ALDRIDGE

SolSolution

Vertical Solar Cylinder, P & V LED Street Lighting

Redefining Solar Panel Street Lighting

Aldridge SolSolution solar panel, with its advanced design, adopts the latest technology in solar lighting that will revolutionise the LED street light industry. The SolSolution is a vertically mounted, cylindrical solar panel, a new generation of solar powered LED street light which transforms the whole look of the traditional solar panel.

The SolSolution Solar Cylinder is easily mounted onto any type of pole from 70 - 160mm diameter. The mono-crystalline solar panel, with efficiency of up to 21.2% and a lifetime of almost 20 years, is an aesthetic, modular design which has a greater wind resistance than regular solar panels, and the ability to capture sunlight 360°.

There are 2 standard sizes of solar panel power cylinders available: 100W and 140W. Using a multiple of cylinders you can increase the wattage by connecting the cylinders in parallel as required, such as 200W (2pcs of 100) 280W (2pcs of 140W), 300W (3pcs of 100W).

The complete SolSolution system consists of two functional components, the solar cylinder and solar LED light head - Cat. **P** 20W - 60W and Cat. **V** 60W - 120W. The solar cylinder and solar light head are easily connected by MC4 connectors. The battery and SolSolution controller are integral to the light fixture. Optional lamp poles are also available from 5 – 12 metres height. With optimum luminous flux and durability the SolSolution meets the requirements of most lighting projects.

With added benefit, the SolSolution solar cylinder can also be used for, LED signs, LED traffic lights, power plants and construction sites etc. which gives the SolSolution cylinder a cutting edge over traditional solar panels.

SolSolution Solar Cylinder

Aldridge SolSolution Solar panel cylinder offers the following advantages over conventional solar panels:

Universal Application

SolSolution Solar Cylinder is a modular concept, designed for easy installation and disassembly. SolSolution can be used on any type of pole without dismantling. Poles can be sourced separately and the detachable modules with adjustable spacing brackets makes mounting the SolSolution easy on almost any pole.

360° Full Day Charging

With solar cell efficiency of up to 21.2%, the 6 slim solar panels sides are fixed tightly on a hexagon frame, ensuring 50% of solar panel will face the sun at any time of the day.

Patented Design

The SolSolution Solar Cylinder is designed and based on advanced concepts and manufactured to a high standard. PCT pre-registration has been processed in 180 countries.

Strong Wind Resistance

The cylindrical design improves the wind resistance area. Each cylinder is directly fastened to the pole by 12 screws. The units stand up well against the most violent winds.

Anti Snow Covering

SolSolution Solar Cylinder mounted vertically, is also resistant to snow coverage unlike a regular solar panel. This ensures enough power can be generated even in very challenging climates, reducing the possibility of black outs.

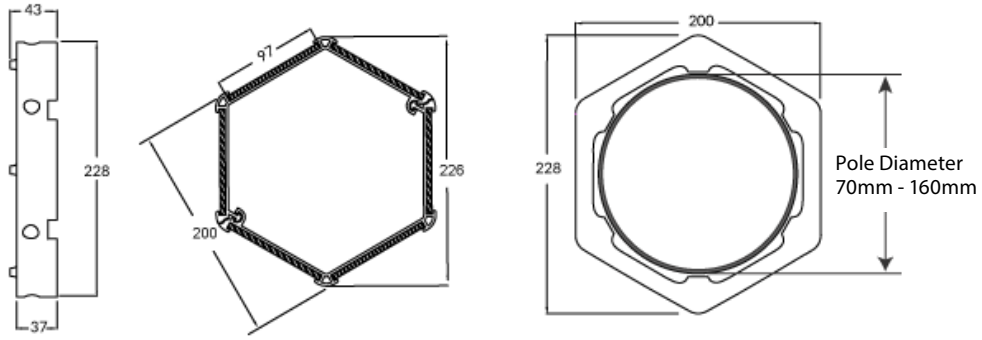
Easy to Clean

Less dust will fall on surface of the SolSolution Cylinder. The unit can be easily cleaned when standing on the ground with a long handled brush, reducing the need for lifts which results in higher efficiency and less maintenance costs.

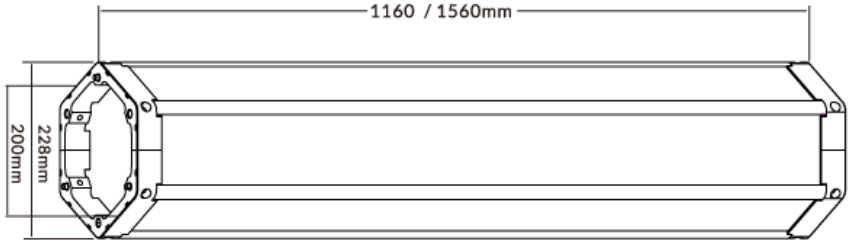
Aesthetic Design

In comparison with the large traditional top mounted solar panels, the SolSolution with its integrated light poles, lamps and cylinders, is a contemporary design, and the ultimate solution where design aesthetics and decorative lighting applications are desired.

