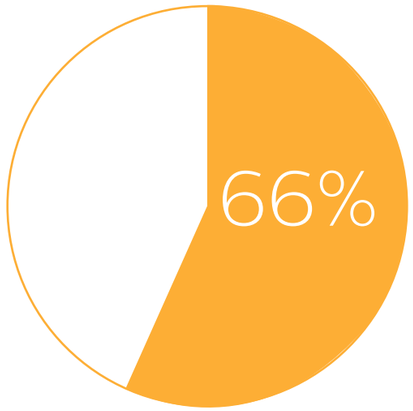

PHILIPS
Solar Lighting
Philips solar lighting.
A world
powered by sun.

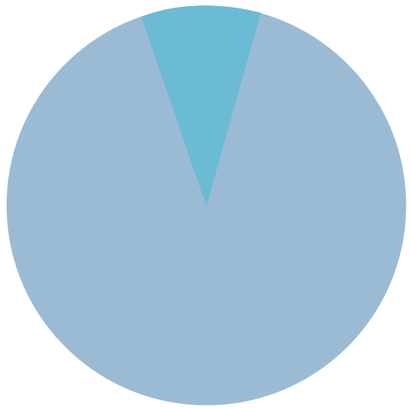
Rapid urbanisation is **fast depleting resources**

Rapid urbanisation and population growth are putting more and more pressure on resources. This is reflected in the environmental impact of cities; as they consume over two thirds of the world's energy and account for more than 70% of global CO_2 emissions. Cities must now reduce their environmental impact.

On the other hand, more than 800 million people do not have access to an electricity grid. Darkness significantly affects quality of life at night and also reduces public safety on roads and streets.



Energy Consumption by urban population



Total world population

7 Billion

800 million without access to electricity grid

Solar lighting is **sustainable, green, and clean.**

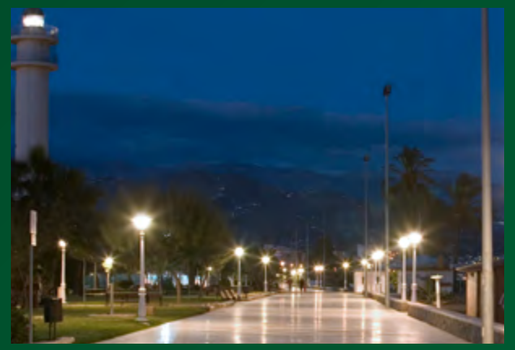
Apart from being powered by a freely available energy source, solar lighting has several other benefits. On the one hand it provides instant relief to people with no access to the energy grid. On the other, hybrid solar supports large populated communities and gives them an opportunity to reduce their carbon footprint - thereby resulting in a greener and healthier world.

- *Enhanced city sustainability potential*
- *No or minimal electricity costs*
- *Significant energy savings*
- *Safer, less risk of electrical hazards*
- *Increased sense of safety and security*
- *Low maintenance*
- *Independence from the power grid*
- *Improved city services*
- *More efficient city planning and operations*
- *Upgrade existing light points to hybrid solar with minimal costs*
- *Preserves landscape, no cabling or trenching*
- *Enabling the community to engage with data from the Internet of Things (IoT)*

Philips range of **solar lighting solutions**

<5k lumens

· Pathways
· Rural areas
· Parks



5k-8k lumens

· Parks
· Plazas
· Cycle tracks

8k-15k lumens

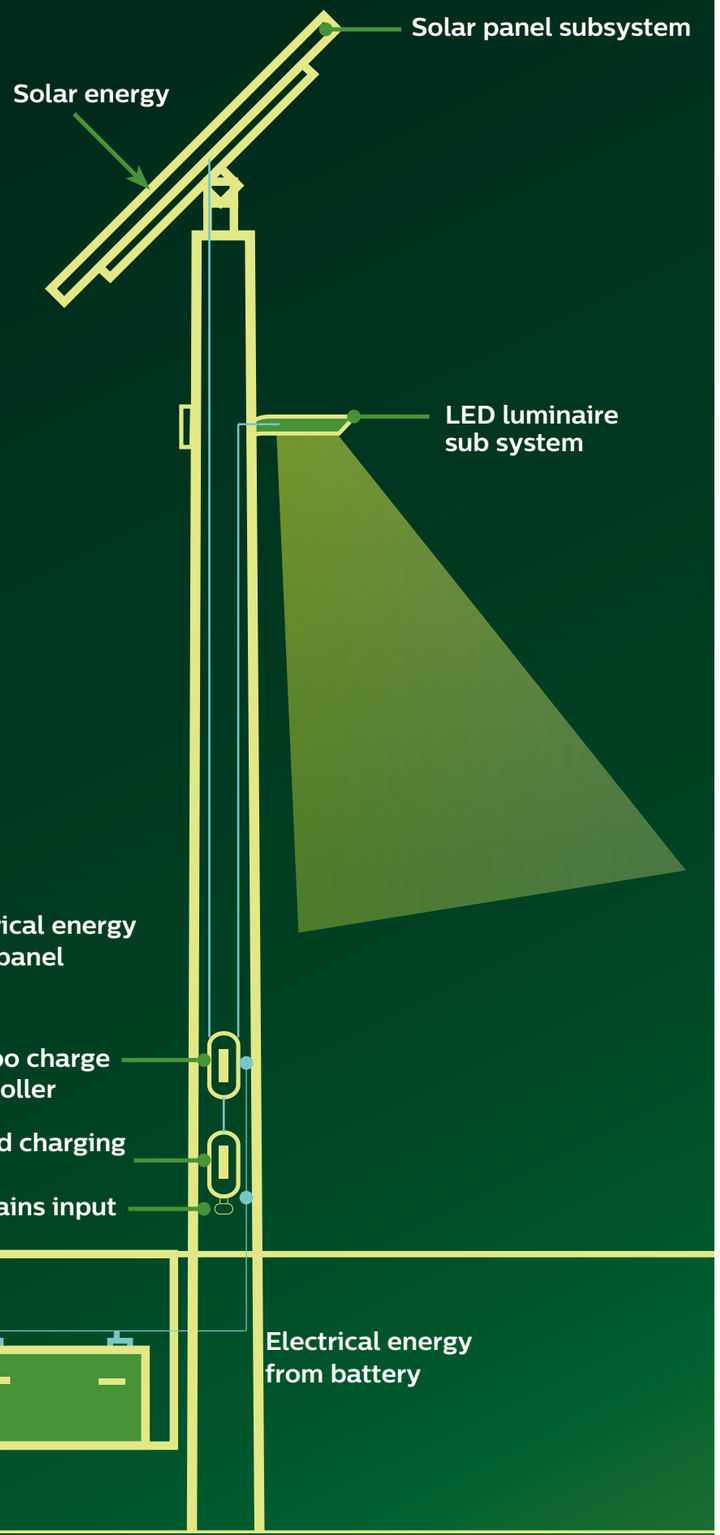
· Office campuses
· Suburban roads
· Inner city roads

15k-24k lumens

· City roads
· Collector roads
· Industrial roads

Table of **contents**

How a solar street lighting system works



When the sun shines during the day, the solar panel converts solar energy to electrical energy and stores it in the battery. During the night, the battery is discharged, releasing electrical energy to power the LED luminaire. If the battery is not adequately charged or it drains out during the night, solar hybrid input will kick in automatically.

