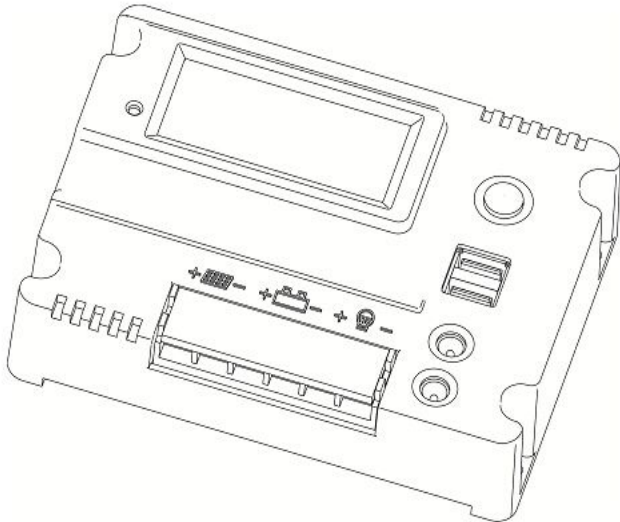


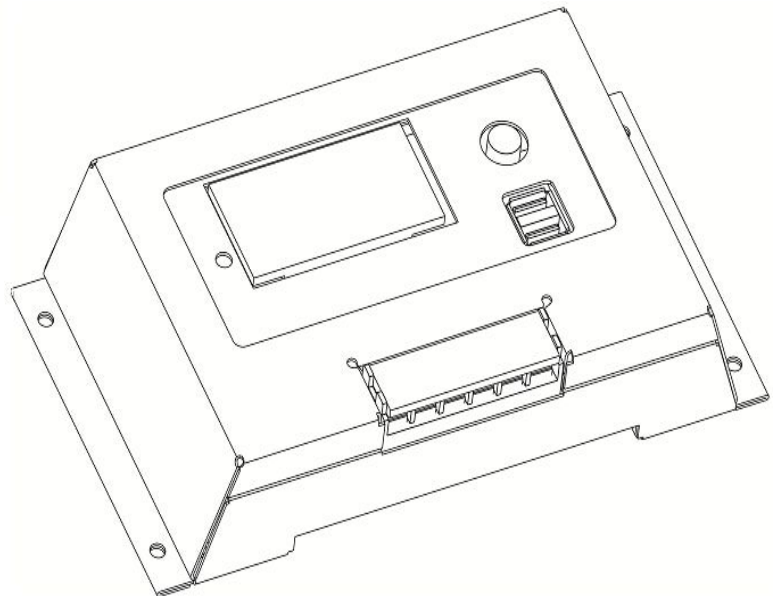
# CMG/CMF Series Solar Charge Controller

(Full parameters display in the LCD)

## Instruction Manual



**CMG**



**CMF**

Model: CMG-2405, CMG-2410, CMG-2415, CMG-2420  
CMF-2405, CMF-2410, CMF-2415, CMF-2420

Description of product model:

CMG-24 10



10 represents the maximum discharge current is 10A  
24 represents the maximum voltage, means 12V/24V auto work

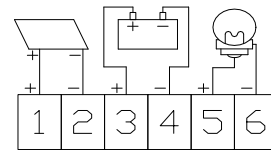
Thank you very much for selecting our product! This manual offers product overview, protection, installation instruction, status instructions, troubleshooting and technical data etc. Please read this manual carefully before using the product.

## Product overview

1. With LCD to display all parameters, the LCD has rich contents, the users can intuitively know the working condition of the controller.
2. With built-in energy-saving backlight LCD, display better and more power-efficient.
3. With SMPS DC12V and USB 5V stabilized voltage output, available for DC lamp and phone charging.
4. With output switch, intelligent control, easy to operate;
5. The system power adopts switching mode power supply which can reduce the quiescent current.
5. With separated temperature detected circuit, with high precision temperature compensation function.
7. With exposed terminals, the wiring more convenient, what's more, the CMF series with metal shell.
8. Use single-chip microcomputer control which makes the controller has the advantages of intelligent, strong adaptability, reliable function.
9. Use PWM upgrade control scheme to WPC mode, which can improve system efficiency and prolong the life span of the battery.

