MES60 Intelligent Wireless Dimming LED Solar Charge Controller with induction function

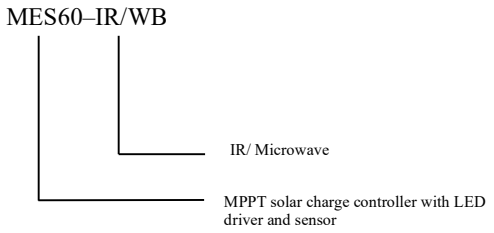
Specification

Main Feature

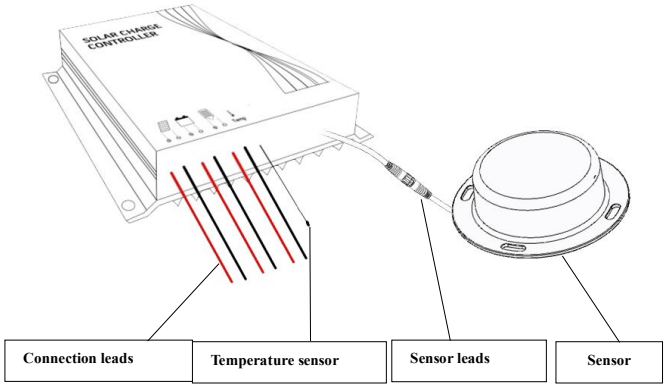
1. Exclusive controller for Lithium Battery, which suit for ternary Lithium, Lithium iron battery, Lithium cobalt oxides battery, etc.
2. Supporting 12V lithium battery, can activate lithium battery automatically.
3. Adopts MPPT charging method, which supports the Voc of solar panel≤40V; Pmax of solar panel ≤100W
4. Lithium battery low temperature charging protection, when the ambient temperature is lower than 0℃, the controller will auto stop low temperature charging so as to protect the battery.
5. With step-up constant current source for output, which can drive 12 LEDs in series, the Maximum power of load can reach up to 60W.
6. Three induction stages design. Working time can be set range from 0h to 15hours, power range from 0~100%.
7. Human infrared induction or microwave induction function.
8. Sensitive time delay can be set range from 0s~250s.
9. Lithium battery low-temperature charging protection. when the ambient temperature below 0℃, controller will stop low temperature charging for protecting the battery.
10. Record system status, can record at a max 7days and monitor the whole system.
11. The true constant current but not limited the current, insure the current output stability thus decrease LED light failure, increase the LED service life.
12. Metal case, IP68 waterproof degree, can be used in all kinds of bad conditions.
13. Overheat protection function, when the controller reaches a certain temperature, it will decrease or close the load.
14. Varies system protection. Including the battery reverse connection, LED short circuit, open circuit protection and so on.

Installation and Wiring:

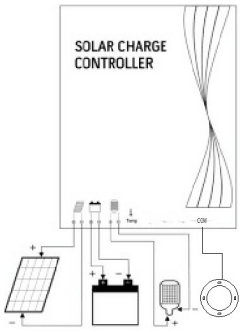
1.Model recognize



2.Appearance picture is as below:：

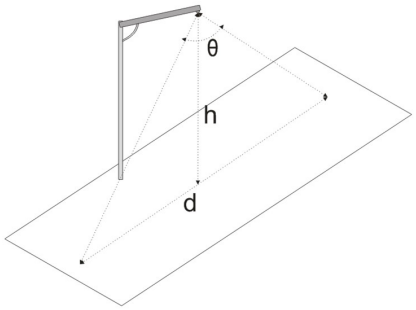


3.Wiring diagram is as below:



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：



Controller Model	θ(Angle)	h（Height）	d（Width）
MES60–IR（IR）	60°	6m	7m
MES60–WB（Microwave）	65°	8m	10m

LED Connection:

1. MES60 Controller integrate a constant current source(LED driver). The max output voltage is 40V. The max amount of LED lights can be connected is 12pcs in series.

2. MES60 is boost design. When connecting 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_{out})
12V	n ≥ 5	V_O ≥ 15V

3. Before switch on 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.

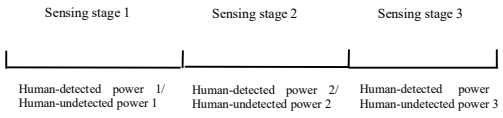
Status Indication:

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.