Philips **outdoor luminaires**

SunStay
All-in-one solar street light

2000-6000 lumen

UrbanSpark
Integrated post top luminaire

2500/ 6000 lumen

RoadFlair Gen4.0 solar street light
Configurable non-integrated street lights

5000-24000 lumen

GreenVision Xceed V2 Gen4.0 solar street light
Configurable non-integrated street lights

5000-24000 lumen

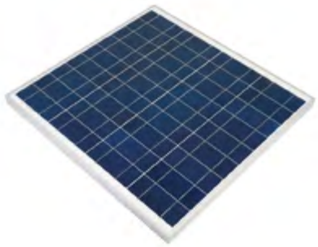
SmartBright range
All-in-one solar street light

5000-12000 lumen

Tango G2 Gen4.0 solar
Configurable non-integrated flood lights

5000- 15000 lumen

Solar sub systems



PV panel sub systems

- for 12V and 24V systems
- 30Wp-325Wp flat panel
- 100-190Wp vertical panel

Battery sub systems

In-ground gel batteries
- 12V and 24V
- 65-250Ah
- 800 cycles at 70% DOD
- IP68 rated

In-ground $LiFePO_4$ batteries
- 12.8V and 25.6V
- 50-180Ah
- 2000 cycles at 90% DOD
- IP68 rated

Combo CC Gen4.0 charge controller

- 200Wp, 400Wp and 600Wp versions
- Support Gel and $LiFePO_4$ batteries
- Offgrid and hybrid solar

Cables and connectors

- Waterproof IP67 connectors
- Plug and play, easy installation
- Error proof to avoid incorrect installation onsite
- Different length of cables are available for various applications

SunStay

SunStay - all-in-one solar street light

Integrated solar street light with lithium ferro phosphate battery, solar panel and charger built into the luminaire. Pressure die cast aluminium for sturdiness and long life. Specially designed pole mounting bracket allows different tilt angles, lateral and pole top mounting. Configuration and health monitoring via BLE mobile application. Available in offgrid and hybrid solar versions.

Delivering the best performance

Long lifetime

- Housing IP65 and IK08
- Aluminium pressure die-cast
- Long life cycle $LiFePO_4$ battery

Best in class performance

- 175lm/W efficacy
- PIR sensor to save energy by light dimming
- BLE based android mobile app to read and set critical configuration at site

Installer friendly

- No onsite wiring, connections, or termination for offgrid solar
- Adjustable tilt angles of 0 to 15 degrees, post top and lateral mounting positions

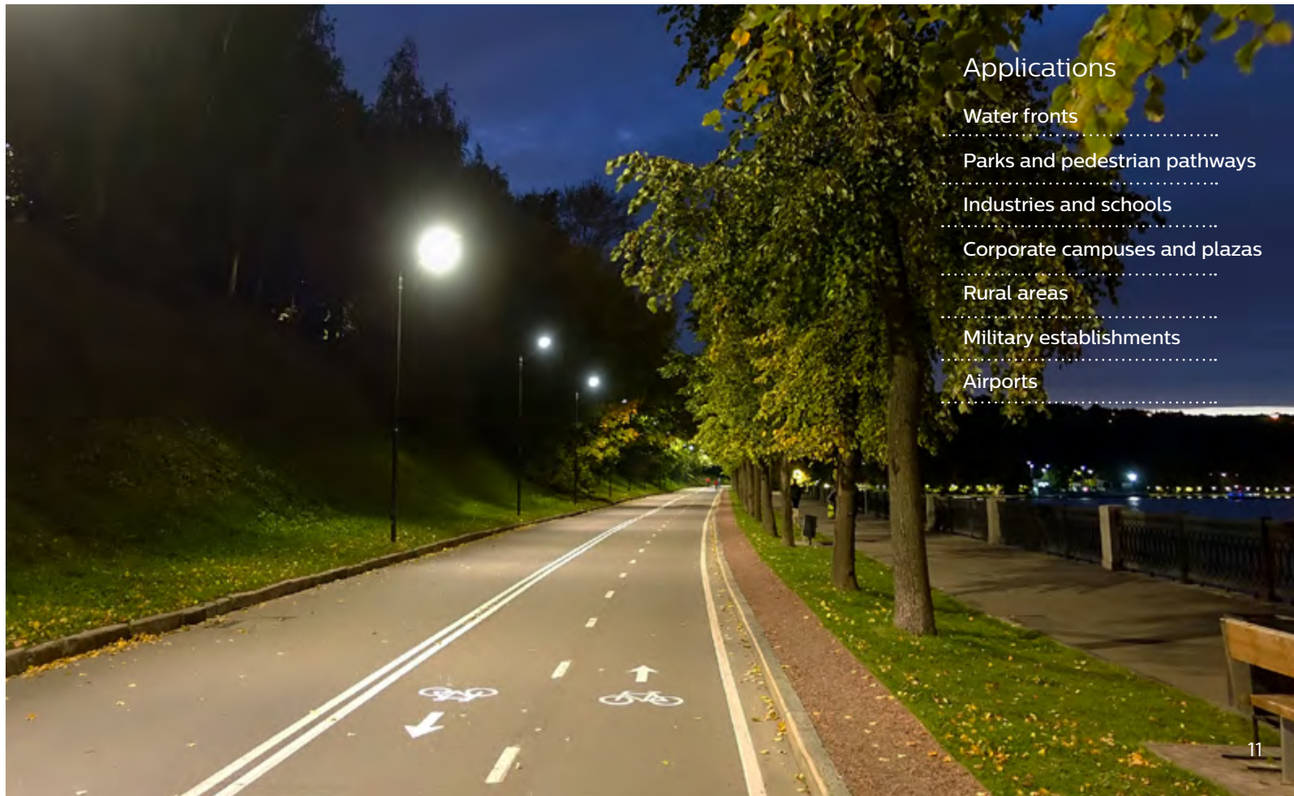
interact ready.

Product benefits

- Brings light to areas without access to electric grid
- Available in offgrid and hybrid solar versions
- Saves energy
- Preserves landscape as no trenching for cabling required
- Environmentally friendly
- Sturdy construction for long life

Technical specifications

Specifications	BRP710 (Offgrid)	BRP710 (hybrid solar)
System wattage (W)	11-27	11-35
System efficacy (lm/W)	175	
Lumen output (lm)	2000 to 4500	2000 to 6000
Housing	Aluminium pressure die cast with anti-corrosive coating	
Colour temperature (K)	3000, 4000, 5700 (2700 available on request)	
CRI	70	
IP rating	IP65	
Cover	UV stabilised polycarbonate cover	
Mounting	Post top and lateral, 48-60 dia.	
Mains voltage	NA	240V+/-20% 50Hz
Connectivity	BLE mobile app for configuration of charge controller Interact ready option available on request	NA



UrbanSpark

Integrated post top luminaire

Integrated solar post top lantern with lithium ferro phosphate battery, vertically mounted monocrystalline, solar panel, MPPT charger and aluminium alloy pole. Extruded aluminium construction for sturdiness and long life. Choice of street light and post top luminaires and pole height of 4 & 6 metres. Charger and battery accommodated inside the pole and accessible through service hatch for ease of maintenance. Vertically mounted panels on all four sides to catch sunlight throughout the day. IP68 battery to prevent damage in case of water logging.

Redefining urban landscapes

Long Lifetime

- IP65 certified, IP68 $LiFePO_4$ battery
- Aluminium die-cast luminaire housing

Smart

- Elegant design with integrated vertical panel
- BLE based android app for health monitoring and configuration

Unique and modern

- Vertical solar panels
- Aluminium alloy pole
- Ideal to redefine urban heritage lighting
- Preserves landscape with no trenching for cabling