Dimensions: SolSolution Solar Cylinder



100W 1160mm / 140W 1560mm



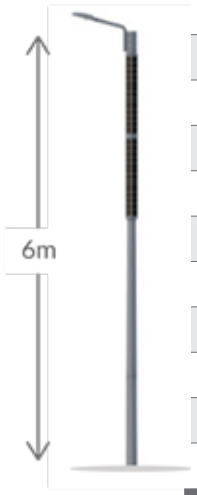
100W 140W

Specification SolSolution Solar Cylinder

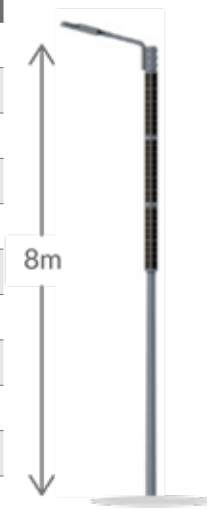
PRODUCT CODE	SSC.100W		SSC.140W	
Cylinder Qty	1 Cylinder		1 Cylinder	
Peak power / Pm(W)	100W		140W	
Open circuit voltage / Voc(V)	21.6V		21.6V	
Max. power voltage / Vmp(V)	18.0V	36V	18.0V	36V
Short circuit current / Isc(A)	5.56A	2.78A	7.78A	3.89A
Solar cells origin & type MONO (PERC process)	MONO (PERC process)		MONO (PERC process)	
Solar cells efficiency	>21.2%		>21.2%	
Dimensions	200 x 228 x 1160mm		200 x 228 x 1560mm	
Material	Aluminium + Tempered Glass		Aluminium + Tempered Glass	
Cable /Cable connector	2.5mm 2 cord with MC4 906WH		2.5mm 2 cord with MC4 906WH	
IP Rating	IP65		IP65	
Operating temperature range	-30°C ~ +70°C		-30°C ~ +70°C	
Warranty	5 years		5 years	
Lifespan	>25 Years		>25 Years	
N.W. (kg)	18.0V – 16.82kgs	36V – 16.82kgs	18.0V – 18.90kgs	36V – 21.00kgs
G.W. (kg)	18.0V – 18.69kgs	36V – 18.69kgs	18.0V – 18.90kgs	36V – 21.00kgs

SolSolution Pole (0ptional)

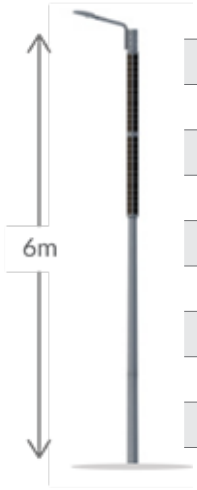
Pole Height	6 Metres
Light Power	20 Watts
Luminous Flux	>2,800lm
Beam Angle	140 x 70°
Battery Capacity	12.8V 230WH
Battery Lifetime	>1,800 Cycles
Solar Cylinder	2 x Q100 200W 18V
Solar Controller	Programmable MPPT
Post Dimensions	90 x 150mm
Working Temperature	-20°C ~ +60°C
Posts Distance	12 ~ 18 Metres
Warranty	3 Years



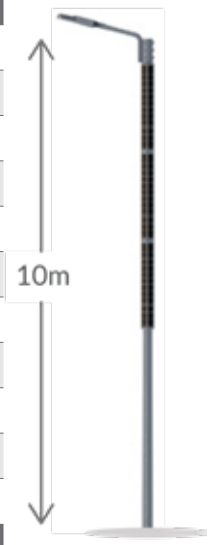
Pole Height	8 Metres
Light Power	60 Watts
Luminous Flux	>8,800lm
Beam Angle	145 x 83°
Battery Capacity	>25.6V 666WH
Battery Lifetime	>2,500 Cycles
Solar Cylinder	3 x Q140 420W
Solar Controller	Programmable MPPT
Post Dimensions	120 x 160mm
Working Temperature	-20°C ~ +60°C
Posts Distance	20 ~ 30 Metres
Warranty	3 years



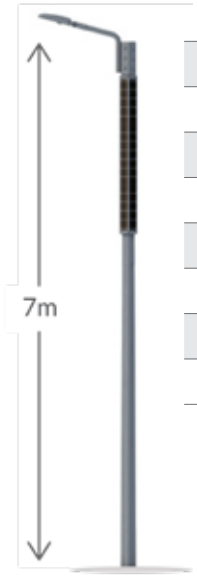
Pole Height	6 Metres
Light Power	30 Watts
Luminous Flux	>4,200lm
Beam Angle	140 x 70°
Battery Capacity	12.8V 307WH
Battery Lifetime	>2,000 Cycles
Solar Cylinder	2 x Q100 200W
Solar Controller	Programmable MPPT
Post Dimensions	100 x 160mm
Working Temperature	-20°C ~ +60°C
Posts Distance	15 ~ 20 Metres
Warranty	3 Years



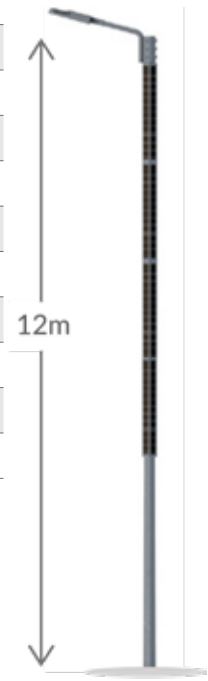
Pole Height	10 Metres
Light Power	80 Watts
Luminous Flux	>10,800lm
Beam Angle	145 x 83°
Battery Capacity	>25.6V 832WH
Battery Lifetime	>2,500 Cycles
Solar Cylinder	3 x Q140 560W
Solar Controller	Programmable MPPT
Post Dimensions	120 x 160mm
Working Temperature	-20°C ~ +60°C
Posts Distance	20 ~ 35 Metres
Warranty	3 years



Pole Height	7 Metres
Light Power	50 Watts
Luminous Flux	>6,500lm
Beam Angle	140 x 70°
Battery Capacity	12.8V 500WH
Battery Lifetime	>1,800 Cycles
Solar Cylinder	2 x Q140 280W
Solar Controller	Programmable MPPT
Post Dimensions	100 x 170mm
Working Temperature	-20°C ~ +60°C
Posts Distance	18 ~ 28 Metres
Warranty	3 Years

