
# Solar Charge Controller

## Installation and Operation Manual

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# Content

# 1. Important safety instructions

**Save these instructions**

This manual contains important safety, installation and operating instructions for the MPPT solar controller.

The following symbols are used throughout this manual to indicate potentially dangerous conditions or mark important safety instructions.

 WARNING:

Indicates a potentially dangerous condition. Use extreme caution when performing this task.

 CAUTION:

Indicates a critical procedure for safe and proper operation of the controller.

 NOTE:

Indicates a procedure or function that is important for the safe and proper operation of the controller.

Safety Information

- Read all of the instructions and cautions in the manual before beginning installation.
- There are no user serviceable parts inside the MPPT charger. Do not disassemble or attempt to repair the controller.
- Disconnect all sources of power to the controller before installing or adjusting the controller setting.
- Mount the controller indoor. Prevent exposure to the elements and do not allow water to enter the controller.
- Install the controller in a location that prevents casual contact. The controller can become very hot during operation.
- Use insulated tools when working with batteries.
- Avoid wearing jewelry during installation.
- The battery bank must be comprised of batteries of same type, make, and age.
- Do not smoke in the vicinity of the battery bank.

- Power connections must remain tight to avoid excessive heating from a loose connection.
- Use properly sized conductors and circuit interrupters.


WARNING: A battery can present a risk of electrical shock or burn from large amounts of short-circuit current, fire, or explosion from vented gases. Observe proper precautions.


CAUTION: When replacing batteries, use properly specified size, type, and rating based on application and system design.


CAUTION: Proper disposal of batteries is required. Refer to local regulations or codes for requirements.

About this Manual

**This manual provides detailed installation and usage instructions for the MPPT solar charge controller. Only qualified electricians and technicians who are familiar with solar system design and wiring practices should install the MPPT controller. The usage information in this manual is intended for the system owner/operator.**

# 2. Getting Started

## 2.1 Overview

The MPPT controller is an advanced maximum power point tracking solar battery charger. The controller features a smart tracking algorithm that finds and maintains operation at the solar array peak power point, maximizing energy harvest.

The MPPT controller charging process has been optimized for long battery life and improved system performance. Self-diagnostics and electronic error protections prevent damage when installation mistakes or system faults occur. The controller also features four adjustable setting switches, RS485 communication port (for 40, 60, 80 and 100 amp models only) and terminal for remote battery temperature measurement.

Please take the time to read this operator's manual and become familiar with the controller. This will help you make full use of the many advantage the MPPT Controller that can provide for your PV system.

## 2.2 Versions and Rating

| Model | Rated Current | Solar Input Voc | System voltage | DC Load | Cooling type | Casing |
|---|---|---|---|---|---|---|
| SCC-20A MPPT | 20A | 18 ~ 100Vdc | 12V/24V | 30A | Heatsink | Metal casing |
| SCC-30A MPPT | 30A | 18 ~ 100Vdc | 12V/24V | 30A | Heatsink | Metal casing |
| SCC-40A MPPT | 40A | 18 ~ 150Vdc | 12V/24V/36V/48V | 40A | Heatsink | Metal casing |
| SCC-60A MPPT | 60A | 18 ~ 150Vdc | 12V/24V/36V/48V | 60A | Heatsink | Metal casing |
| SCC-80A MPPT | 80A | 18 ~ 150Vdc | 12V/24V/36V/48V | 60A | Heatsink | Metal casing |
| SCC-100A MPPT | 100A | 18 ~ 150Vdc | 12V/24V/36V/48V | 60A | Heatsink | Metal casing |

## 2.3 Features

The features of the MPPT controller are shown in figure below. An explanation of each feature is provided.

