

PRODUCT

SPECIFICATION SHEET



SL-90W

**TECHNICAL PROPOSAL OF
SOLAR STREET LIGHT**

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Overview of Solar Street Light Solution



Description	Specification	Quantity
LED Street Light	90W/24V	1
Solar Panel	120W/18V	2
Storage Battery (excluded)	Order Separately	
Solar Controller	15A/24V	1
Battery Box (underground)	Plastic	1
Pole (with lamp arm + solar bracket)	6m Height	1
Foundation Kit	M16-500mm	1
Accessories	Assorted	1

ACDC's Solar Street Light is designed to collect and store solar energy during the daytime, and release it as light energy during the night. Our system is composed of five major components: LED street light, solar panel, battery, solar controller and pole. Each component of our solar system is carefully selected, integrated and configured to ensure that you receive the most compact, reliable, and efficient solar lighting system.

WARRANTY


ACDC guarantees the purchaser for a minimum period of 1 year that our solar lighting systems will be free from defects in materials. ACDC will repair or replace any component which is defective in this 1 year period from the date of purchase. This warranty does not cover damage or malfunction due to abuse, misuse, incorrect installation, or accident, as determined by ACDC service technicians or engineers. Please see ACDC Standard Conditions of Sale & Tender (Available on request) Clause 13 for a more detailed description.

DESIGN CONDITIONS

ACDC refers to the latest geographical data of weather conditions from NASA was referred to for the design of solar lighting system.

Country - region ▼
 Province / State ▼
 Climate data location ▼

Latitude °N
 Longitude °E Source
 Elevation m
 Heating design temperature °C
 Cooling design temperature °C
 Earth temperature amplitude °C



	Air temperature	Relative humidity	Daily solar radiation - horizontal	Atmospheric pressure	Wind speed	Earth temperature	Heating degree-days	Cooling degree-days
	°C	%	kWh/m ² /d	kPa	m/s	°C	°C-d	°C-d
Jan	20.7	52.8%	7.46	85.0	4.0	23.7	0	330
Feb	20.0	55.8%	6.67	85.1	3.9	22.1	0	280
Mar	18.2	55.0%	5.75	85.2	3.8	19.9	0	253
Apr	15.0	51.3%	4.70	85.3	3.8	16.3	90	150
May	11.0	50.8%	3.95	85.5	4.0	11.5	219	29
Jun	6.9	53.8%	3.48	85.6	4.3	6.8	334	0
Jul	6.8	50.6%	3.77	85.6	4.3	6.9	346	0
Aug	9.7	44.5%	4.69	85.5	4.5	10.6	256	0
Sep	13.6	41.7%	5.68	85.3	4.5	15.5	132	108
Oct	16.2	48.3%	6.57	85.2	4.4	19.2	55	193
Nov	18.2	48.5%	7.27	85.1	4.2	21.7	0	246
Dec	19.9	49.8%	7.77	85.0	4.0	23.6	0	308
Annual	14.7	50.2%	5.64	85.3	4.1	16.4	1,432	1,897
Source	NASA	NASA	NASA	NASA	NASA	NASA	NASA	NASA

Measured at m °C

Factors considered when designing the solar lighting system:

Solar Duration: We use NASA data to calculate average and minimum solar radiation

Latitude: We design the solar panel tilt to capture the maximum amount of energy

Season Variation: We make adjustments for seasonal differences, so our lights will work efficiently through summer and winter.

Weather: Our lights are designed to work through rain, snow, fog, and cloudy weather

Dust: We have a special design to ensure our lights are dust resistant and minimize maintenance costs in dusty areas

Wind Speed: We design the foundations and poles to withstand hurricanes

Temperature: Our lights are designed to operate from -30 to 60 degrees

Humidity: We use a waterproof controller, connector and underground battery box to ensure our lights operate even in the most humid conditions