MES60 offer three induction working stages. Working duration and power of each stage can be set separately.



Working mode diagram

A. Normal working mode : According to preset duration and power of each stage to work.

B. Induction delay mode： For example, setting normal working duration to 4 hours, normal working power set to 100%, then system will delay 4hours to enter induction stage.

C. All night Induction mode: For example, setting working duration of induction stage 1 to 15 hours, working power of induction stage 1 (when people is near the lamp.) set to 100%, working power of induction stage 2 (when people is away from lamp.) set to 30%, Sensitive time delay set to 10s, the system will enter all night induction mode. The load will working on 100% power when people is near the lamp. People leave ,after 10s will running in 30% power.

D. Test mode: Normally the controller is under " light + time "control mode, when during installation or debugging, users can open the load by remote controller and the load power will be changed according to the preset value in the remote controller. Test mode will last 1 minute, after 1min, the system will automatically recover to normal working mode.

Adjust item	*Parameter*	*Default value*
Duration of induction stage 1	0hour ～ 15hours	4
Induction working power(when people is near the lamp)	0% ～ 100%	100%
Induction working power(when people is away from the lamp)	0% ～ 100%	100%
Duration of induction stage 2	0hour ～ 15hours	4
Induction working power(when people is near the lamp)	0% ～ 100%	100%
Induction working power(when people is away from the lamp)	0% ～ 100%	30%
Duration of induction stage 3	0hour ～ 15hours	15
Induction working power(when people is near the lamp)	0% ～ 100%	50%
Induction working power(when people is away from the lamp)	0% ～ 100%	0%

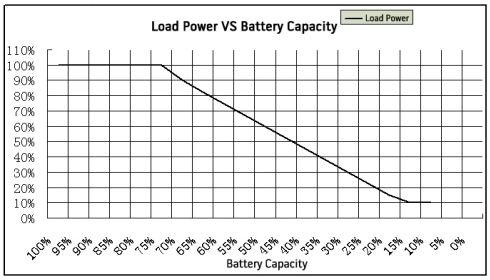
Sensitive time delay	0s ～ 250s	10s

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

MES 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.

Low power sleep mode

When installed controller requires long-distance transport, ordinary controller will be switched on during transportation, this problem will not only cause a waste of energy, but also increase the transportation risk. To solve this problem, a conventional controller need to add additional mechanical switch to shut off the main power. MES controller's sleep mode can effectively solve this problem. After the remote control sends a command, the controller enters "sleep mode", when there is sunlight, MES will exit the sleep mode and go into normal operating mode automatically.

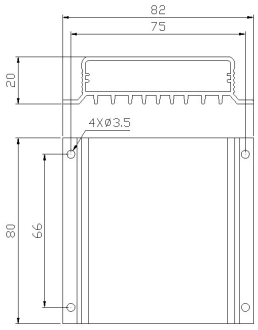
Charging control

A.MPPT charging mode:
MPPT is an advanced charging way which could detect the real-time power of the solar panel and the maximum power point of the I-V curve that makes the highest battery charging efficiency. Contrast with the traditional PWM controller, MPPT controller could play a maximum power of the solar panel so that a larger charging current could be supplied. Generally speaking, the MPPT controller's energy utilization efficiency is 15%~20% higher than PWM controller.

B. 0℃ charging protection function.
Because ambient temperature will affect Lithium battery's features. When the temperature is lower than 0℃, the features of Lithium battery will be changed a lot and is not suit for charging again. When the 0℃ charging protection function is turned on, when controller test the ambient temperature is lower than 0℃, the battery charging will be stopped to protect the Lithium battery.

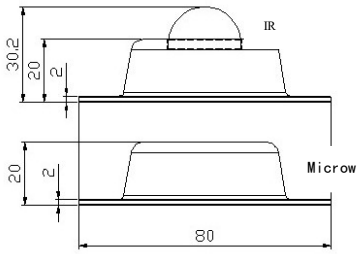
Dimension and installation Instruction

1、Controller dimension



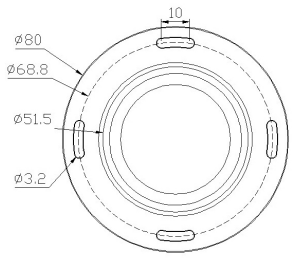
MES60 dimension as below:
Dimension：82×80×20(mm)
Installation size: 75×66(mm)
Installation aperture：3.5(mm)