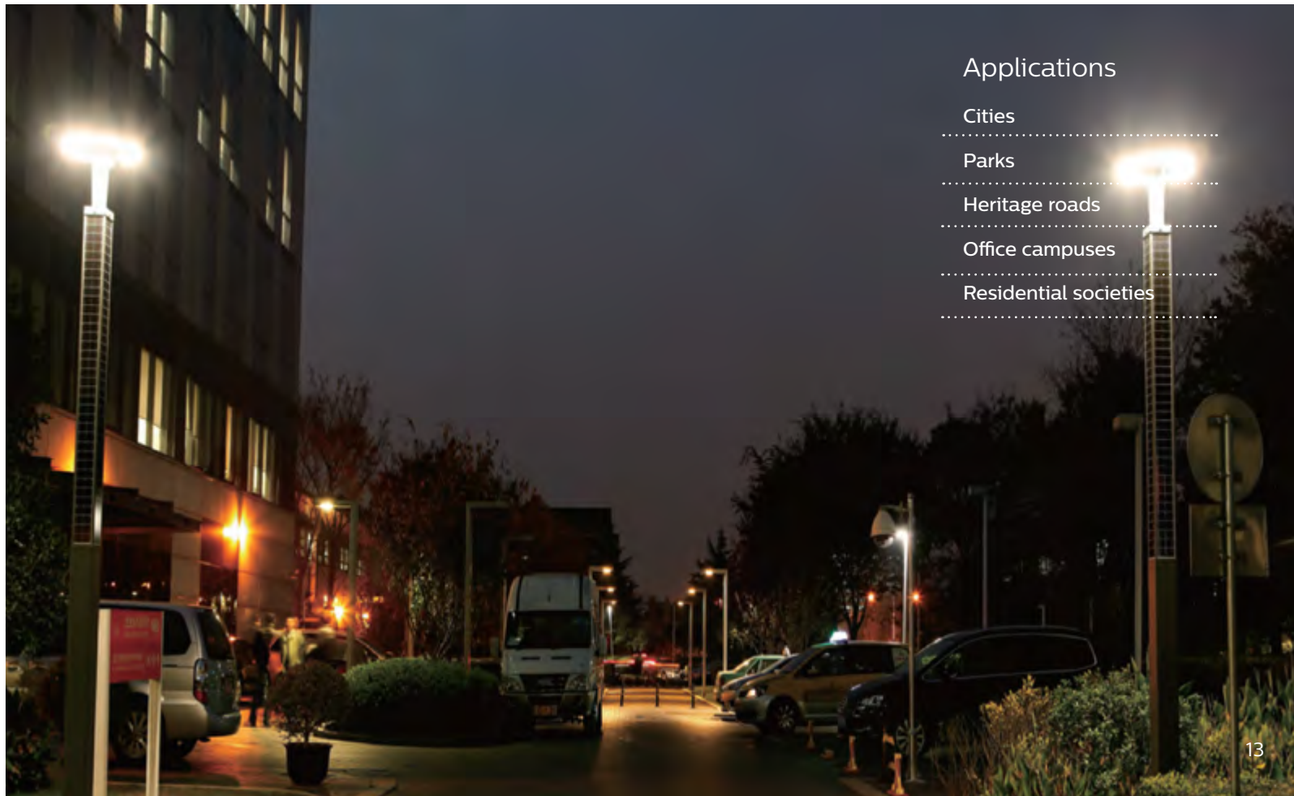
interact ready.

Product benefits

- Brings light to areas without access to electric grid
- Elegant design
- Preserves landscape as no trenching for cabling required
- Saves energy
- Environmentally friendly

Technical specifications

Specifications	Post top (BGP 161)	Street lighting (BRP 711)
PV Panel (Wp)	180	360
Lumen output (lm)	2500	6000
Battery type	$LiFePO_4$	$LiFePO_4$
Colour temperature (K)	4000	5700
CRI	70	70
Housing	Aluminium die cast	Aluminium die cast
Battery capacity	12.8V 60Ah	12.8V 100Ah
Pole dimensions	172 x 172 x 4000	172 x 172 x 6000
Connectivity	BLE mobile app for configuration of charge controller Interact ready option available on request	



RoadFlair Gen4.0 solar

Configurable non-integrated street lights

Range of solar street lights from 5000 lumen to 24000 lumen, configurable dimming profile and load wattage. Compatible with multiple battery types like $LiFePO_4$, GEL. Configuration and health monitoring through mobile app or hand held remote. Available in offgrid and hybrid solar versions.

Reliable savings, lasting brightness.

High quality material and design

- High efficacy reduces cost per light point by optimising battery and panel size
- Pressure die-cast aluminium housing for sturdiness and excellent thermal management

Long-lasting performance

- Designed for energy savings and smart cities
- Designed for operation under diverse environmental conditions from -30˚C to 50˚C

Smart and flexible

- Configurable dimming profile and load wattage
- Intelligent hybrid switch over
- Compatible with Gel and $LiFePO_4$ batteries

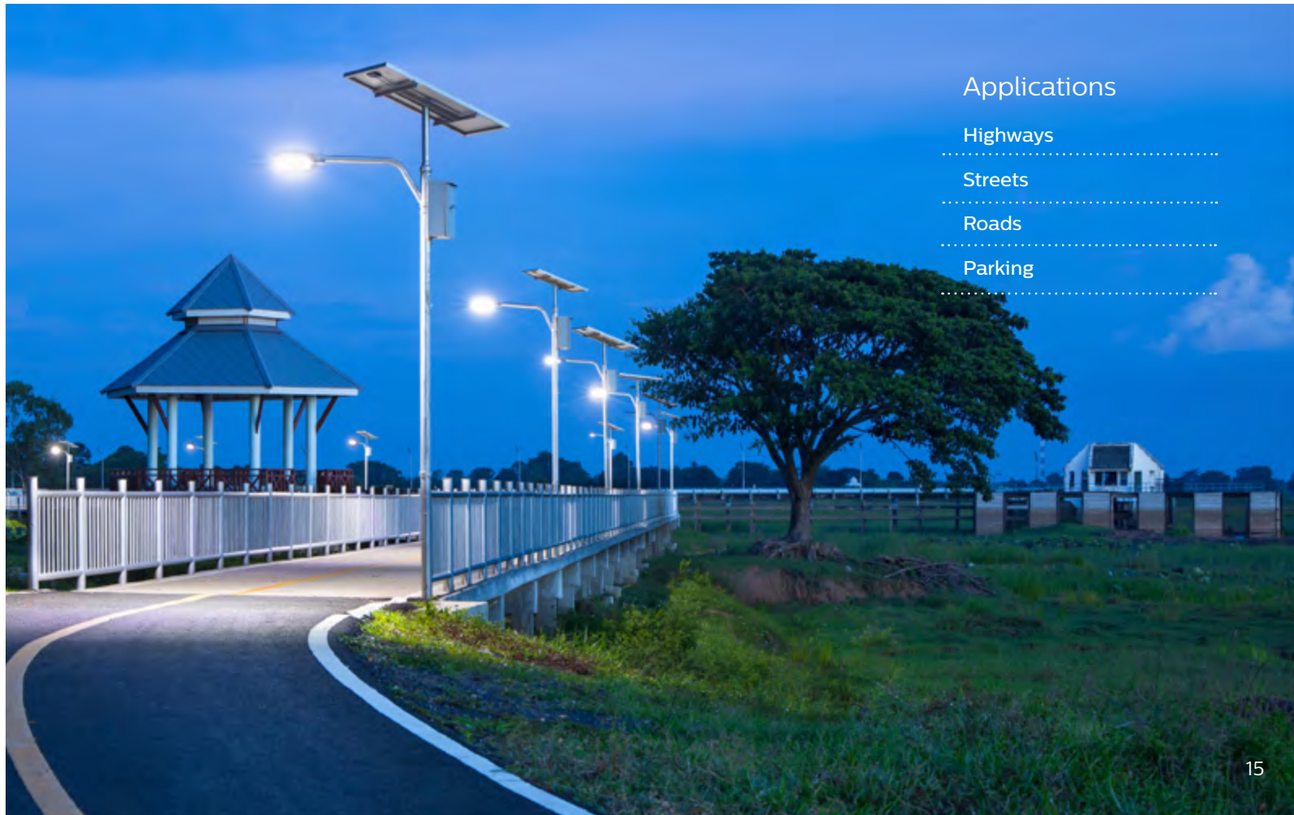
interact ready.

Product benefits

- Brings light to areas without access to electric grid
- Environmentally friendly
- Saves energy
- High efficacy reduces cost per light point by reducing battery and panel size
- Preserves landscape as no trenching for cabling required
- Sturdy construction for long life
- Smart city ready for sustainable cities

Technical specifications

Specifications	BRP 392/ 393/ 394
System wattage (W)	up to 150
System efficacy (lm/W)	up to 170
Lumen output (lm)	up to 24000
Housing	High pressure die cast aluminium
Colour temperature (K)	3000, 4000, 5700
CRI	70
IP rating	IP66
Cover	Polycarbonate
Configurable	Yes
Connectivity	BLE mobile app for configuration of charge controller Interact ready option available on request



GreenVision Xceed Gen4.0 solar

Configurable non-integrated street lights

Range of solar street lights from 5000 lumen to 24000 lumen, configurable dimming profile and load wattage. Compatible with multiple battery types like $LiFePO_4$, GEL. Configuration and health monitoring through mobile app or hand held remote. Available in offgrid and hybrid solar versions.