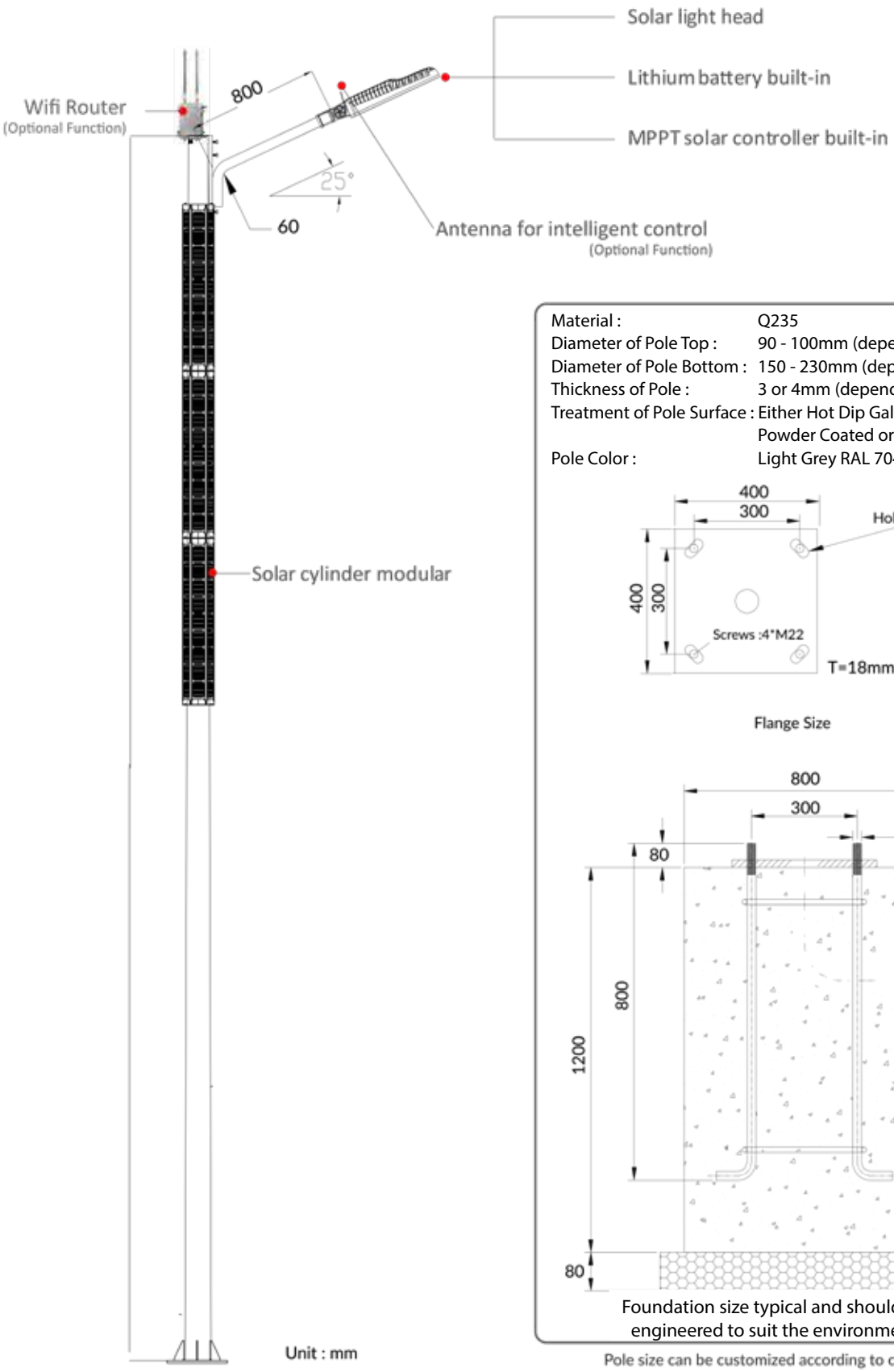


Pole Height	12 Metres
Light Power	100 Watts
Luminous Flux	>12,800lm
Beam Angle	140 x 70°
Battery Capacity	>25.6V 1000WH
Battery Lifetime	>2,500 Cycles
Solar Cylinder	5 x Q140 700W
Solar Controller	Programmable MPPT
Post Dimensions	100 x 230mm
Working Temperature	-20°C ~ +60°C
Posts Distance	20 ~ 35 Metres
Warranty	3 years



The specification including solar light and power of the SolSolution cylinder can be customised according to your requirements.

SolSolution Pole Construction



Material :	Q235
Diameter of Pole Top :	90 - 100mm (depending on height)
Diameter of Pole Bottom :	150 - 230mm (depending on height)
Thickness of Pole :	3 or 4mm (depending on height)
Treatment of Pole Surface :	Either Hot Dip Galvanized, Powder Coated or Both
Pole Color :	Light Grey RAL 7045

Flange Size

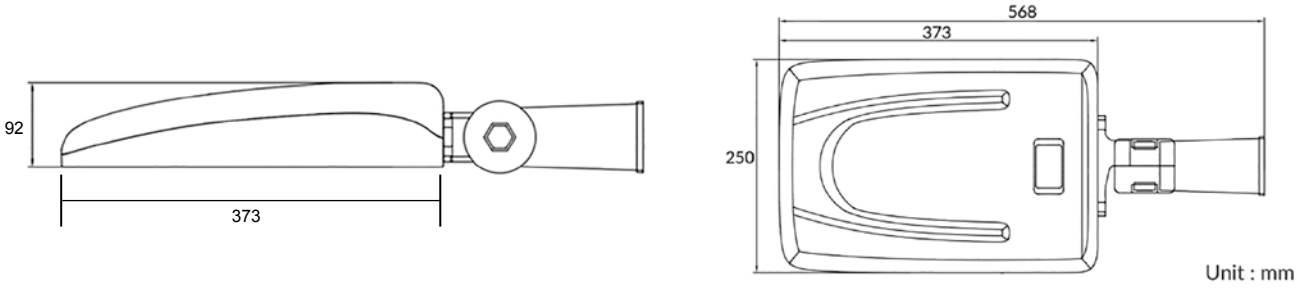
Foundation size typical and should be engineered to suit the environment

Pole size can be customized according to client's request.

