Solar charger controller
User's Manual

Contents

1. Thanks

Thank you for choosing Sumry and congratulations on your choosing new high-performance Sumry product .This manual will help you get to know your new product. Read the manual carefully and you will soon be familiar with many great features of your new product. When you choose Sumry solar charger controller, you option for reliable and high-performance technology.

2. About This Manual

2.1 Validity

This manual describes the assembly, installation, commissioning and maintenance of the following Shenzhen Sumry Electronics Co., Ltd solar charger controller model:

SMY2430DM-SCC
SMY3630DM-SCC
SMY2460DM-SCC
SMY3660DM-SCC

This manual does not cover any details concerning equipment connected to the Shenzhen Sumry Electronics Co., Ltd （e.g. PV modules). Information concerning the connected equipment is available from the manufacturer of the equipment.

2.2 Purpose

The purpose of this manual is to provide explanations and procedures for installing, operating, maintaining, and troubleshooting the Solar charge controller.

2.3 Scope

This manual provides safety guidelines, detailed planning and setup information, procedures for installing the Solar charger controller, as well as information about operating and troubleshooting the unit. It does not provide details about particular brands of batteries. You need to consult individual battery manufacturers for this information.

2.4 Audience

This manual is intended for anyone who needs to install and operate the Solar charger controller. Installers should be certified technicians or electricians.

3. Important Safety Massage
3.1 Save these instructions

This manual contains important instructions for Solar charger controller that shall be followed during installation and maintenance.

3.2 General

3.2.1. Refer installation and servicing to qualified service personnel. Incorrect installation or use may result in risk of fire. No user serviceable parts in this unit.

3.2.2. Remove all sources of power, photovoltaic and battery before servicing or installing.

3.2.3. Warning – risk of explosive gases

- ◆ When Solar charger controller is working, Please DO NOT touch it because the temperature is too high.
- ◆ Working in the vicinity of lead-acid batteries is dangerous. Batteries produce explosive gasses during normal battery operation.
- ◆ To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery.

3.2.4. Personal precautions

- ◆ Someone should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.
- ◆ Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes.
- ◆ Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
- ◆ If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.
- ◆ NEVER smoke or allow a spark or flame in vicinity of battery.
- ◆ Be extra cautious to reduce risk of dropping metal tool onto battery. It might spark or short circuit battery or other electrical part that may cause explosion.
- ◆ Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short circuit current high enough to weld a ring or the like to metal, causing a severe burn.

3.2.5. Preparing to charge

- ◆ Never charge a frozen battery.
- ◆ Be sure battery is mounted in a well-ventilated compartment.
- ◆ Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from the cells. Do not overfill. For a battery without cell caps, carefully follow manufacturers charging instructions.

3.2.6. Charger location & installation

- ◆ Controller employs components that tend to produce arcs or sparks. NEVER install in battery

compartment or in the presence of explosive gases.

◆ Protect all wiring from physical damage, vibration and excessive heat.

◆ Insure that the controller is properly setup for the battery being charged.

◆ Do not expose controller to rain or snow.

◆ Insure all terminating connections are clean and tight to prevent arcing and overheating.

◆ Charging system must be properly installed as described in these instructions prior to operation.

◆ Do not connect to a PV array capable of producing greater than 30 Amps of short circuit current @ 25°C.

◆ Do not connect input to DC source directly with load, Solar charger controller need to be powered by solar panel.

◆ Do not short-circuit DC output port, it will damage Solar charger controller.

3.3 Symbol Explain

Symbol	Explanation
	Electrical voltage!
	Risk of burns
	Operation after 10 minutes
	Point of connection for grounding protection
	Direct Current (DC)
	The Solar charger controller has no transformer isolation.
	Read the manual
	CE mark. The Solar charger controller. complies with the requirements of the applicable CE guidelines.
	The Solar charger controller must not be disposed of with the household waste.

3.4 Abbreviations and Acronyms

Abbreviations	Full name
BTS	Battery Temperature Sensor
DC	Direct Current
LED	Light Emitting Diode
LVD	Low Voltage Disconnect
LVR	Low Voltage Reconnect
B.SELECT	Battery type selector
BAT	Battery
CHG.MODE	Charge mode
PV	Photovoltaic
MPPT	Maximum Power Point Tracking
PWM	Pulse Width Modulation

4. Product description

4.1 General description

Solar charger controller is a 30/60Amp 12/24,36V/48V voltage Maximum Power Point Tracking (MPPT) photovoltaic (PV) battery charge controller. Through the use of MPPT technology, Solar charger controller can increase charge current up to 30% or more compared to conventional controllers. Solar charger controller's sophisticated three stage charge control system can be configured to optimize charge parameters to precise battery requirements. The unit is fully protected against voltage transients, over temperature, over current, reverse battery and reverse PV connections. An automatic current limit feature allows use of the full 30/60Amp amp capability without worrying about overload from excessive current, voltage or amp-hour based load control.

Series pass Pulse Width Modulation (PWM) charge voltage control combined with a multistage charge control algorithm leads to superior charging and enhanced battery performance. The filtered PWM power control system uses highly efficient and reliable power MOSFET transistors. The MOSFET's are turned on and off at high frequency to precisely control charge voltage and MPPT.

Fully automatic temperature compensation of charge voltage is available to further improve charge control and battery performance. The optional battery temperature sensor is built for long term reliability. The sensor element is environmentally sealed and encapsulated into a plastic lug which adheres to directly to the battery terminal and by screw port connect with the unit, And the Solar charger controller also includes an isolated RS485 port for connection to a PC computer for data logging and system monitoring.

The Solar charger controller can easily install in parallel connection of output, so it also suitable for large system current application condition.

4.2 Features

◆ Maximum efficiency of 97.5%
◆ DC Load output port(10A)
◆ Wide PV input voltage range 200V Voc
◆ **Double MPPT trackers(only for 60A product)**
◆ An optional battery temperature sensor ensures precise battery charging
◆ LCD and LED displays to indicate the status of charge
◆ Lightning protection
◆ Reverse current at night
◆ Three-stage battery charging (bulk, absorption, and float) with optional temperature compensation
◆ Automatic overload protection
◆ DSP controlled
◆ Silent, pulse width modulated (PWM), high efficiency operation
◆ Remote monitor/RS485 communication
◆ Natural cooling
◆ Temperature compensate for battery

4.3 Product description

SMYxxxxDM-SCC　Overview

Figure 1 : The Solar charge controller Overview

Position	Description
A	LED
B	LCD
C	Function Key
D	RS485，Temperature sensor port
E	DC load theminal output
F	**Battery** theminal
G	PV input
H	Safety (Earth) ground

4.4 Type label

The type labels provide a unique identification of the Solar charger controller (The type of product, Device-specific characteristics, Certificates and approvals). The type labels are on the right-hand side of the enclosure.
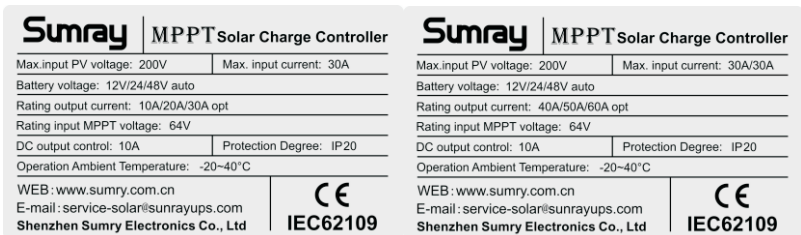
Figure 2 : The Solar charge controller label