Robust lighting solution

High quality material and design

- High efficacy reduces cost per light point by optimising battery and panel size
- Pressure die-cast aluminium housing for sturdiness and excellent thermal management

Long-lasting performance

- Designed for energy savings and smart cities
- Designed for operation under diverse environmental conditions from -30˚C to 50˚C

Smart and flexible

- Configurable dimming profile and load wattage
- Intelligent hybrid switch over
- Compatible with Gel and $LiFePO_4$ batteries

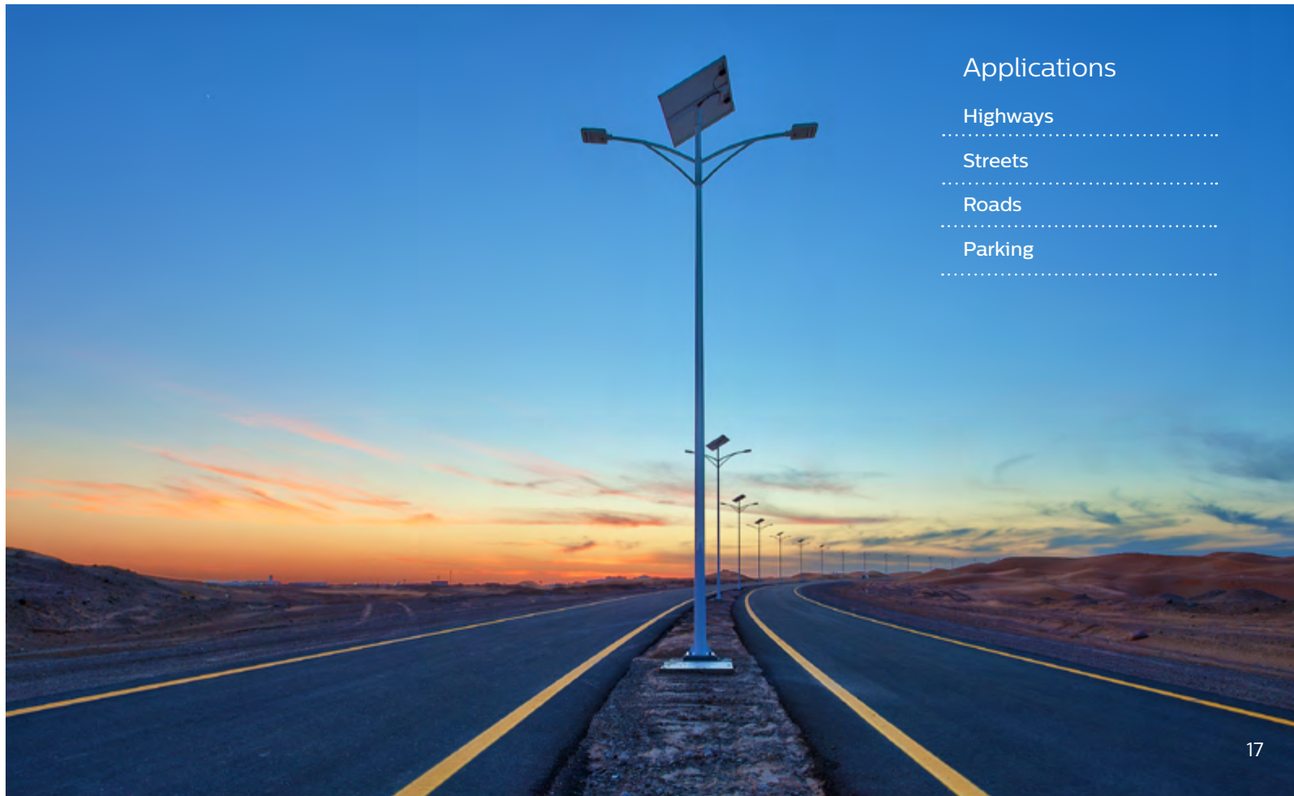
interact ready.

Product benefits

- Brings light to areas without access to electric grid
- Environmentally friendly
- Saves energy
- High efficacy reduces cost per light point by reducing battery and panel size
- Preserves landscape as no trenching for cabling required
- Sturdy construction for long life
- Smart city ready for sustainable cities

Technical specifications

Specifications	BRP371/372/373
System wattage (W)	up to 150
System efficacy (lm/W)	up to 170
Lumen output (lm)	5000-24000
Housing	Pressure die-cast aluminium
Colour temperature (K)	4000, 5700
CRI	70
IP rating	IP66
Cover	Glass
Configurable	Yes
Connectivity	BLE mobile app for configuration of charge controller Interact ready option available on request



Applications

- Highways
- Streets
- Roads
- Parking

GreenVision Xceed v2

Gen4.0 solar

Configurable non-integrated street lights

Range of solar street lights from 5000 lumen to 24000 lumen, configurable dimming profile and load wattage. Compatible with multiple battery types like $LiFePO_4$, GEL. Configuration and health monitoring through mobile app or hand held remote. Available in offgrid and hybrid solar versions.

Smart and robust.

High quality material and design

- High efficacy reduces cost per light point by optmising battery and panel size
- Pressure die-cast aluminium housing for sturdiness and excellent thermal management

Long-lasting performance

- Designed for energy savings and smart cities
- Designed for operation under diverse environmental conditions from -30˚C to 50˚C

Smart and flexible

- Configurable dimming profile and load wattage
- Intelligent hybrid switch over
- Compatible with Gel and $LiFePO_4$ batteries

interact ready.

Product benefits

- Brings light to areas without access to electric grid
- Environmentally friendly
- Saves energy
- High efficacy reduces cost per light point by reducing battery and panel size
- Preserves landscape as no trenching for cabling required
- Sturdy construction for long life
- Smart city ready for sustainable cities

Technical specifications

Specifications	BRP 381/382/383
System wattage (W)	up to 150
System efficacy (lm/W)	up to 170
Lumen output (lm)	up to 24000
Housing	Pressure die-cast aluminium
Colour temperature (K)	5700
CRI	>70
IP rating	IP66
Cover	Glass
Configurable	Yes
Connectivity	BLE mobile app for configuration of charge controller Interact ready option available on request

SmartBright all-in-one solar street light

All integrated solar lighting solution.

Integrated solar street light with lithium ferro phosphate battery, solar panel and charger built into the luminaire. Independently tilt-able LED source and pole mounting bracket allows light beam to focus on the road and solar panel towards the sun. Microwave based motion sensor for optimising battery autonomy.

Integrated solar lighting solution

Long lasting performance

- Factory set dimming profile along with microwave sensor for run time maximisation.
- Long life cycle $LiFePO_4$ battery

Efficient

- MPPT charge controller for maximum efficiency
- Independently tilt-able LED source and polemounting bracket allows light beam to focus on the road, and solar panel towards the sun

Latest technology

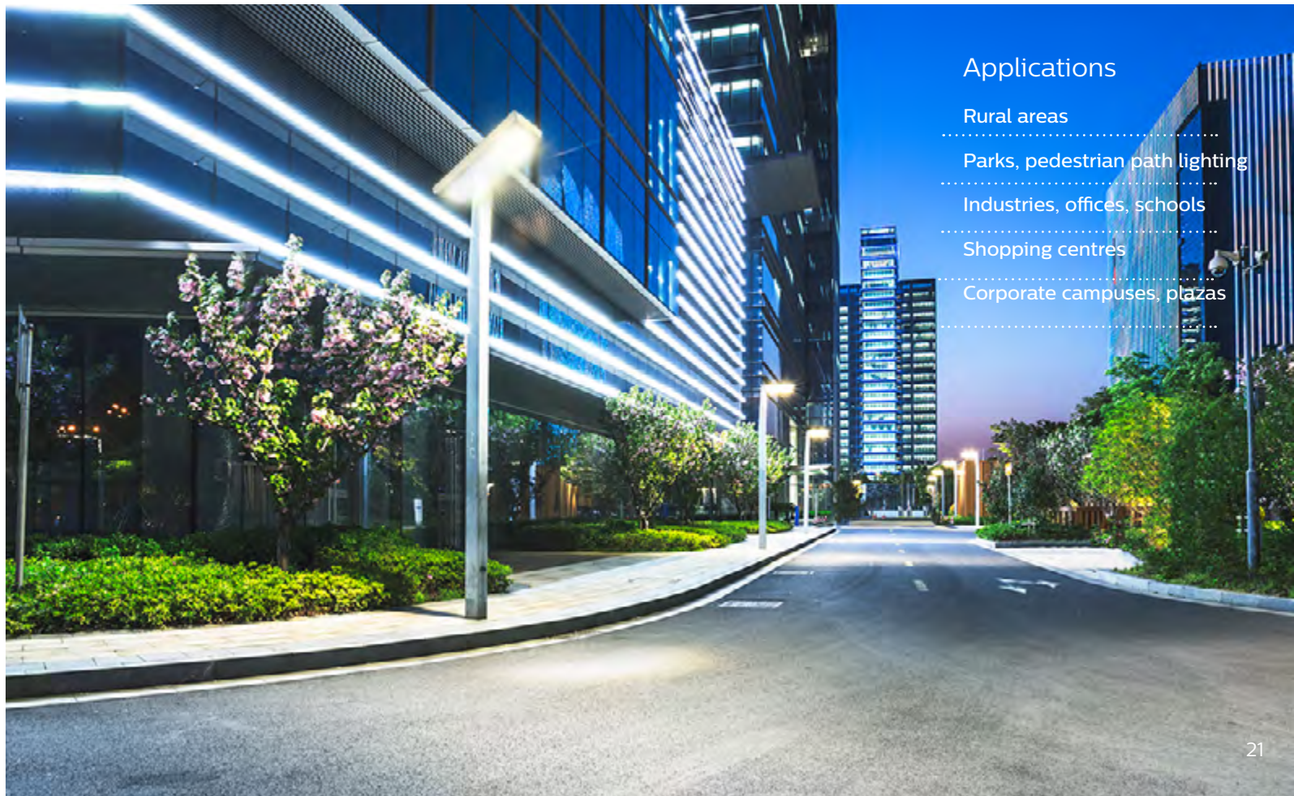
- Wireless remote for configuration
- Microwave based motion sensor