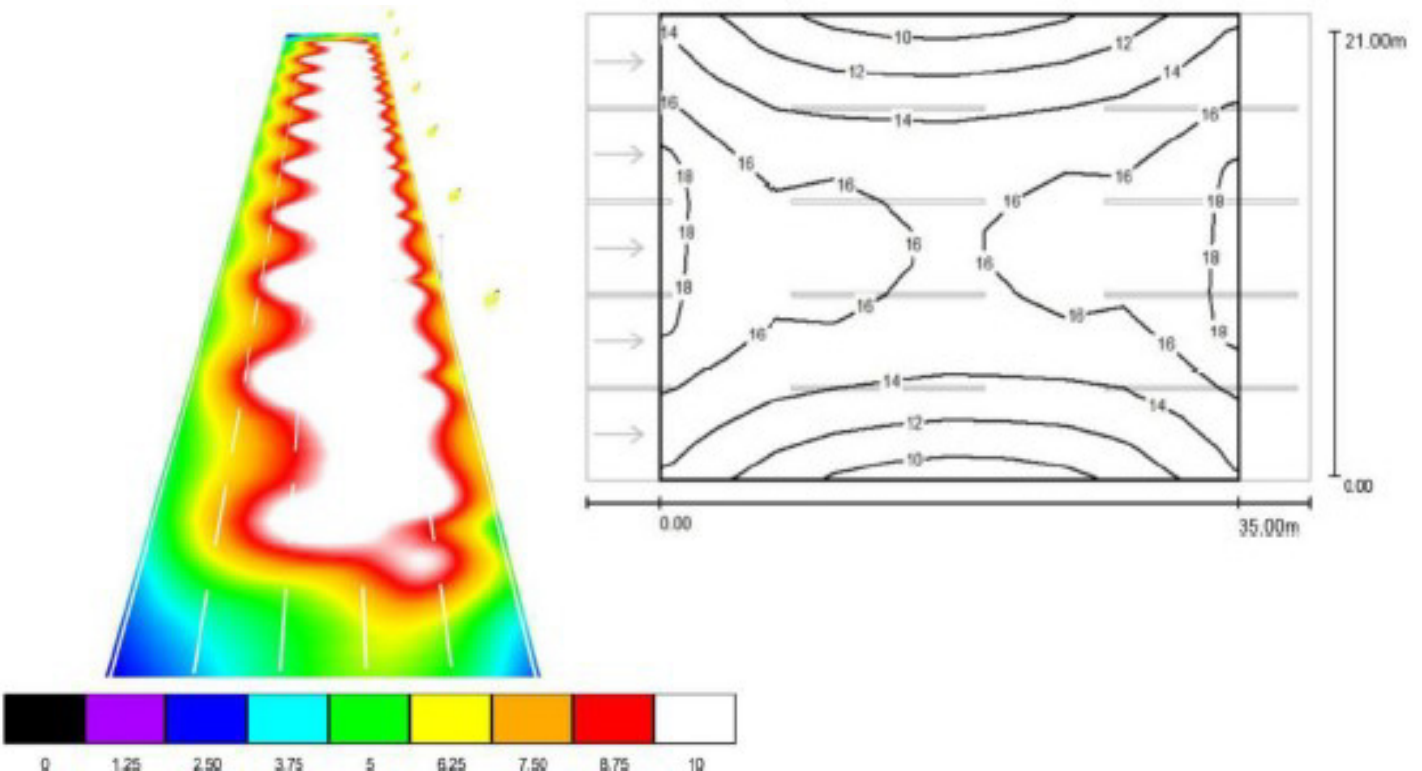
DESIGN CONDITIONS & LIGHTING DESIGN REPORT

After optimization it was found that 40 degrees is the best slope angle for the solar panel to capture the maximum amount of solar energy during the day time. The month with the worst average solar conditions is highlighted below. We base the system on this information to insure that our system will work optimally year round.

Fixed -30.0			Fixed -25.0			Fixed -40.0			Fixed -20.0		
Month	Daily Solar Radiation - Horizontal kWh/m ² /d	Daily Solar Radiation - Tilted kWh/m ² /d	Month	Daily Solar Radiation - Horizontal kWh/m ² /d	Daily Solar Radiation - Tilted kWh/m ² /d	Month	Daily Solar Radiation - Horizontal kWh/m ² /d	Daily Solar Radiation - Tilted kWh/m ² /d	Month	Daily Solar Radiation - Horizontal kWh/m ² /d	Daily Solar Radiation - Tilted kWh/m ² /d
January	7.46	6.74	January	7.46	6.95	January	7.46	6.21	January	7.46	7.12
February	6.67	6.50	February	6.67	6.62	February	6.67	6.15	February	6.67	6.71
March	5.75	6.18	March	5.75	6.19	March	5.75	6.04	March	5.75	6.17
April	4.70	5.78	April	4.70	5.68	April	4.70	5.88	April	4.70	5.55
May	3.95	5.64	May	3.95	5.44	May	3.95	5.93	May	3.95	5.20
June	3.48	5.38	June	3.48	5.14	June	3.48	5.75	June	3.48	4.86
July	3.77	5.66	July	3.77	5.42	July	3.77	6.01	July	3.77	5.15
August	4.69	6.14	August	4.69	5.99	August	4.69	5.34	August	4.69	5.80
September	5.68	6.47	September	5.68	6.43	September	5.68	6.43	September	5.68	6.35
October	6.57	6.61	October	6.57	6.70	October	6.57	6.32	October	6.57	6.75
November	7.27	6.69	November	7.27	6.88	November	7.27	6.21	November	7.27	7.03
December	7.77	6.87	December	7.77	7.11	December	7.77	7.28	December	7.77	7.31
Annual	5.64	6.22	Annual	5.64	6.21	Annual	5.64	6.13	Annual	5.64	6.17

