PHILIPS

Outdoor lighting

FlowStar

Product guide

True LED tunnel entrance and point-source interior lighting

Contents

The FlowStar family **3**

LED tunnel-entrance and point-source interior lighting 3

Design concept 4

Family range **5**

Lighting performance **6**

Light distribution 6

Applications **7**

Entrance and interior versions 8

Optimized for longevity **9**

Components **10**

Luminaire features **11**

LED design for high lumen packages 11

Configurations 11

Compact, sealed modular build 12

High-flux cooling concept 13

Lens optic technology 14

Material follows function 14

Local or remote driver layout 14

Lifetime maintenance service concept 15

Serviceability **16**

Accessory overview **17**

FlowStar in control **18**

TunneLogic 18

TotalTunnel approach **19**

Building blocks for success 19

Main specifications **20**

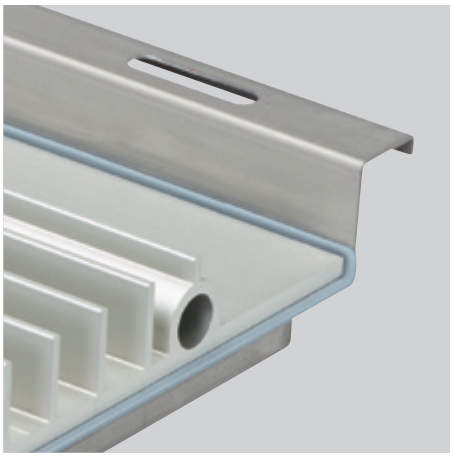
Specification table **21**

The FlowStar family

LED tunnel-entrance and point-source interior lighting

Customers are looking for a tunnel LED solution for both interior and entrance lighting that delivers benefits, throughout the entire life cycle, in terms of cost, safety and availability. The stainless-steel modular build and dedicated LED design provide a long-lasting and efficient LED alternative to conventional HPS lighting. When used in combination with our controls and services, the best possible performance can be achieved.

LED lighting has now matured to the point that it can be used with confidence for high-quality lighting projects in all applications. There has never been a better time to make the switch to LED! Public authorities are under increasing pressure to meet environmental targets by reducing their energy consumption whilst at the same time complying with lighting norms and standards in tunnels. LED lighting will not only help you to achieve your energy saving targets, it will also ensure you comply with environmental regulations such as the Energy-Using Products (EUP) Directive.



The Flowstar family

Design concept

FlowStar is designed around the needs of the customer. The requirements of tunnel owners and operators are different from those of end-users and installation and maintenance companies. The luminaire design is such that it optimally fulfills the demands of different customers, with a focus on providing a lifetime solution.

FlowStar has a modular, sealed plug-and-play design. The optimized thermal design allows you to get the best possible performance out of the LED technology. Highly reliable plug-and-play connectivity facilitates rapid installation. It also makes it very easy to replace units and reduces the amount of time that has to be spent in the tunnel driving envelope. In view of the fact that our luminaires contain an increasing amount of electronics and taking into account the harsh tunnel environment, the units are sealed to provide the best possible IP rating.

Benefits

FlowStar is designed specifically for tunnel applications, which are highly demanding in terms of performance and availability. Because of the design concept chosen, the luminaire offers several benefits.

- True LED alternative to 400 W HPS for point-source interior and entrance lighting
- Design compliant with construction and lighting technology requirements
- Highest rating for performance and longevity
- Lifetime maintenance service concepts ensure reliable and safe tunnel lighting throughout the entire life of the system
- System approach allows seamless integration into our TotalTunnel program and enables best possible performance at system level

These benefits enable owners/operators and installers/maintenance engineers to create projects which offer the best value-for-money tunnel lighting solutions and provide quality lighting for end-users.

Family range

The FlowStar family can replace HPS tunnel lighting applications up to 400 W. In order to cater for the different lumen packages, which are determined by the number of LEDs required, FlowStar is available in three sizes: Small (BGB302 and BGB312), Medium (BGB301 and BGB311) and Large (BGB300 and BGB310).

FlowStar Small

FlowStar Medium

FlowStar Large

Full range overview

Application	Size	Number of LEDs	Product family code FlowStar Luminaire or LED-unit	Product family code driver-unit
Entrance	Small	36/72	BGB302	EGB302
	Medium	36/72/120	BGB301	EGB301
	Large	36/72/120/200	BGB300	EGB300
Interior	Small	36/72	BGB312	EGB312
	Medium	36/76/120	BGB311	EGB311
	Large	36/72/120/200	BGB310	EGB310

Note:
The interior version is physically identical to the entrance version. The only difference is that the programmed maximum output power for the interior versions is reduced.

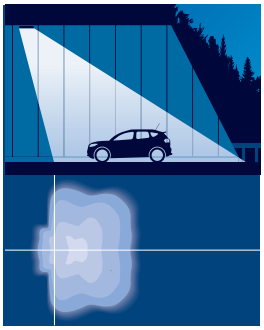
Note:
The interior version is designed for optimum lifecycle services. The entrance version can also be used for interior lighting applications, although it is important to bear in mind that luminaires used for interior lighting will not last as long as those used for entrance lighting.

Lighting performance

Light distribution

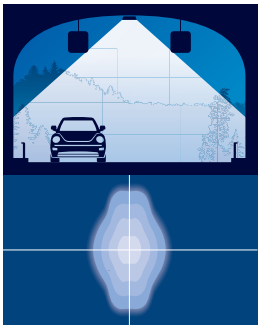
FlowStar offers a wide range of optics which can be used to light any tunnel geometry according to the project specifications. The high-performance lenses are fitted behind a toughened glass cover in a sealed enclosure to ensure reliable light performance over the full lifetime of the product. In cases where the luminaire is mounted flush with the ceiling, the correct choice of optic will ensure the correct light distribution for the tunnel.

