

RP Series

“Black Smart” Motion Sensor Controller&LED driver

USER MANUAL

Compatible Models:

MicroWave:

RP-20H;RP-20W;RP-20

High Technology Create A Better Life!

Preface

Thank you very much for selecting our product!

This manual offers important information and suggestions with respect to installation, use and troubleshooting, etc.

Please read this manual carefully before using the product and pay attention to the safety recommendations in it.

Contents of this manual are subject to change without notice, and updates will be added in the new version of the user manual.

For ease of reference, please take good care of this manual

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Products Introduction

1.1 Product Description

The "Black Smart" series motion sensor solar controller&LED driver including the functions of solar battery charge and discharge management,boost voltage LED constant current driver and human motion sensor control, which is designed for integrated lithium all in one LED lighting.When someone comes to the motion sensor nearby,this device will offer output(turn on LED lamp)automatically,when left,after the duration working time(adjustable),this device will offer small current to load according to the minimum load current (adjustable), or turn off the load after duratioin of the 30seconds default(adjustable),To avoid the waste of energy, improve the efficiency of the whole system and equipment lifespan, With the feature of the automatic intelligent lighting, energy saving and convenient maintenance, etc.

1.2 Main Features

- It is compatible with LiFePO4,Li-ion and other types of lithium battery, which can customize battery parameters.
- Installed in battery box or lamp holder easily and conveniently.
- The operation is simple and supports the infrared remote control parameter setting.
- The one-button operation supports low power consumption,which is suitable for long-distance transportation and storage.
- Including the function of motion sensor (infrared/microwave

optional), intelligent lighting.

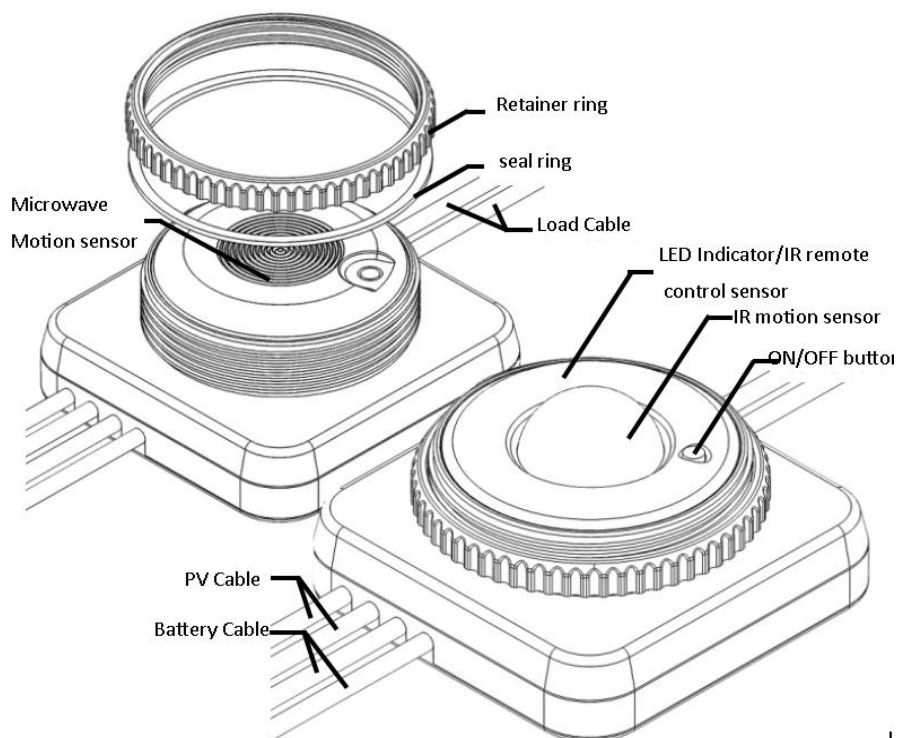
- Three time period output power setting, and it can also work for dimming automatic according to battery level for energy saving and last long time working.
- Waterproof IP65 ADAPTS to various external applications environment.