Product benefits

- Brings light to areas without access to electric grid
- Saves energy
- Preserves landscape as no trenching for cabling required
- Environmentally friendly

Technical specifications

Specifications	BRP110 LED50	BRP110LED85	BRP110LED120
System wattage (W)	35	60	80
Lumen output	5000	8500	12000
Battery	12.8V 24Ah	12.8V 42Ah	25.6 30Ah
Solar Panel (Wp)	50	90	120
Housing	Aluminium		
Colour temperature (K)	5700		
CRI	>70		
IP rating	IP65		
Cover	Polycarbonate		
Mounting	Adjustable pole top mounting		
Motion sensor type	Microwave		
Configuration	Wireless remote		



Tango G2 Gen 4.0 solar

Configurable and non-integrated flood lights

Range of solar flood lights starting from 5000 lumens to 15000 lumens. Suitable for area lighting, billboards, facades and parking areas. Configurable dimming profile and load wattage. Available in offgrid and hybrid solar versions.

More brightness, more savings.

Weather resistant

- IP65 and IK07 rated
- Up to 15000 lumens
- Pressure die-cast aluminium housing for sturdiness and excellent thermal management

Long-lasting performance

- Designed for energy savings and smart cities
- Designed for operations under diverse environmental conditions

Smart and flexible

- Configurable dimming profile and load wattage
- Intelligent hybrid switch over
- Compatible with gel and $LiFePO_4$ batteries

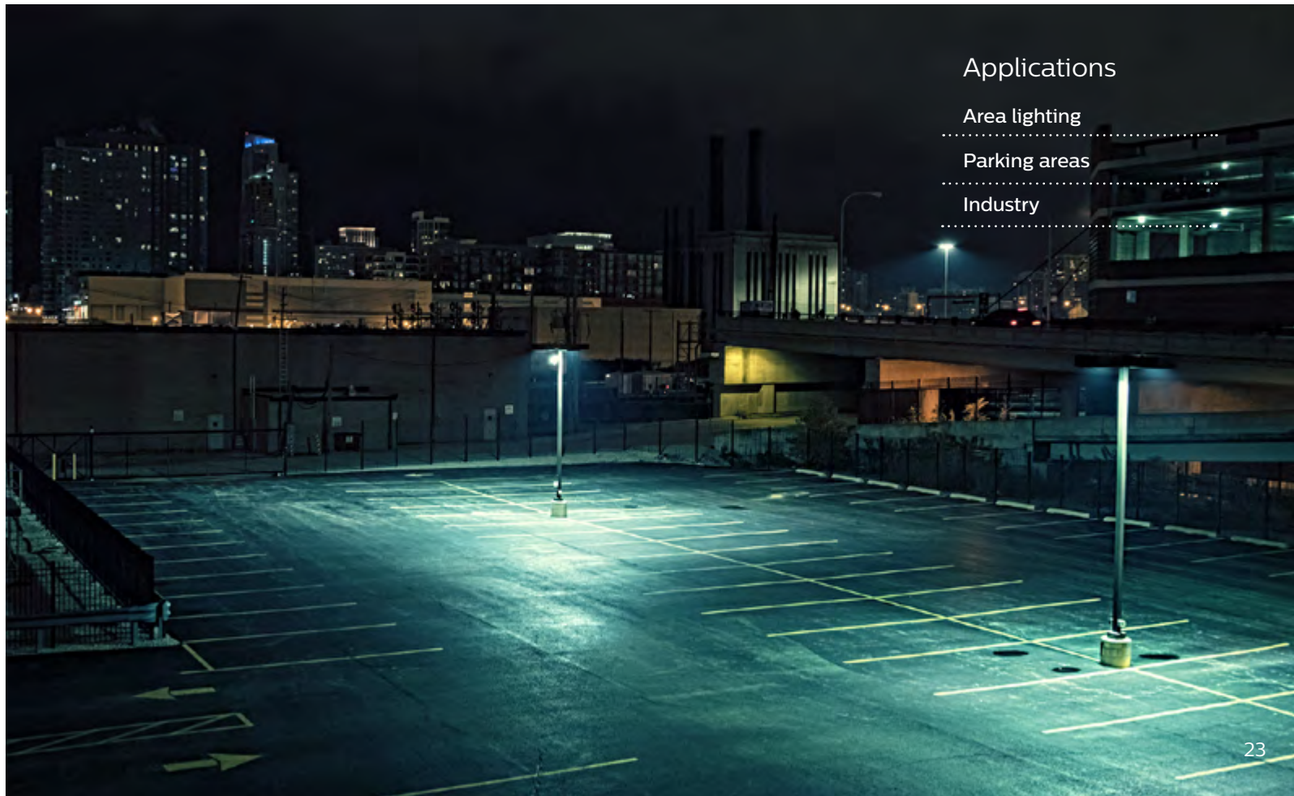
interact ready.

Product benefits

- Brings light to areas without access to electric grid
- Environmentally friendly
- Saves energy
- High efficacy reduces cost per light point by reducing battery and panel size
- Preserves landscape as no trenching for cabling required
- Sturdy construction for long life
- Smart city ready for sustainable cities

Technical specifications

Specifications	BVP281/282
System wattage (W)	40-120
Lumen output	5000-15000
Housing	Pressure die-cast aluminium housing
Colour temperature (K)	5700
CRI	>70
IP rating	IP65
Cover	Glass
Mounting	Wall/ bracket
Connectivity	BLE mobile app for configuration of charge controller Interact ready option available on request



SmartBright solar flood light

Efficient and reliable solar flood light

Solar flood lighting DIY kit with lithium ferro phosphate battery built into the luminaire. Split folding solar panel, remote controller and installation accessories, IP66, IK07 for sturdiness. Choice of four lumen packs - 1000, 2000, 3000 and 4800 lumens.