SolSolution P LED Lamp

20 | 30 | 40 | 50 | 60 watts

Dimensions SolSolution P-LED Lamp



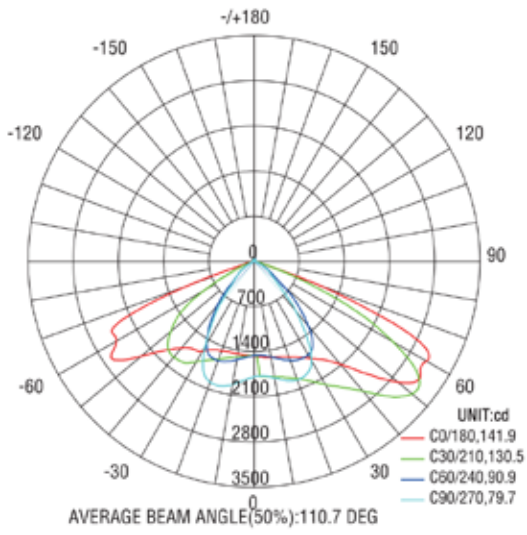
Key Advantages

- ALUMINIUM DIE CAST FIXTURE
  High quality, streamlined light fitting, powder coated - resistant to salt corrosion.
- PERFECT LIGHT DISTRIBUTION
  Batwing lighting distribution with smooth distribution curves.
- HIGH LUMENS
  Philips® SMD5050 LEDS, with up to 150lm/W. Maximum power efficiency, keeping lamp's stability and performance.
- INTEGRATED DESIGN
  LifePO4 battery and high quality MPPT charge controller are built inside of light head fixture combined as a complete unit with MC4 connectors to plug to solar panel. Capable of 3-4 days autonomy. 4-5 hours to fully charge the battery.
- LIFETIME BATTERY
  100% Performance, maintenance free, LifePO4 lithium battery with up to 2000 recharge cycles.
- SIMPLE AND DURABLE CONNECTION
  MC4 male and female plug directly to 18V solar panel for quick and easy connection. The 2.5mm^2 power cord provides stability and less voltage drop.
- INTELLIGENT WIRELESS CONTROL SYSTEM
  Based on 4G technology, changing lighting modes and monitoring light and battery status, is controlled remotely via mobile, iPad and computer devices.

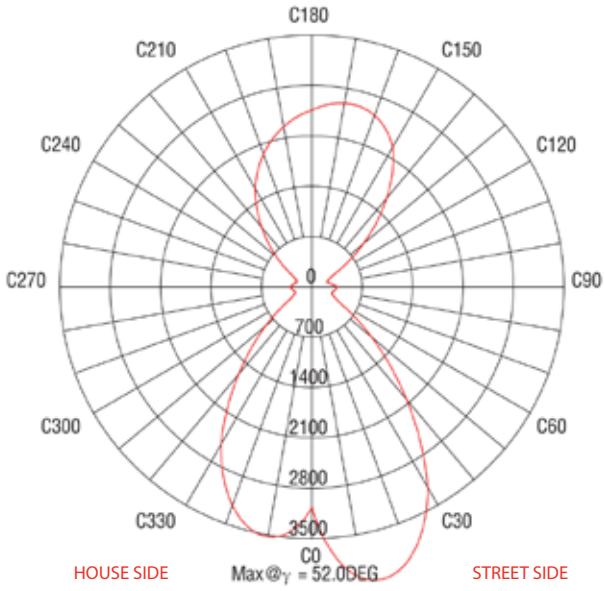
Internal Components

Performance

Light Distribution Curve (Unit: cd)

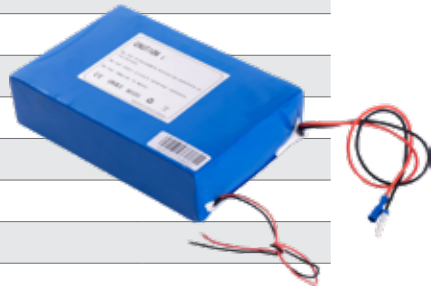


Max Plane Light Distribution Curve (Unit: cd)



Product Specifications: SolSolution Cat. P Street Light

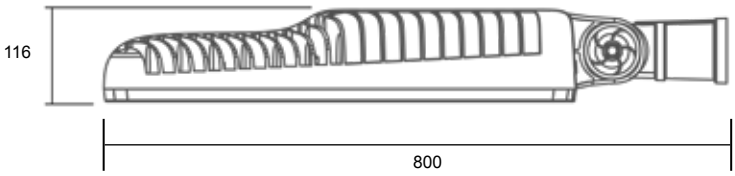
PRODUCT CODE	SSP.20W	SSP.30W	SSP.40W	SSP.50W	SSP.60W
LED Power	20W	30W	40W	50W	60W
Luminous Flux	2,800 lms	4,200 lms	5,124 lms	6,500 lms	6,936 lms
Pole Height	5 metres	6 metres	7 metres	7 metres	8 metres
SolSolution Cylinder (qty)	1 x 100W	1 x 140W	2 x 100W	2 x 140W	3 x 100W
Weight: Net/Gross Kgs	N.W **8.26**/G.W **9.18**	N.W **8.87**/G.W **9.85**	N.W **9.88**/G.W**10.98**	N.W **9.88**/G.W **10.98**	N.W 1**1.25** G.W **12.50**
LED Type	Philips® SMD5050				
Colour Temperature	4000K				
CRI	>80Ra				
Beam Angle	140 x 70°				
Lens Material	PMMA				
Fixture Size	568 x 250 x 92mm				
Fixture Material	Die Cast Aluminium				
Standard Colour	RAL 7045 Light Grey				
IP Rate	IP67				
IK Rate	IK10				
Motion Sensor	Microwave Sensor				
Spigot O/D	60mm				
Connector and Cable	2.5 mm 2 with MC4 Connectors				
Working Temperature	-15°C ~ +70°C				
Warranty	3 Years				
BATTERY PACK					
Battery Type	LifePO4 (Lithium iron phosphate battery)				
Battery Capacity	268WH 12V	391WH 12V	488WH 12V	548WH 12V	635WH 12V
Quality Level	Brand New A Class				
Charge Time	6 Hours				
Discharge Time	>20				
Battery Lifetime	2000 Cycles				
D.O.D.	100%				
Autonomy	3 ~ 4 Days Max				
BMS	Built In				
Over-DV	11.5V				
Over-DRV	12.8V				
Over-CV	14.6V				
Over-CRV	13.2V				
SOLAR CHARGER					
Charge Mode	MPPT				
System Voltage	12V				
Output Current	0.5A ~ 5A Settable				
Efficiency	>98%				
Setting Method	By Remote Control				
Installation Method	Built-In				
Operating Temperature	-40°C ~ +80°C				
IP Rating	IP68				
SOLAR PANEL COMPARISON					
SolSolution Cylinder	140W 18V		200W 18V		280W 18V
Regular Solar Panel	60W 18V		80W 18V		100W 18V
Certificates	CE, ROHS, FCC, IP67< LM80, COC, IK10, LM79, SABER, CB				