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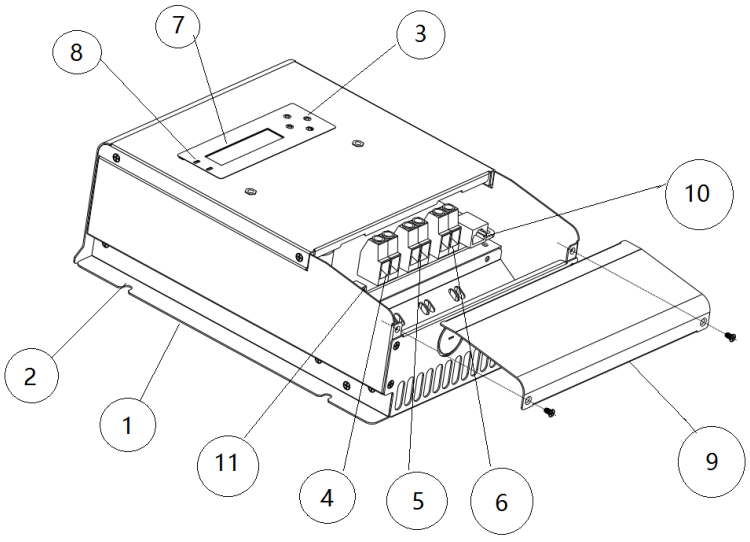


1. Heatsink

   Aluminum heatsink to dissipate controller heat

2. Mounting hole

   Keyhole slot for mounting

3. Setting Switches

   Four setting switches to configure operation of the MPPT controller

4. Solar Positive Terminal

   Power connection for Solar(+)

   Solar Negative Terminal

   Power connection for solar(-)

5. Battery Positive Terminal

   Power connection for battery(+)

   Battery Negative Terminal

   Power connection for battery(-)

6. DC Load output

7. LCD screen

   Indicate the operating status

8. LED indicators

   LED indicators show charging status and controller faults

9. Wiring Box cover

   Sheet metal wiring box cover protect power connections

10. RS-485Port

    Terminal for RS-485communication

11. Battery temperature Sensor

    Terminal for battery temperature detect and provide compensation

# 3. Installation

### 3.1 General Information

The mounting location is important to the performance and operating life of the controller. The environment must be dry and protected from water ingress. If required, the controller may be installed in a ventilated enclosure with sufficient air flow. Never install the controller in a sealed enclosure. The controller may be mounted in an enclosure with sealed batteries, but **never with vented/flooded** batteries. Battery fumes from vented batteries will corrode and destroy the controller circuits.

Multiple controllers can be installed in parallel on the same battery bank to achieve higher charging current. Additional parallel controllers can also be added in the future. Each controller must have its own solar array.

CAUTION: Equipment Damage or Risk of Explosion

Never install the controller in an enclosure with vented/flooded batteries. Battery fumes are flammable and will corrode and destroy the controller circuits.

CAUTION: Equipment Damage

When installing the controller in an enclosure, ensure sufficient ventilation. Installation in a **sealed** enclosure will lead to over-heating and decreased product lifetime.

The installation is straight-forward, but it is important each step is done correctly and safety. A mistake can lead to dangerous voltage and current levels. Be sure to carefully follow each instruction. Read all instructions first before beginning installation.

Recommended Tools:

- Wire strippers
- Wire cutters
- Phillips screwdriver
- Slotted screwdrivers
- Pliers
- Drill
- Drill bit
- Level
- Hack saw（cutting conduit）

