

- C series
- CD series

Owner's Guide

SOLAR CHARGE CONTROLLER



C-CD-101Z15*100715

Tips: the picture and function description just for reference, and we reserve the right to change it and have no notice.



ISO9001:2000 ROHS SON EB CE

Refer to the sticker on box for detail model #!

Content

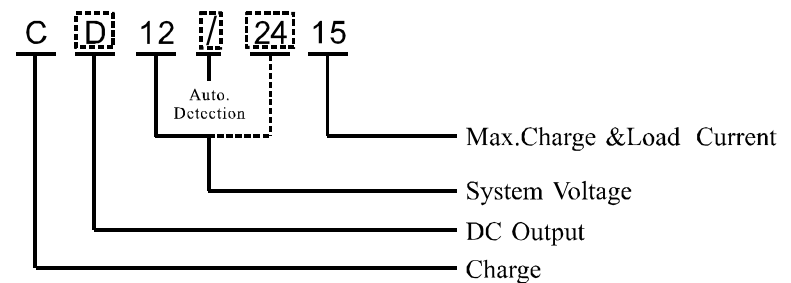
1.Features.....	1
2.Model Explanation	1
3.Products Description.....	2
4.Installation and Connection.....	2-4
5.Grounding the System	5
6.Starting up the Controller.....	5-6
7.Display and Functions.....	6-7
8.Setting.....	8
9.Error Description.....	9
10.Recommended Safety and Application Procedures	10
11.Liability Exclusion.....	10
12.Technial Data.....	11

Thank you for choosing our C and CD series solar charge controller, it is a state-of-the art device which was developed according to the latest available technical standards. Before your controller, please read all instructions in this manual.

1.Features:

- 4 LED functionality
- Easy to read, clear indication of charge status
- Automatic protection against reverse polarity on the batteries, solar panels and charge output
- Extensive electronic protection : short circuit , reverse polarity and overloading
- Low voltage disconnected regulated by control voltage
- Large terminals (up to 16mm² wire size)
- Automatic reset
- Automatic temperature compensation
- Automatic detection of the battery voltage (12/24V auto.switch model only)
- The charge battery type Selectable (Gel battery & Lead battery with liquid electrolyte)
- Security against low battery voltage (LVD)
- Blocking of the return current
- Common positive allows grounding
- Easy to mount on wall or rail
- Type of use selection (charge verification or voltage verification)

2.Model Explanation



3.Products Description

C series charge controller protects the battery from being overcharged by the solar array. The charging characteristics include several stages which include automatic adaptation to the ambient temperature, and 12/24V auto. Switch. model selectable

CD series solar charge controller protects the battery from being overcharged by the solar array and from being deep discharged by the loads. The charging characteristics include several stages which include automatic adaptation to the ambient temperature, and 12/24V auto. switch. model selectable.

4. Installation and Connection

The controller is intend for indoor use only. Protect it from direct sunlight and place it in a dry environment. Never install it in humid rooms (like bathrooms).

The controller measures the ambient temperature to determine the charging voltage. Controller and battery must be installed in the same room.

The controller warms up during operation, and should therefore be installed on a nonflammable surface only.

4.1 Mounting

Note : Connect the controller by following the steps described below to avoid installation errors.

4.1.1. Screw mounting

Mount the controller on the wall with screws that fit to the wall material. Use screws with 3.5mm shaft and max .8 mm head diameter, no counter sunk .(As below pictures)

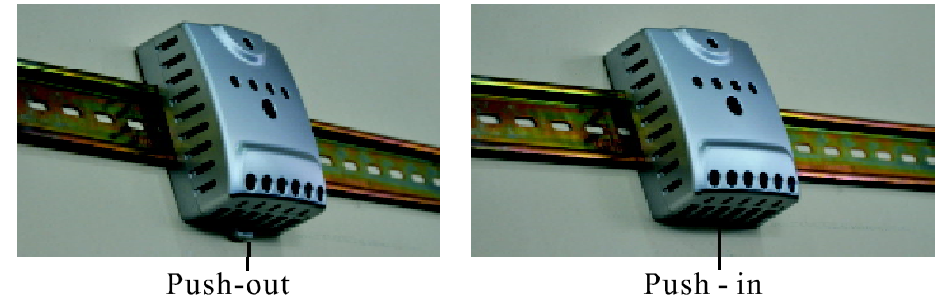
Note: Mind that the screws have carry also the force applied by the wiring. Make sure that the ventilator slits on the sides are unobstructed.



