

# SES Intelligent Wireless Dimming LED Solar Charge Controller with induction function

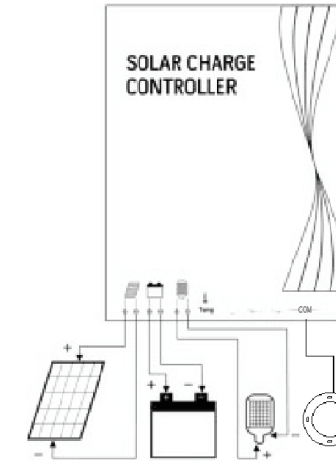
## Specification

### Main Feature

- 1.Exclusive controller for Lithium Battery, which suit for ternary Lithium, Lithium iron battery, Lithium cobalt oxides battery, etc.
- 2.Normal working+Sensitive+Morninglight mode design and working time can be set range from 0h to 15hours,power range from 0~100%.
- 3.Human infrared induction or microwave induction function.
- 4.Sensitive time delay can be set range from 0s~150s.
- 5.Unique Lithium battery which is automatically actuated.
- 6.Flexible charging mode, equalizing charge or PWM charge auto switch.
- 7.Lithium battery low temperature charging protection, when the ambient temperature is lower than 0°C, the controller will auto stop low temperature charging so as to protect the battery.
- 8.Intelligent power mode, the load power can be adjusted automatically according to the battery power, can extend the maximum working time of the battery.
- 9.Digital high precision constant-current control, the maximum efficiency can reach 96%.
- 10.ecord the system status, can record at a max 7days and monitor the whole system.
- 11.Metal case, IP68 waterproof degree, can be used in all kinds of bad conditions.
- 12.Overheat protection function, when the controller reaches a certain temperature, it will decrease or close the load.
- 13.Varies system protection. Including the battery reverse connection, LED short circuit, open circuit protection and so on.

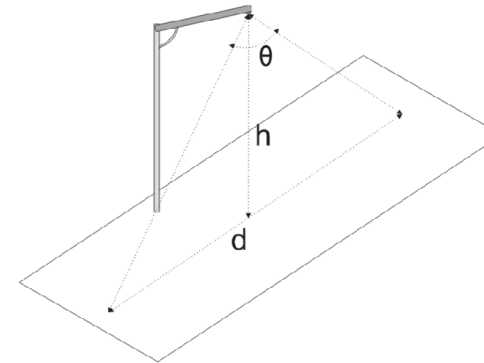
### Installation and Wiring:

- 1.Model recognize

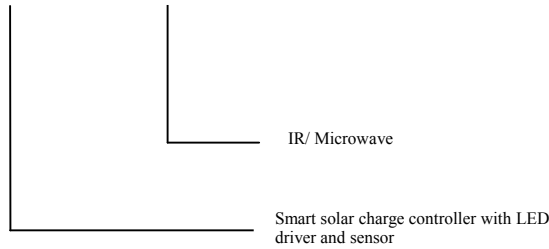


4.Connection sequence: Please connect the load first, then connect the sensor, and then connect the battery,last is the solar panel. Pay attention to the “+” and “-” in case of reverse connection.

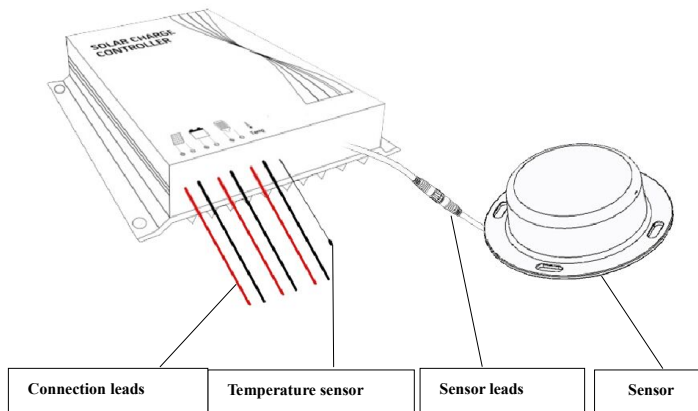
5.Sensitive scope:



### SES60-IR/WB



2.Appearance picture is as below::



3.Wiring diagram is as below:

Controller Model	θ (Angle)	h (Height)	d (Width)
SES - IR (IR)	60°	6m	7m
SES - WB (Microwave)	65°	8m	10m

### LED Connection:

- 1.SES Controller is internally installed with constant current source(LED driver). The max output voltage is 60V. The max amount of LED lights can be connected is 18pcs in series.
2. The SES controller can auto identify 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 recommendation as below:

System voltage	The Min No.(n) Of LED lights In series	Output voltage of load (V <sub>out</sub> )
12V	n ≥ 5	V <sub>O</sub> ≥ 15V

24V	$n \geq 10$	$V_0 \geq 30V$
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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.