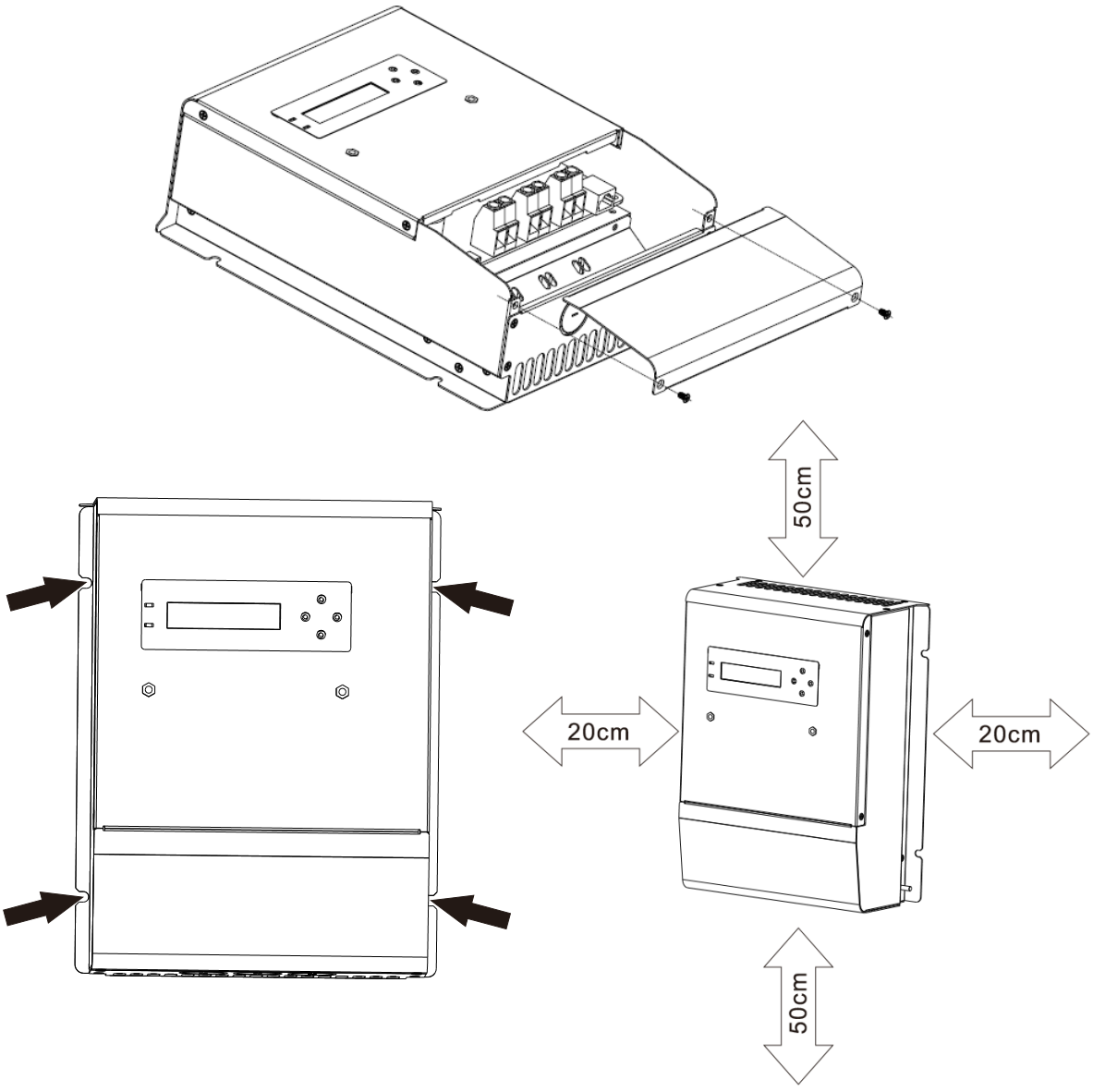
### 3.2 Controller Installation

Step 1-Remove the wiring box cover

CAUTION: Shock Hazard

Disconnect all power sources to the controller before removing the wiring box cover. Never remove the cover when voltage exists on any of the power connections.

Use a #4 Phillips screw driver to remove the four screws that secure the wiring box cover as show in figure below.




Battery charging setting

It is important to select the battery type that match the system battery to ensure proper charging and long battery life. Refer to the specifications provided by the battery manufacturer and choose a setting that best fits the recommended charging profile.

| Battery type | Bulk charge stage | Absorption charge stage | Float charge stage |
|---|---|---|---|
| Gel | 14.2 | 14.4 | 13.7 |
| AGM | 14.3 | 14.5 | 13.7 |
| Sealed | 14.4 | 14.6 | 13.7 |
| Flooded | 14.6 | 14.8 | 13.5 |
| Lithium/Lifepo4 | 13.7-15 | Same as bulk charge voltage- | Same as bulk charge voltage |
| User define | 10.0-15V | 10.0-15V | 10.0-15 |

Battery type-The most common battery type associated with the specified charging settings.

Bulk stage-This stage limits input current, as the battery become more charged ,the charging current continues to taper down until the battery is fully charged.