4.1.2. DIN Rail Mounting

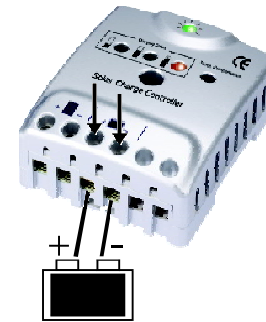
Push the rail - clip outside then mount it on a standard 35mm DIN rail. Push the rail - clip inside to fasten the controller onto the DIN rail. (As below pictures)

Note: the thickness of DIN rail should not more than 1mm , suggest to choose the 0.8mm type.



4.2 Battery and Controller Connecting

Please connect the controllers according this instruction!



Connect the wires leading to the battery with correct polarity. To avoid any voltage on the wires, first connect the controller , then the battery. Mind the recommended wire length (min 30cm to max approx. 100cm) and the wire size :

10A: min 6mm²

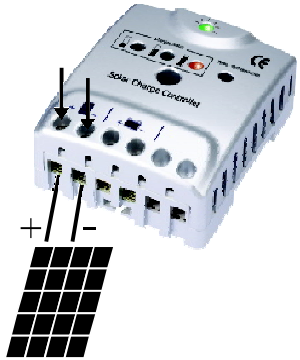
12A: min 6mm²

15A: min 8mm²

Warning : If the battery is connected with reverse polarity, the load terminals will also have the wrong polarity. Never connect loads during this conditions!

4.3 Solar array and Controller Connecting

Please note that the solar panels total power should no more than the controller's rate power (voltage*Amper (V*A))!



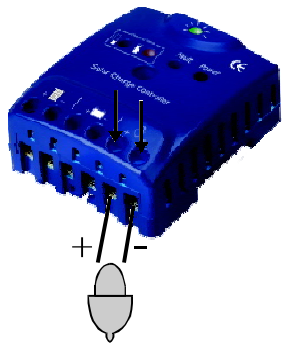
Connect the wires leading to the solar array with correct polarity. To avoid any voltage on the wires, first connect the controller, then the solar array. Mind the recommended wire size:

- 10A: min 6mm²
- 12A: min 6mm²
- 15A: min 8mm²

Attentions :

- Place positive and negative wire close to each other to minimize electromagnetic effects.
- Solar panel provide voltage as soon as exposed to sunlight. Mind the solar panel manufacturer's recommendations in any case .

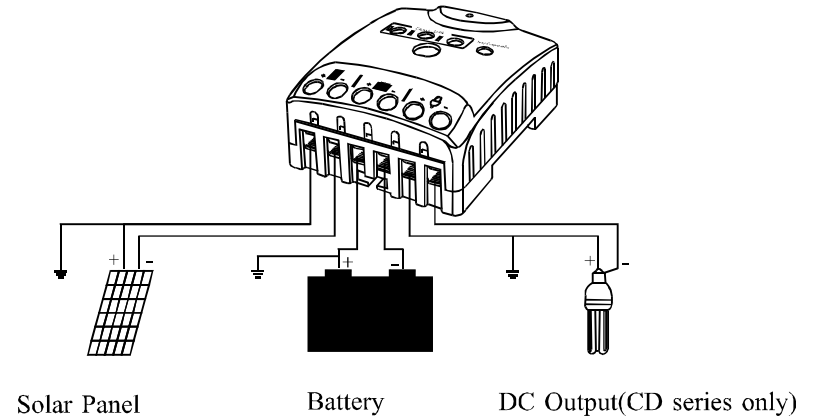
4.4 Load and the Controller Connecting (CD Series only)