1.3 Technical Parameters

PRODUCT	20W with IR control	20W with Microwave control	20W with Indicators
Model	RP-20H	RP-20W	RP-20
Function	Infrared pyroelectric induction of human body Three yuan / LiFePO4 battery charge Boost LED constant current drive. Intelligent solar street lamp control The controller status is externally displayed Support RC-3 remote control communication	Microwave Doppler effect, human induction Three yuan / LiFePO4 battery charge Boost LED constant current drive Intelligent solar street lamp control The controller status is externally displayed Support RC-3 remote control communication	With controller status display Three yuan / LiFePO4 battery charge Boost LED constant current drive Intelligent solar street lamp control Support RC-3 remote control communication
Charge	PWM		
Battery	Li-ion & LiFePO4 or customized		
Max PV Charge	≤8A		
Discharge	Boost voltage with constant current		
LED chips	5~12 series		
LED voltage	15~45V		
Max Output	1.3A		

current			
Output error	< 3%		
Ripple	≤600mV		
Efficiency	92%~96%		
Temperature	-35~55°C		
Loss	≤7mA		
Installation Hole	Φ51mm		
IR Control distance	8-12m		
Sensor distance	7m	14m	--
weight	150g		

1.4 Panel Introduction

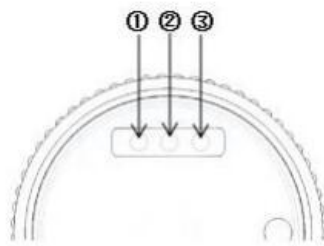


Directions for use

2.1 ON/OFF button instruction

With ON/OFF Button,you can turn OFF all the power of PV,battery and LED load to save battery energy. (including charging, loading and LED indicators) and enter into a state of low power consumption.Avoid battery loss for a long period of time.Press the button again to wake up the system and resume normal work.

2.2 LED Indicators



① PV Indicator

Color	Indication	Working State
Green	On Solid	PV is charging Battery
Green	Flash Fast	Battery Over Voltage, refer to Trouble shooting.
---	OFF	PV voltage is low

② Battery Indicator

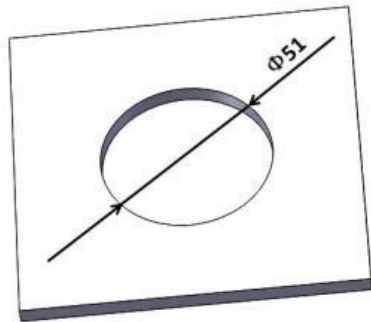
Color	Indication	Working State
Green	On Solid	Battery is Normal
Green	Flash	Battery is full
Yellow	On Solid	Battery is under voltage
Red	On Solid	Battery is over-discharged, turn off Load auto

③Load Indicator

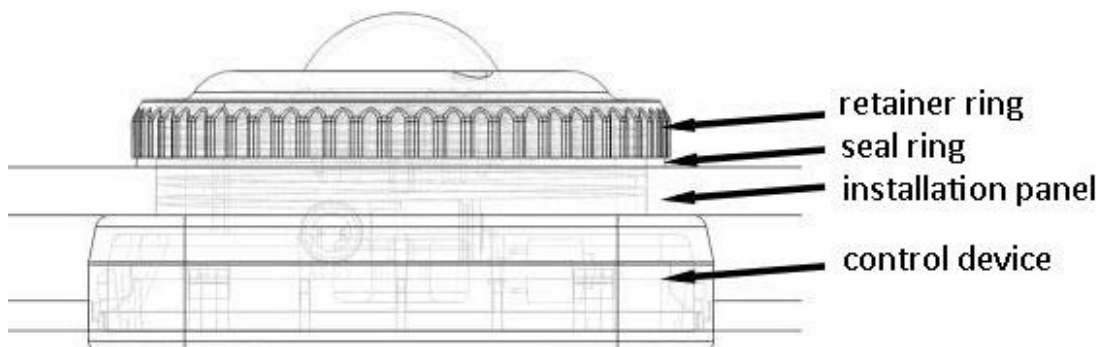
Color	Indication	Working State
Yellow	On Solid	Load is ON
--	OFF	Load is off
Yellow	Flash Fast	Load short circuit or open circuit
Yellow	Flast Slow	Load led chaps series number is too low Or overload limited power output