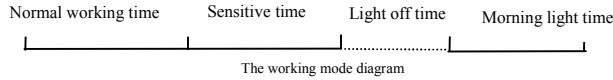
**Status Indication:**

LED indicator status	Function
Always on	Battery working normal
Off	Battery not connect
Twinkle slow	In charging
Twinkle fast	System failure

**Tips:** System failure including battery over-discharge, system over-voltage, open circuit.

**Load working mode.**

SES controller working time separate to Normal working+Sensitive+Morninglight. Each section the working time and power both can be setting.



**A. Test Mode :**Normally the controller is under the light + time control mode, when during installation or debugging, you can open the load by remote controller and the load power will be changed according to the set value in the remote controller. The test mode will last 1 minute, after 1min the system will automatically recover to the normal working mode.

**B. Sensitive delay mode:** For example, setting the normal working time is 4hours,normal working power is 100%,system will enter sensitive mode after 4hours later.

**C. Sensitive all night mode:** For example,setting the first working time is 0hour, sensitive working time is 15hours, sensitive working power(when people coming) is 100%. Sensitive power(after people Leave) is 30%,the system will enter sensitive all night mode. The load will working on 100% power with people coming. People leave ,after 10s will running in 30% power.

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

**E. Morning lighting mode:** our controller can auto calculate the night length and adjust the morning lighting time so as to make a precise morning lighting time.

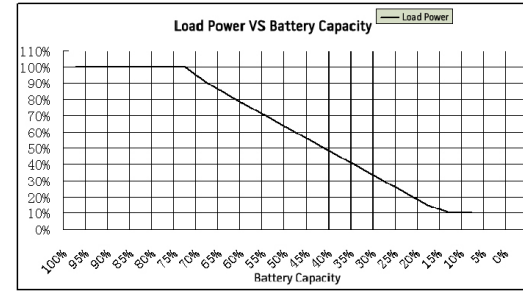
Adjust item	Parameter	Default value
Normal working time	0hour ~ 15hours	0
Normal working power	0% ~ 100%	100%
Sensitive time	0hour ~ 15hours	15
Sensitive power(when people coming)	0% ~ 100%	70%
Sensitive delay time	0hour ~ 15hours	10
Sensitive power(after people Leave)	0% ~ 100%	30%
The Morning lighting time	0hour ~ 15hours	0
The Morning lighting power	0% ~ 100%	30%

**LED Intelligent Power Control**

While customer open the “Intelligent power” mode, 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 choose the smaller one as the load output power.

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

**Intelligent power typical diagram is as below:**



**Parameter read and modify**

SES controller can setting the parameter including load working time,load working power,light control delay time,charging voltage and so on. After setting then aim at the controller press the “Send”key to finish setting. Also can read the parameter what the controller running to check whether the parameter setting is correct or not.

**Charging control**

The charging mode including direct charging and pwm charging mode.User can choose the charging mode by battery character.

**A. Direct charging:**

Direct charging is a traditional cut-off charging mode, when the battery voltage reaches to the over charge voltage, it will auto cut off the circuit and stop charging. When the battery voltage drop to over charge return voltage, it will return to charging again. This charging mode is suggested when the lithium battery protection panel is sensitive to PWM charging.

**B.PWM charging mode:**

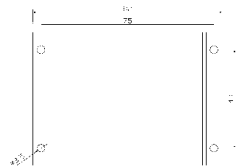
PWM charging mode means: when the battery voltage reaches full charged voltage, the charging mode will auto adjusted to constant voltage charging, the charging mode changes to discontinuous current charging, PWM charging mode is a safe and fast way for battery charging, so as to make a better charging efficiency.

**C. 0°C charging protection function.**

Because the ambient temperature will do a influence to Lithium battery. When the temperature is lower than 0°C, the features of Lithium battery will be changed a lot and is not suit for continuous charging. When the 0°C charging protection function is ON, if the ambient temperature is lower than 0°C, the battery charging will be stopped so as to protect the Lithium battery.