DTCB Distribution Counterbeam



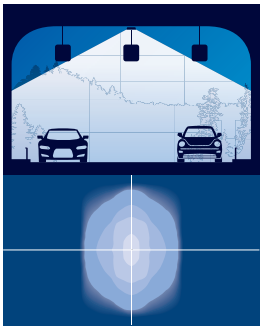
Entrance lighting
Typical 2-3 lane tunnel / central configuration

DTS Distribution Symmetrical Standard



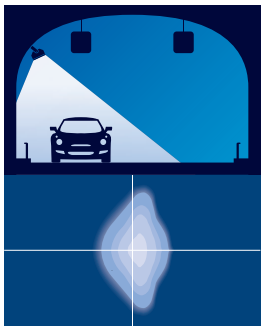
Entrance and interior lighting
Typical 2 lane tunnel / central configuration

DTS-WB Distribution Symmetrical Wide



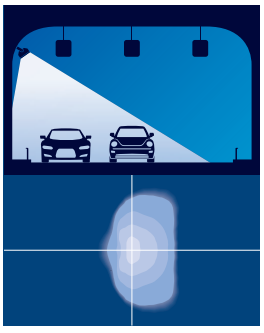
Entrance and interior lighting
Typical 3 lane tunnel / central configuration

DTA Distribution Asymmetrical Standard



Entrance and interior lighting
Typical 2 lane tunnel / central configuration

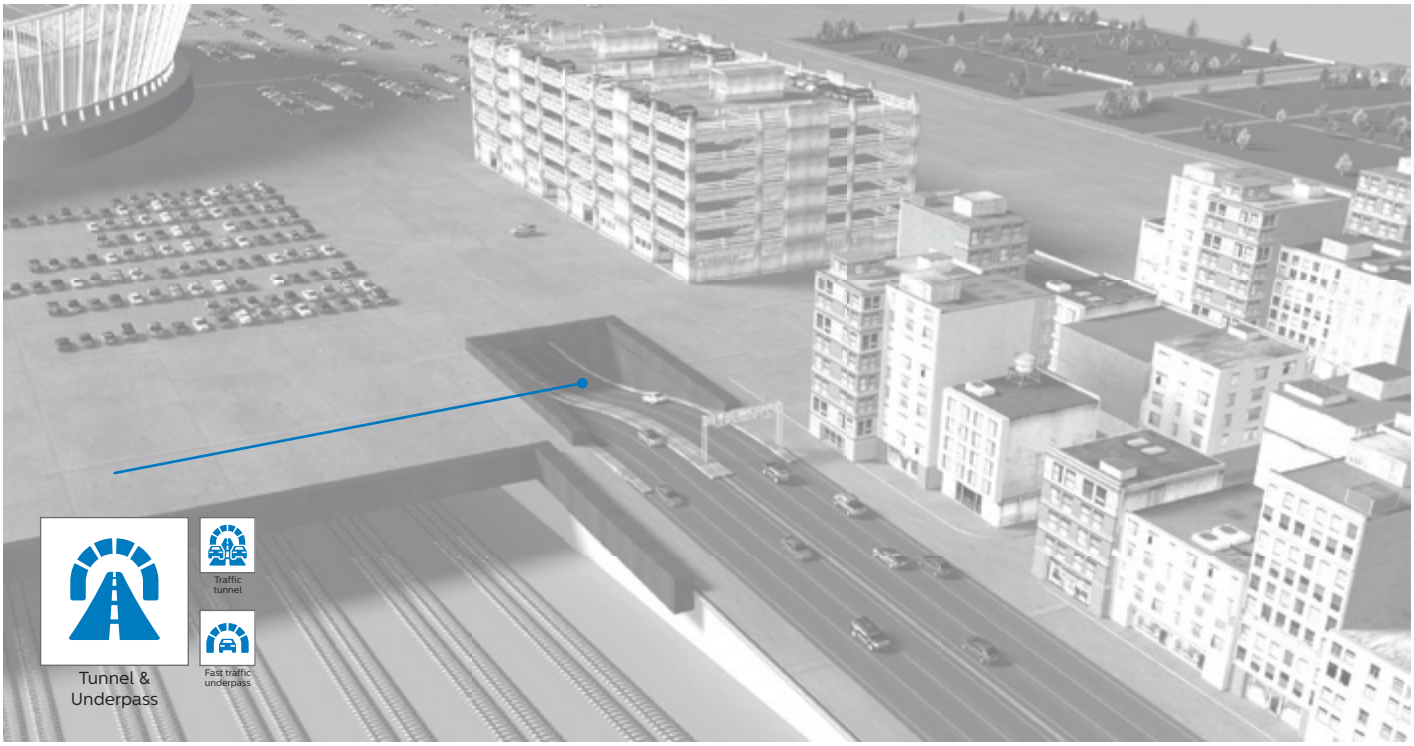
DTA-WB Distribution Asymmetrical Wide



Entrance and interior lighting
Typical 3 lane tunnel / central configuration

Applications

FlowStar is designed for harsh tunnel environments and, more specifically, for traffic tunnel lighting. It can replace HPS 400 W lighting and, as such, it is suitable for both entrance and interior lighting.



The various sizes and optics allow it to be used for any given tunnel geometry and lighting level.

- Traffic tunnel lighting
- Fast traffic underpass lighting

When used for tunnel or underpass lighting, FlowStar can serve different purposes:

- Reinforced entrance lighting
- Point-source interior lighting
- Exit lighting

If the project prescribes a light line made up of linear LED luminaires for the interior, FlowLine interior lighting can be combined with FlowStar entrance lighting for a comfortable, total LED tunnel installation.
The design of FlowLine is based on the same concept as FlowStar.
Both also work seamlessly with our dedicated LED tunnel control and monitoring system TunneLogic.