Lighting Design Report

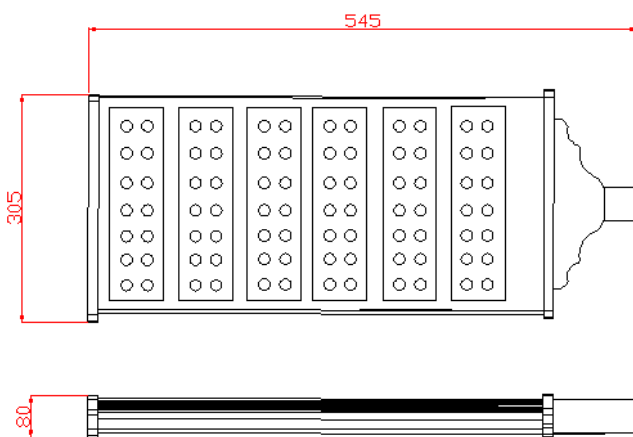
The following is representation from the report regarding the street color rendering and isolate. With lamp height 6m and pole spacing 21m.



LED STREET LIGHT DATA SHEET

Features

- High Lumen Output
- Achieves Energy Savings of up to 70% in comparison to traditional solutions
- Minimal Light Pollution
- Low Maintenance
- Factory Fitted Photocell Option
- Long Life Span > 100 000 hours



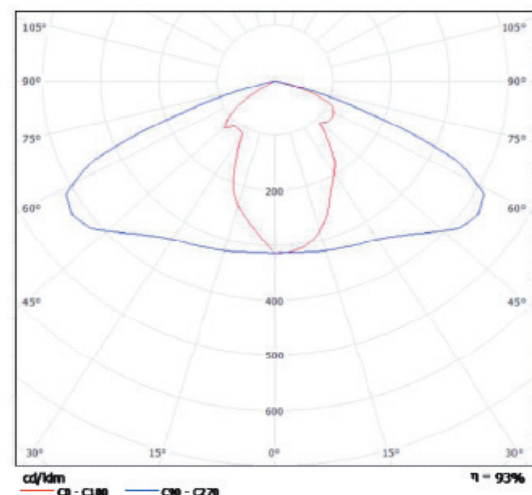
Code	SL-90W
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Electrical Specifications	
LED Power	90W
Lamp's Power	<95W
Operating Voltage	100-240VAC, 50/60Hz or 12/24VDC
Optimal Operating Temp.	-30°C - +60°C
Operating Humidity	10% - 90%
Power Factor (PF)	>0.95
Power Supply Efficiency	>90%

Photometric Specifications	
LED Luminous Flux	>10920lm
LED Luminous Efficiency	Up to 150-160lm/W
CRI	Ra >= 72
CCT	3000 - 6500K

Mechanical Specifications	
IP Rating	IP65
Guarantee	3 Years
Heat Radiator	Anodized Aluminium
Face	Toughened Glass
Fixture Dimensions	545 x 305 x 80mm
Fixture Weight	6.3kg

Packing Information	
Packing Type	1 Unit / carton
Packing Dimension	610 x 340 x 100mm
Packing Weight	6.7kg



SOLAR PANEL DATA SHEET

SM120P

POLY CRYSTALLINE MODULE

Positive power tolerance of 0/+3%



Key Features



High Power Output:

Polycrystalline module with high efficiency achieves a power output.



Anti-PID Guarantee:

Limited power degradation of Eagle module caused by PID effect is guaranteed under 60°C/85% RH condition for mass production.



Low-light Performance:

Advanced glass and surface texturing allow for excellent performance in low-light environments.



Severe Weather Resilience:

Certified to withstand: wind load (2400 Pascal) and snow load (5400 Pascal).



Durability against extreme environmental conditions:

High salt mist and ammonia resistance certified by TUV NORD.