2.3 Installation & Connection Step

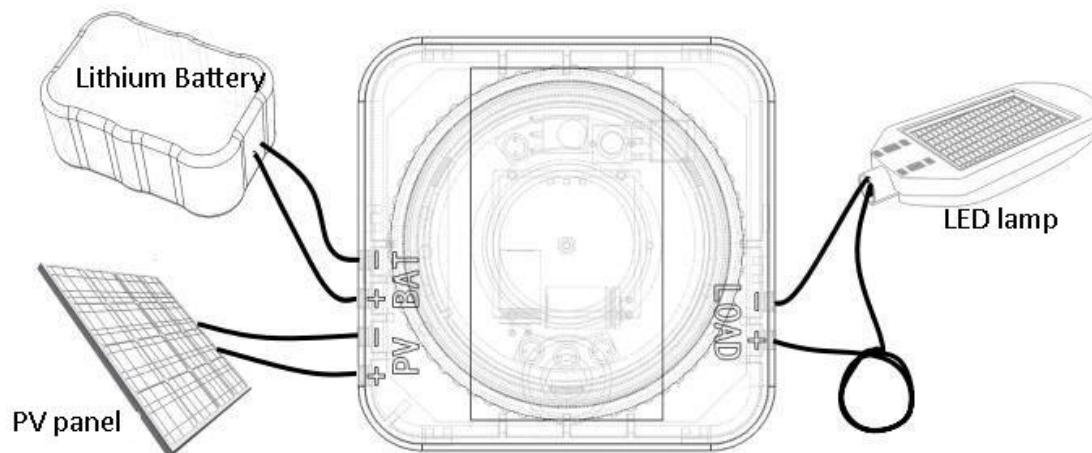
2.3.1 the panel or area should be with a hole of diameter with 51mm.



2.3.2 put the controller in the opposite side, and in the right side, make it steady with retainer ring.



2.3.3 For the sake of safety, please complete wiring in the following order first: Load, second: Battery, third: PV



- Load connection: As the controller has not started operation, there is no response from the controller after load connection.

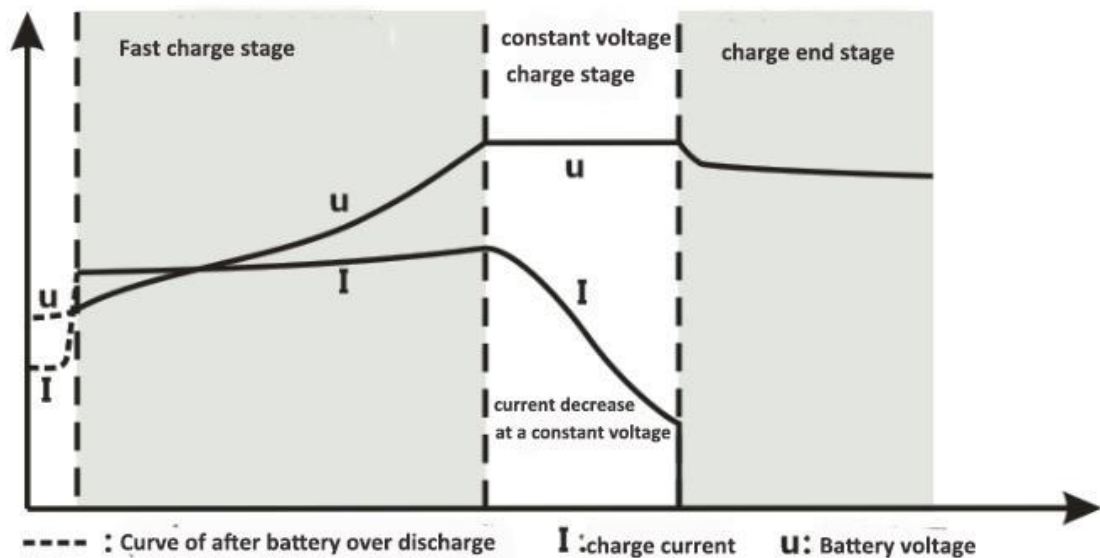
- Battery connection: Before connection of the battery, make sure that the battery voltage is higher than 9V so that the controller can be started. For a 24V system, make sure that the battery voltage is not lower than 18V. After completion of battery connection, the controller will start to work. 10s later, the load will be light up automatically to confirm correct wiring.