Applications

Entrance and interior versions

In order to ensure optimum life expectancy behavior for the entire lighting system (both the entrance and interior lighting), two versions are available:

- Entrance lighting version
- Interior lighting version

Tunnel entrance lighting

Tunnel interior lighting

Tunnel underpass lighting

Optimized for longevity

Entrance lighting and interior lighting have a different control regime. The entrance lighting is only switched on during the day and the level of lighting is regulated on the basis of the portal brightness. As a consequence, it not only runs for a limited number of hours, it is also dimmed for a large proportion of this time. The interior lighting is switched on 24 hours a day. At night it is normally set to a lower lighting level to align it with the lighting level of the adjacent road lighting. The annual number of burning hours for the interior lighting is therefore much higher than the annual number of burning hours for the entrance lighting.

The entrance lighting version, which has a limited number of burning hours per year, is set to maximum output power (i.e. maximum LED current). In order to generate the same application lifetime expectancy for the interior application as for the entrance lighting application, the maximum output power for the "interior version" is limited so that these luminaires last for the same amount of time as the entrance lighting luminaires.

This ensures that the lifetime for entrance and interior lighting is the same, which means that replacement after end of life can be carried out at the same time for both.

Subsequently the lumen output range for the interior versions is lower than that for the entrance versions. Both versions are available in the configurations shown in the range overview. Both entrance and interior versions are available in three sizes and within these three sizes different quantities of LEDs are available.

Boxumtunnel, Zwolle, The Netherlands

Components

1 **Housing:** two separate sealed units (LED unit and driver unit). The main body is made of stainless steel plate material (EN 1.4571) pickled and passivated according to DIN EN 2516 / ASTM A380/A967

2 **Glass cover:** thermally toughened ultra-clear glass cover

3 **Heatsink:** aluminum (EN-AW 6063) extruded part 25 µm anodized in accordance with EURAS/EEWA

4 **Mounting flange:** allows 'clamp mounting' or project-specific solutions

5 **Mounting clamps:** set of 6 stainless steel (EN 1.4571) mounting clamps, including washers (PA) for galvanic isolation from the tunnel construction (C-profiles)

6 **Flying lead:** flying lead (LS0H) and plug connection (IP66/68) to LED unit for easy replacement

7 **Driver unit:** equipped with fuse accessible from the outside

8 **Gear:** maximum of one LED driver in the small version, two in the medium version and three in the large version (depending on the quantity of LEDs). The drivers are programmable and fully compliant with our TunneLogic control and monitoring system

9 **Connection:** sockets for DALI control and mains connection

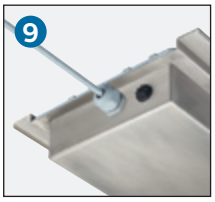
10 **Filter:** to prevent underpressure and overpressure

11 **Galvanic separation:** frame and heatsink separated by sillicone sealing

Mounting clamp: single-sided mounting

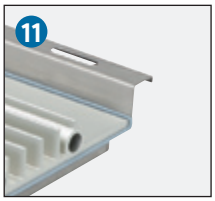
Mounting clamp: double-sided mounting

Plug & play connectivity (MDO): one mains connection, including DALI wire plug connection on the driver unit



Flying lead connectivity (CFW): mains cable including two DALI wires

Plug & play connectivity (MDD): one mains and two separate DALI plug connections on the driver unit



Galvanic isolation

Luminaire features

LED design for high lumen packages

The FlowStar LED design is based upon an integrated non-compromized approach. Both thermal management and optical management form an integral part of this philosophy. Because of the compact design, LEDs are positioned with a relatively short interdistance, which calls for optimized heat control.

Configurations

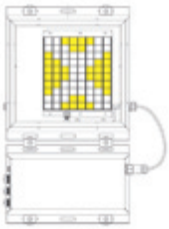
Within the different sizes the following configurations are available:

FlowStar Small (BGB302/312)

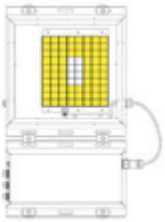
Small 36 LEDs

Small 72 LEDs

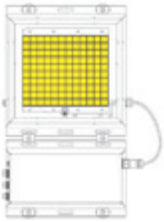
FlowStar Medium (BGB301/311)



Medium 36 LEDs

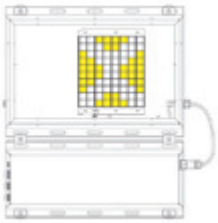


Medium 72 LEDs

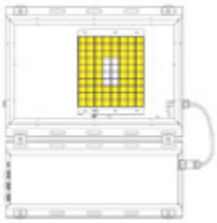


Medium 120 LEDs

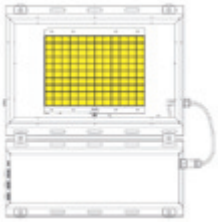
FlowStar Large (BGB300/310)



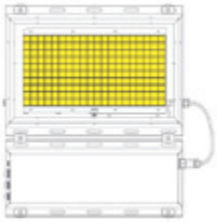
Large 36 LEDs



Large 72 LEDs



Large 120 LEDs



Large 200 LEDs

Luminaire features

Compact, sealed modular build

Compact build

- The FlowStar is only 65 mm high. This shallow build allows either increased overhead height or a reduction in the tunnel height.
- In terms of length and width, the dimensions of the FlowStar are similar to those of a conventional HPS tunnel luminaire, which means that an existing conventional scheme can now be replaced one-on-one by a LED solution.

Modular build

The modular build offers advantages both in terms of thermal behavior and maintenance approach.

