Intelligent Solar Charge Controller
User's Manual

Please read this manual carefully before you use this product

Catalogue

1. Product Introduction

CM series controller is a kind of intelligent , multi-purpose solar charge and discharge controller. The family use the fixed LCD display, with a very friendly interface; various control parameters can be flexibly set , fully meet you're your various application requirements.

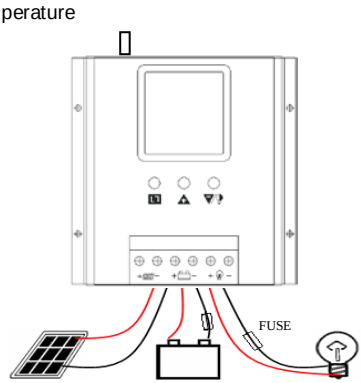
CM series controller has following features:

- Image of LCD graphic symbol
- Simple button operation
- Automatic Identification System Voltage level
- Intelligent PWM charge mode
- Automatic Temperature Compensation
- Adjustable charge-discharge control parameters
- Overload Protection
- Battery reverse-discharge protection
- Battery Low Voltage Disconnection (LVD)
- Accumulated function of charge and discharge Ampere hours

2. Installation

Install：

①Ready tools and cables. Encourage you to matching the right cables. Ensure that the current density<4m that is conductive to reducing the line voltage drop. Recommended: 80A with 25mm^2 cable.
Check weather the installation sites compliance with the relevant safety requirements. Please avoid the damp, dusty, there is a place flammable, explosive and corrosive gases use the controller to install.



②Install the controller into a fixed vertical plane. See section 5 of the pore size and pore spacing. In order to ensure a good thermal control conditions, please set aside each 10cm below the controller space.

③As shown on the right, connect the (1) Load, (2) Battery and (3) Solar Panel to the controller according to the order of (1) (2) (3). Pay attention to the load, battery, solar panel and controller of same polarity.

④Put into the external temperature sensor on the left of the controller (probe port). The temperature sensor should be similar space with battery. (Otherwise, the controller will control the parameters of all wrong temperature compensation.)

Demolition: To prevent accidents, please order the demolition of solar panels, battery and load disconnect with controller.

Note：Don't connect the solar pannels reverse polarity to conttroller reverse polarity will damage the controller！

Battery polarity will not damage the controller, but you will have a load equipment security risks.

3.Operation Instructions

3.1Keys function

Key	Operation	Function instruction
	Press	Page up
	Press and hold	Enter parameters setup mode. Save the parameters.
	Press	Modify the parameters in setup mode. Enter into the warning page.
	Press and hold	Modify the parameters successively in setup mode. To restore to default values on page 1. Clear charge and discharge power data on page 3.
	Press	Modify the parameters in setup mode. Load on or load off in normal mode.
	Press and hold	Modify the parameters successively in setup mode.

Figure 5-1: Key function instruction

3.2 LCD displays

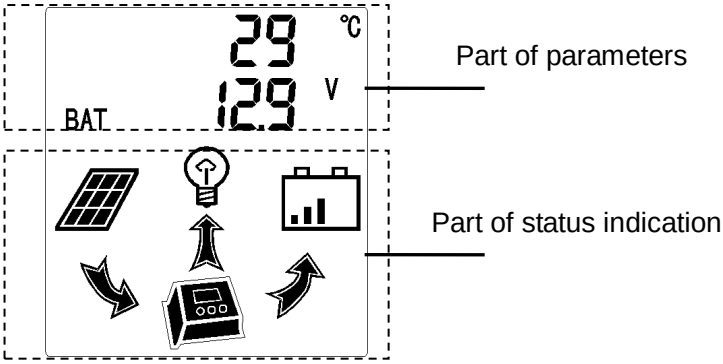


Figure 5-1: LCD display diagram

- There is no relationship between parameters part and status indication part when no faults come up. Paging up changes parameters display and status indication display doesn't change. The part of status indication shows the current working status of the controller.
- When any of the fault comes up, the fault code shows on the part of parameters and the other part indicates the status at the same time.