## Protection

- |                             |                                |
|-----------------------------|--------------------------------|
| 1. Over-load protection     | 2. Short circuit protection    |
| 3. Lightning protection     | 4. Under-voltage protection    |
| 5. Over-charging protection | 6. Reverse Polarity Protection |



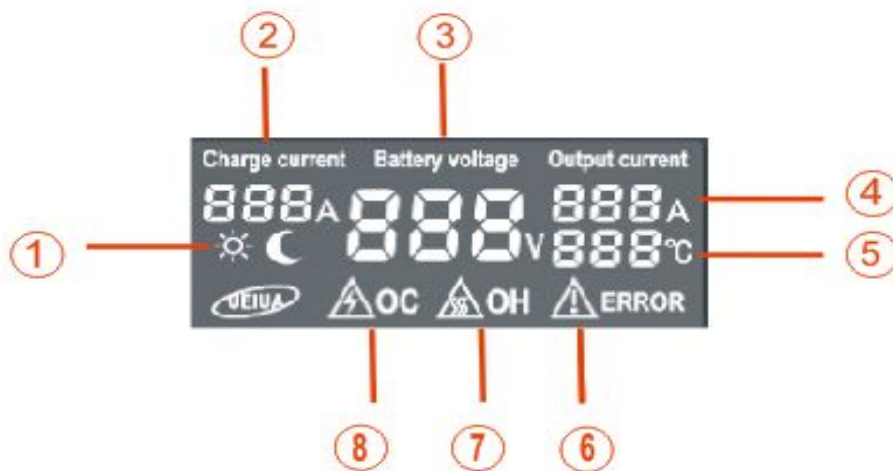
## Installation Instructions

Open the top cover of controller and connect the wire with terminals as the diagram on the top cover of it.

1. Connect the “+”, “-” Poles of the battery to the corresponding ports of controller (the third and the fourth one from left).
2. Connect the “+”, “-” poles of the solar panel to the corresponding ports of controller (the first and the second one from left).
3. Connect the “+”, “-” poles of the load to the corresponding ports of controller (the fifth and the sixth one from left).

**Note: If there is connection error, it may damage your controller.**

## Status instructions



① Solar status display (day night display)	② Charge current display
③ Battery voltage display	④ Output current display
⑤ Environmental temperature display	⑥ Warning – error display
⑦ Warning – over heated protection	⑧ Warning – over current protection

### The charge display:

During the day the LCD displays the sun, while charging it displays the charge current directly.



While at night it displays the moon and the charge current parameter will disappear.



**Battery voltage display:** always display the current battery voltage

**Battery under voltage display:** when the battery is in the state of under voltage, (in the 12V system the battery voltage is less than 10V, in the 24V system the battery voltage is less than 20V), at this time the load output is not allowed and the output current will displays “OFF”.

### The load display: (the default output switch is open)

1. In the 12V system, when the battery voltage is less than 10.5V, the output current displays “OFF”, at this time the load output is not allowed. When the battery voltage returns to 12V, the load output restart and displays the output current.



2. In the 24Vsystem, when the battery voltage is less than 21V, the output current displays “OFF”, at this time the load output is not allowed. When the battery voltage returns to 24V, the load output restart and displays the output current.



3. When the load output overload or short circuit occurs, the controller will start the protect function automatically, and then turn off the load output, it displays “OC” and “ERROR”. The output protection will automatically try to recover after 10s, if the short circuit has been removed, the load output will start to work and displays the output current.



### Troubleshooting

When the following phenomenon happens, please check as follows

Phenomenon	Trouble shooting
The LCD cannot display	Check the battery wiring whether is well connected or whether the voltage of the battery is normal or not.
When there is adequate sunshine, it displays	Check the PV and battery wire whether is well connected or tight connection or not.
The charge current is quite low or the charge current keep flashing	1. The battery is full charged and the system enters into protective charging. 2. The sunshine of the solar panel is insufficient.
The output current displays  , the load cannot start	1. Reference to the system wiring diagram, check the system whether is well connected or not. 2. Check the power of the battery, the load will start only when the battery voltage is Normal. 3. Connect the solar module, charge the battery until it reach to the normal state.
The image  and  flickers, the output current displays  the output terminal without voltage	When in the state of over current or short circuit protection, the controller will return to work automatically after finish trouble shooting for 10 seconds.
Other phenomena	Check the wiring whether is tight or not, and the automatic identification of 12V/24V system is correct or not.

Note: We keep right to change and update without prior notice.