- Solar panel connection: The controller can be used for both standard 12V or 24V solar panel components and those with an open-circuit input voltage not exceeding the specified maximum input voltage. The voltage at the highest power point of solar components should not be lower than the battery voltage.

Instructions

3.1 Charge Description of Lithium battery

When the battery type selected for the lithium battery, the controller of the charging curve to be adjusted to accommodate the lithium battery charging characteristic.



3.1.2 Lithium battery

- Trickle pre-charge stage: at the beginning of charging. If the battery voltage is too low, in order to protect the battery, to avoid large current impact caused damage to the internal structure of the battery. The controller will charge battery in a small current. And will enter fast charge stage after the battery voltage be some improvement.

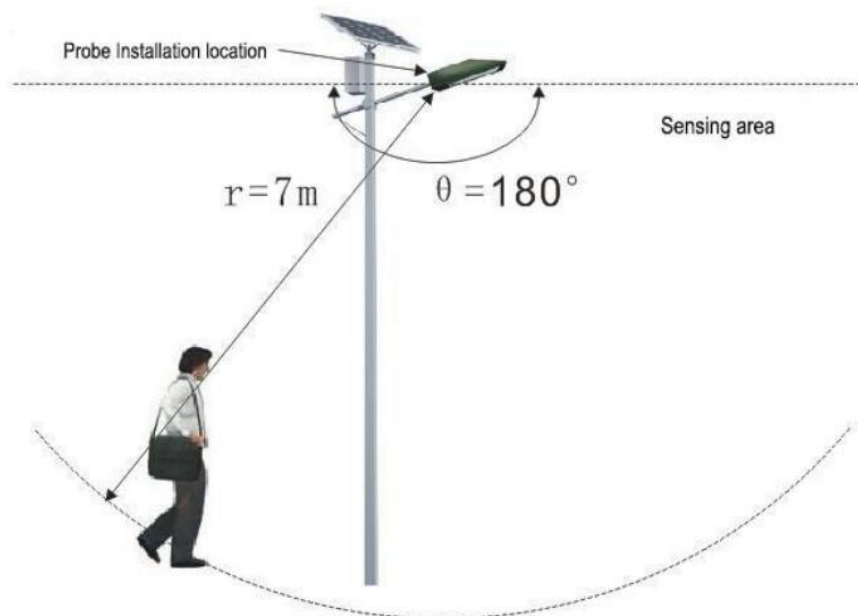
- Fast charge stage: The battery voltage has not reached the setting, and the controller will provide the maximum solar power to charge the battery. During Fast charging, the solar panel and the battery are connected directly. The voltage of the solar panel is clamped at the battery voltage.