Easy to use and efficient

Installer friendly

- DIY installation
- Mounting accessories included
- Split folding solar panel

Eco friendly

- Requires no electricity grid connection
- Environmentally friendly lithium battery

Weatherproof

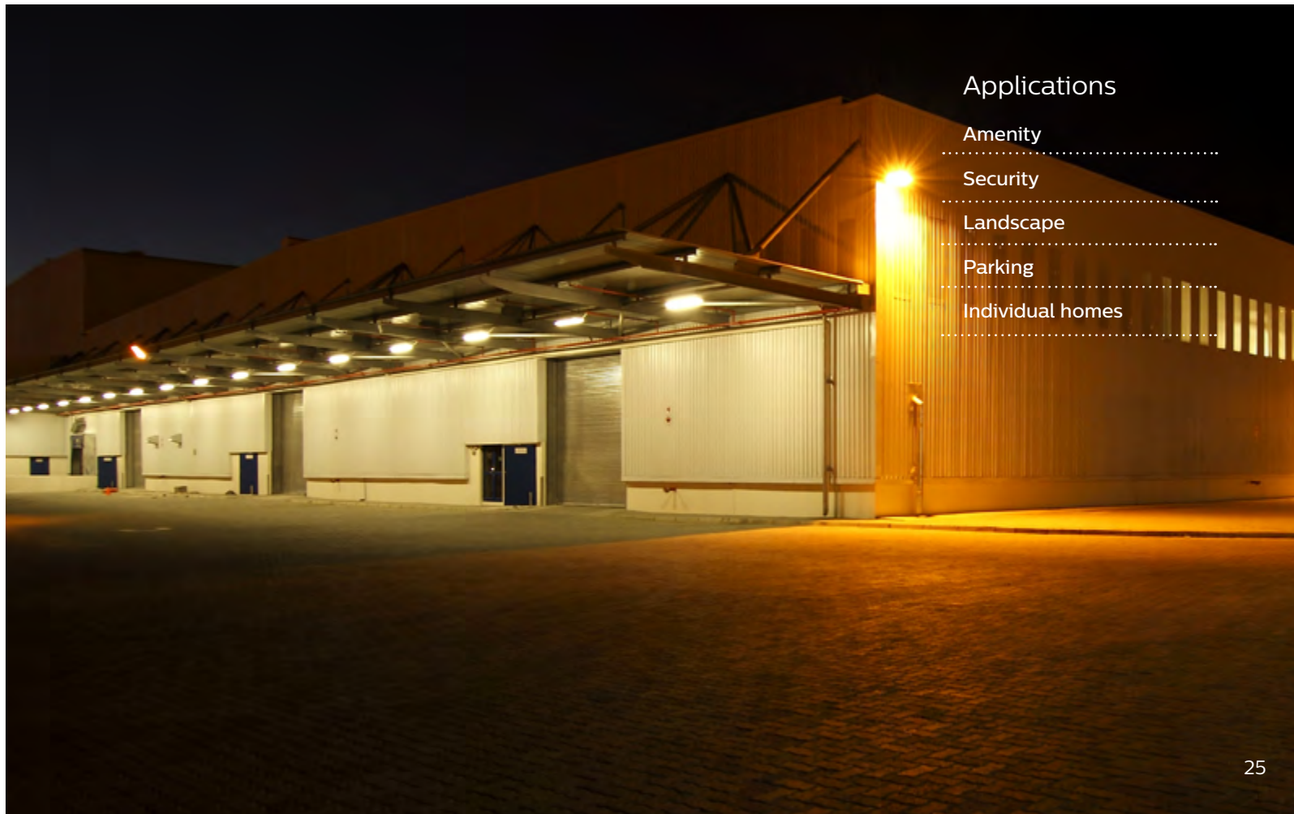
- IP66 rated
- $LiFePO_4$ battery installed inside sealed housing

Product benefits

- Split folding solar panel
- Saves energy
- $LiFePO_4$ battery included inside the luminaire
- Infra red remote controller to set light output
- Sturdy construction for long life

Technical specifications

Specifications	BVP080
System wattage (W)	10, 20, 30, 48
System efficacy (lm/W)	100
Lumen output	1000, 2000, 3000, 4800
Housing	Aluminium die cast housing
Colour temperature (K)	5700
CRI	>70
IP rating	IP66, IK07
Cover	Glass
Mounting	Wall mounted
Controls	IR remote



Combo CC Gen4.0

Configurable and smart solar charge controller

Combo CC Gen 4.0 is a range of solar charge controllers suitable for major, intermediate and minor road installations, using either off-grid or hybrid solar lighting. High system efficacy, optimised design and long life ensures lower cost of ownership. On site configuration and parameter reading with BLE mobile app.

Configurable and easy to operate

High system efficacy

- Integrated LED driver enables high system efficacy
- MPPT charging algorithm for maximum efficiency
- Temperature compensation for batteries

Best in class

- Onsite programming and configuration with GUI for panel, battery and dimming profile.
- Protections inbuilt for solar sub systems
- Multiple battery types supported

Optimized design

- Metal weatherproof IP67 housing with IP67 connectors
- Plug and play poka - yoke connectors for error free connections
- Tactile and audible mating feedback

interact ready.

Product benefits

- Three different platforms: 200Wp, 400Wp and 600Wp.
- Available in offgrid and hybrid options.
- Can drive luminaires from 5000 to 24000 lumens for a wide range of autonomy days and solar insolation.
- Sturdy construction for long life

Technical specifications

Specifications	ZJS401 CCC 200Wp	ZJS402 CCC 400Wp	ZJS403 CCC 600Wp
Maximum charging current	17A		20A
Maximum LED wattage	50W	80W	180W
Maximum load current	2.5A	1.7A	3.2A
System voltage	12V	24V	12V/24V
IP Rating	IP67		
Configurable parameters	Dusk and dawn operation, battery type, load wattage, dimming profile, RTE.		
Architecture	Offgrid solar & hybrid solar		
LED indications	Battery charging, load ON, battery deep discharge, fault alert.		
Configuration	BLE mobile app for configuration of charge controller (with BLE dongle accessory)		Wireless remote/ Laptop
Connectivity	RMU, Interact ready option available on request		RMU


MC4


KB1

Solar battery sub systems – GEL

Range of high performance batteries

A range of 65Ah to 250Ah 12V/24V, valve regulated lead acid (VRLA) batteries with gel electrolyte technology for long service lifetime and high performance. These batteries deliver good performance in a wide ambient temperature range.

Advanced technology for high performance

Gel electrolyte technology

- Long service lifetime and high performance in deep discharging

Wide range of ambient temperature

- Good performance of constant power input

Robust connections

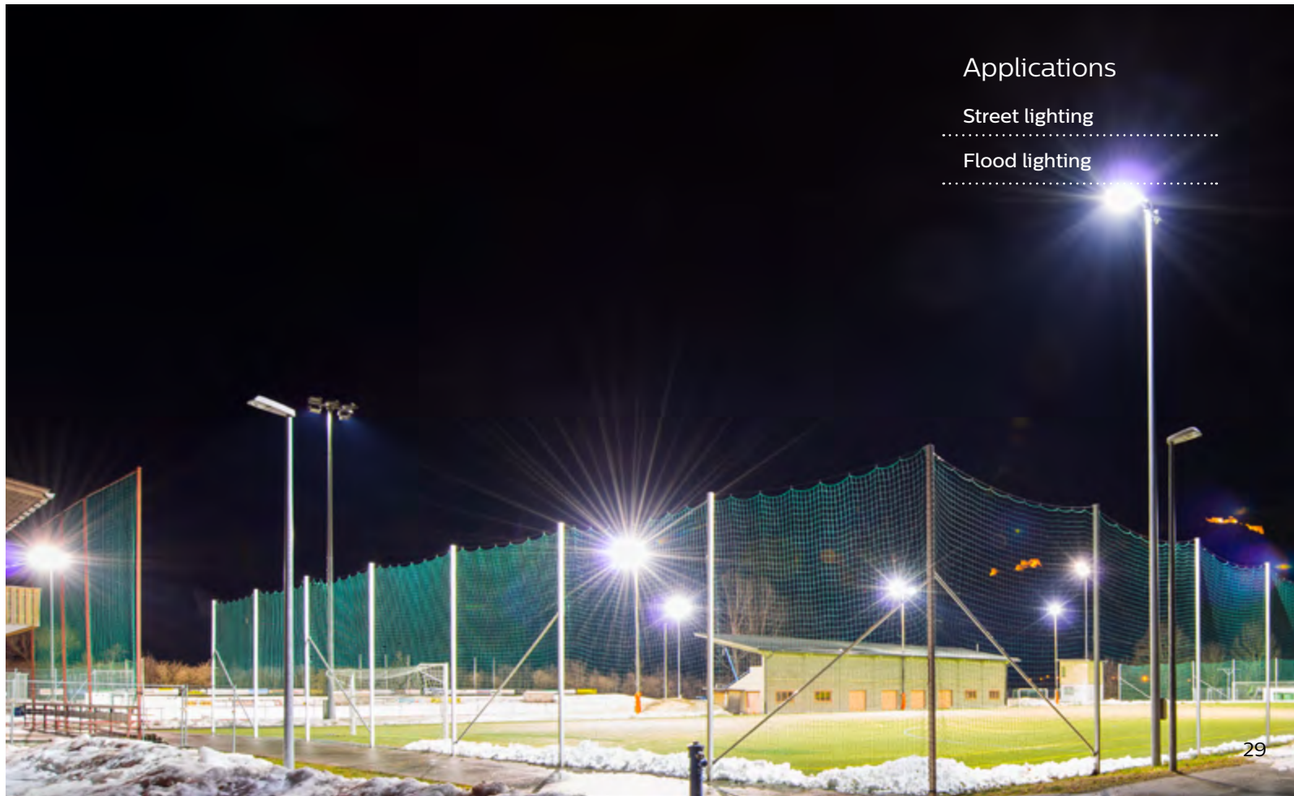
- IP67 connectors
- Plug and play design for easy wiring
- Tactile and audible mating feedback