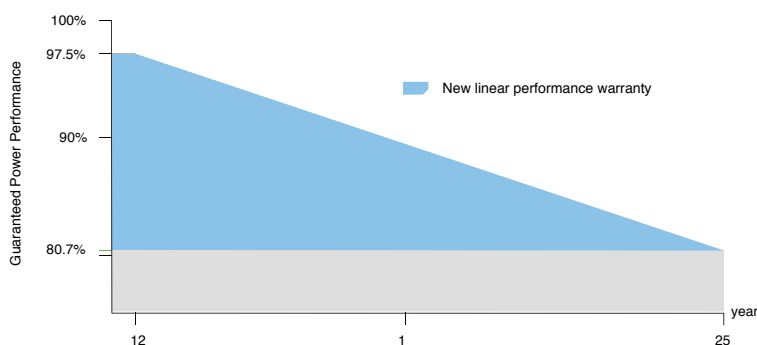
Temperature Coefficient:

Improved temperature coefficient decreases power loss during high temperatures.

Linear Performance Warranty

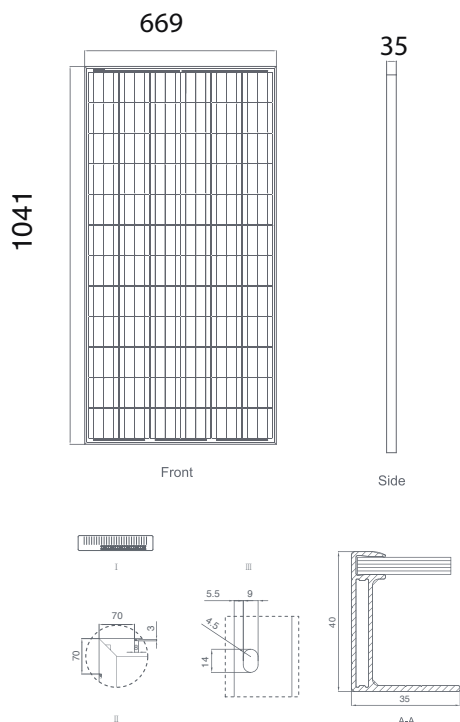
10 Year Product Warranty

25 Year Linear Power Warranty

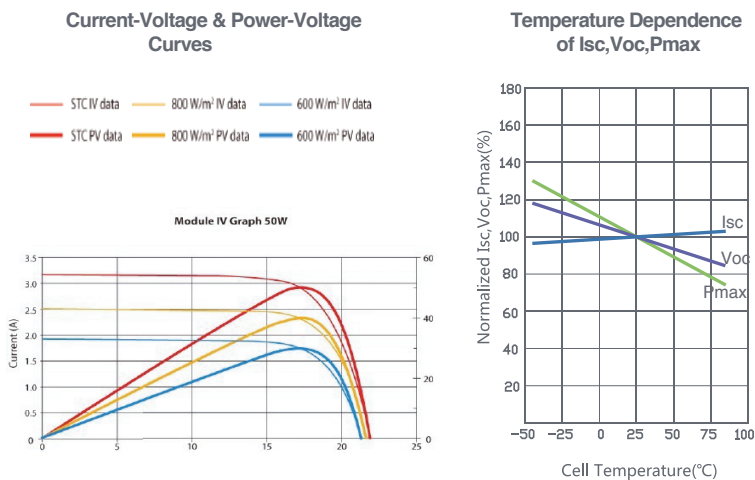


SOLAR PANEL DATA SHEET

Engineering Drawings



Electrical Performance & Temperature Dependence



Mechanical Characteristics

Cell Type	Polycrystalline 156 x 85mm
No. of Cells	36 (4 x 9)
Dimensions	1041 x 669 x 35mm
Weight	11kgs
Front Glass	3.2mm, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP67 Rated
Output Cables	TÜV 1 x 4.0mm², Length: 900mm

Packaging Configuration

(Two Boxes = One Pallet)
2pcs/Box, 50boxes/Pallet

Specifications

Module Type	SM120P
Maximum Power at STC (Pmax)	120Wp
Maximum Power Voltage (Vmp)	18V
Maximum Power Current (Imp)	6.66A
Open-Circuit Voltage (Voc)	22.5V
Short-Circuit Current (Isc)	6.95A
Module Efficiency STC (%)	17%
Operating Temperature (°C)	-40°C~+85°C
Maximum System Voltage	1000VDC (IEC)
Maximum Series Fuse Rating	5A
Power Tolerance	0~+3%
Temperature Coefficients of Pmax	-0.40%/°C
Temperature Coefficients of Voc	-0.30%/°C
Temperature Coefficients of Isc	0.06%/°C
Nominal Operating Cell Temperature (NOCT)	45±2°C

CONTROLLER DATA SHEET

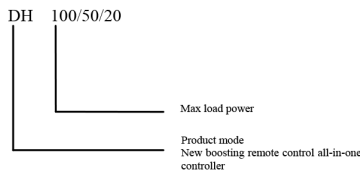
DH Intelligent Wireless Dimming LED Solar Charge Controller Specification