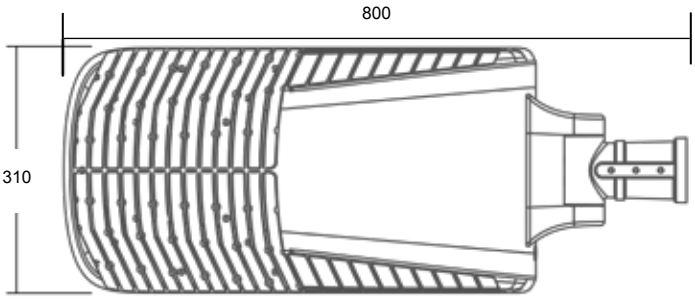


SolSolution V LED Lamp

60 | 70 | 80 | 90 | 100 | 120 watts

Dimensions SolSolution V Series Street Light





Key Advantages

- ALUMINIUM DIE CAST FIXTURE
  High quality, streamlined light fitting, powder coated - resistant to salt corrosion.

- PERFECT LIGHT DISTRIBUTION
  Batwing lighting distribution with smooth distribution curves.

- ULTRA HIGH LUMENS
  62 Philips® SMD5050 LEDS, with up to 160lm/W. Maximum power of 300W efficiency, keeping lamp's stability and performance.

- INTEGRATED DESIGN
  LifePO4 battery and high quality MPPT charge controller are built inside of light head fixture combined as a complete unit with MC4 connectors to plug to solar panel. Capable of 3-4 days autonomy. 4-5 hours to fully charge the battery.

- LIFETIME BATTERY
  100% Performance, maintenance free, LifePO4 lithium battery with up to 2000 recharge cycles.

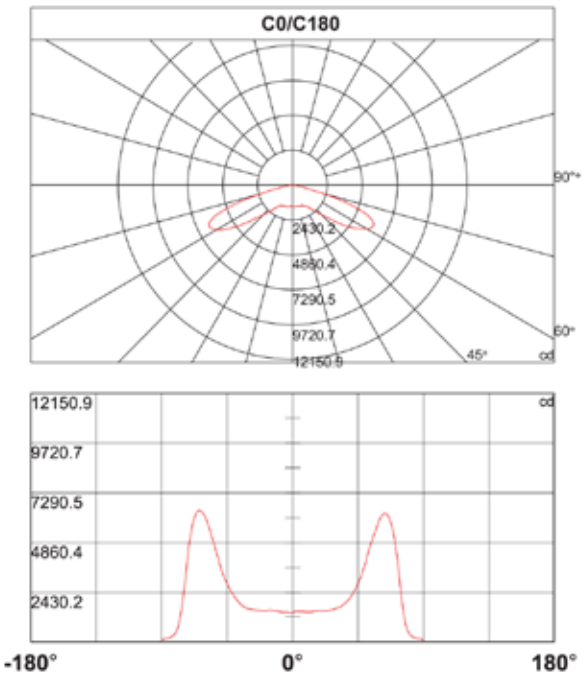
- SIMPLE AND DURABLE CONNECTION
  MC4 male and female plug directly to 18V solar panel for quick and easy connection. The 2.5mm^2 power cord provides stability and less voltage drop.

- INTELLIGENT WIRELESS CONTROL SYSTEM
  Based on 4G technology, changing lighting modes and monitoring light and battery status, is controlled remotely via mobile, iPad and computer devices.

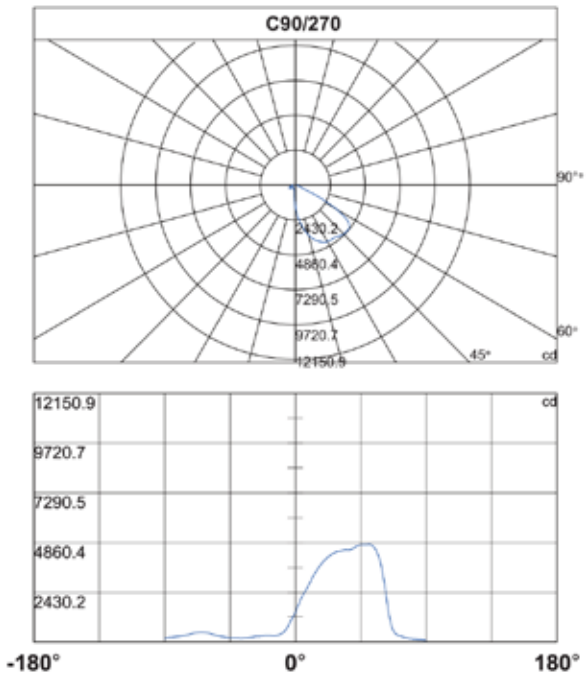
Internal Components

Performance

Light Distribution Curve (Unit: cd)



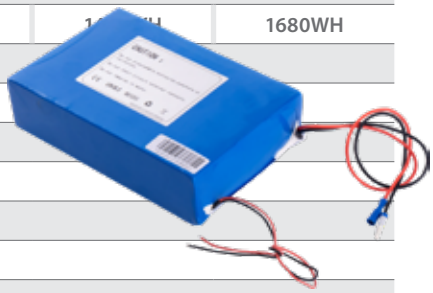
Max Plane Light Distribution Curve (Unit: cd)