More detail about the type label as the chart below:

Model Specifications	SMY2430DM-S CC	SMY3630DM-SC C customization	SMY2460DM-SC C	SMY3660DM-SC C customization
Max. PV voltage	200V	200V	200V	200V
Start voltage	10v	30V	10v	30V
Battery voltage	12V/24V/48 auto	36V/60V auto	12V/24V/48 auto	36V/60V auto
MPPT voltage range	14V-160V	41V-160V	14V-160V	41V-160V
Suggest input Voc voltage	20V/50V/80V	60V/100V	20V/50V/80V	60V/100V
Max. input current	30A	30A	30A/30A	30A/30A
Number of MPP trackers	1	1	2	2
Number of input trackers	1	1	2	2
Max.PV Input power	12V 400W	36V 1200W	12V 800W	36V 2400W
	24V 800W	48V 1600W	24V 1600W	48V 3200W
Charger Output (DC)				
Floating voltage	13.5V/27V/54V	40.5V/67.5V	13.5V/27V/54V	40.5V/67.5V
Max. output current	30A	30A	60A	60A
Rating output current	10A/20A/30A opt	10A/20A/30A opt	40A/50A/60A opt	40A/50A/60A opt
Define output current	30A	30A	60A	60A
Environmental Protection Rating	IP20	IP20	IP20	IP20
DC output control	10A	10A	10A	10A
Operating temperature range	-10...+50℃(14...+ 122°F) with derating above 40℃（104°F）			

4.5 Size and weight

Model	Height (H)	Width (W)	Depth (D)	Weight
SMY2430DM-SCC	219mm 8.2inch	171mm 6.7inch	96mm 3.8inch	2kg
SMY3630DM-SCC	219mm 8.2inch	171mm 6.7inch	96mm 3.8inch	2kg
SMY2460DM-SCC	283mm 11.1inch	215mm 8.5inch	110mm 4.3inch	4kg
SMY3660DM-SCC	283mm 11.1inch	215mm 8.5inch	110mm 4.3inch	4kg

5. Unpacking and inspection

The solar charge controller is thoroughly tested and inspected strictly before delivery. Our solar charge controller leave our factory in proper electrical and mechanical condition. Special packaging ensures safe and careful transportation. However, transport damage may still occur. The shipping company is responsible in such cases. Thoroughly inspect the solar charge controller upon delivery. Immediately notify the responsible shipping company if you discover any damage to the packaging which indicates that the inverter may have been damaged or if you discover any visible damage to the solar charge controller. We will be glad to assist you, if required. When transporting the solar charge controller, the original or equivalent packaging should be used, and the maximum layers for original carton is four, as this ensures safe transport.

After opening the package, please check the contents of the box. It should contain the following, Please check all of the accessories carefully in the carton. If anything missing, contact your dealer at once.

Figure 3 : The Solar charge controller packing

Item	Name	Number
A	MPPT solar charge controller	1
B	Safety-lock screws	1
C	Mounting screws	4
D	Output protect cover	1
E	M3 cross recessed countersunk head screws	2
F	RS485 connectors（option）	1
G	Remote monitor（option）	1
H	Remote monitor adapter（option）	1
I	**Battery** temperature sensor and Temperature sensor（option）	1
J	User Manual	1

6. Installation Instructions

6.1 Pre-Installation

The instructions that follow are applicable to the typical installation. For special applications, consult a qualified electrician or your Certified Dealer. Installation procedures will vary according to your specific application.

✧ **Important:** Installations should meet all local codes and standards. Installations of this equipment should only be performed by skilled personnel such as qualified electricians and Certified Renewable Energy (RE) System Installers.

6.2 Installation location

This is guidance for installer to choose a suitable installation location, to avoid potential damages to device and operators. The inverter can't install close to trunk of outdoor。The Ingress Protection rate is IP20 which means the inverter can be installed indoors.
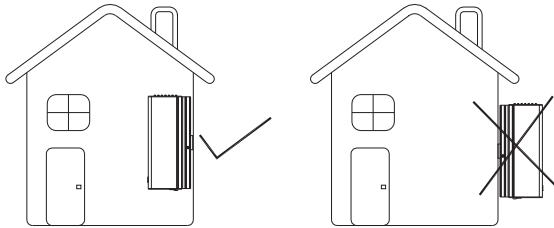
Please make sure the solar charge controller installed at the right place。The the solar charge controller can not install close to trunk.
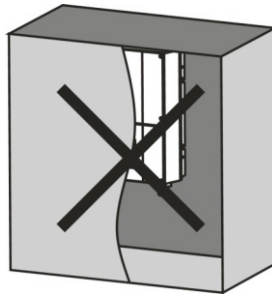
The installation location must be suitable for the inverter's weight and dimensions for a long period time. Select the installation location so that the status display can be easily viewed. Do not install the solar charge controller on structures constructed of flammable or thermolabile materials.Never install the solar charge controller in environment of little or no air flow, nor dust environment. The humidity of the installation location should be 0~95% without condensation. The installation location must be freely and safely to get at all times. Vertically installation and make sure the connection of the solar charge controller must be downwards. Never install horizontal and avoids forward and sideways tilt.
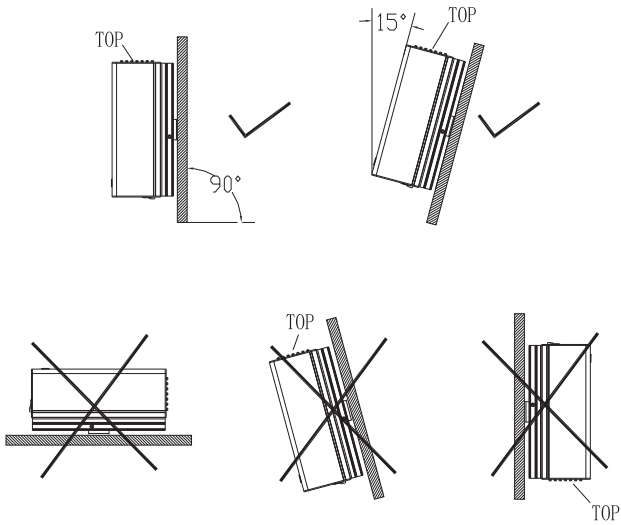
6.3 Mounting the Solar charger controller

The Solar charger controller is designed for indoor mounting. Care should be taken in selecting a location and when mounting the enclosure. Avoid mounting it in direct sunlight to prevent heating of the enclosure. The enclosure should be mounted vertically on a wall. In outdoor installations, the Solar charge controller must be installed in a rainproof enclosure to eliminate exposure to rain, mist or water-spray.