- Thermal management: LEDs do not affect the thermal management of drivers, and vice versa. This ensures the best possible lifetime and efficiency ratings for both LEDs and drivers.
- Maintenance/installation: the separate units allow repairs to be carried out efficiently. The LED unit and the driver unit can be replaced separately for incidental repairs or for group replacement in the event of the LED unit and driver unit having different life expectancies. This also reduces the amount of spare parts that have to be held in stock, and mounting is made easier thanks to the reduced weight of the individual units. The units can be replaced easily thanks to the plug-and-play design.

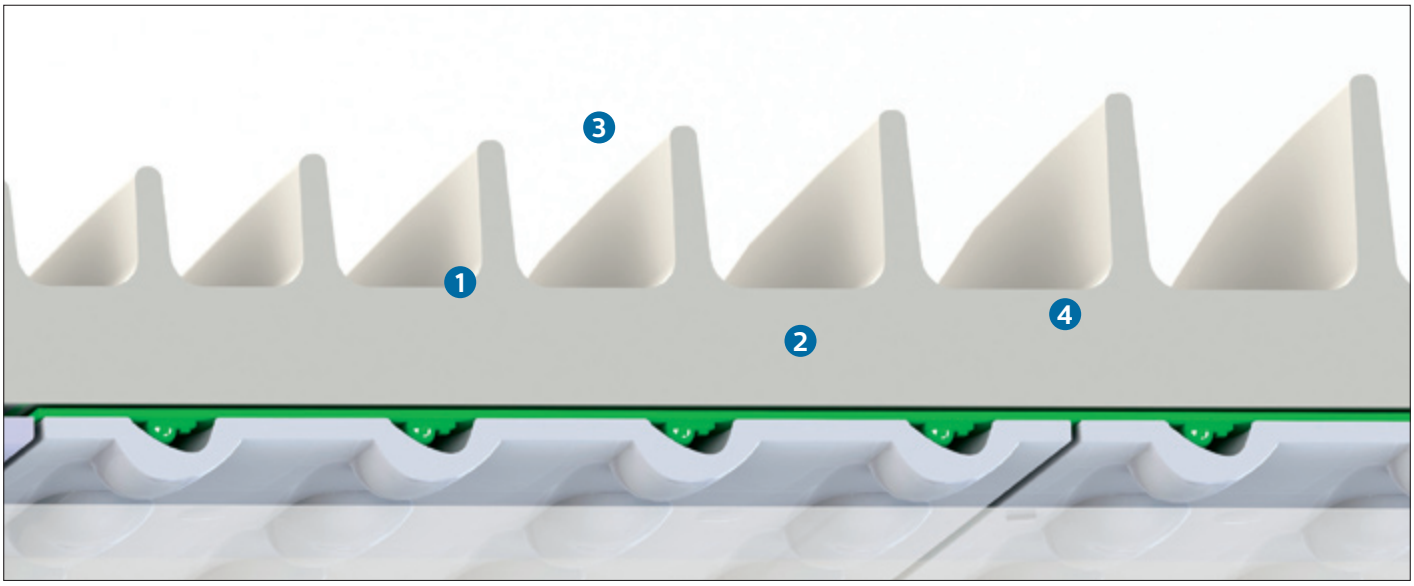
Sealed units

- Tunnel closures must be avoided wherever possible. With FlowStar, the time required for repairs can be reduced to a minimum because the units are easy to replace.
- The use of LED technology and the increased electronics in the tunnel driving envelope means the enclosures need to have a higher IP rating. Sealed units ensure maximum IP rating reliability over the entire lifetime of the installation.

Luminaire features

High-flux cooling concept

The integrated design approach helps create a high-flux lighting solution with optimum cooling and therefore maximum efficiency and lifetime.



The best LED heatsink design for the application

1 **Aluminum heatsink** anodized for optimum heat dissipation. Aluminum has the greatest capacity to spread and dissipate the heat to the surroundings.
2 **Thermal interface layer** of special heat-conducting material between the PCB and the luminaire housing further optimizes heat dissipation.
3 **Rib-cooling** through wide spacing prevents the build-up of dirt and increases cooling capacity.
4 **Direct dissipation of heat** from the LEDs to the heatsink and to the outside.

The technology applied is already used in Philips' outdoor luminaires. Only this proven technology is used for critical applications like tunnel lighting in order to ensure reliability from the very start.

Luminaire features

Lens optic technology

Lenses are grouped in sets of 20 on a plate. These compact plates are always placed on the PCB, thereby equalizing pressure on the PCB and thus optimizing heat dissipation.

Material follows function

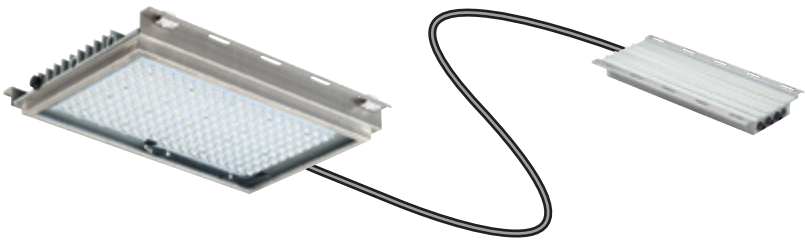
The main (load-bearing) construction is made of stainless steel (pickled and passivated). Different stainless-steel material grades are available to suit specific customer requirements.
The heatsink (non-structural part) is made of aluminum (anodized) for optimal thermal management.
The high-grade finish of both parts, to industrial grade, ensures lifetime protection against corrosion.

The luminaire is designed in such a way as to prevent galvanic corrosion. In addition, the mounting construction is such that there is no galvanic contact between the luminaire and the main tunnel-mounting construction.

Local or remote driver layout

The FlowStar driver unit can be positioned locally or remotely. Common practice is for the driver to be positioned remotely outside the driving envelop. This facilitates easy maintenance. In this case LED extensions leads are required between the LED unit and the driver unit (or larger remote driver enclosures), as explained in the accessories section.