Connect the wires leading to the loads with correct polarity. To avoid any voltage on the wires, first connect the wire to load, then to the controller. Mind the the recommended wire size:

- 10A: min 6mm²
- 12A: min 6mm²
- 15A: min 8mm²

5. Grounding the Solar System



Be aware that the positive terminals if the controller are connected internally and therefore have the same electrical potential. If any grounding is required, always do this on the positive wires.

Note : If the device is used in a vehicle which has the battery negative on the chassis, loads connected to the regulator must not have an electric connection to the car body. Otherwise the Low

6. Starting up the Controller

Self Test

The charge controller starts a self test when it is properly connected to the battery and solar panel. After which the display resets to normal operation.

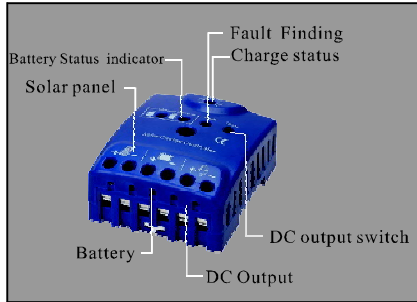
System Voltage

The controller adjusts itself automatically to 12V or 24V system voltage. As soon as the voltage at the time of start-up exceeds 18V, the controller implies a 24V system. If the battery voltage is not within the normal operation range (ca. 12 to 15.5V to ca. 24V to 31V) at start-up, a status display according to the section ERROR DESCRIPTION occurs.

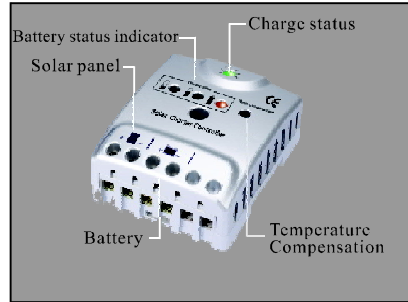
Battery Type

The controller is preset to operate with lead acid batteries with liquid electrolyte, If you intend to use a lead-acid battery with solid electrolyte(“gel” type or “fleece” type) you can adjust the charging characteristics (see “settings”).The equalization charge is deactivated then. In case if any doubts consult your dealer.

7. Display and Functions

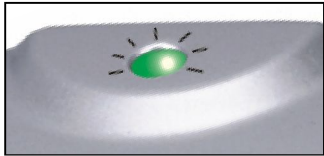


CD series

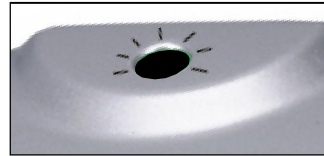


C series

7.1 Charge Status

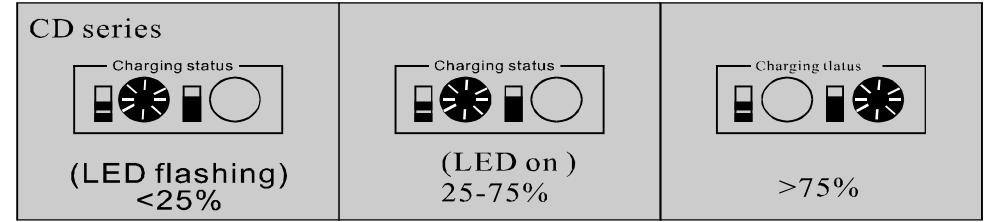
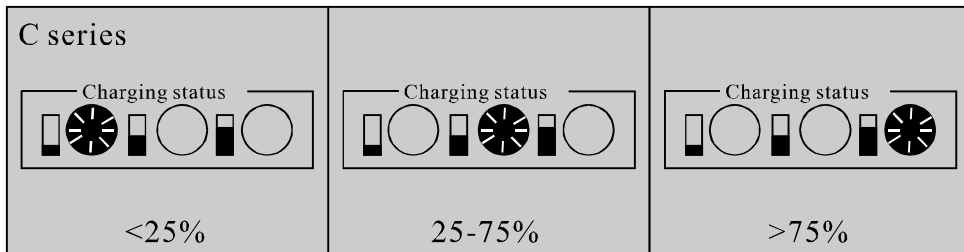


