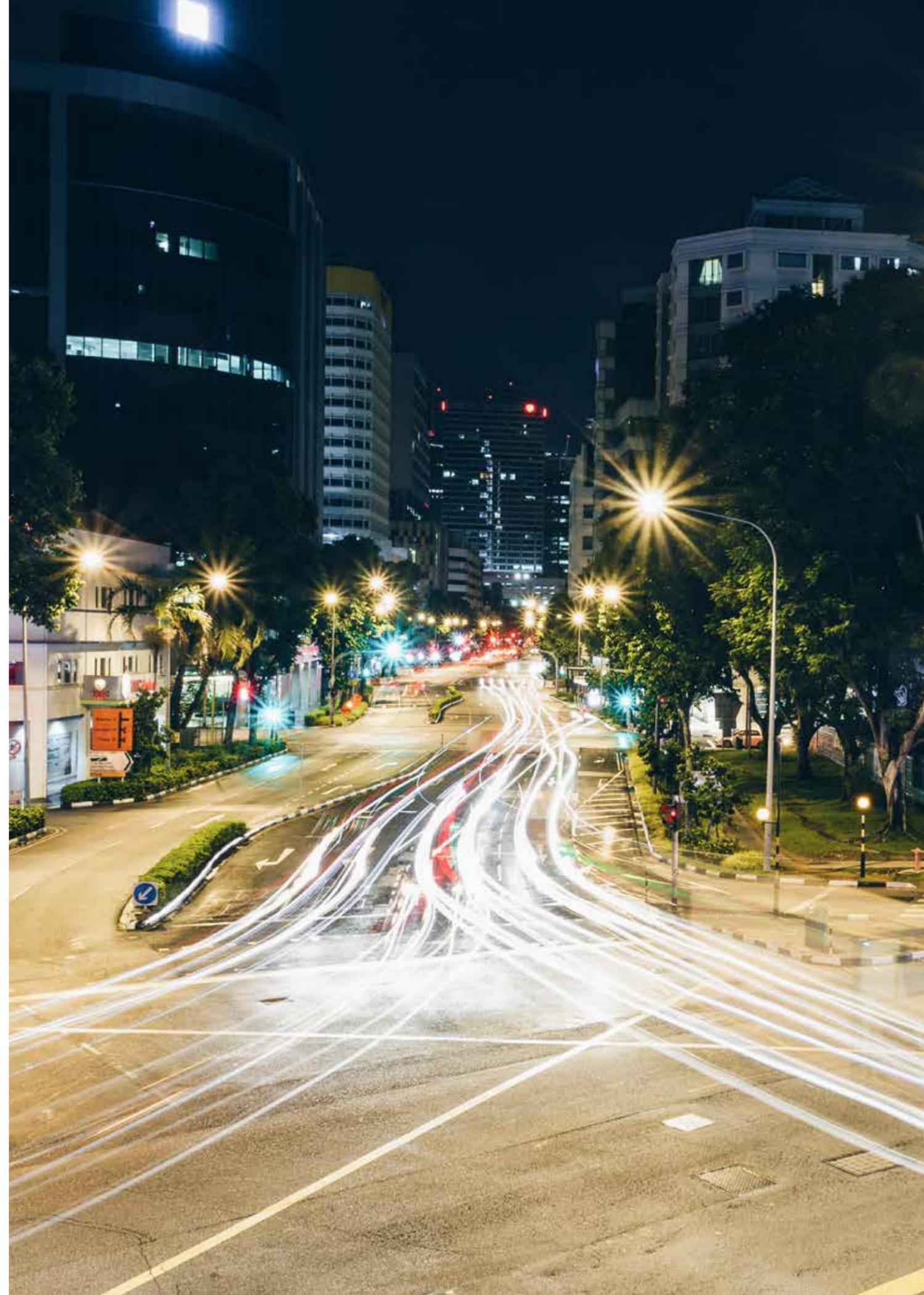
30W 80 CRI 4000K Floodlight with static driver and symmetrical optic in grey housing

Name	Gen.	Front glass	Optics	Power (W)	CCT [K]	Control	Accessories	IEC protection class	Precabbling	Mounting	Customer
TLBt	4	F	A B C D E Y B5 E5	32-90 - 35W-90W	30 - 3000	N - No control	ST- 10kV Surge immunity (built-in the driver)	C1 - Class 1	N - without precabbling	B1- Short bracket for ceiling mounting	XXX
					40 - 4000	D - DALI					
					50 - 5000	AMPxxx - Output current amplitude dimming Wxxx - LineSwitch Yxxx - DynaDIM NL - No control + CLO DL - DALI + CLO WLxxx - LineSwitch + CLO YLxxx - DynaDIM + CLO					
TMBt	4	F	AA - (Asym) AB - (Asym) AC - (Asym) AD - (Asym) AE - (Asym) AQ - (Asym) AB5 - (Asym) AE5 - (Asym) SA - (Sym) SB - (Sym) SC - (Sym) SD - (Sym) SE - (Sym) SB5 - (Sym) SE5 - (Sym)	130 - 175 130W-175W	30 - 3000	N - No control	ST- 10kV Surge immunity (built-in the driver)	C1 - Class 1	N - without precabbling	B1- Short bracket for ceiling mounting	XXX
					40 - 4000	D - DALI					
					50 - 5000	AMPxxx - Output current amplitude dimming Wxxx - LineSwitch Yxxx - DynaDIM NL - No control + CLO DL - DALI + CLO WLxxx - LineS witch + CLO YLxxx - DynaDIM + CLO					

Example: TLBt/4/F/Y/90/40/D/ST/C1/N/B1, TMBt/4/F/AA/130/40/D/ST/C1/N/B1

Name	Gen.	Front glass	Optics	Nominal Power (W)	CCT [K]	Control	Accessories	IEC protection class	Precabbling	Mounting	Customer
THBt	1	F - Flat Glass	AA - (Asym) AB - (Asym) AC - (Asym) AE - (Asym) SB - (Sym) SC - (Sym) SE - (Sym)	200	3 - 3000	N - No control	ST- Driver box mounted on luminaire RST - Remote driver box with 2 m connection cable	C1 - Class I	PX - Precabbling with X meters	B1 - Ceiling mounting	XXX
				240	4 - 4000	D - DALI					
				280 320 360	5 - 5000	Yxx - DynaDIM NL - No control + CLO DL - DALI + CLO YLxx - DynaDIM + CLO					

Example: THBt/1/F/AC/360/4/D/ST/1/MC2/B2



ABOUT TUNGSRAM

Tungsrám, an iconic name, returned to the global market in 2018 as a premium innovative European technology brand following the acquisition of GE Lighting's general lighting business in Europe, the Middle East, Africa and Turkey as well as GE's global automotive operation.

www.tungsrám.com



Bright Smart Future

Our vision for a brighter tomorrow

Tungsrám is shaping the future of urban living providing technology-driven, smart, sustainable solutions for large metropolitan areas using lighting as a platform. From traditional technologies to state-of-the-art LED products, we incorporate energy optimization and system intelligence into our portfolio.

TUNGSRAM™

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