Locally positioned driver unit



Remotely positioned driver unit

Luminaire features

Lifetime maintenance service concept

Standard long life

The standard lifetime expectancy (L80/B10) of all FlowStar versions is 100,000 hours. This applies irrespective of how the luminaire is used and does not take into account any extension of lifetime due to switching-off or dimming, which is common in tunnel applications.

Extended long life

Upon request, Philips can provide an extended warranty or lifecycle service package. Extended warranties ensure your product functionality for a longer period and guarantee delivery of replacement products in the event of failures. Based on specific customer needs or project requirements we can provide full lifecycle support and service packages.

Philips guarantees product functionality and supports system functionality over the agreed lifetime of the project, which can consist of the following elements:

- Replacement products for corrective and preventive maintenance at discounted price
- Preventive group replacement
- Preventive system check to ensure system functionality
- Professional system support (system scans, optimization and updates)
- Training on the system functionality, usage, maintenance and commissioning
- Service parts kit on site

Serviceability

FlowStar has a modular, sealed plug-and-play design. The LEDs and drivers are housed in separate enclosures. These units can be replaced easily.

The main reason for this design approach is that the lifetime expectancy is longer for the LEDs than for the drivers. The modular design allows optimization of the lifecycle maintenance concept. Both units can continue operating until they need to be replaced at the end of their life. As already mentioned, separate units are available for all luminaire versions.

Accessory overview

Power cable & DALI communication cable

Mains and DALI cabling

FlowStar is standard equipped with sockets on the driver unit.

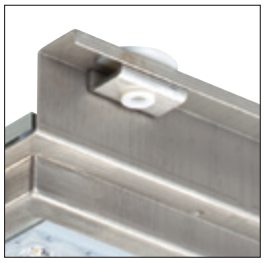
Philips supplies cabling with plugs fitted as an accessory. These are available in standard lengths to enable a full plug-and-play installation process.

- Power cable with plug fitted at one end
- DALI cable with plugs fitted at both ends

Sealing cap for unused socket connection

Socket sealing cap

In order to wire up the DALI network the DALI cabling is usually looped in and out from one luminaire to the next. At the end of the DALI network there is one socket left unused. To ensure a proper IP rating, a socket sealing cap must be fitted.



Spare mounting clamps

Spare mounting clamps

FlowStar and the separate units are supplied with sets of mounting clamps. If extra mounting clamps are required, two sets are available which include the isolation washers needed for full galvanic isolated mounting:

- Set of 6 mounting clamps including isolation washers for mounting a complete FlowStar set
- Set of 4 mounting clamps including isolation washers for mounting a separate FlowStar unit

LED extension lead

LED extension lead

One of the reasons why the driver unit is often positioned remotely outside the driving envelope is that maintenance can be carried out without closing the tunnel.
For this, an extension cable that plugs into the LED unit flying cable at one end and into the driver unit at the other end is required.

- LED extension lead with plug fitted at one end. Separate plugs to connect to the driver unit are also available
- LED extension lead with plugs fitted at both ends