Main Features:

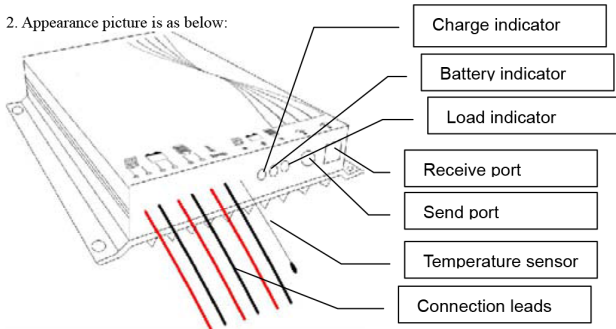
1. New design of wireless remote-control can modify the controller parameter and read the system message.
2. Digital high precision constant-current control, the maximum efficiency can reach 96%.
3. The working current can be adjusted from 0.15A to 3.3A, the regulating precision is 30mA.
4. High dynamic performances of load insure current output stability.
5. 3 section time frame dimming function, work time can be set from 0h to 15 hours, power can be set from 0% to 100%.
6. Intelligent power mode, the load power can adjust automatically according to the battery power.
7. Record the system status a max 7 days and monitor the whole system.
8. The true constant current increases the LED service life.
9. Metal case, IP68 waterproof degree.
10. With modified calculation of charging, the charging efficiency is improved, which lengthens the using time of solar energy.
11. Overheat preventing function, above a certain temperature will decrease the load or close the load.
12. Varies system protection function. Including the battery reverse connection, LED short circuit, open circuit protection and so on.

Installation and Wiring:

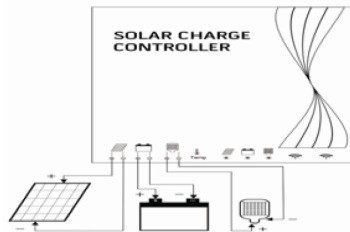
1. Mode identification:



2. Appearance picture is as below:



3. Wiring diagram is as below:



Connection sequence: Please connect the storage battery first, then connect the load, last is the solar panel. Pay attention to the "+" and "-" in case of reverse connection.

LED Connection:

1. The DH Controller is internally installed with constant current source. The max output voltage is 60V. The max amount of LED lights can be connected is 18pcs in series.
2. The DH controller can automatically identify of 12V and 24V system voltage. While connect to LED load, please ensure the number of LED lights in series is appropriate.

Please refer to the recommend as below:

System voltage	The Min No.(n) Of LED lights In series	Output voltage of load (V _{out})	Output power of load (V _{out})
12V	n ≥ 5	V _O ≥ 15V	P _{LED} ≤ 50W
24V	n ≥ 10	V _O ≥ 30V	P _{LED} ≤ 100W

3. Before open the load, Please connect LED light first.

Warning: if the number of LED in series is not appropriate, the controller or the LED load will be damaged.

Status Indication:

LED light	Indications	Status	Functions
	Charging indication	Long-term On	The solar panel voltage is higher than light control voltage
		Long-term Off	The solar panel voltage is lower than light control voltage
		Slow Flashing	Be on charging
		Fast Flashing	Overpressure of system
	Battery indication	Long-term On	Storage battery works normally
		Long-term Off	Storage battery is not connected
		Fast Flashing	Storage battery is excessively discharged
	Load indication	Long-term On	Load is on
		Long-term Off	LED load is in short circuit or open circuit status.
		off	Load is off

Test Mode

Normally the controller is under the light + time control mode. Can use the remote control open the load and the load power will be changed according to the remote control setting during installation or need testing. The test mode will last 1min, after 1min the system will automatically recover to the normal working mode.

Load Working Mode:

Load connect to the DH controller have four working timeframe, each working time and working power can be adjusted arbitrary. Different combination can realize different control mode.

A. Normal Working Mode.

B. Delay Light Time Mode: For example, setting the first time working 4hours,the first power is 0%,system will lighting 4hours later.

C. Double Time Frame Mode: For example, setting the third time working 4 hours, the third power is 0%, system will be off 4hours after work through the first and second time and then enter the fourth time continue lighting until sunrise.(Remark: this mode do not have the correct function for the night length, different season will show various lighting time in the morning.)