Product benefits

- Gel electrolyte, 12 year lifespan in float service application.
- Excellent capacity restoration, 95% capacity recovery after short circuit in 24 hours.
- Low self-discharge rate, less than 3% per month
- Wide application temperature range, -20°C to 55°C
- High charge efficiency, good small current charge absorption ability
- Water-proof, patented design, that enables underground battery installation
- Ventilation pipe, releases the gas from battery to the air for safe operation

Technical specifications

Specifications	XGS321/XGS322
Battery chemistry	Gel
Capacity	65Ah to 250Ah
Housing	IP68
Mounting	Underground installation
Battery Voltage	12V and 24V
Connections	3 m cable with IP67 MC4 and KB 1 connectors
Charging temp.	-20°C to 55°C
Discharging temp.	-20°C to 55°C
Self discharge rate	< 3% / month @25 degree celsius
Life Cycle	>800 cycles at 70% daily DOD



Solar battery sub systems-$LiFePO_4$

Range of high performance batteries

Lithium ferro phosphate battery integrating highly efficient technology for long service lifetime, high performance in deep discharging. Inbuilt battery management system for protection and safe operation. Can be used in a wide range of ambient temperatures delivering constant power output.

Advanced technology for high performance

$LiFePO_4$ technology

- Long service lifetime and high performance in deep discharging
- 2000 cycles at 90% DOD

Safe

- Over charging/discharging protection
- Short circuit protection
- Cell balancing
- Temperature high/low cut offs

Robust

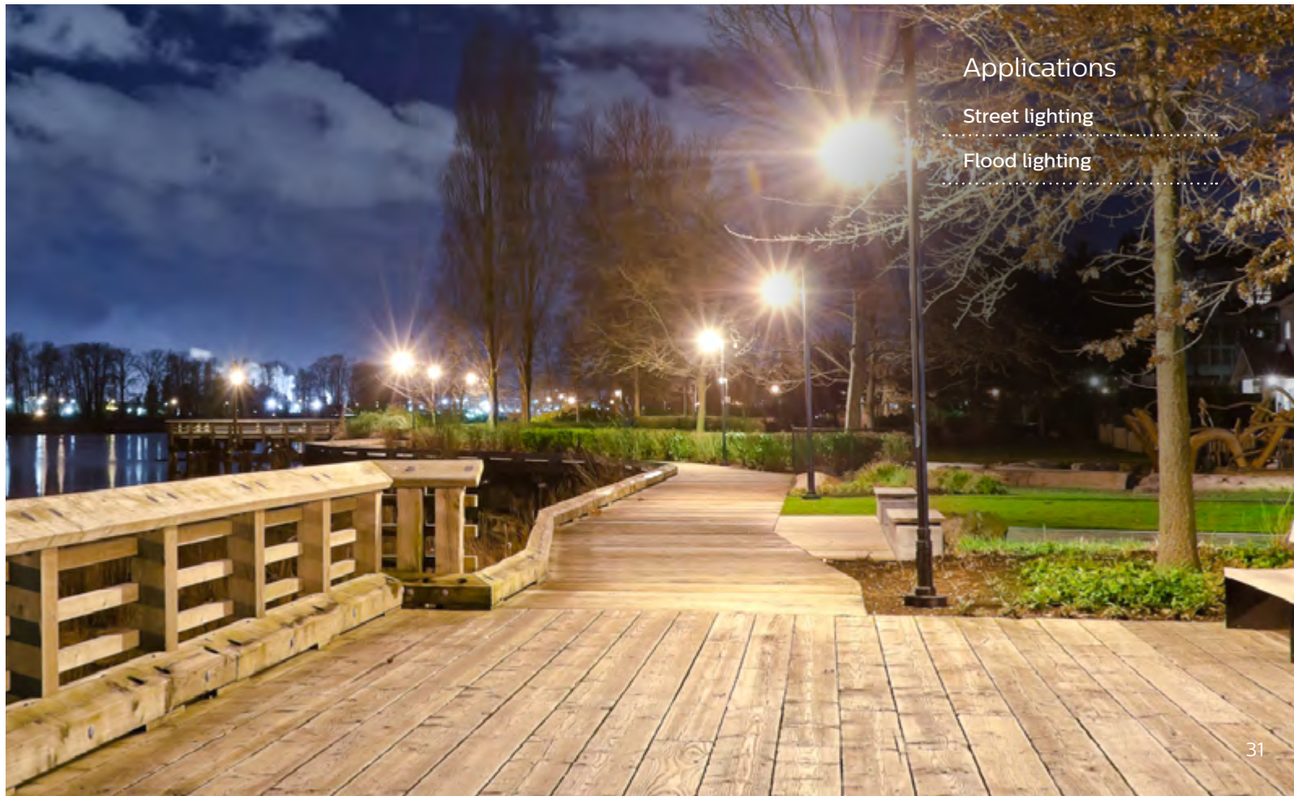
- Environmentally sealed to IP68
- Suitable for underground installation

Product benefits

- On-pole and in-ground installation
- Available in 12.8V and 25.6V systems
- Wide operating temperature range from 0 to 60° C
- Plug and play design for easy connection and installation

Technical specifications

Specifications	ZJS601
Battery chemistry	Lithium ferro phosphate
Capacity	50Ah to 160Ah
Housing	IP68
Mounting	Underground & pole installation, pole mounting kit available as accessory
Battery Voltage	12.8V and 25.6V
Connections	3 m cable with IP67 MC4 and KB1 connectors
Charging temp.	0°C to 60°C
Discharging temp.	-20°C to 60°C
Life Cycle	>2000 cycles at 90% DOD



Solar panel sub systems

Range of high performance solar panels

A range of solar panels from 30W to 325W specially designed for Philips solar street lighting and flood lighting.

Long lasting performance

Long life

- Connectors with excellent aging resistance and UV endurance, for harsh environment operation
- 25+ years life class

Weatherproof

- Wide temperature range of -40°C to 85°C
- IP67 connector

Safe

- Specially designed for Philips solar charge controllers
- Tested in accordance with Philips quality policy

Product benefits

- Robust quality managed by Philips quality discipline, supplied by world class manufacturers
- Customisation available
- Plug and play design for easy connection and installation

Technical specifications

Specifications	Flat panels
Panel wattage (Wp)	30 to 325
System voltage	Range available for 12V and 24V system voltage
Temperature Range	-40°C to +80°C
PV type	Polycrystalline silicon
Connection cables	Cable 1.0 m 4.0 sqm, 3m to 14.5m extension accessory available
IP rating	IP67
Mounting	On pole top

Solar panel sub systems

Retrofit vertical solar panels

A range of solar panels from 100Wp to 190Wp specially designed for Philips solar street lighting,

Redefining urban landscapes

360° full day charging

- 360° solar panel ensuring full day sunlight capture
- Works efficiently at higher latitudes due to vertical position of the panel
- Monocrystalline technology for maximum efficiency

Good visual appearance

- Sleek hexagonal vertical design
- Low wind resistance offers flexibility of choosing poles
- Visually appealing installations