✧ Caution: Damage to Solar charge Controller, Install the Solar charge controller in a dry, protected location away from sources of high temperature, moisture, and vibration. Exposure to saltwater is particularly destructive. Corrosion is not covered by the warranty.

Mount the Solar charge controller step

1. Place the controller on the desired mounting surface and mark the location of the keyhole slots on the wall.
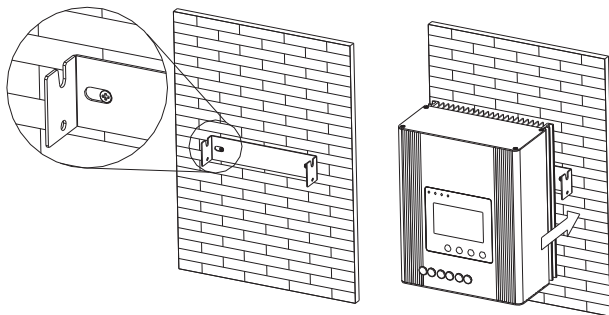
2. Move the controller out of the way, and secure two mounting screws in the locations marked. Leave the screw heads backed out approximately 1/4inch (6 mm) or less.
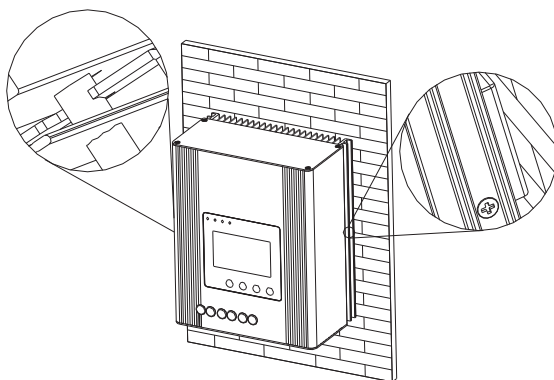
3. To hanging the solar charger controller on rack, and ensure the reliable safety lock screws.

✧ **Warning:** Explosion/Corrosion Hazard and don't mount solar charger controller on the flammable wall(for example: wooden all and so on).

Do not locate the Solar charge controller in a sealed compartment with the batteries. Batteries can vent hydrogen-sulfide gas, which is corrosive to electronic equipment. Batteries also generate hydrogen and oxygen gas that can explode when exposed to a spark.

7. Electrical connection

7.1 Screw up the screw

1. Access the inside of the solar charger controller by screwdriver on the cover top of the unit.

2. screw up the screw of Solar charger controller.
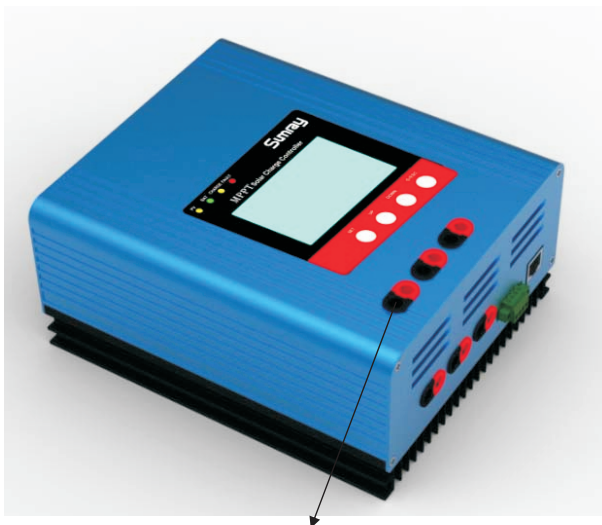
Figure 5: By screwdriver on the cover top of the unit

7.2 Wire Size and Over-current Protection Requirements

The wiring, over-current protection devices (fuses), and installation methods used must conform to all national and local electrical code requirements. Wiring should be protected from physical damage with conduit or a strain relief clamp.

7.2.1 PV input wire

Solar charge controller is rated for a rating continuous current of 30 Amps（60Amps）. Since PV outputs can vary due to the array size or sunlight striking it, the safe minimum wire size should be based on the maximum current ratings.

★Note：The SMY2460DM-SCC，SMY3660DM-SCC support Dual solar panel input, meas the two inputs are run independently, can make solar panels have more efficient . The maximum input current of each channel is 30A.

Solar charger   advice PV input voltage：

Condition Model	Advice input Voc voltage		Advice input Voc voltage		Advice input Voc voltage	
	System Battery	**Advice PV Voc**	System Battery	**Advice t PV Voc**	System Battery	**Advice PV Voc**
SMY2430DM-SCC	12V	**20V**	24V	**50V**	48V	**80V**
SMY3630DM-SCC	36V	**60V**	60V	**100V**	-	**-**
SMY2460DM-SCC	12V	**20V**	24V	**50V**	48V	**80V**

| SMY3660DM-SCC | 36V | **55V** | 60V | **100V** | - | **-** |

7.2.2 Battery input wire

Since PV arrays are often mounted on an elevated structure and thus are more susceptible to lightning strikes, protection from lightning-induced power surges and other transient power disturbances between the PV array and the Solar charge controller are strongly recommended. Because the Solar charger controller have wider input voltage range 13.5-150VDC(12/24/48V product) or 40.5V-200VDC(36V/60Vproduct).

7.2.3 DC output load wire

If the controller detects an overload, it will automatically resets the over current protection system. If the default is still present, the controller will shut off. This will occur continuously until the problem is corrected.

Table : Suggestion Minimum wire size

Controller	PV input Wire Size	BAT Wire Size	DC load wire size
12V/24V **30A**, 36V/48V **30A**	1PC*#8AWG	1PC*#8AWG	1PC*#12AWG
12V/24V **60A**, 36V/48V **60A**	2PC*#8AWG	2PC*#8AWG or 1*PC #5AWG	1*PC #12AWG

7.1 DC terminal connector locations

Terminal connectors for DC wiring are located on the lower edge of the circuit board. Terminal Torque Requirements. Once the wires have been installed, torque the terminals as follows. Be careful not to over tighten of the power wire.

⚡	When connecting the battery and solar panels to distinguish between positive and negative attention, please pay attention to safety.

Figure 6: DC terminal connector locations

7.3 PV Charge And Load Control Mode Wiring

The procedure below is illustrated in Figure 7.

✧ **WARNING:** Shock Hazard

PV arrays generate voltage whenever light strikes the surface of the array. Before connecting the Solar charge controller, cover or disconnect the array to prevent any current from being generated.
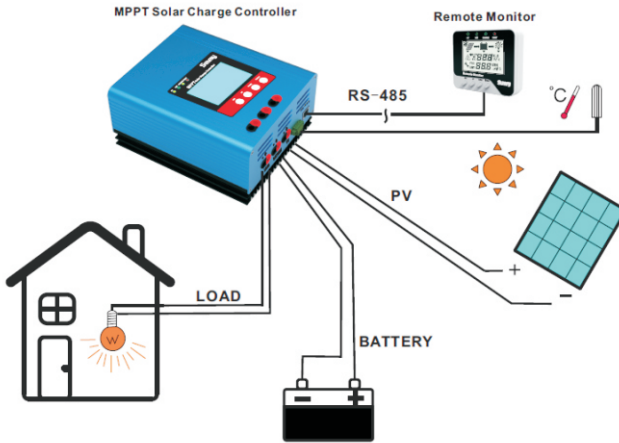
1. Connect the PV array's positive (+) output to the terminal marked PV positive (+) on the Solar charge controller and tighten the screw.