Absorption stage-During an equalization cycle, the charging voltage will be held constant at the specified voltage setting.

Float stage- When the battery is fully charged, the charging voltage will be reduced to the float voltage setting.

**Network Connections**

Network connections allow the MPPT controller to communicate with computers. A network can be as simple as one controller and one PC, or as complex as dozens of controllers monitored via the Internet.

**Power Connections**

Wire Size

The six large power terminals are sized for 6AWG wire. The terminals are rated for copper and aluminum conductors. Good system design generally requires large conductor wires for the solar and battery connection that limit voltage drop losses to 2% or less.

Minimum Wire Size

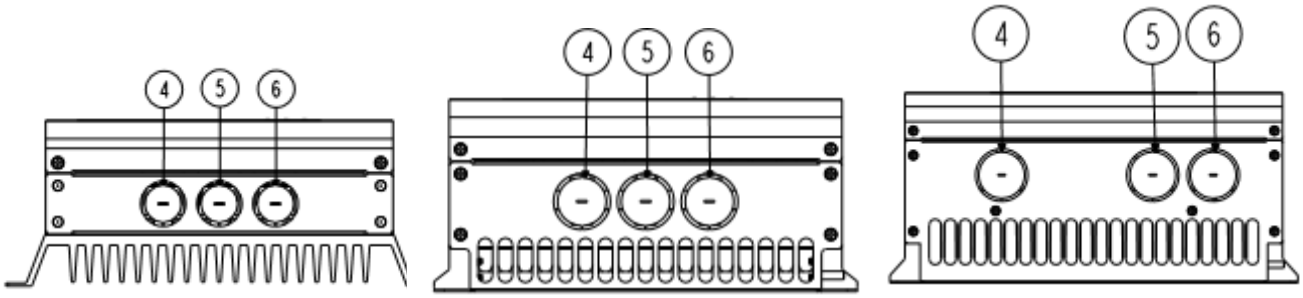
Minimum wire sizes for ambient temperatures to 45°C are provided in table 3-2 below.

| Model | Copper Wire Type | Recommended Size | Minimum Size |
|---|---|---|---|
| 20A | Copper | 12AWG | 14AWG |
| 30A | Copper | 10AWG | 12AWG |
| 40A | Copper | 6AWG | 8AWG |
| 60A | Copper | 5AWG | 6AWG |
| 80A | Copper | 4AWG | 5AWG |
| 100A | Copper | 4AWG | 5AWG |

**Power Wire Connection**

WARNING: Shock Hazard

The solar PV array can produce open-circuit voltages in excess of 100VDC or 150VDC (Depend on different Model of the controller) when in sunlight. Verify that the solar input breaker or disconnect has been opened (disconnected) before installing the system wires.




**Model: 20A 30A** **Model: 40A** **Model: 60A 80A 100A**

Connect the six power conductors shown in figure above the following steps:

Confirm that the system input and output disconnect switches are both turned off before connecting the power wires to the controller and that there are no disconnect switches inside the controller.

1. Put the wires into the wiring box. ④ Solar Input ⑤Battery Input ⑥DC load Output

WARNING: Risk of Damage

Be very certain that the battery connection is made with the correct polarity. Turn on the battery breaker/disconnect and measure the voltage on the open battery wires before connecting to the controller. Disconnect the battery breaker/disconnect before wiring to the controller.

2. Connect the **battery+ (Positive)** wire to the **battery+** terminal on the controller, Connect the **battery- (Negative)** wire to the **battery-** terminal on the controller.

3. Connect the **Solar+ (Positive)** wire to the **PV+** terminal on the controller, Connectthe **Solar- (Negative)**wire to the**PV-**terminal on the controller.

4. Connect the **DC load+ (Positive)** wire to the **Load+** terminal on the controller,

   Connectthe **DC load- (Negative)**wire to the **Load -**terminal on the controller.

**Power-Up**

 WARNING: Risk of Damage

Connecting the solar array to the battery terminal will **permanently damage** the controller.