Battery on charging (LED on)



Battery not in charging (LED off)

7.2 Battery Status Indicator



C series : 3 LEDs show the state of the battery s charge

First LED on : battery capacity <25%

Second LED on: battery capacity between 25% and 75%

Third LED on : battery capacity >75%

CD series: 2 LEDs show the state of the battery s charge

First LED flashing : battery capacity < 25%

First LED on : battery capacity between 25% and 75%

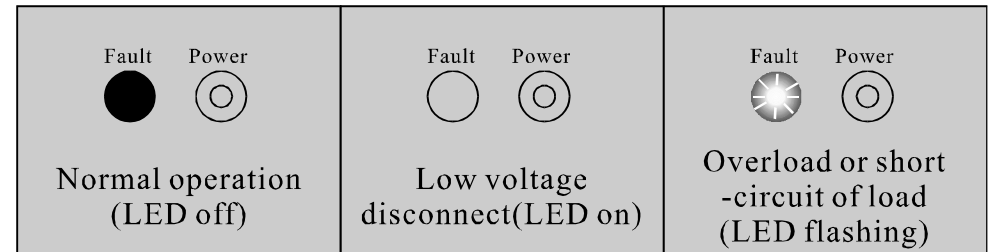
Third LED on : battery capacity >75%

7.3 Fault Finding

Fault LED flashes when there is an open circuit , or if there is an overload or short circuit.

7.4 DC Output Switch(CD Series only)

This switch turns the DC output on and off.



8.Settings

WARNING:The controller should not be open when it is plugged in or running!

Always disconnect the solar panels and the battery before opening the charge controller.

The controller can be configured for a particular purpose.

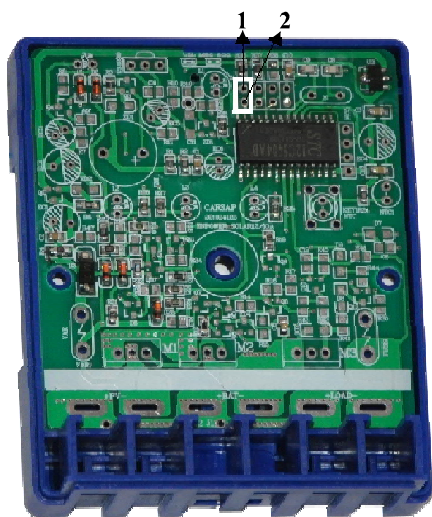
Charge the battery type (Lead -acid and Gel)

To do this, open the lid of the controller by removing the screws on the back. !


When the controller is open,there is two jumper on the board. The controller is factory set with the jumper closed for GEL batteries.


To modify the settings, move the jumper on the connector pins.

To charge, turn the jumper which is covering both pins to cover only one



contact pin-see below.

 Jumper close for Gel batteries
(1, 2 closed)

 Jumper open for lead acid batteries
(1,2 open)

The controller is preset to open jumper from the factory

Jumper	Battery Type
Setting jumper open	Liquid electrolyte
Setting jumper close	GEL(VRLA battery)
Factory setting	Jumper open (Liquid electrolyte)

After completing the setting, replace the cover and tighten it with the screws.