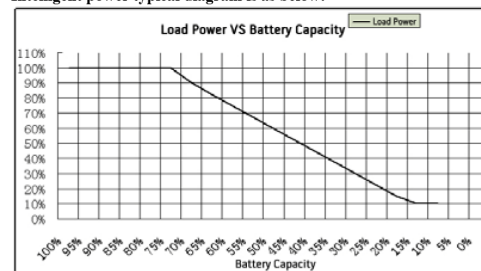
Adjust item	Parameter	Default value
The first working time	0hour ~ 15hours	4
The first working power	0% ~ 100%	100%
The second working time	0hour ~ 15hours	0
The second working power	0% ~ 100%	70%
The third working time	0hour ~ 15hours	4
The third working power	0% ~ 100%	50%
The fourth working time	0hour ~ 15hours	0
The fourth working power	0% ~ 100%	30%

LED Intelligent Power Control

While customer open the "Intelligent power" mode, currently the controller will enter to the intelligent power control mode. The LED load power will adjust automatically according to the battery power. The working time and load power preset before is still valid; system will compare with the automatically power and the preset power, and then choose the small one as the load output power.

For example: when the battery power is 50%,intelligent power mode calculate the load power is 60%.if now customer preset the load power is 100%,the system will choose 60% as load power. If now customer preset the load power is 20%, the system will choose 20% as load power.

Intelligent power typical diagram is as below:



Read and Modify The Parameter:

DH solar charge controller can setting including the load working time, load working power, light control delay, charging voltage and so on. After setting finish on remote control, aim at the controller and press the "Send" key will set up successfully. Also can read the currently setting parameter of the controller, then check the parameter setting correct or no.

System Status Record:

DH solar charge controller can record the whole system running status, including the running day, over discharge times, full charged time. Also can record the battery's voltage changing conditions in one

CONTROLLER DATA SHEET

week which convenient for customer analysis and understanding about the system. Customer can read the running status by remote control, after read successfully; the parameter will be record in the remote control.

Charge-Discharge Control Case:

The parameter of the case is as below:

The setting of the case	Setting value
Working time of first stage	3 hours
Working power of first stage	100%
Working time of second stage	5 hours
Working Power of second stage	70%
Working time of third stage	2 hours
Working power of second stage	50%
Working time in the morning	2 hours
Working power in the morning	30%
Load current	1.74A
Boost charge voltage	14.4V
Float charge voltage	13.8V
Light-operated voltage	8V
Light-operated delay time	5Min

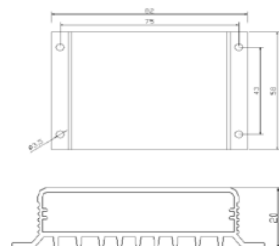
Run Stage Specification:

stage	description
1	Daytime: When the light strengthened, the charging current will increase rapidly, Battery voltage will rise.
2	Daytime: the light changes, the battery voltage is unstable.
3	Daytime: boost charge stage.
4	Daytime: boost charge finished and enter float charge stage.
5	Night: when the solar panel voltage is lower than light-operated voltage, The load will be open after delay. At the first stage, the load power is 100%.
6	Night: at the second stage, the load power is 70%.
7	Night: at the third stage, the load power is 50%.
8	Night: the fourth stage is morning time, the power is 30%. Tip: because of the total setting time(12h) exceeds the night time, The load hasn't been shut, But the light is on over the night.
9	Daytime: The solar panel voltage is higher than light-operated voltage, Close the load after delay. The battery voltage will raise contemporary.

System State Record:

DH series controller can record the operation status of the whole system, including operation day, over discharge time, full charged time, etc. It can also record the change of battery voltage weekly, gives the customer clearer knowledge of the system. Users need to use remote control to read its operation status, when read successfully; the data will be recorded in the remote control.

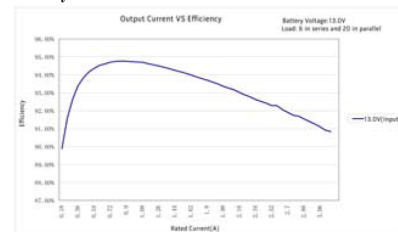
Installation Dimension:



- The size of DH100 is as follows :
Boundary dimension: 82×100×20(mm)
Installation aperture: 86×75(mm)
Installation aperture: 3.5(mm)
- The size of DH50 and DH20:
Boundary dimension: 82×58×20(mm)
Installation dimension: 43×75(mm)
Installation aperture: 3.5(mm)

Typical Efficiency Curve:

1.12V system



2.24V system



The Parameters:

Parameter name	Parameter value			Adjustable	Default value
	DH100	DH50	DH20		
Model	DH100	DH50	DH20		
System voltage	12V/24V	12V/24V	12V		
Output power	50W/12V 100W/24V	30W/12V 50W/24V	20W		
Output current	0.15A ~ 3.3A	0.15A ~ 1.98A	0.15A ~ 1.67A	√	330mA
No-load loss	9mA/12V; 12mA / 24V				
Charging current	15A	8A	5A		
Solar input voltage	< 55V		< 30V		
Efficiency of constant current	90% ~ 96%				
Overvoltage protection	16.0V; ×2/24V				
Charging limits voltage	15.5V; ×2/24V				
Equal charging voltage	15.2V; ×2/24V (25°C)				
Equal charging interval	30 days				
Ascending charging voltage	14.2V ~ 15.0V; ×2/24V (25°C)			√	14.4V
Float charging voltage	13.2V ~ 14.0V; ×2/24V (25°C)			√	13.8V
over-discharging recover voltage	12.0V ~ 13.0V; ×2/24V			√	12.6V
over-discharging voltage	9.8V ~ 11.8V; ×2/24V			√	11.0V
Temperature compensation	-4.0mV/°C/2V;				
Current precision	±3% (Load current>300mA)				
Load output voltage	<60V	<60V	<60V		
over-temperature protection	ambient temperature:80 °C (load drop power)				
overheat protection	internal temperature:120°C(Load off)				
light control voltage	5V ~ 11V			√	5V
light control delay	5min ~ 50min			√	5min
Working temperature	-35°C ~ +65°C;				
Protection level	IP68				
Weight	280g	170g	160g		
Dimension (mm)	100*82*20	58*82*20			

Faults and Solutions

Faults	Solutions
After open circuit of the load, it has no output when reconnect.	Check out if the connection is correct and reliable, wait for 10s until the load is on.
After debugging short circuit of the load, it has no output.	When the load is short circuit, wait for 1min until the load is reopened.
The light of storage battery flashes quickly without any output.	The storage battery has been over discharged, when charging to the return voltage of over discharge, it will self-recovered.
The indicator light of the solar panel is off even if there has sunshine.	Check out if the connection of the solar panel is correct and reliable, or if the solar panel is under sunshine.
The load current hasn't reach to the set value.	Check if the current value has exceeded the rated current of the controller.

Tips: The detail parameters and status please refer to the specification of SR-CU-D.

DH20 DH50 photo



DH100 photo



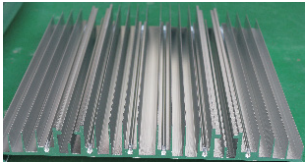
LED STREET LIGHT FEATURES

The LED Series is your best choice for energy - Efficient, Environmentally Friendly Lighting for roads, highways and thoroughfares.

- Enhance Safety and Productivity
- Cut overall Cost of Ownership
- Reduce Energy Consumption
- Meet rising Environmental Standards

Safe, Reliable Heat Transfer

The heat sink was designed to perform in high ambient temperatures up to 65°C and as low as -40°C. The thick walls of the castings make for a tough, rugged housing that keeps the internal driver and LED temperatures down, allowing them to perform flawlessly, and protects them from damage. Separated driver and LED housing allows dust to shed from fixture.



Precise Optic Lens

In high intensity glass material, providing high uniformity and optimal luminaire spacing. The optical system optimizes the light distribution, eliminating the waste of light, increasing the reasonable and effective using of light.



Stainless Steel Screws

Used in the whole fitting, no corrosion problems!



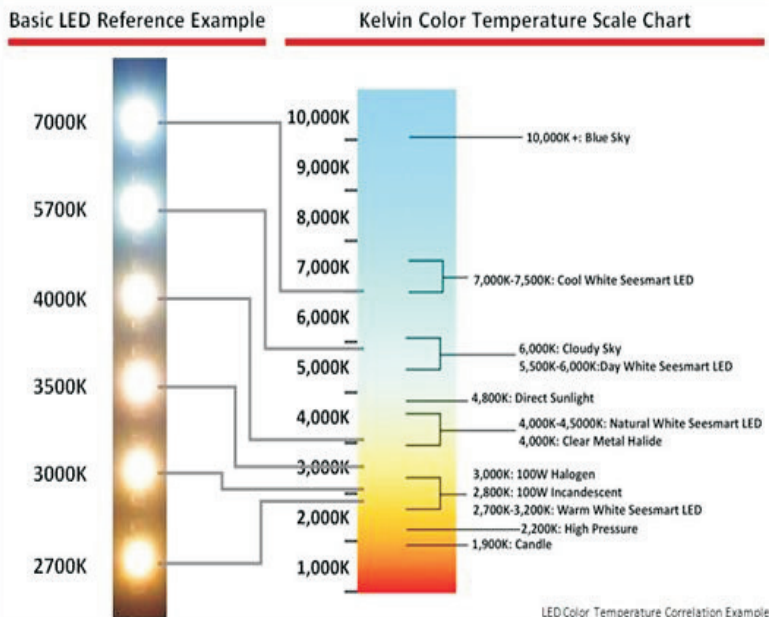
Optional Equipment

Cool (C) and Warm (W) white colour temperatures and different housing colours available (on request).