2. Connect the PV array's negative (−) output to the terminal marked PV negative (−) on the Solar charge controller and tighten the screw.

3. Connect the terminal marked battery negative (−) on the Solar charge controller to the negative (−) battery terminal and tighten the screw.

4. Connect the terminal marked battery positive (+) on the Solar charge controller to the positive (+) battery terminal and tighten the screw.

5. Connect the terminal marked load negative (−) on the Solar charge controller to the negative (−) load terminal and tighten the screw.

6. Connect the terminal marked load positive (+) on the Solar charger controller to the positive (+) battery terminal and tighten the screw.

7. Connect a cable from the controller's other terminal marked load negative (−) to the negative terminal of your DC load and tighten the screw.

8. Connect a cable from the controller's other terminal marked load positive (+) to the positive terminal of your DC load and tighten the screw.
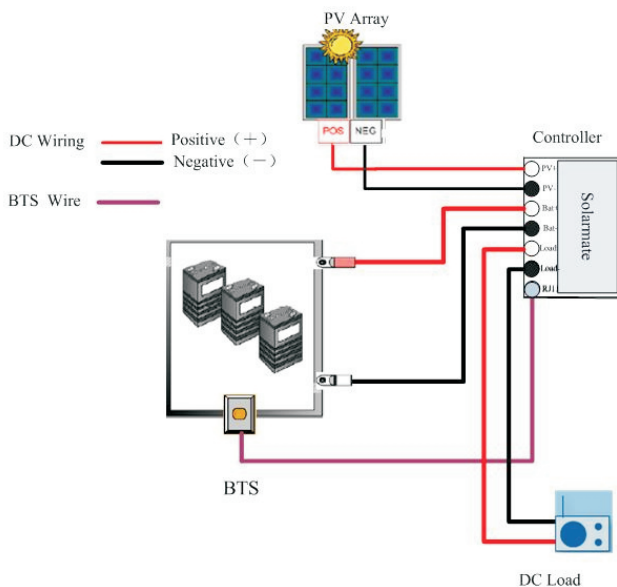
Figure 7: Single connection

7.4 Easily install in parallel connection

In order to get more than 30A(60A) charge current, Output of solar charger controller can be connected in parallel.
For example, connecting 2 Solar charger controller in parallel can get 60A(120A) charger current, and connecting
3 Solar charger controller in parallel can get 90A(180A) charger current.
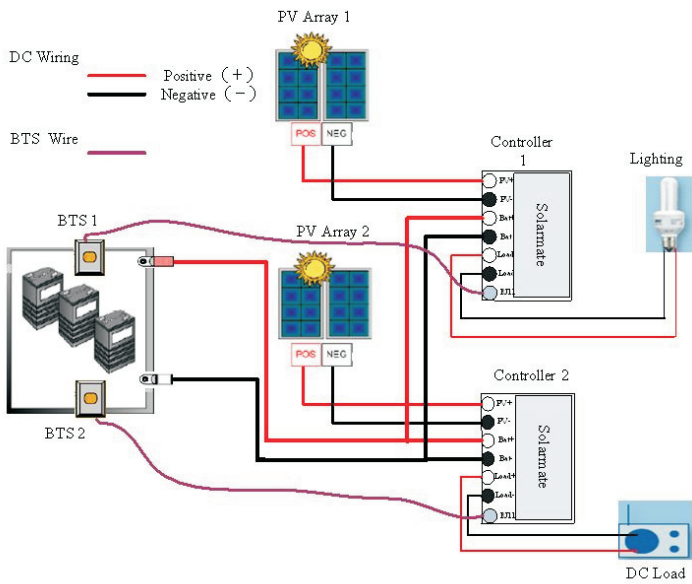
Figure 8: Parallel connection

7.5 Grounding

The Solar charge controller is designed to work with grounded electrical systems. In solar charger controller ground is not connected to input terminal and output terminal so customer can connect Ground to battery + or batter -. But don't connect battery terminal and PV output terminal with Ground at same time

Figure9: Safety (Earth) ground

8. Operation Instructions

8.1 Key define

Key Definition: from left to right are SET，UP ，DOWN, ESC

8.2 Browse display message

Display according to (solar panel voltage, current)， (the battery voltage, charging current), (load voltage, load current), (battery AH capacitance, battery temperature), (the percentage of battery power, temperature compensation coefficient),(battery system voltage 12/24/36/48/60V, battery type) in order to cycle display the above parameters。Use the UP or DOWN key Switching the display between the various parameters, shows the structure shown in Figure 10:
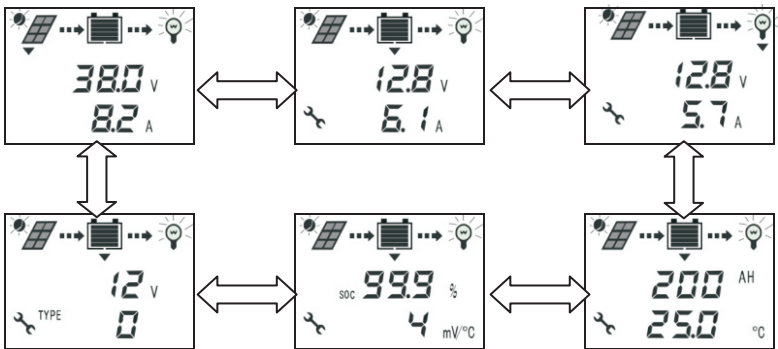
Figure10: Browse page

means the set symbol, which means that there can be set to the current page option, you can modify the parameters, when enter into the setup mode, the symbol will twinkling, indicating the current status is can modified.

9. Configuring the Solar charge controller

9.1 Display message description

When have any key operation, the LCD backlight will automatically turn on；when without any key operation, the LCD backlight will automatically turns off after 30 seconds

Display message explain
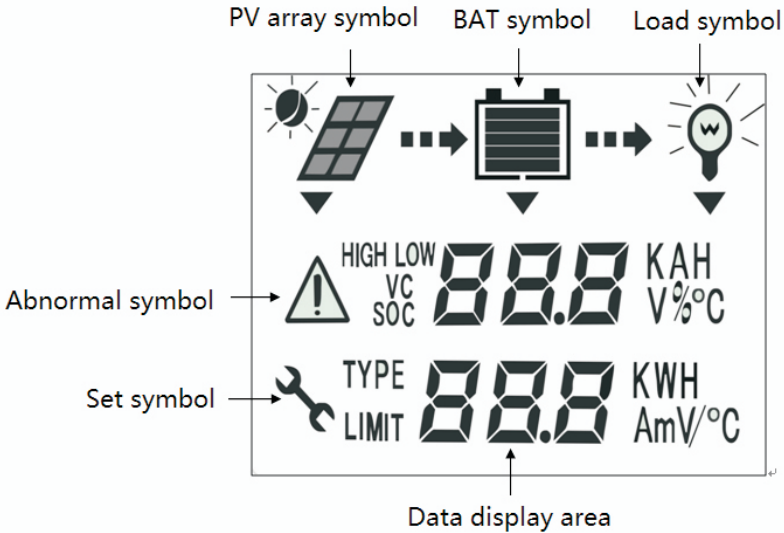
Figure11: LCD display message

LED indicator light explain：

1. When have the PV input voltage, PV indicator light turn on, when there is no input PV voltage, PV indicator lights turn off.
2. When have the BAT input voltage, BAT indicator light turn on, when there is no input BAT voltage, BAT indicator lights turn off.
3. When the charging, CHARGE indicator light turn on, when not charging, CHARGE indicator light turn off.
4. When have an abnormality occurs, FAULT indicator light turn on, when there is no abnormality, FAULT light turn off.