**Dimension and installation Instruction**

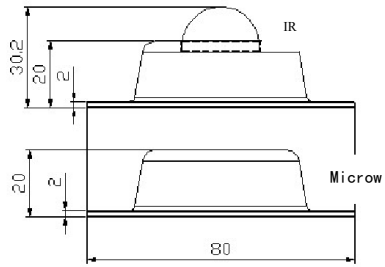
**1、 Controller dimension**



SES60 dimension as below:  
Dimension: 82×58×20(mm)  
Installation aperture: 3.5(mm)

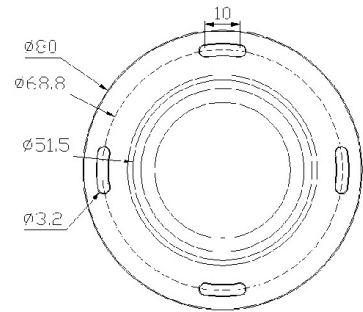


**2、 Sensor dimension**



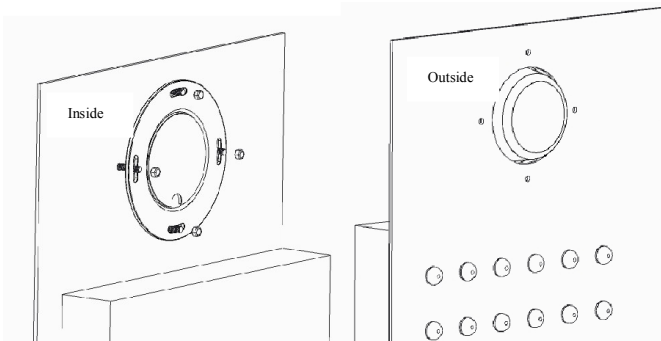
Sensor dimension: Unit mm.  
Sensor lines' length: 320mm

3、IR/Microwave sensor installation dimension



Hole Diameter  $\phi$  52mm

4、Installation Instruction

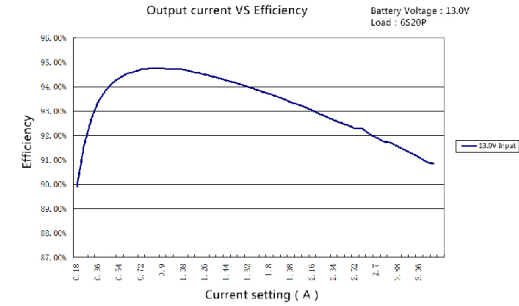


System state record

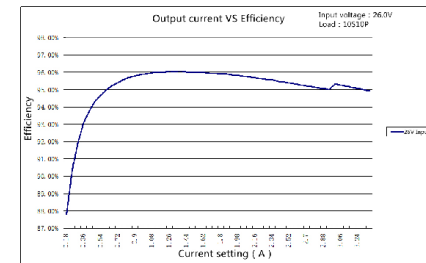
SES controller can record all the status of the system including running days, over-discharging times, full charging times and so on. It also can record the changes of the battery voltage one week which is very easy for user to understand and analyze the system. User can use the controller to read the running status, after reading successfully, the parameter will be recorded in remote control.

Typical efficiency curve

1、12V system



2、24V system



Parameter

Name	Value	Parameter adjustable	Default
Model	SES60-WB      SES60-IR		
System voltage	12V/24V		
Output power	40W/12V; 60W/24V		
Output current	0.15A~1.98A	√	330mA
No load loss	12V:14mA; 24V:25mA      12V:11mA; 24V:21mA		
Charging current	10A		
PV input voltage	< 55V		
LED driver efficiency	90% ~ 96%		
Over-voltage protection	Over-charging voltage +2V; ×2/24V		16.6V
Charging limited voltage	Over-charging voltage +1V; ×2/24V		15.6V
Over-charging voltage	9.0V ~ 17.0V; ×2/24V	√	14.6V
Over-charging recovery voltage	9.0V ~ 17.0V; ×2/24V	√	13.6V
Over discharge voltage	8.0V ~ 17.0V; ×2/24V	√	10.0V
Discharging recovery voltage	9.0V ~ 17.0V; ×2/24V	√	12.0V
Current precision	±3% (Load current > 300mA)		
Load output voltage	< 60V		

Over-temperature protection (environment)	Environment temperature: 80℃ (Load power decreased)			
Over-temperature protection (Inner)	Inner temperature: 120℃(Load closed)			
Light-control voltage	5V ~ 11V		√	5V
Light-control delayed time	0min ~ 50min		√	0min
Induction delayed time	0S ~ 150S		√	10S
Working temperature	-35℃ ~ +65℃;			
Induction range	Vertical: 8M, horizontal: 10M	Vertical: 6M, horizontal: 7M		
Waterproof degree	IP68			
Weight	210g			
Dimension (mm)	58*82*20			
The probe lead length (mm)	320			

**Remark: Parameter setting: over-charging voltage > over-charging recovery voltage > over-discharging recovery voltage > over-discharging voltage**

#### Faults and Solutions

Faults	Solutions
Indicator closed	Pls check the connection is correct and fastness.
Indicator twinkle fast	Check the battery without over-discharge, and the load without open and short circuit.
With sunshine but no charging	Ensure the solar panel connection correct, the solar panel without cover.
The load current not match with the setting value	Pls check the current not exceed the controller max charging current

Tip: Pls kindly check the parameter and state by the specification of CU-SES.