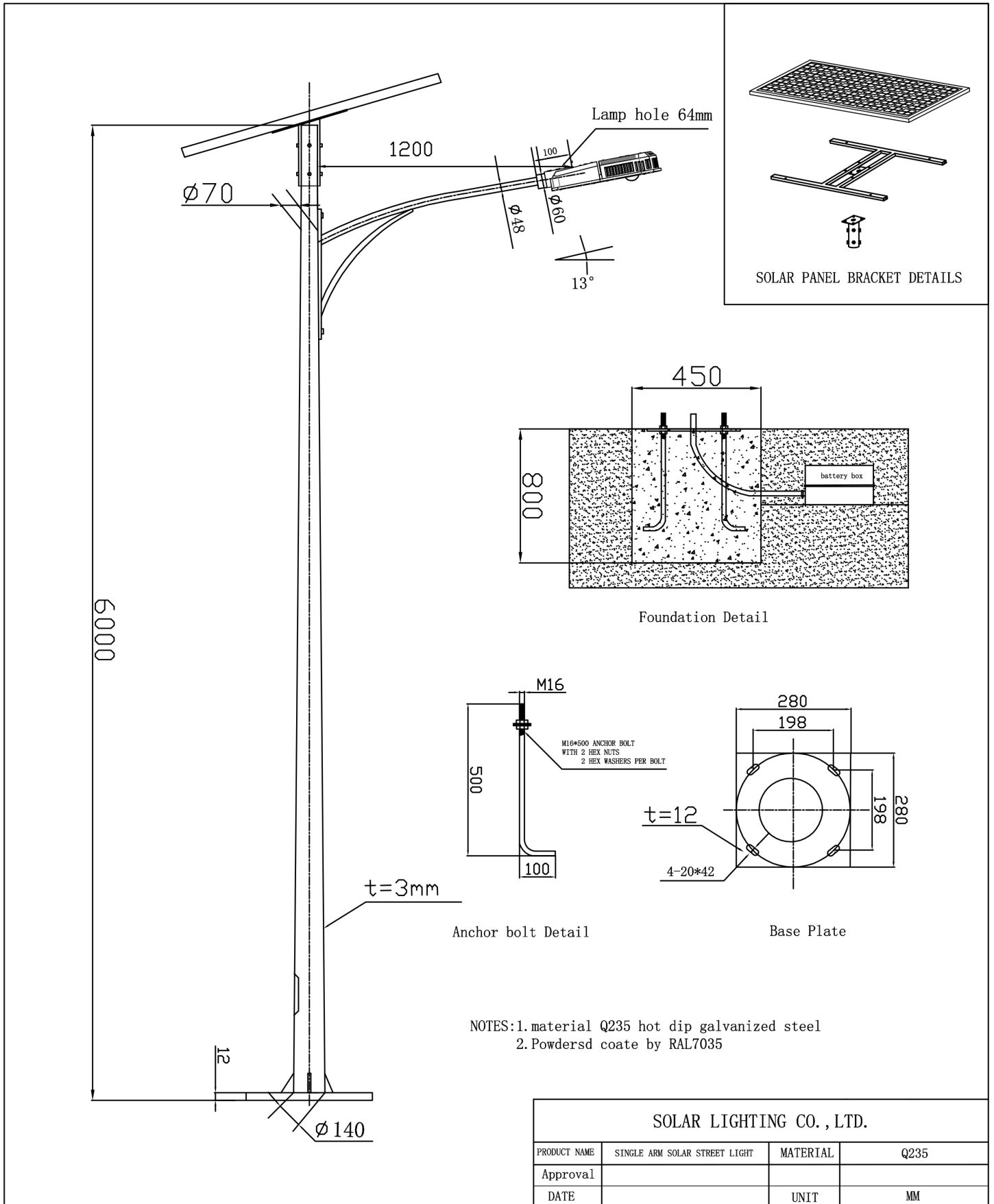


High Efficiency and Lumen Output

High efficiency drivers and LED arrays provide reliable low cost operation. Components were chosen to give industry-leading light output from the LED.



DIMENSIONS



Note regarding Foundation: ACDC suggests that the client find local contractors and land engineers to survey the land and give their opinion of whether the soil can support the wind bearing load of the poles. ACDC only provide indicative information related to the size and design of the concrete foundation.

PRODUCT SPECIFICATION SHEET



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