3.3 System voltage indication

The 24V controller adjusts itself to 12V or 24V system voltage automatically，and the 48V controller is only 48V system .The controller indicates the system type when the controller startups every time. Details show as follows:

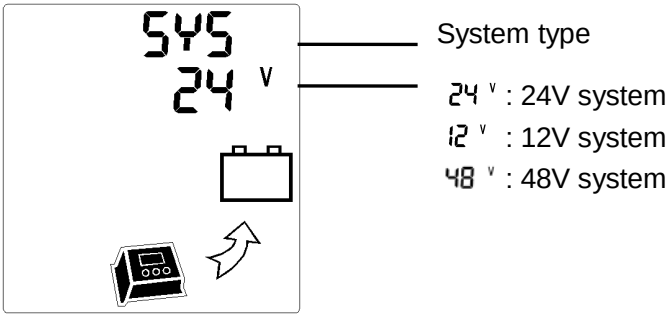


Figure 5-3: System type indication diagram

3.4 Parameters display

In normal mode, press to change display page (from page 1 to 4).

Page	Parameters Display	Instruction
1	29 ℃ BAT 12.9 V	Shows ambient temperature and battery voltage.
2	CH 25.3 A LOAD 23.7 A	Shows charge current and load current.
3	CH 136 KAh LOAD 857 Ah	Shows charge power and load power in Ah.

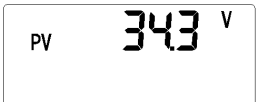
4		Shows PV voltage.

Figure 5-3: Part of parameters display diagram

3.5Parameters setup instructions

- Be careful with the parameters, don't modify them with causal!
- The corresponding parameters differs from battery type. You should reference the battery datasheet if possible.
- The setup parameters are without temperature compensated. The controller compensates automatically with the setup values.

In normal mode, press and hold for more than 5 seconds. Don't release the key until the display goes into setup mode. There are 5 items can be setup in 3 pages (Page A to C). Press to change setup items and press or to modify the values. The setup legend is as follows:

Page	Setup Legend	Instruction
A		Absorption charge setup range: 13.6~15.2V Step: 0.1V
B		Float charge setup range: 12.8~14.2V Step: 0.1V
C		LVD voltage setup range: 10.5~12.0V; LVR voltage setup range: 11.5~13.0V. Step: 0.1V

Figure 5-4: Parameters Setup Instruction

When parameters setup completed, press and hold for more than 5 seconds to save the parameters. **You should recover the parameters to the default values if the parameters changed but not need to be saved. Otherwise the setup parameters will be saved automatically when exits from the setup mode.** If you don't save the parameters by yourself, the controller will save the parameters automatically and exit from the setup mode when no key pressed for more than 15 seconds.

3.6 Restoring to default values

Press key to switch to page 1, then press and hold key about 5 seconds. Don't release the key until the display contents change.

3.7 Clear charge and discharge power data

Press key to switch to page 3, then press and hold key about 5 seconds. Don't release the key until the Ah data clears to 0.

4.Faults and Remedies

4.1 Protection remedies

- Warning page pops up when any fault detects. This page displays fault code and corresponding simple hint.
- On the warning page press or to exit the display. If no key pressed for more than 15 seconds, then it turns back to warning page again. Or you can press directly to turn into warning page.