FlowStar in control

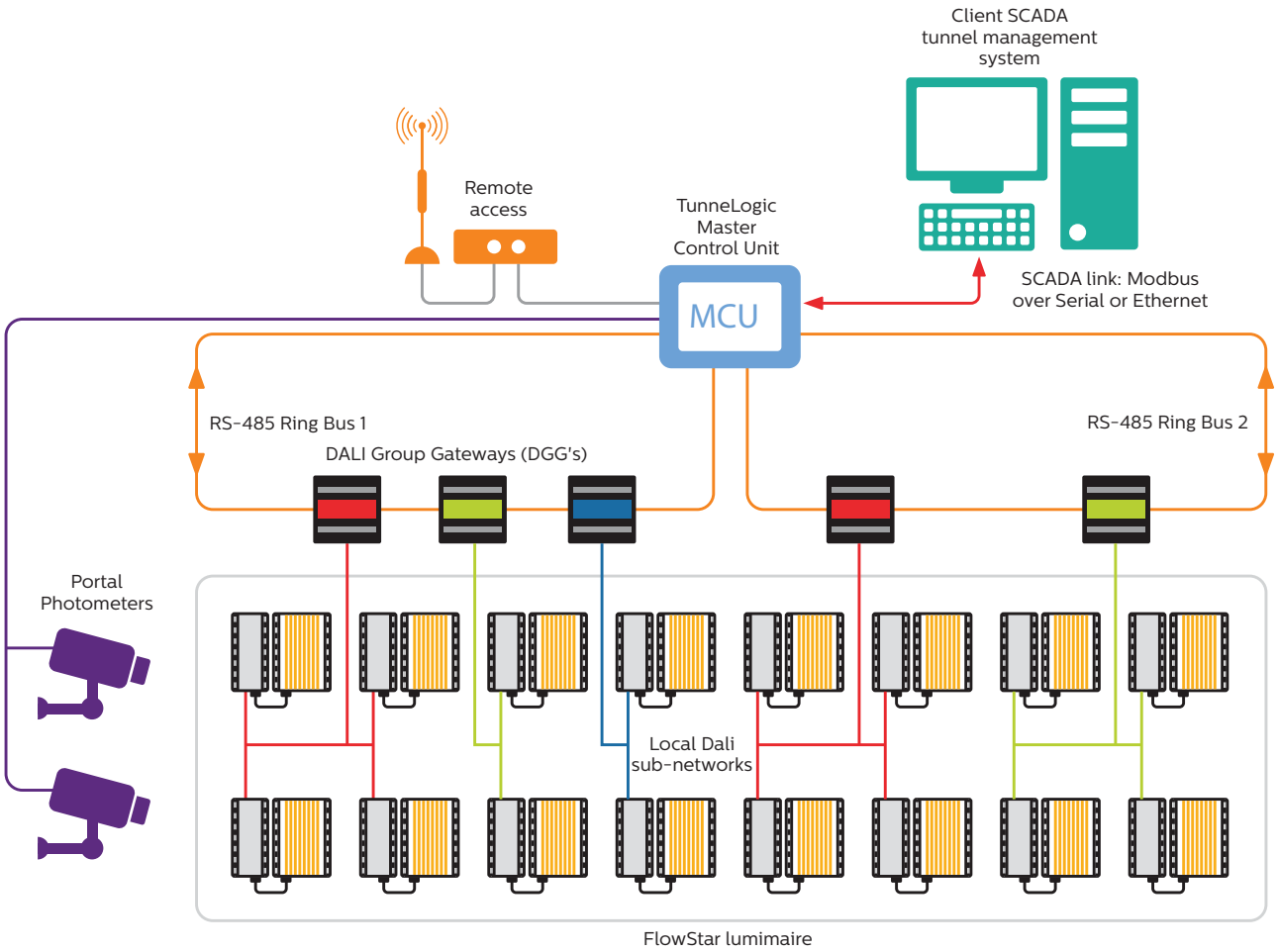
TunneLogic

TunneLogic, our dedicated tunnel control and monitoring system, ensures we get the best out of LED technology. This control system, which is easy to install, use and maintain, provides the customer with safe lighting control and health information relating to the lighting system. When used together with high-performance Philips tunnel LED luminaires, optimal system performance can be achieved.

FlowStar is an integral part of our TotalTunnel program. Providing the best design at luminaire level is only part of the story. At system performance level, TunneLogic control is required to get the best out of the luminaires. By combining a good luminaire design with a dedicated LED control system you will be assured of the best that is available at system level.

- FlowStar can easily be combined with other luminaires from the TotalTunnel program
- FlowStar is designed to work seamlessly with our TunneLogic control and monitoring system
- FlowStar is optimized for the lifetime maintenance service concept

Below is an example of a topology of our TotalTunnel system approach.

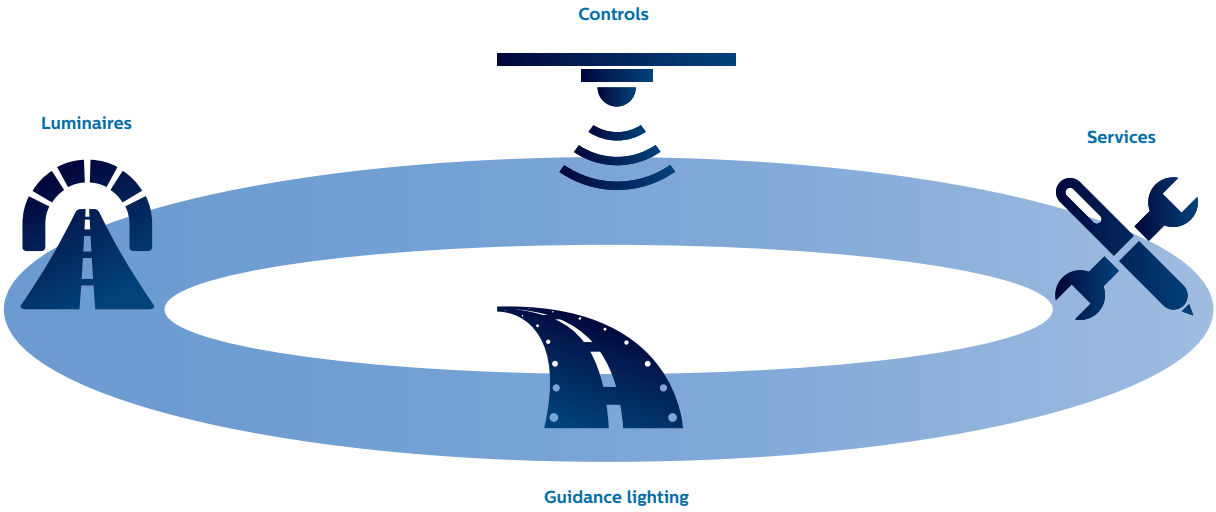


TotalTunnel approach

FlowStar has been developed as part of our TotalTunnel program, which embodies our holistic approach to tunnel lighting. TotalTunnel enables us to channel our expertise in LED into bespoke solutions for our customers. By combining our four building blocks for success we can create lighting solutions that offer precise levels of quality, guidance, control and service support.

Building blocks for success

The key building blocks for a tunnel lighting solution are:



- Luminaires - to support tunnel-specific lighting techniques
- Guidance lighting - to guide the traffic and to secure a safe exit
- Controls - from basic controls to elaborate monitoring systems to give you full control over the lighting system
- Services - from concept design and commissioning to lifecycle services

We take the strain by delivering the complete project and protecting your investment

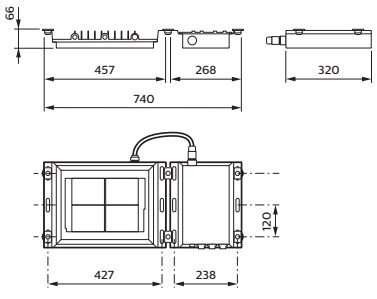
Within each building block Philips offers a range of products, from simple solutions that deliver unbeatable value to high-performance alternatives. We select the components according to your specific needs, and then combine them to create a total lighting system that is unique to your project. So, whether your focus is on the cost of the initial investment or on the total cost of ownership over the entire lifetime, Philips can build the right solution for you.