 WARNING: Risk of Damage

Connecting the solar array or battery connection with reverse polarity will **permanently damage** the controller.

- Confirm that the Solar and Battery polarities are correct.
- Turn the battery disconnect switch on first. Observe that the LCD indicates a successful start-up.(LCD display turns on)
- Note that a battery bank must be connected to the controller to start and operate the controller. The controller will not operate from solar input only.
- Turn the solar disconnect switch on. If the solar array is in full sunlight. The controller will begin charging.

**Power-Down**

 WARNING: Risk of Damage

Only Disconnect the battery from the controller AFTER the solar input has been disconnected. Damage to the controller may result if the battery is removed while the controller is charging.

**To prevent damage, Power-down must be done in the reverse order as power-up.**

# 4. Operation

The MPPT controller is fully automatic. After installation is completed, there are few operator tasks to perform. However, the operator should be familiar with the operation and care of the controller as described in this section.

### 4.1The MPPT controller utilizes Solar Maximum Power Point

Tracking(MPPT) technology to extract maximum power from the solar array. The tracking algorithm is fully automatic and does not require user adjustment. MPPT technology tracks the array maximum power point as it varies with weather conditions, ensuring that maximum power is harvested from the array throughout the course of the day.

### 4.2 Current Boost

Under most conditions, MPPT technology will “boost” the solar charge current. For example, a system may have 36 Amps of solar current flowing into the controller and 44 Amps of charge current flowing out to the battery. The controller does not create current! Rest assured that the power into the controller is the same as the power out of the controller. Since power is the product of voltage and current (Volts x Amps), the following is true*:

(1) Power Into the MPPT 150V = Power Out of the MPPT 150V

(2) Volts In x Amps In = Volts Out x Amps Out

* assuming 100% efficiency. Losses in wiring and conversion exist.

If the solar module’s *maximum power voltage* ($V_{mp}$) is greater than the battery voltage, it follows that the battery current must be proportionally greater than the solar input current so that input and output power are balanced. The greater the difference between the $V_{mp}$ and battery voltage, the greater the current boost. Current boost can be substantial in systems where the solar array is of a higher nominal voltage than the battery as described in the next section.

### 4.3 Battery Charging Information

The MPPT controller has 4-stage battery charging algorithm for rapid, efficient, and safe battery charging. Figure 4-1 shows the sequence of the stages.

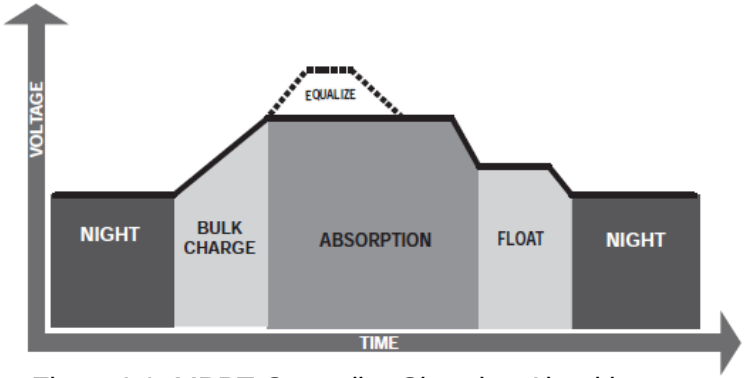



Figure4-1. MPPT Controller Charging Algorithm

**Bulk Charge Stage**

In bulk charge stage, the battery is not at 100% stage of charge and battery voltage has not yet charged to the absorption voltage set-point. The controller will deliver 100% of available solar power to recharge the battery. The green LED will blink once 0.5 second during bulk charging.

**Absorption Stage**

When the battery has recharged to the absorption voltage set-point, constant-voltage regulation is used to maintain battery voltage at the absorption set-point, This prevents heating and excessive battery gassing. The battery is allowed to come to full state of charge at the absorption voltage set-point. The green/blue LED will blink once per two second during absorption charging.

**Float Stage**

After the battery is fully charged in the absorption stage, The controller reduces the battery voltage to the Float voltage set-point, When the battery is fully recharged, there can be no more chemical reactions and all the charging current is turned into heat and gassing. The float stage provides a very low rate of maintenance charging while reducing the heating and gassing of a fully charged battery. The purpose of float is to protect the battery from long-term over-charge. The green/blue LED will keep green during float charging.