Battery capacity indicator：

Each cell corresponds to 20% of the capacity. Note: This capacity is based on 100% of full voltage, over-discharge voltage is 0%, the percentage of the battery voltage is calculated.

9.2 Parameter setting operation

Referring to Figure 1 with symbols, means you can set some parameters : the battery charge current limit, the load switch, the battery capacity **AH**,the battery temperature compensation coefficient, the battery type, a total

of five parameters that can be modified. In the Browse state and the page showing symbol, press SET key to enter into the current parameter setting state, then sign will twinkling, that has entered into the modification mode, press UP, DOWN key modify the current parameter value, if the parameter have finished, press SET key save the current parameter value and return to the main page,the ESC key without saving the current parameters and return main pages.
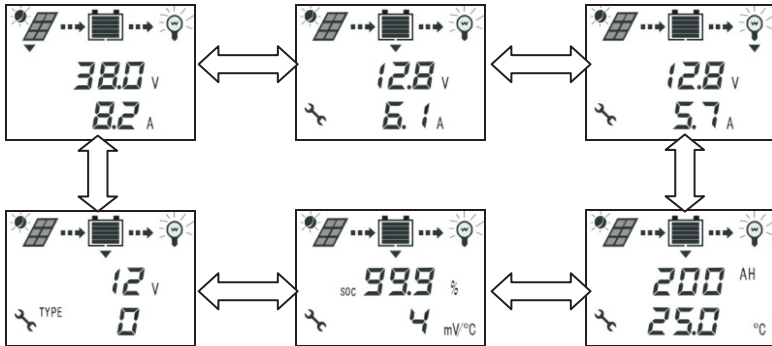
Figure12: Browse interface

9.3   **Parameter setting description**

9.3.1   The charging current limit setting

The SMY2430DM-SCC and SMY3630DM-SCC model solar charger supports charging current of 30A, the default maximum charging current is limited to 30A. There can modify charging current limit 10A, 20A, 30A .

The SMY2460DM-SCC and SMY3660DM-SCC model solar charger supports charging current of 60A, the default maximum charging current is limited to 30A 60A. There can modify charging current limit 40A, 50A, 60A.

Please enter into the battery voltage, battery charge current display page，shown in Figure 2, press SET key 3second to enter setup mode, then the will twinkling and the "LIMIT"will display. By UP or DOWN key modify the value, when adjusted to the appropriate value, save and return to main page by SET key, if you do not want to save, press ESC key, return to main page, the charging current limit unchanged.
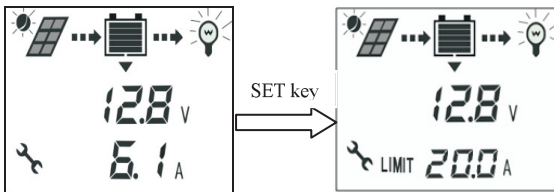
Figure13: The charging current limit setting interface

9.3.2   Load switch setting

This setting allows the user to choose whether to open the DC load. Set the option to ON or OFF.if want colsing

the load,choice OFF.if you wantv open the load,choice1. Under the load voltage, load current display page, press SET key 3second to enter into setup mode, then the ⚲ will twinkling and display, By UP or DOWN key modify the choice ON or OFF, save and return to main page by SET key, if you do not want to save, press ESC key, return to the main page, the load switch remains unchanged.
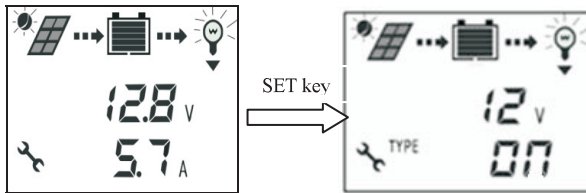
Figure14: The Load switch setting interface

9.3.3   The battery capacity setting

The battery nominal capacity, modify the range 1 ~ 999AH, the default capacity 200AH.because the battery capacity parameters involved in the charging and discharge control operation, so try to set data security and the actual number of hours battery similar or consistent; Into battery capacity page and the the battery temperature browse page by pressing SET key 3second, after the symbol ⚲ will twinkling ,by UP or DOWN key modify the value, press once for 1AH adjustment, press the quick adjustment, adjusted to the appropriate value, by SET key to save and return to browse state, if you want not to save, press ESC key, return to the browser status, battery Ann hours have not changed.
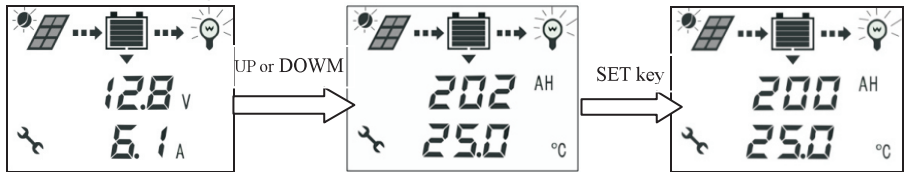
Figure15: The battery capacity setting interface

9.3.4   Battery temperature compensation setting

This parameter involved in the charging and discharging control algorithms, modify the range of 0 ~ 10mV/Cell / ℃, the default 4 mV / Cell / ℃, when the parameter is 0, the means that there is no temperature compensation; In the percentage of battery charge and the temperature compensation page by pressing SET key 3second, enter inot setting the symbol flashing through UP or DOWN key modify the value displayed changes every 1 mV / Cell / ℃, and page,and the ⚲ will twinkling ,adjusted to the appropriate value, click SET key Save and return to main page, if you want not save, press ESC key, return to the main page, temperature compensation coefficient will unchanged.
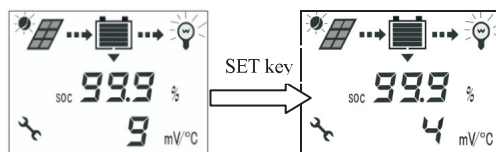
Figure16: The Battery temperature compensation setting interface