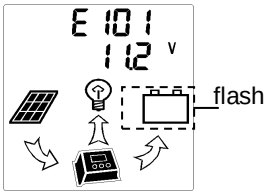
Legend: E 2 01

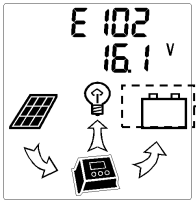
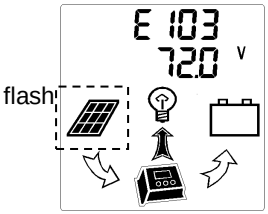
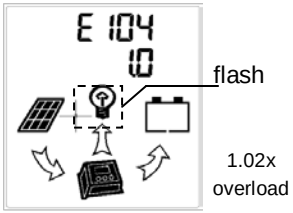
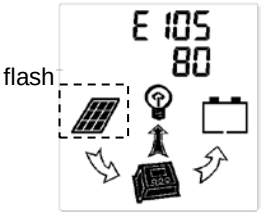
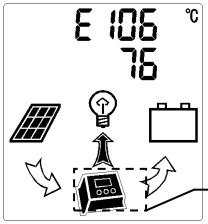
Error (abbreviation)

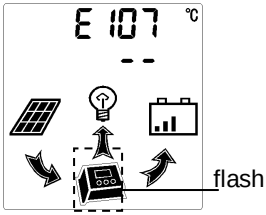
Total faults

Code number

Note: If total faults more than 1, then press to check other fault(s).

Code Number	Code Legend	Cause/Remedy
01		**Battery voltage too low.** Check the battery voltage and manually recharge the battery if necessary. Loads directly connected to the battery can cause deep discharge.

02		**Battery voltage too high.** Check installation. Check the battery voltage and check any additional charging sources if present.
03		**PV voltage too high.** Check the PV system configuration. The PV open circuit voltage increases while the ambient temperature decreases.
04		**Excessive load current.** Reduce the load current at the load output. The load may cause current peaks. Try reconnecting the load.
05		**Excessive charge current.** Charge is closed, and it will be opened automatically after 5 minutes
06		**Controller inside temperature too high.** Allow the controller to cool down. Check for possible causes of overheating (mounting location, other heat sources). Possibly reduce the charge current. Make sure the controller is adequately ventilated.

07		**Inside temperature sensor error.** Disconnect the load, solar modules and battery. Re-install the controller. If the error recurs, then please contact your specialist dealer.

4.2 Common faults and remedies

Phenomenon	Cause	Remedy
LCD no display	The battery is connected to the controller with the wrong polarity. The fuse burns out.	Check the fuse. Disconnect the battery and reconnect it to the controller with the correct polarity.
Battery overvoltage protection when startup	The controller adjusts to the wrong system voltage.	Disconnect the load, solar modules and battery. Waiting for about 10 seconds and then re-install the controller.
Ambient temperature shows --	The ambient temperature sensor disconnected.	Insert the temperature sensor into the socket in the top of the controller.

5. Technical Data

Model / Data	CM8024Z	CM8048	Model / Data	CM8024Z	CM8048
Rated current	80A	80A	Cooling style	Active Cooling	
Rated voltage	12V/24V	48V	Ambient temperature range	-20℃~45℃	
Maximum voltage of solar panel	≤50V	≤100V	Storage temperature range	-30℃~70℃	
Float voltage	13.8V(12.8V~14.2V)×1/×2/×4		Humidity Requirement	≤90%, no condensation	
Absorb voltage	14.4V(13.6V~15.2V) ×1/×2/×4		Size	193.5mm*188mm*89mm	193.5mm*188mm*96mm
Low Voltage Disconnection	11.5V(10.5V~12.0V) ×1/×2/×4		Mounting hole spacing	106mm*178mm --Φ5	
Low Voltage Reconnection	12.6V(11.5V~13.0V) ×1/×2/×4		Maximum wire size	≤25mm²	
No load loss	<26mA	<22mA	Weight	1.09kg	1.3kg
Charge Voltage Drop	≤300mV	≤200mV			
Discharge Voltage Drop	≤100mV	≤150mV			
Charging mode	PWM mode				
Temperature compensation	-4mV/Cell/℃				
Notes	Model suffix " Z" represent automatic identify system voltage level				