Weatherproof

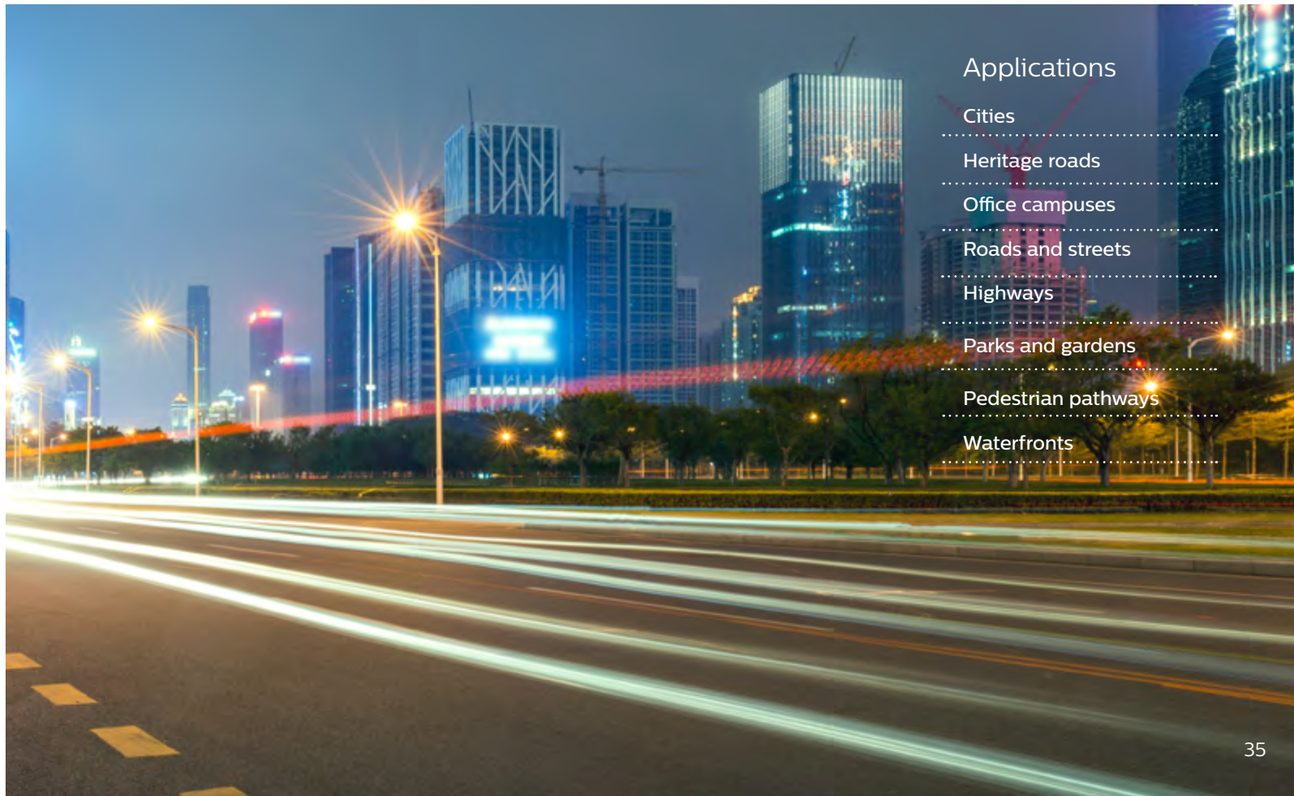
- Resistant to dust, dirt and snow accumulation due to vertical design
- Better resistance to hailstorms

Product benefits

- Cylindrical design eliminates the chances of accumulation of dust, hence delivers more power
- Plug and play design for easy connection and installation
- Aesthetically pleasing installation for heritage sites
- Very large solar panel size possible due to low wind resistance and modular installations

Technical specifications

Specifications	Vertical panels
Panel wattage (Wp)	100, 140 and 190
System voltage	12V and 24V
Temperature Range	-40°C to +85°C
PV type	Monocrystalline
Connection cables	Cable connection kit Included, 3m to 14.5m extension accessory available
IP rating	IP66
Material	Aluminium bracket and tempered glass covering
Mounting	Along the height of pole

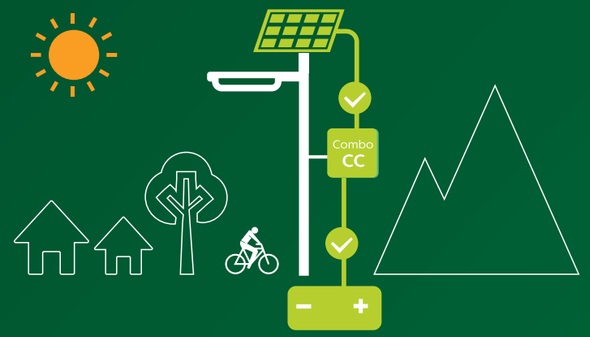


Our solar lighting propositions

Off grid solar

•Saving cabling and distribution switchgear cost

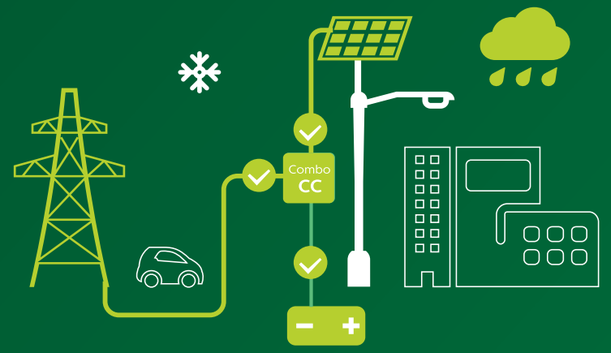
This system consists of luminaires, solar panels and batteries designed to operate autonomously without any connection with an electrical grid. The solar panels charge the batteries during the day and the stored energy powers the LEDs at night.



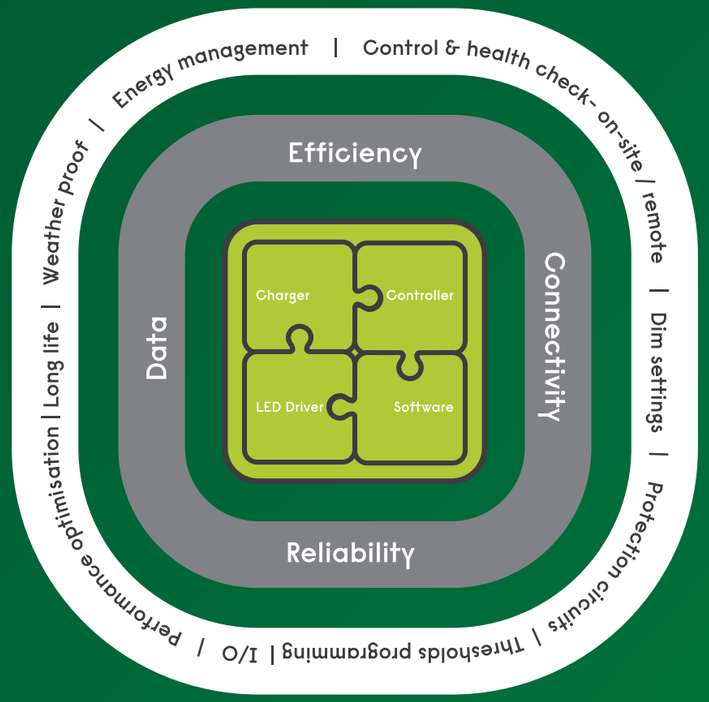
Hybrid solar

•For existing grid connected light points

This system is like the off-grid solar system but is connected to a power grid. The solar panels charge the batteries during the day and the stored energy powers the LEDs at night. If the batteries run out of power, the LEDs are powered with energy drawn from the power grid.



Philips solar systems combine charger, controller, LED driver and connectivity options on the same board. Available in off-grid and hybrid architectures, the range comprises solar street lights and flood lights with a wide range of lumen outputs delivering best in class efficacy.



Reliable operation under diverse conditions

Abbreviations

LMLA GEL: low Maintenance Lead Acid (batteries)
CRI: colour rendering index
CCT: correlated colour temperature
PV: photovoltaics
LM: lumen
K: kelvin
Ah: ampere hour
A: ampere
Hz: hertz
V: volts
Wh: watt hour
BLE: bluetooth low energy
W: watts
IP: ingress protection
IK: impact protection
$LiFePO_4$: lithium ferro phosphate
C: celsius
LED: light emitting diode
DIY: do it yourself
RMU: remote monitoring unit
RTE : run time extension
DOD : depth of discharge
m: metres

www.lighting.philips.com