10. Communications connection（Optional Accessories）

Note:The RS485 communication cable length should be less than 1 kilometer. Please use a dedicated cable or network cable。If the Remote monitor shown 103 error, please check the cable connection is abnormal or wrong.
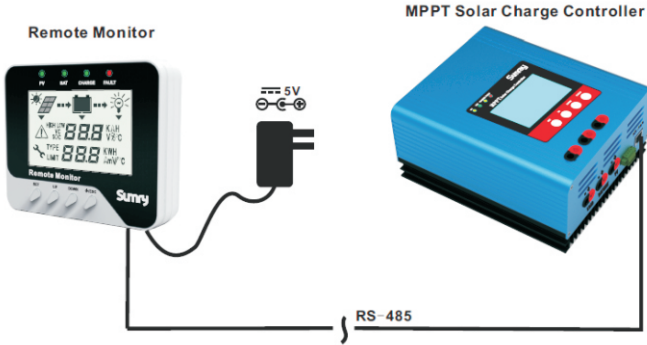
Figure18: The Communications connection diagram

RS485 cable definition
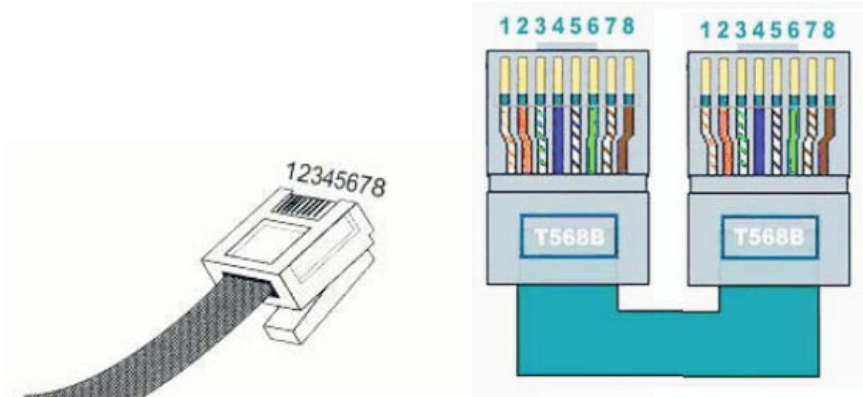
Figure19: The cable connection diagram

Crystal Head/RJ45	Solar charge controller/Remote monitor
Pin6，pin8	RS485-TX
Pin5，Pin7	RS485-RX
Pin3, Pin4	NC
Pin2	+5V
Pin1	GND

9.3.5 Battery type setting

The used have four optional of the battery type, 0 - Maintenance-free type, 1 - Gel batteries ,2 -Opening lead-acid batteries ；,3- Lithium batteries. In the battery system type (12/24/36/48/60V system), battery type browse page by pressing SET key 3second, after the symbol 🔧 will twinkling, through press UP or DOWN key select the appropriate battery type, by SET key save and return to main page state, if you do not want to save, press ESC, return to the main page, battery type unchanged.
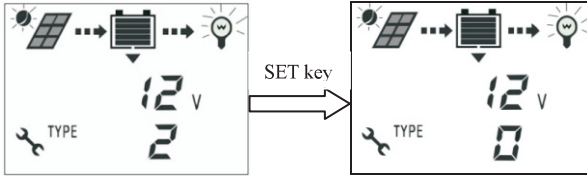
Figure17: The Battery temperature compensation setting interface

11. Start-Up and shut down the Solar charge controller

11.1 Start-Up the the Solar charge controller

Turn –off the Solar charge controller step

1. Connect the Battery breaker of the Solar charge controller.
2. Turn on the PV switch, and the Solar charge controller will start automatically when the input voltage is higher than 15V.
3. Check the the Solar charge controller operating status
4. Waiting until LED, LCD display have operation normal, the Solar charge controller is start up.

11.2 Turn-off the Solar charge controller

5. Turn –off the Solar charge controller step:
6. Disconect PV breaker
7. Turn off the Battery switch.
8. Check the Solar charge controller operating status
9. Waiting until LED, LCD display have go out, the Solar charge controller is shut down.

12. Maintenance and Cleaning

12.1 Checking Heat Dissipation

	Please stop the solar charge controller , half an hour after the operation, the heat sink temperature too high prevent scalding hands.

If the solar charge controller regularly reduces its output power due to high temperature, please improve the heat dissipation condition. Maybe you need to clean the heat sink.

12.2 Cleaning the solar charge controller

If the solar charge controller is dirty, turn-off the DC breaker or DC switch ,waiting the solar charge controller shut down ,then clean the enclosure lid, the display, and the LEDs using only a wet cloth. Do not use any cleaning agents (e.g. solvents or abrasives).

12.2 Checking the DC Disconnect

	When connecting the battery and solar panels to distinguish between positive and negative attention, please pay attention to safety. Don't disconnect under the DC connectors under load.

Check for externally visible damage and discoloration of the DC Disconnect and the cables at regular solar charge controllers.If there is any visible damage to the DC Disconnect, or visible discoloration or damage to the cables, contact the installer.

13. Trouble shooting

13.1 Trouble shooting list

Table: Troubleshooting list

Symptom	Probable cause	Items to examine or correct
Completely dead, no display	No battery power	Battery disconnected, overly discharged, or connected reverse dead, no display polarity. Battery powers the system, not PV.
Unit will not turn on (charge status LED off), Display if attached is OK	PV disconnected PV reverse polarity PV- connected to BAT- external to controller	PV disconnected PV must supply at least 0.25Amp at 3V more than battery voltage to begin charge. PV reverse polarity, Reverse polarity PV will cause heat sink to heat. PV- & BAT- must be separate for proper operation. PV- must receive earth ground via shunts inside the Solar charger controller which internally connect PV- to BAT-. External connection prevents proper operation of internal shunts and current measurement system. Battery voltage is determined automatically when the unit first receives power. Voltage must be less than 30Vdc for 12Vdc battery, or greater than 30Vdc for 24Vdc battery. Apply battery quickly and crisply.
Charge status LED on, but no output charge current	Battery voltage greater than charge voltage setpoint Battery voltage too low	This is normal operation. Output is off due to high battery voltage which may be caused by other charging systems. Battery voltage must be at least 9Vdc for the unit to operate.
Charge current is lower than expected, PV current may be low as well	Battery is highly charged Worn out PV modules Low insolation PV- connected to BAT- Nominal PV voltage has changed from 24Vdc to 12Vdc	Normal operation, current is reduced if battery voltage is at setpoint Replace, or use as is. Atmospheric haze, PV's dirty, sun low on horizon, etc. PV- & BAT- must be separate for proper operation. PV- must receive earth ground via shunts inside the Solar charger controller which internally connect PV- to BAT-. External connection prevents proper operation of internal shunts and current measurement system. If PV voltage is changed from 24Vdc to 12Vdc, battery and PV power must be removed momentarily to reboot unit and load initial 12Vdc PV control values.

		Unit considers PV's to 24Vdc if PV voltage ever goes above 30Vdc.
Charge OFF at high temperature	System temporarily shuts down due to high heat sink temperature	Improve ventilation or reduce PV power. Sufficient ventilation to prevent over temperature shut down

13.2 Errors(E)

⚠ CAUTION	When display the logo,the solar charge controller had operation abnormal.please check the solar charge controller.