Product Specifications: SolSolution Cat. V Street Light

PRODUCT CODE	SSV.60W	SSV.70W	SSV.80W	SSV.90W	SSV.100W	SS.120W
LED Power	60W	70W	80W	90W	100W	120W
Luminous Flux	9,180 lms	10,681 lms	12,048 lms	12,896 lms	13,800 lms	15,800 lms
Pole Height	8 metres	8 metres	10 metres	10 metres	12 metres	12 metres
SolSolution Cylinder (qty)	3 x 100W	3 x 140W	3 x 140W	3 x 140W	4 x 140W	4 x 140W
Weight: Net/Gross Kgs	N.W11.25/G.W12.50	N.W13.50/G.W15.00	N.W14.40/G.W16.00	N.W14.40/G.W16.00	N.W 18.59G.W20.65	N.W20.48G.W22.75
LED Type	Philips® SMD3030					
System Voltage	24V					
Colour Temperature	4000K ~ 6000K					
CRI	>81					
Beam Angle	145 x 83°					
Lens Material	PMMA					
Fixture Size	800 x 310 x 116mm					
Fixture Material	Die Cast Aluminium					
Standard Colour	RAL 7045 Light Grey					
IP Rate	IP65					
IK Rate	IK10					
Motion Sensor	Microwave Sensor					
Spigot O/D	60mm					
Connector and Cable	2.5 mm 2 with MC4 Connectors					
Working Temperature	-15°C ~ +70°C					
Warranty	3 years					
BATTERY PACK						
Battery Type	LifePO4 (Lithium iron phosphate battery)					
Battery Capacity	840W	960WH	1080WH	1200WH	[illegible]	1680WH
Quality Level	Brand New A Class					
Charge Time	5 Hours					
Discharge Time	>20					
Battery Lifetime	2500 Cycles					
D.O.D.	100%					
Autonomy	2 ~ 3 Days					
BMS	Built In					
Over-DV	23.0V					
Over-DRV	25.6V					
Over-CV	29.2V					
Over-CRV	26.4V					
SOLAR CHARGER						
Charge Mode	MPPT					
System Voltage	24V					
Output Current	1.0A ~ 4.0A Settable					
Efficiency	>98%					
Setting Method	By Remote Control					
Installation Method	Built-In					
Operating Temperature	-40°C ~ +80°C					
IP Rating	IP68					

SOLAR PANEL COMPARISON				
SolSolution Cylinder	300W 36V	420W 36V	560W 36V	600W 36V
Regular Solar Panel	150W 36V	200W 36V	260W 36V	300W 36V
Certificates	CE, ROHS, FCC, IP67< LM80, COC, IK10, LM79, SABER, CB			

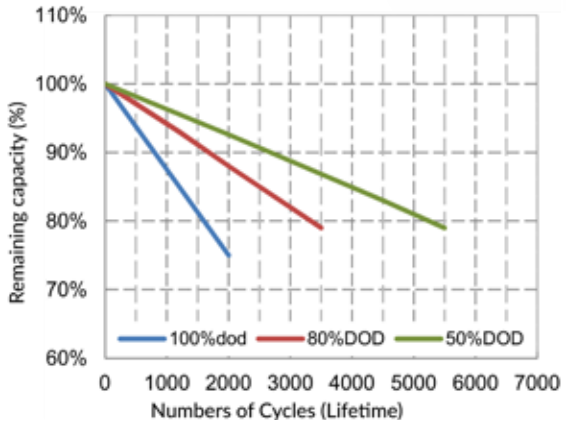


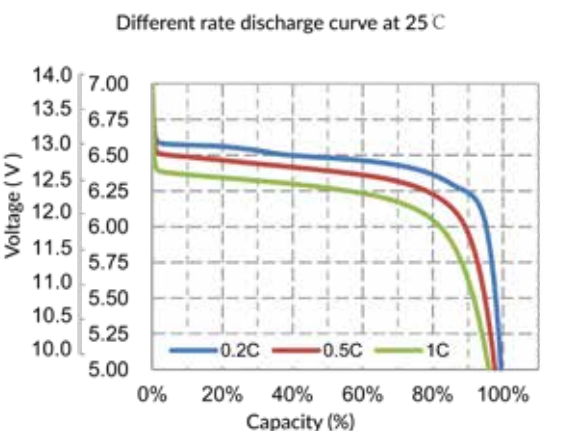
Battery performance

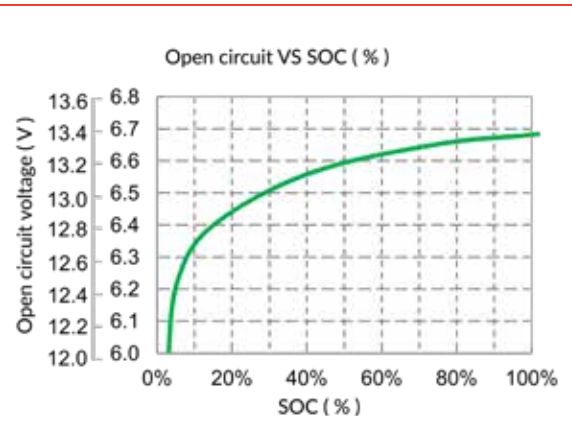
Key Advantages

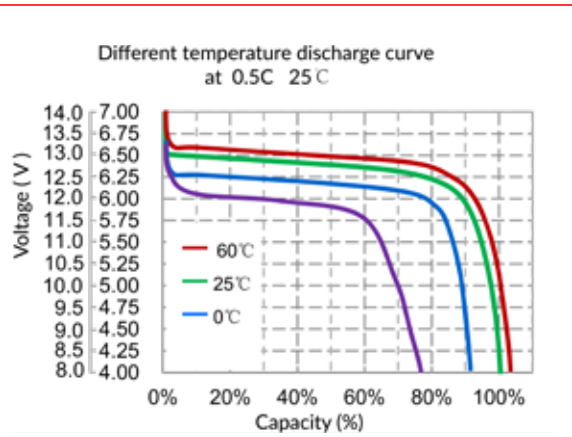
- Lithium Iron Phosphate (LifePO4) Battery
- Safe lithium chemistry with high energy density
- Automatic protection built-in for over-charge, over discharge, over current and over temperature
- Efficient and long-lasting up to 4000+ cycles DOD 50%
- >2000 cycles @0.2C, charge/discharge at 100% DOD
- Internal cell balancing
- Wide temperature range: -20°C ~ 70°C
- Maintenance free after installation
- Cost effective

Test Performance of LifePO4 Battery









Intelligent Wireless Control

Using LoRaWAN wireless street lighting system for optimized management and efficiency, communication via the LoRaWAN-based wireless device, provides efficient street lamp system management, thanks to the advanced interface and control architecture. Utilizing the sensors to control and guarantee the optimal system parameters, the information is transferred via single to multi-points using LoRa (Long Range) protocol, and is sent to a control terminal used to check the state of the street lamps and to take appropriate measures in case of failure. The system allows substantial energy savings with increased performance and maintainability.