- Constant-voltage charge stage: The constant-current charge phase ends when the cell voltage rises to a predefined level, followed by a

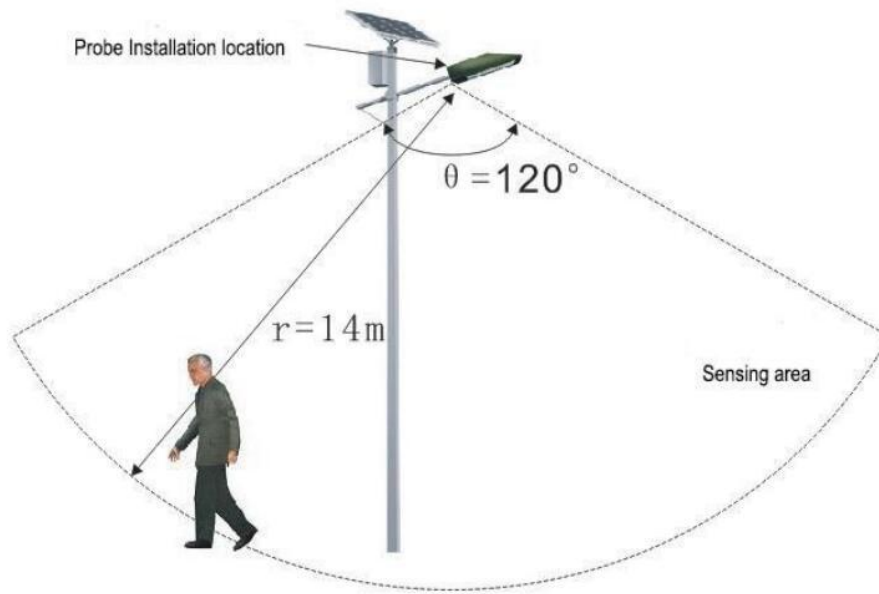
constant-voltage charge phase. Depending on saturation degree of the battery cell, the current drops from the maximum level gradually as the charging process proceeds. This charge voltage is typically defined as 4.2V for a single-string battery. The specific voltage should be set according to the parameters provided by the battery manufacturer. (C is a notation representing correspondence between cell nominal capacity and current. For example, for a cell capacity of 1000mAh, 1C means a charging current of 1000mA.)

- Charge end stage: The charging current during the constant-voltage charge phase is monitored, and the charging process is ended when the charging current drops to the end-of-charge current, which is typically 0.02C

3.2 Diagram of motion sensor distance



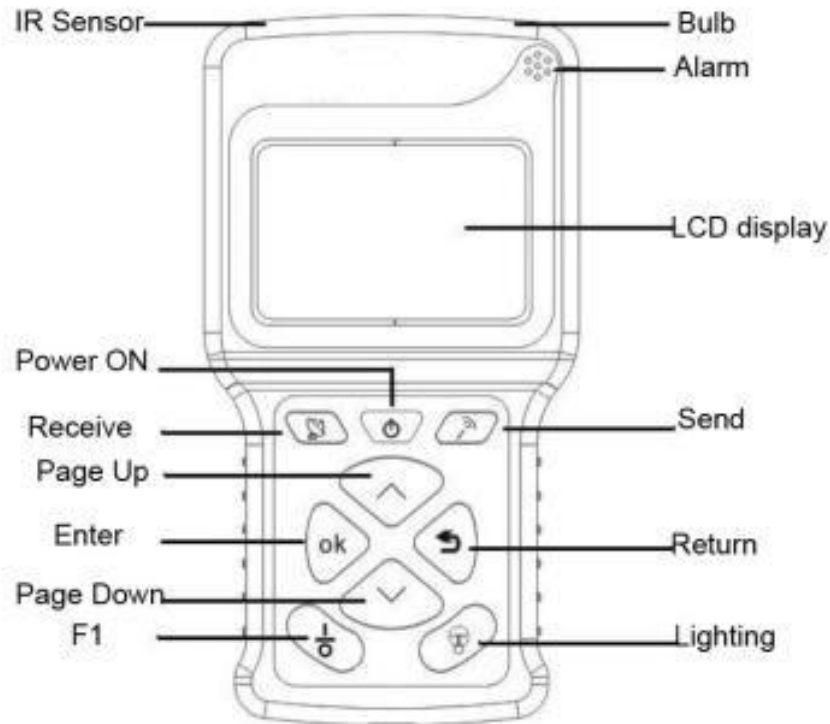
Microwave motion sensor Inductive range diagram