9.Error Description

Error	Display	Reason	Remedy
Loads are not supplied (CD series only)	LED is on (Red LED)	Battery is low	Load will reconnect as soon as battery is recharged.
	LED is flashing (Red LED)	Overcurrent/load	Switch off all loads.
		DC Loads Short Circuit	Remove the short circuit , Controller will switch on load automatically after 10 seconds
	LEDs are on	Battery voltage too high (>15.5/31.0V)	Check if other sources overcharge the battery. If not controller is damaged.
Battery wires or battery fuse damaged, battery has high resistance		Check battery wires fuses and battery.	
Battery is empty after a short time	LED is on (red LED)	Battery has low capacity	Change battery
Battery is not being charged during the day	LED is off (red LED)	Solar array faulty or wrong polarity	Remove faulty connection/ reverse polarity

10. Recommended Safety and Application Procedures

Intended Use

The charge controller is intended exclusively for use in photovoltaic systems with 12V or 24V normal voltage and in conjunction with vented or sealed (VRLA) lead acid batteries only.

The controller will become warm when working but no maintenance is required. Please use dry cloth to wipe off dust when needed. It is important that batteries are frequently fully charged (min once a month). Otherwise batteries might be damaged permanently. Also note that a DC loaded battery can only be charged full if the charging current is bigger than battery output.

Product Application

This charge controller is designed to be used with solar panels only. Designed voltage is 12V or 24V system (depending on the models) with lead acid battery or gel battery. Never short circuit batteries since they contain big (strong) power. We recommend connecting fuse on batteries (slow motion type according to the designed current). Batteries may release flammable gas. Please keep away from sparks, open fire. Store batteries in ventilated room.

Do not touch or short circuit connections/ terminals. Some wires or terminals may carry twice the voltage as batteries. To operate on batteries, make sure hands are dry and use isolation tools. Stand on dry ground. Keep children away from battery and controller.

11. Liability Exclusion

The manufacturer shall not be liable for damages, especially on the battery, caused by use other than as intended or as mentioned in this manual or if the recommendations of the battery manufacturer are neglected. The manufacturer shall not be liable if there has been service or repair carried out by any unauthorized person, misuse, incorrect installation and/ or bad system design. This product carries a warranty of two years from the date of original purchase. Warranty is limited to service or free replacement as determined by the manufacturer or your local distributor.

12. Technical Data

Model#	C1210	C1212	C1215	CD1210	CD1212	CD1215	C2410	C2412	C2415	CD2410	CD2412	CD2415	C12/24-10	C12/24-12	C12/24-15	CD12/24-10	CD12/24-12	CD12/24-15
Normal Voltage	12V						24V						12/24V auto. Detection					
Battery Selection	Lead Battery with liquid electrolyte			Gel Battery			Lead Battery with liquid electrolyte			Gel Battery			Lead Battery with liquid electrolyte			Gel Battery		
Equalization Voltage	14.5V(25°C)			14.3V(25°C)			29V(25°C)			28.6V(25°C)			14.5V/29V(25°C)			14.3V/28.6V(25°C)		
Boost Voltage	14.8V(25°C)			14.4V(25°C)			29.6V(25°C)			28.8V(25°C)			14.8V/29.6V(25°C)			14.4V/28.8V(25°C)		
Float Voltage	13.7V(25°C)			13.6V(25°C)			27.4V(25°C)			27.2V(25°C)			13.7V/27.4V(25°C)			13.6V/27.2V(25°C)		
Low Voltage Disconnect	11V controlled by voltage																	
Load reconnect voltage	12.8V						25.6V						12.8V/25.6V					
Max.Charge Current	10A	12A	15A	10A	12A	15A	10A	12A	15A	10A	12A	15A	10A	12A	15A	10A	12A	15A
Max.Load Current																		
Reverse connection protection for DC Output	Fuse 25A																	
Self Current Consumption	<4mA																	
Temperature Compensation	-4 mV/cell * K																	
Operating Temperature Range	-40 ~ 50°C																	
Case Protection	IP22																	
Max. Wire Size	16mm ² (AWG#6)																	
Dimension	86*68*36mm (L * W * H)																	
N.W.	145g																	