LoRaWAN gateway

Introduction

WE-GW-10 is a communication gateway based on LoRaWAN protocol standard. It is a key node device for building low-power WAN.

The gateway has full-duplex data forwarding capability, required for long distance communication. With low power consumption and networking requirements for terminal devices with multiple entry points, it also supports multiple style deployments. Operating temperatures between -40~80°C, the gateway supports industrial-grade communication equipment working in harsh environments. Giving access of diverse terminals in different scenarios.

The control performance of the LoRaWAN gateway has more stability compared with 4G technology. In a 4G system, solar light poles transmit signals to each other using “hand by hand”. The signal transmission is delayed or “offline” when the 4G signal is weak, especially in remote areas. Whilst using the LoRaWAN system, each light is directly transmitting signals to the LoRaWAN gateway without any Intermediary, this ensures stable and instant communication for monitoring or performing operations.

Each LoRaWAN gateway can control up to 200 units of light device terminals. One project can compose of multi gateways. If the quantity of light device terminals are exceeded, the LoRa gateways can then act as a transparent bridge, relaying messages between end-devices and a central network server on the backend.

Feature and Performance

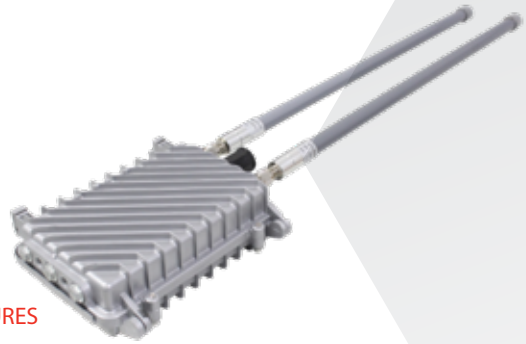
- Supports 8 channels, accessible nodes number up to 200
- Effective lightning protection grounding protection
- Communication parameters:
- Operating frequency: CN470MHz/US915MHz/EU868MHz
- Channel: 8 125KHz, rate adaptive, support for spread factor SF7-SF12
- Transmit power: < 23dBm
- Receive sensitivity: > -142.5dBm
- Transmission distance: city: 2Km line of sight: 15Km
- Access method: LAN, 2G/3G/4G
- Data Protocol: UDP/TCP/MQTT
- LoRa antenna: T-NC female interface
- 4G antenna: T-NC female interface
- Supply voltage: 12V~36V Recommended: 12V/1A
- Power consumption: <1W
- Working temperature: -40 ~ 80°C
- Network / power interface: RJ45 + DC
- Waterproof rating: IP66
- Weight: 2600g

Solar Charge Controller with Antenna

- System voltage : 12V / 24V
- Power range : 20W ~ 120W
- Charge mode : MPPT
- Solar panel voltage : <60V
- Data record : 7 days
- Efficiency : >97%
- Light sensor delay : 1~40mins changeable
- Working temperature: -40 ~ 80°C
- Waterproof rating: IP68

WiFi Hotspot

The ComFi B9000 Outdoor Dual Band Wireless Access Point / CPE offers the best solution for both range and data intensive network environments. Designed for high performance, the ComFi B9000 features a Power-over-Ethernet (PoE) connection, and includes wall and pole mounting kits. With built-in dual band 2.4 GHz and 5GHz radios, the device simultaneously supports the IEEE 802.11a/b/g/n wireless network standards. Whether creating a wireless network for business or industrial application, the ComFi B9000 is easy to configure and set up within minutes. It is an industrial grade, waterproof device with rugged IP67 metal casing for extreme environments.



FEATURES

Industrial Grade Design

ComFi B9000 operates in temperatures between -20°C~ 70°C, ideal for outdoor deployment on a large scale. Protected by a rugged weather-proof IP67 enclosure, it supports standard 48V PoE IEEE 802.3af.

Dual Band Wireless

ComFi B9000 provides maximum flexibility to connect to the popular 2.4GHz frequency for long range applications and to offload traffic to the faster, less data crowded 5GHz frequency for data intensive applications.

Cellular Networks

ComFi B9000 supports cellular networks while WAN connection is not a primary use. Multiple 4G/3G bands supported such as 4G LTE FDD, TDD, 3G UMTS/CDMA.

Power over Ethernet (PoE)

The Power-over-Ethernet (PoE) feature allows the device to be powered through an Ethernet cable, eliminating the need for a separate power cord. This reduces installation costs and power cable clutter, which provides mounting flexibility for outdoor applications.

Easy Installation

ComFi B9000 Supports Local Web GUI configuration and/ or remote management. No software is required with its hassle-free feature. Simply power up the unit and log in to the setup page.