## Technical Data

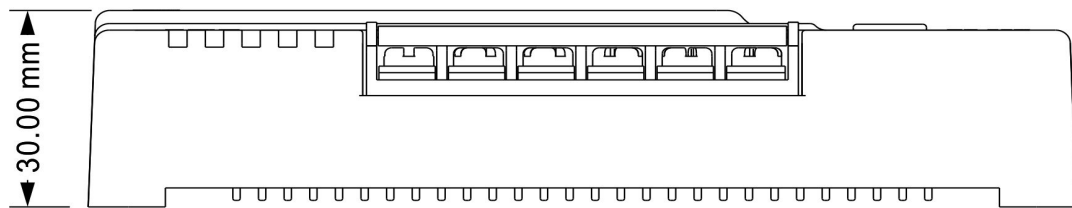
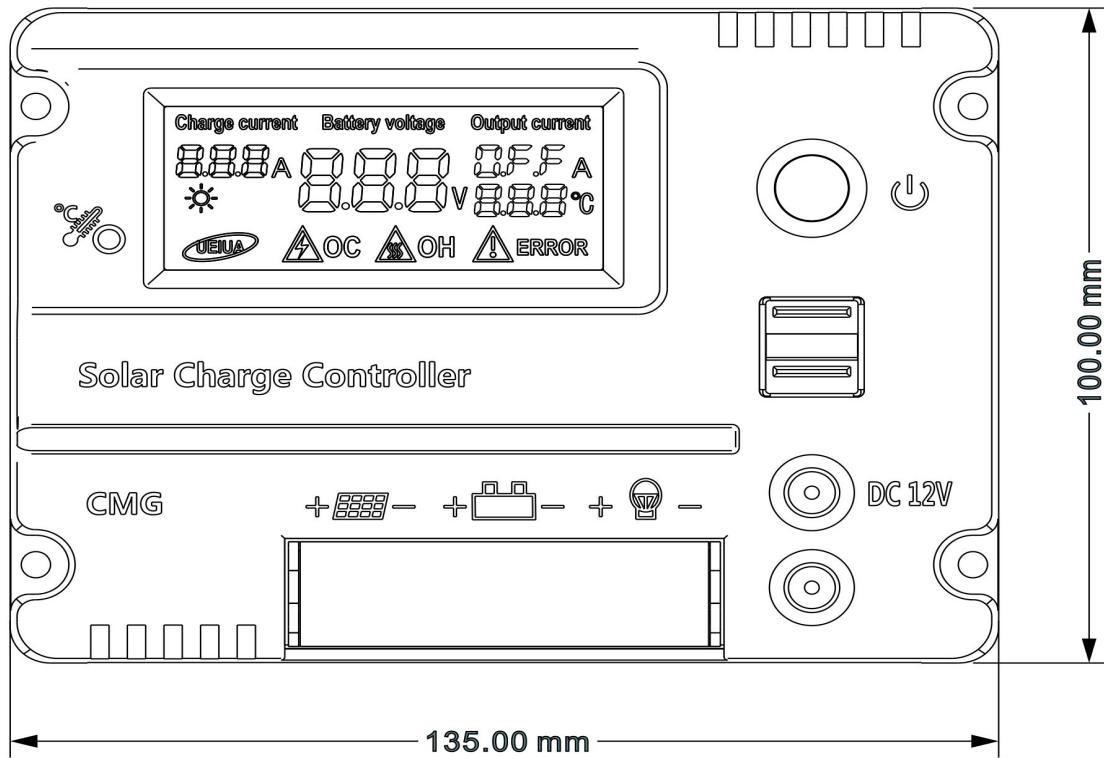
<b>Model</b>	<b>CMG-2405 CMF-2405</b>	<b>CMG-2410 CMF-2410</b>	<b>CMG-2415 CMF-2415</b>	<b>CMG-2420 CMF-2420</b>
Rated charge current	5A	10A	15A	20A
Rated discharge current	5A	10A	15A	20A
USB output voltage	5V			
Total USB output current	3A			
DC output voltage	12V (only CMG)			
Total DC output current	2A (only CMG)			
Over load, short circuit protection	1.5 times by rated current			
Short circuit recovery time	10s			
Open circuit voltage of solar panel	40V			
No load loss	0.05W			
Over voltage protection	15V; ×2/24V			
Float charge voltage	14V; ×2/24V			
Discharge recovery voltage	12V; ×2/24V			
Over discharge voltage	10.5V; ×2/24V			
Control mode	software intelligent control			
Working temperature	-35℃~+55℃			

<b>Model</b>	<b>CMG</b>	<b>CMF</b>
Dimension (L×W×H)	135*100*30(mm)	201.6*108*37.1(mm)
Weight	275g	560g

**\*Parameters may customized by customers.**

## Dimension Figure

### CMG dimension



### CMF dimension