Errors(E) codes identify a possible equipment failure, fault or incorrect inverter setting or configuration. Any and all attempts to correct or clear a fault must be performed by qualified personnel. Typically, the (E) code can be cleared once the cause or fault is removed. Some of the (E) codes, Error as indicated in the table below, may indicate a fatal error and require you to contact the supplier or the Shenzhen Sumry Electronics Co., Ltd to replace a new one.

when the LCD display the Abnormal signs ⚠ ,the second line will show the error code。

Error code	Description	Suggestion
101	EEPROM fault	1. Restart the solar charge controller 2. If error message still exists, contact Sumry.
102	Remote communicate fault	1. Restart the solar charger controller 2. Please check the remote communicate cable. 3. If error message still exists, contactSumry.
103	Input PV voltage too low	1. Please check the PV voltage. 2. If the PV normal,restart the solar charge controller 3. If error message still exists, contact Sumry.
104	Input voltage too high	1. Please check the PV voltage。 2. If the PV normal,restart the solar charge controller 3. If error message still exists, contact Sumry.
105	Battery voltage too low	1. Please check the battery voltage。 2. If the battery normal, restart the solar charge controller 3. If error message still exists, contact Sumry.
106	Battery voltage too high	1. Please check the battery voltage 2. If the battery normal,restart the solar charge controller 3. Please check the internal fuse. 4. If error message still exists, contact Sumry.
107	Charge current too large	1. Restart the solar charge controller 2. If error message still exists, contact Sumry.
108	Load current too large	4. Restart the solar charge controller 5. Please check the DC load. 6. If error message still exists, contact Sumry.
109	Battery temperature too high	1. Restart the solar charge controller 2. Please check the temperature sensor. 3. If error message still exists, contact Sumry.
110	Controller temperature too high	1. Restart the solar charge controller 2. If error message still exists, contact Sumry.

14. Manufacturer Warranty

This certificate represents a **one(1)** year warranty for the Sumry solar charge controller products listed below. Possession of this certificate validates a standard factory warranty of 1 years from the date of purchase.

14.1 Warranted products

This warranty is applicable solely to the following products:
SMY2430DM-SCC
SMY3630DM-SCC
SMY2460DM-SCC
SMY3660DM-SCC

14.2 Limited Product Warranty

(Applicable under normal application, installation, use and service conditions)

Sumry warrants the above listed products to be free from defects and/or failure specified for a period not exceeding one(1) years from the date of sale as shown in the Proof of Purchase to the Original purchaser.

The warranties described in these "Limited Warranties" are exclusive and are expressly in lieu of and exclude all other warranties, whether written, oral, express or implied, including but not limited to, warranties of merchantability and of fitness for a particular purpose, use，or application, and all other obligations or liabilities on the part of Sumry，unless such other obligations or liabilities are expressly agreed to it in writing signed and approved by Sumry，Sumry shall have no responsibility or liability whatsoever for damage or injury to persons or property, or for other loss or injury resulting from any cause whatsoever arising out of or related to the modules, including, without limitation, any defects in the modules or from use or installation. Under no circumstances shall Sumry be liable for incidental , consequential or special damages howsoever caused; loss of use, loss of production, loss of revenues are therefore specifically and without limitation excluded to the extent legally permissible, Sumry 's aggregate liability, if any, in damages or otherwise, shall not exceed the invoice as paid by the customer.

The "Limited Product Warranties" described above shall not apply to, and Shenzhen Sumry Electronics Co., Ltd shall have no obligation of any kind whatsoever with respect to, any inverter which has been subjected to:

— Misuse, abuse, neglect or accident；
— Alteration, improper installation or application；
— Unauthorized modification or attempted repairs；
— Insufficient ventilation of the product；
— Transport damage；
— Breaking of the original manufacturers seal；
— Non-observance of Sumry installation and maintenance instruction；
— Failure to observe the applicable safety regulations
— Power failure surges, lighting, flood, fire, exposure to incorrect use, negligence, accident, force majeure, explosion, terrorist act, vandalism or damage caused by incorrect installation, modification or extreme weather conditions or other circumstances not reasonably attributable to Shenzhen Sumry Electronics Co., Ltd .

The warranty shall also cease to apply if the product cannot be correctly identified as the product of

Sumry . Warranty claims will not be honored if the type of serial number on the inverters have been altered, removed or rendered illegible.

14.3 Liability

The liability of Sumry in respect of any defects in its PV inverters shall be limited to compliance with the obligations as stated in these terms and conditions of warranty. Maximum liability shall be limited to the sale price of the product. Sumry shall accept no liability for loss of profit, resultant of indirect damage, any loss of electrical power and/or compensation of energy   suppliers within the express meaning of that term. The warranty rights as meant herein are not transferable or assignable to any third party excepting the named warranty holder.

14.4 Warranty conditions

If a device becomes defective during the agreed Sumry factory warranty period and provided that it will not be impossible or unreasonable, the device will be, as selected by Sumry. Shipped to a Sumry   service centre for repair, or repaired on-site, or exchanged for a replacement device of equivalent value according to model and age.

The warranty shall not cover transportation costs in connection with the return of defective modules. The cost of the installation or reinstallation of the modules shall also be expressly excluded as are all other related logistical and process costs incurred by all parties in relation to this warranty claim.

15. Decommissioning

15.1 Dismantling the solar charge controller

  1 Disconnect the solar charge controller as described in section6，section7.
  2 Remove all connection cables from the solar charge controller。

⚠️ CAUTION	Danger of burn injuries due to hot enclosure parts! Wait 10 minutes before disassembling until the housing has cooled down.
⚡🔄 10 min	When your want backout the PV input wire, your must break down the switch ,and wait 10 minutes .

  3 Screw off all projecting cable glands.
  4 Lift the solar charge controller off the bracket and unscrew the bracket screws.

15.2 Packing the Inverter

If possible, always pack the solar charge controller in its original carton and secure it with tension belts. If it is no longer available, you can also use an equivalent carton. The box must be capable of being closed completely and made to support both the weight and the size of the solar charge controller.

15.3 Storing the solar charge controller

Store the solar charge controller a dry place where ambient temperatures are always between -25°C and +60°C.