Main specifications

FlowStar

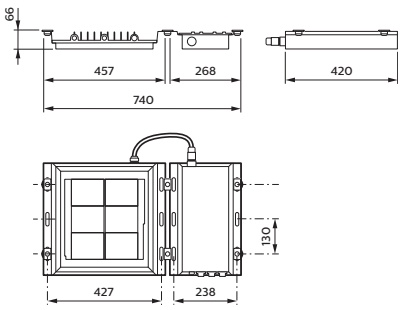
Product features	Specifictions
Type	Entrance: FlowStar Small (BGB302) • Medium (BGB30) • Large (BGB300) Interior: FlowStar Small (BGB312) • Medium (BGB311) • Large (BGB310)
IP rating	IP66
IK rating	IK08
Light source	Sealed separate LED unit
Power	Entrance version: 80 to 435 W depending on LED configuration
	Interior version: 68 to 371 W depending on LED configuration
Luminous flux	8 klm to 50 klm depending on LED configuration and version
Color temperature	4000 K (neutral white) • 5700 K (cool white)
Electrical class	I (class II is pending)
Light distributions	Distribution Counterbeam (DTCB) • Distribution Symmetrical Standard (DTS) • Distribution Symmetrical Wide (DTS-WB) • Distribution Asymmetrical Standard (DTA) • Distribution Asymmetrical Wide (DTA-WB)
Optical cover	Toughened flat glass
Luminaire efficacy	115 to 120 lm/W depending on version and LED configuration
Color Rendering Index	70
Lumen maintenance output	100,000 hours at L80/B10
Operating temperature range	- 25 ˚C < Ta< 40 ˚C
Driver	Driver unit equipped with Philips Xitanium driver
Fusing	IP68 fuse holder (FU) accessible from the outside (Size 6.3 x 32 mm, 16 A, 250 V AC)
Mains voltage	220-240 V / 50-60 Hz
Surge protection	4 kV minimal
Control system input	DALI control (D9) (SDU (D4) is pending)
Connection	MDD (2 DALI sockets + mains socket) or MDO (mains socket including DALI) or CFW (flying cable no plug included)
	LED unit with flying lead and plug connection to driver unit
	All plug connections IP66/IP68
Accessories	Sealing cap for unused socket connection • Mains connection cable • DALI link cable • Mounting clamps
Materials/Finish	Main construction: stainless steel EN 1.4571 (SH), pickled and passivated • Non-structural heatsink: aluminum, 6063, 25 µm anodized • Mounting clamps: stainless steel EN 1.4571 (SH), pickled and passivated • Cover: extra clear, thermally toughened flat glass, 5 mm thick
Maintenance	Both the LED unit and the driver unit are sealed • Units can easily be replaced separately thanks to plug connections
Installation	Ceiling mounted on C-profiles • Clamps and plastic washers included with the luminaire • Hammer bolts and nuts for C-profile not included
Weight	LED unit: max. 17 kg
	Driver unit: max 10 kg

BGB302/BGB312



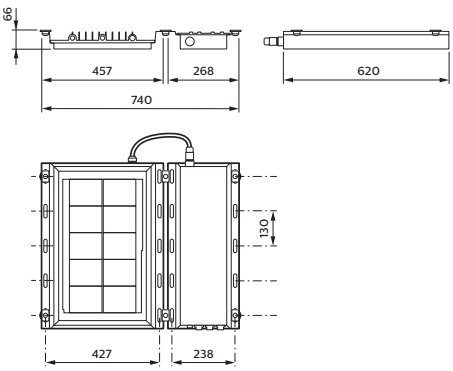
FlowStar Small

BGB301/BGB311



FlowStar Medium

BGB300/BGB310



FlowStar Large

Specification table

FlowStar

Product designation	Size	Version	LEDs (no.)	Source flux (lm)	System power (W)
BGB302 9K/NW SH I DTS D9 FU MDD	Small	Entrance	36	9,250	80
BGB302 18K/NW SH I DTS D9 FU MDD	Small	Entrance	72	18,400	155
BGB312 8K/NW SH I DTS D9 FU MDD	Small	Interior	36	8,150	68
BGB312 16K/NW SH I DTS D9 FU MDD	Small	Interior	72	16,200	132
BGB301 9K/NW SH I DTS D9 FU MDD	Medium	Entrance	36	9,250	80
BGB301 18K/NW SH I DTS D9 FU MDD	Medium	Entrance	72	18,400	155
BGB301 30K/NW SH I DTS D9 FU MDD	Medium	Entrance	120	30,350	263
BGB311 8K/NW SH I DTS D9 FU MDD	Medium	Interior	36	8,150	68
BGB311 16K/NW SH I DTS D9 FU MDD	Medium	Interior	72	16,200	132
BGB311 27K/NW SH I DTS D9 FU MDD	Medium	Interior	120	26,750	225
BGB300 9K/NW SH I DTS D9 FU MDD	Large	Entrance	36	9,250	80
BGB300 18K/NW SH I DTS D9 FU MDD	Large	Entrance	72	18,400	155
BGB300 30K/NW SH I DTS D9 FU MDD	Large	Entrance	120	30,350	263
BGB300 50K/NW SH I DTS D9 FU MDD	Large	Entrance	200	50,150	435
BGB310 8K/NW SH I DTS D9 FU MDD	Large	Interior	36	8,150	68
BGB310 16K/NW SH I DTS D9 FU MDD	Large	Interior	72	16,200	132
BGB310 27K/NW SH I DTS D9 FU MDD	Large	Interior	120	26,750	225
BGB310 45K/NW SH I DTS D9 FU MDD	Large	Interior	200	44,550	371