Infrared motion sensor Inductive range diagram

IR Remote Control

4.1 Diagram



4.2 Operation of remote control

Power ON/OFF

Press “Power” button continue for 3 seconds to start up the remote control,for power off,just leave the remote control without any operations for 5minutes,then it will be power off automatically.Or you can press “Lighting”button continue for 3 seconds for Power OFF.

LCD Screen Display after Power ON

1.Setting

Parameters setting for all the models of controllers,including battery

specification and other charge and discharge parameters,also you can set the work mode of output here.

2 .Real-Time Data

Real-time data for all the controllers that is working now,all the value on the LCD screen display is real-time.

3. System Setting

Remote control system setting,Including Remote Style,Language, Alarm,Factory Reset and Edition.

Receive and Send Signal to controller

RC-3 Remote control transfer signal by infrared,the distance indoor can be 10-15m,and outdoor will be shorter for environment difference.

Press “Receive”button to get the signal from working controller,you can know what kind of work mode is saved inside of controller.you can page up and down to check all the parameters of working controller.

After set all the parameters well,and make the remote control face to the controller that need to be set,press “Send” button,controller will receive the signal from remote control,after recheck inside controller with no problem,3 indicators on the controller will flash all together for one time,meaning that sending signal successfully.the same time,some controllers will send back the successful signal to the remote control again,after remote control get the signal,alarm will work for reminding.

(Attention:sometimes remote control will not get signal from

controller, and LCD screen will show “communication over time”, and remote control will make sound “DI DI DI” for 3 times, reasons are that the distance is too far, the angle not correct or occlusion of some other object between remote control and controller).

Lighting

After Power ON the remote control, you can press “lighting” button for lighting in the night, press one more time again for off.

Parameter changing

When enter into the setting mode, press “O.K” button to change the value of each parameter, when it flash, meaning enter into the editable status, you can change the parameter by press page up or down button, after set well, press “O.K” button to save the value. the same time, the parameter will stop flashing, and you can press “Return” button to be back to previous menu.

(if the parameter is flashing, and you press “return” button, the data will not be saved)

4.3 FOR RP Black Smart Series

All the parameter is changed by remote control RC-3, please choose the remote control version above V3.65

For end user, you can go setting with remote control style “RP-20W” simply and easily, For Professional Engineer, you can go setting with remote control style” standard”

Name	Default	Range	Step	Unit	Note
1st period time(Hours)	9	00:00-09:00	00:10	h	
1st period power(Current)	150	50~1300	50	mA	sensing current
2nd period Hour(Hours)	0	00:00-09:00	00:10	h	
2nd period power(current)	150	50~1300	50	mA	sensing current
Morning Period Time(Hours)	0	00:00-09:00	00:10	h	
Morning Period Time power(current)	150	50~1300	50	mA	sensing current
Minimum Load current	150	1300	50	mA	No sensing current
Smart Mode	ON				
Sensor duration time	30	0~990	10	second	
Battery type	Li-ion	Li-ion,LiFePO4			
Battery cell series	3	3~4	1	series	
Over discharge current	9	8-13	0.1	V	
Charge voltage	14V	8-18	0.1	V	
Charge Temperature	-40~99	(-40~30) ~	1	°C	
Discharge Temperature	-40~99	(-40~30) ~	1	°C	

Warranty

Warranty Card

Product Name

Product Model

Serial number

Date of purchase: ____Date____Month____Year

Company Name:

Contact:

Address:

Tel:

1. The product warranty period is three years since factory.
2. During the warranty period, any problem caused by normal use under the user manual (determined by the controller factory), reparation is free of charge.