HARDWARE SPECIFICATIONS :

- CPU — 32bit MIPS Industrial Network Processor
- System Memory — 128MB DDR2 RAM
- Flash — 16MB SPI Flash
- Wireless — 2.4GHz 802.11n MIMO up to 300Mbps
  5GHz 802.11n MIMO up to 300Mbps
  7dBi / 8dBi Fiberglass WIFI Antennas (Single/Dual Band)

INTERFACES :

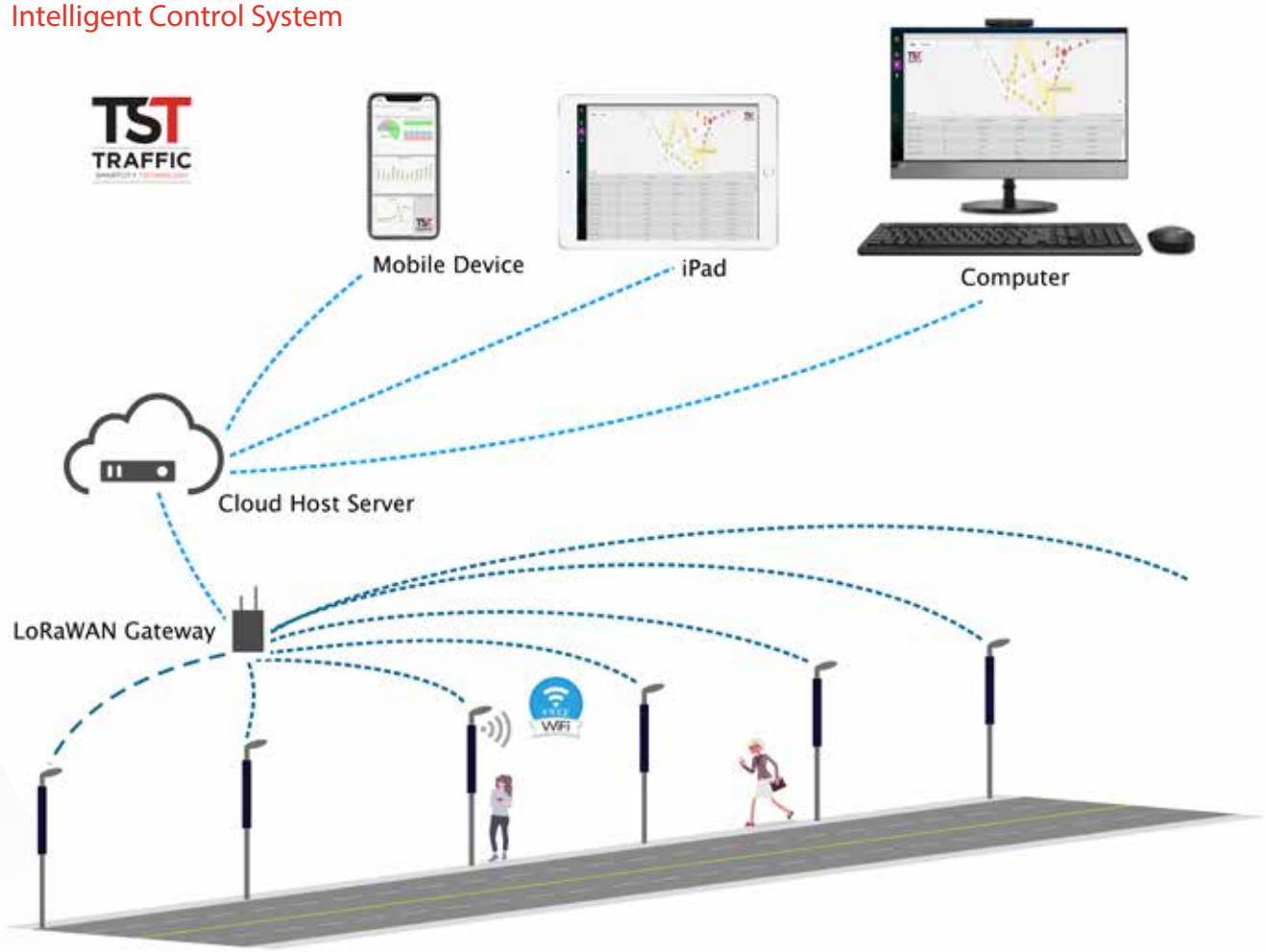
1. WAN/LAN — 1 x 10/100Mbps Fast Ethernet Port, auto MDI/X, with 1.5KV magnetic isolation protection, IP68 RJ45 Connector
2. SIM — 1 x SIM Card Slot, Standard 1.8V/3V SIM/UIM, 15KV ESD Protection (Internal)
3. USB — 1 x Standard USB 2.0 Host Port (internal)
4. Reset — 1 x Factory Reset Button (internal)
5. Power — 12~24VDC or 24V Passive PoE/48V PoE 802.3af
6. Antenna — 2 x WIFI Standard N-Type Antenna Port, 50ohm
   1 x Cellular Standard N-Type Antenna Port, 50ohm (optional)

- Enclosure — Cast Aluminum Casing, IP67 Rating protection for outdoor use
- Dimensions — 234mm x 153mm x 79.5mm
- Environment — Operating Temperature: -20°C~ 70°C
  Storage Temperature: -40°C ~ 90°C
  Operating Humidity: 10% ~ 95% RH Non-condensing Storage Humidity: 5% ~ 95% RH Non-condensing
- Surge Protection — Differential Mode Voltage 1.5KV
  Common Mode Voltage 6KV

WIRELESS SPECIFICATIONS :

- Standards — IEEE 802.11a/b/g/n
- Frequencies — 802.11b/g/n 2.412 – 2.4835GHz
  802.11a/n 5.180-5.825GHz
- Functions — 2.4GHz 1 – 13 Channel Selection
  5GHz 36 – 165 Channel Selection
  Band Bandwidth 20MHz / 40MHz
- RF Output Power
  2.4GHz IEEE 802.11n 25±2dBm
  5GHz IEEE 802.11n 24±2dBm
- Reception Sensitivity
  1. 2.4GHz — IEEE 802.11b -91±2dBm
     IEEE 802.11g -77±2dBm
     IEEE 802.11n -72±2dBm
  2. 5GHz : — IEEE 802.11a -77±2dBm

Intelligent Control System



Software Interface

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ISO 45001 OH&S management system
ISO 14001 Environmental management system

NATA Accreditation No. 10378

its SILVER MEMBER

ZHAGA Associate Member

IPWEA Institute of Public Works Engineering Australasia

TALQ Associate Member