FlowStar LED unit

Product designation	Size	Version	LEDs (no.)	Source flux (lm)	System power (W)
BGB302 9K/NW SH DTS	Small	Entrance	36	9,250	75
BGB302 18K/NW SH DTS	Small	Entrance	72	18,400	150
BGB312 8K/NW SH DTS	Small	Interior	36	8,150	64
BGB312 16K/NW SH DTS	Small	Interior	72	16,200	127
BGB301 9K/NW SH DTS	Medium	Entrance	36	9,250	75
BGB301 18K/NW SH DTS	Medium	Entrance	72	18,400	150
BGB301 30K/NW SH DTS	Medium	Entrance	120	30,350	249
BGB311 8K/NW SH DTS	Medium	Interior	36	8,150	64
BGB311 16K/NW SH DTS	Medium	Interior	72	16,200	127
BGB311 27K/NW SH DTS	Medium	Interior	120	26,750	211
BGB300 9K/NW SH DTS	Large	Entrance	36	9,250	75
BGB300 18K/NW SH DTS	Large	Entrance	72	18,400	150
BGB300 30K/NW SH DTS	Large	Entrance	120	30,350	249
BGB300 50K/NW SH DTS	Large	Entrance	200	50,150	410
BGB310 8K/NW SH DTS	Large	Interior	36	8,150	64
BGB310 16K/NW SH DTS	Large	Interior	72	16,200	127
BGB310 27K/NW SH DTS	Large	Interior	120	26,750	211
BGB310 45K/NW SH I DTS	Large	Interior	200	44,550	349

Specification table

FlowStar driver unit

Product designation	Size	Version	LEDs (no.)	System power (W)
EGB302 9K SH I D9 FU MDD	Small	Entrance	36	80
EGB302 18K SH I D9 FU MDD	Small	Entrance	72	155
EGB312 8K SH I D9 FU MDD	Small	Interior	36	68
EGB312 16K SH I D9 FU MDD	Small	Interior	72	132
EGB301 9K SH I D9 FU MDD	Medium	Entrance	36	80
EGB301 18K SH I D9 FU MDD	Medium	Entrance	72	155
EGB301 30K SH I D9 FU MDD	Medium	Entrance	120	263
EGB311 8K SH I D9 FU MDD	Medium	Interior	36	68
EGB311 16K SH I D9 FU MDD	Medium	Interior	72	132
EGB311 27K SH I D9 FU MDD	Medium	Interior	120	225
EGB300 9K SH I D9 FU MDD	Large	Entrance	36	80
EGB300 18K SH I D9 FU MDD	Large	Entrance	72	155
EGB300 30K SH I D9 FU MDD	Large	Entrance	120	263
EGB300 50K SH I D9 FU MDD	Large	Entrance	200	435
EGB310 8K SH I D9 FU MDD	Large	Interior	36	68
EGB310 16K SH I D9 FU MDD	Large	Interior	72	132
EGB310 27K SH I D9 FU MDD	Large	Interior	120	225
EGB310 45K SH I D9 FU MDD	Large	Interior	200	371

FlowStar accessories

Product designation
Clamp-Set 4
Clamp-Set 6
Sealing cap for unused DALI socket
Power cable assembly
DALI cable assembly
Driver cable assembly

FlowStar combination table

Luminaire designation	Compatible LED unit designation	Compatible driver unit designation
BGB300 9K/NW SH I DTS D9 FU MDD	BGB300 9K/NW SH DTS	EGB300 9K SH I D9 FU MDD
BGB300 18K/NW SH I DTS D9 FU MDD	BGB300 18K/NW SH DTS	EGB300 18K SH I D9 FU MDD
BGB300 30K/NW SH I DTS D9 FU MDD	BGB300 30K/NW SH DTS	EGB300 30K SH I D9 FU MDD
BGB300 50K/NW SH I DTS D9 FU MDD	BGB300 50K/NW SH DTS	EGB300 50K SH I D9 FU MDD
BGB301 9K/NW SH I DTS D9 FU MDD	BGB301 9K/NW SH DTS	EGB301 9K SH I D9 FU MDD
BGB301 18K/NW SH I DTS D9 FU MDD	BGB301 18K/NW SH DTS	EGB301 18K SH I D9 FU MDD
BGB301 30K/NW SH I DTS D9 FU MDD	BGB301 30K/NW SH DTS	EGB301 30K SH I D9 FU MDD
BGB302 9K/NW SH I DTS D9 FU MDD	BGB302 9K/NW SH DTS	EGB302 9K SH I D9 FU MDD
BGB302 18K/NW SH I DTS D9 FU MDD	BGB302 18K/NW SH DTS	EGB302 18K SH I D9 FU MDD
BGB310 8K/NW SH I DTS D9 FU MDD	BGB310 8K/NW SH DTS	EGB310 8K SH I D9 FU MDD
BGB310 16K/NW SH I DTS D9 FU MDD	BGB310 16K/NW SH DTS	EGB310 16K SH I D9 FU MDD
BGB310 27K/NW SH I DTS D9 FU MDD	BGB310 27K/NW SH DTS	EGB310 27K SH I D9 FU MDD
BGB310 45K/NW SH I DTS D9 FU MDD	BGB310 45K/NW SH I DTS	EGB310 45K SH I D9 FU MDD
BGB311 8K/NW SH I DTS D9 FU MDD	BGB311 8K/NW SH DTS	EGB311 8K SH I D9 FU MDD
BGB311 16K/NW SH I DTS D9 FU MDD	BGB311 16K/NW SH DTS	EGB311 16K SH I D9 FU MDD
BGB311 27K/NW SH I DTS D9 FU MDD	BGB311 27K/NW SH DTS	EGB311 27K SH I D9 FU MDD
BGB312 8K/NW SH I DTS D9 FU MDD	BGB312 8K/NW SH DTS	EGB312 8K SH I D9 FU MDD
BGB312 16K/NW SH I DTS D9 FU MDD	BGB312 16K/NW SH DTS	EGB312 16K SH I D9 FU MDD

Document order number: 3222 635 69508
10/2014
Data subject to change.

www.philips.com/catalog