15.4 Disposing of the solar charge controller

Do not dispose of faulty solar charge controller or accessories together with household waste. Please accordance with the disposal regulations，for electronic waste which apply at the installation site at that time. Ensure that the old unit and, where applicable, any accessories are disposed of in a proper manner

16. Technical Data

Model / Specifications	SMY2430DM-SCC	SMY3630DM-SCC customization	SMY2460DM-SCC	SMY3660DM-SCC customization
PV Input data(PV)				
Max. PV voltage	200V	200V	200V	200V
Start voltage	10v	30V	10v	30V
Battery voltage	12V/24V/48 auto	36V/60V auto	12V/24V/48 auto	36V/60V auto
MPPT voltage range	14V-160V	41V-160V	14V-160V	41V-160V
Suggest input Voc voltage	20V/50V/80V	60V/100V	20V/50V/80V	60V/100V
Max. input current	30A	30A	30A/30A	30A/30A
Number of MPP trackers	1	1	2	2
Number of input trackers	1	1	2	2
Max.PV Input power	12V 400W	36V 1200W	12V 800W	36V 2400W
	24V 800W	48V 1600W	24V 1600W	48V 3200W
Charger Output (DC)				
Floating voltage	13.5V/27V/54V	40.5V/67.5V	13.5V/27V/54V	40.5V/67.5V
Max. output current	30A	30A	60A	60A
Rating output current	10A/20A/30A opt	10A/20A/30A opt	40A/50A/60A opt	40A/50A/60A opt
Define output current	30A	30A	60A	60A
Ripper voltage(rating voltage)	<0.5%	<0.5%	<0.5%	<0.5%
Efficiency				
Max. efficiency	96.5%	97%	97.5%	97.5%
MPPT efficieny	99.5%	99.5%	99.5%	99.5%
Protection devices				
PV reverse polarity protection	yes	yes	yes	yes
BAT reverse polarity protection	yes	yes	yes	yes
Input Overvoltage Protection	Yes	Yes	Yes	Yes
Input overcurrent Protection	Yes	Yes	Yes	Yes
DC output Overcurrent protection（10A）	Yes	Yes	Yes	Yes
Internal overtemperature protetion	Yes	Yes	Yes	Yes
Battery discharger low voltage protect	Yes	Yes	Yes	Yes
General Data				
Dimensions (W / H / D) in mm	171/219/96	171/219/96	215/283/110	215/283/110
Weight	1.5KG	1.5KG	3KG	3KG
Operating temperature range	-10...+50℃(14...+ 122°F)　　with derating above 40°C（104°F）			
Noise emission (typical)	≤ 25 dB(A)			

Altitude	Up to 2000m（6560ft） without power derating			
Relative humidity	20 to 80% relative humidity (non-condensing)			
Consumption: operating (standby) / night	<3W / < 0.75 W	<3W / < 0.75 W	<3W / < 0.75 W	<3W / < 0.75 W
Topology	Buck	Buck	Buck	Buck
Cooling concept	Natural	Natural	Natural	Natural
Environmental Protection Rating	IP20	IP20	IP20	IP20
Features				
PV connection:	Screw terminal	Screw terminal	Screw terminal	Screw terminal
Battery connection:	Screw terminal	Screw terminal	Screw terminal	Screw terminal
DC output connection:	Screw terminal	Screw terminal	Screw terminal	Screw terminal
Battery type choice	Yes	Yes	Yes	Yes
Environment temperature detect	Yes	Yes	Yes	Yes
Battery temperature detect	Yes	Yes	Yes	Yes
Temperature compensate for battery	Yes	Yes	Yes	Yes
DC output control（10A）	yes	yes	yes	yes
Interfaces: RS485	yes	yes	yes	yes
Warranty: 1years / 2 years	yes /opt	yes /opt	yes /opt	yes /opt
RTC clock	opt	opt	opt	opt
LCD Display	opt	opt	opt	opt
Remote monitor	opt	opt	opt	opt
Certificates and approvals	CE,IEC 62109,CGC			

17. PV-Battery system installation reference

suggestion

BAT:	12V/24V	36V/48V
Voc :	48V	80V
Vmp:	36V	64V

TRACKER A   TRACKER B

SMY2460DM-SCC
SMY3660DM-SCC
solar charger controller

battery   DC Load

suggestion

BAT:	12V/24V	36V/48V
Voc :	48V	80V
Vmp:	36V	64V

TRACKER A

SMY2430DM-SCC
SMY3660DM-SCC
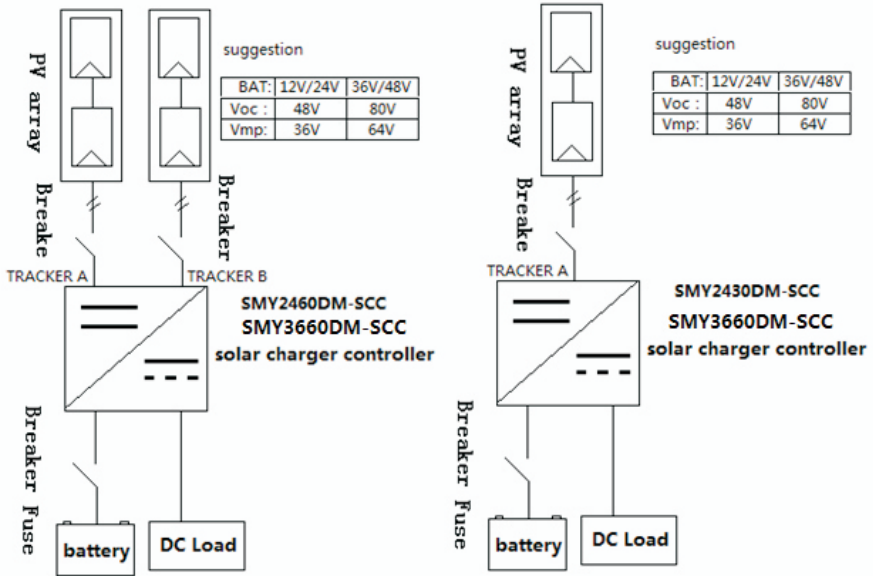solar charger controller

battery   DC Load

Figure17 PV-Battery system installation diagram

18. Contact

If you have technical problems about our products, contact the SHENZHEN SUMRY ELECTRONICS CO., LTD Serviceline. We need the following information in order to provide you with the necessary assistance.

➢ product type(inverter,solar charger controller,pvgrid inverter)
➢ Serial number of the product
➢ Event number or display message of the product
➢ Type and number of PV modules connected
➢ Optional equipment

Shenzhen Sumry Electronics Co., Ltd

B16,the 1st road,the 1st industry Park,Bai hua dong,Guangming new district,Shenzhen city,Guangdong, China.

www.sumry.com.cn

Serviceline

Tel：+ 86 755 2342 1231

Fax：+ 86 755 8173 7258

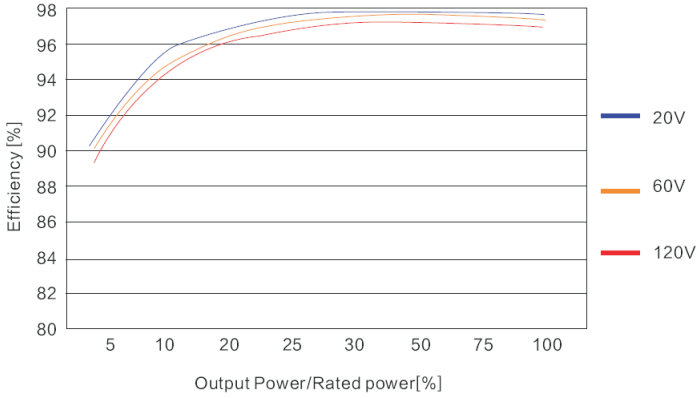Service Email：service-solar@sunrayups.com

19. Annex

Efficiency curve：
SMY2430DM-SCC　（12V battery systerm）

SMY2460DM-SCC　（12V battery systerm）