2、Sensor dimension



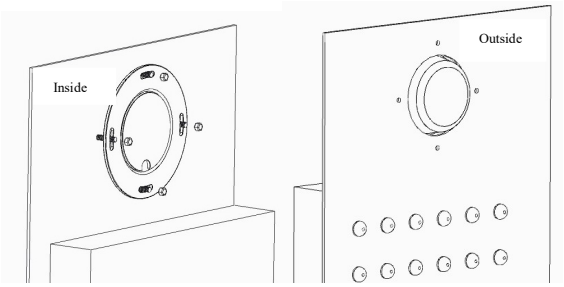
Sensor dimension：Unit mm.
Sensor lines' length：320mm

3、IR /Microwave sensor installation dimension



Hole Diameter ϕ 52mm

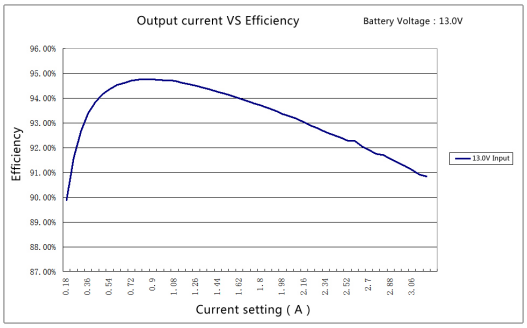
4、Installation Instruction



System state record

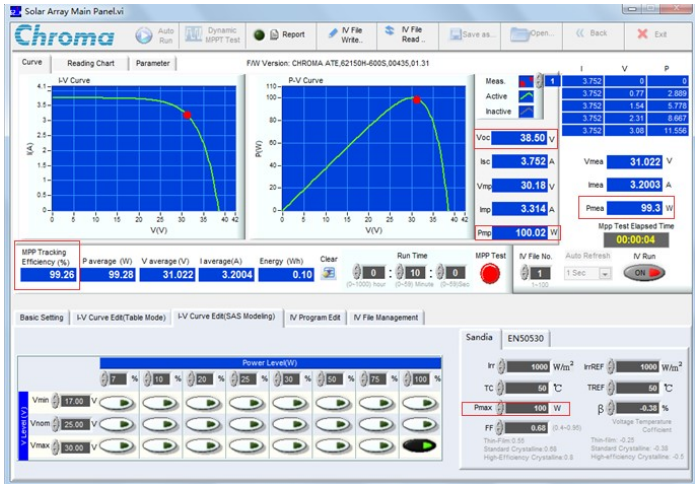
MES60 controller can record all the status of the system including running days,over-discharging times, full charging times and so on. It also can record the changes of the battery voltage one week which very easy for user understand and analyze the system. User can use the controller to read the running status, after read successful, the parameter will record in remote control.

Typical efficiency curve



load 12 series connections 5 parallel connections 60W

Typical MPPT tracking efficiency test



12V lithium battery, Solar panel's Voc=38.5V; Pm=100W, tracking efficiency is 99.26%

Parameter

Name	Value	Parameter adjustable	Default
Model	MES60-WB / MES60-IR		
System voltage	12V		
Output power	60W/12V		
Output current	0.15A～3.3A	√	330mA
No load loss	12V:17mA; / 12V:14mA;		
Charging current	8A		
Solar panel power	≤100W		
PV Voc	< 40V		
MPPT efficiency	99%		
LED driver efficiency	90% ～ 96%		
Over-voltage protection	Over-charging voltage +2V		16.6V
Charging limited voltage	Over-charging voltage +1V		15.6V
Over-charging voltage	8.0V ～ 17.0V	√	14.6V
Over-charging recovery voltage	8.0V ～ 17.0V	√	13.6V
Over discharge voltage	8.0V ～ 17.0V	√	10.0V
Discharging recovery voltage	8.0V ～ 17.0V	√	12.0V
Current precision	±3%（Load current＞300mA）		
Load output voltage	＜40V		
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～ 250S	√	10S
Working temperature	-35℃ ～ +65℃;		
Induction range	Vertical: 8M，horizontal: 10M / Vertical: 6M，horizontal:7M		
Waterproof degree	IP68		
Weight	210g		
Dimension（mm）	82*80*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 off	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-All