**Equalize Stage**

Equalize charging will charges in a higher voltage to kick start battery activity, usually this cycle lasts 30minsdepending on different battery type.

**WARNING: Risk of Explosion**

Equalizing vented batteries produces explosive gases. The battery bank must be properly ventilated.

CAUTION: Equipment Damage

Equalization increases the battery voltage to levels that may damage sensitive DC loads. Verify all system loads are rated for the temperature compensated Equalize voltage before beginning an Equalization charge. Excessive overcharging and gassing too vigorously can damage the battery plates and cause shedding of active material from the plates. An equalization that is too high or for too long can be damaging. Review the requirements for the particular battery being used in your system.

Temperature Compensation

All charging setting are based on 25°C (77°F). If the battery temperature varies by 5°C, the charging setting will change by 0.15volts from a 12v battery. This is a substantial change in the charging of the battery, and the use of the Battery sensor is recommended to adjust charging to the actual battery temperature.

### 4.4 Protections, Faults & Alarms

The MPPT controller protections and automatic recovery are important features that ensure the safe operation of the system. Additionally, the controller features real-time self diagnostics that report Fault and Alarm conditions as they occur.

Faults are events or conditions that require the controller to cease operation. A Fault usually occurs when a limit such as voltage, current, or temperature has been surpassed. Fault conditions are indicated with unique LED sequences and are also displayed on the LCD screen.

**Protections**

-Solar overload

The controller will limit battery current to the maximum battery current rating. An over-sized solar array will not operate at peak power. The solar array should be less than the controller nominal maximum input power rating for optimal performance.

-Solar short circuit

The controller will disconnect the solar input if a short circuit is detected in the solar wiring. Charging automatically resumes when the short is cleared.

-Very Low battery Voltage

If battery discharge below 9Volts the controller will go into brownout and shut down. When the battery voltage rises above the 10 Volts minimum operating voltage, the controller will restart.

**Alarms**

-High temperature current limit

The MPPT controller will limit the solar input current if the heatsink temperature exceeds safe limit. Solar charge current will be tapered back (to 0 amps if needed) to reduce the heatsink temperature. The controller is designed to operate at full rated current at the maximum ambient temperature. This alarm indicates that there is insufficient airflow and that the heatsink temperature is approaching unsafe limits. If the controller frequently reports this alarm condition, corrective action must be taken to provide better air flow or to relocate the controller to a cooler spot.

-High Input voltage current limit

The MPPT controller will limit the solar input current as the solar array Voc approaches the maximum input voltage rating. **The array Voc should never exceed the maximum input voltage (100VDC or 150VDC)**.

**Current limit**

The array power exceeds the rating of the controller, this alarm indicates that the controller is limiting battery current to the maximum current rating.

**Uncalibrated**

The controller was not factory calibrated. Return the controller to an authorized dealer for service.

**Inspection and Maintenance**

The following inspections are recommended two times per year for best long-term performance.

System Inspection

- Confirm the controller is securely mounted in a clean and dry environment.
- Confirm that the air flow around the controller is not blocked. Clean the heatsink of any dirt or debris.
- Inspect all exposed conductors for insulation damage due to sun damage, rubbing on nearby objects, dry rot, insects, or rodents. Repair or replace conductors as necessary.
- Tighten all power connections per the manufacturers' recommendations.
- Verify the LED and LCD indications are consistent with the equipment operation. Note any fault or error indications. Take corrective action if necessary.
- Inspect the battery bank. Look for cracked or bulging cases and corroded terminals.
- Inspect the system earth grounding for all components .Verify all grounding conductors are appropriately secured to earth ground.

Inside the MPPT controller Wiring Box

 CAUTION: Shock Hazard

Disconnect all power sources to the controller before removing the wiring box cover. Never remove the cover when voltage exists on the controller power connections.

- Check all wire terminals. Inspect connection for corrosion, damaged insulation, signs of high temperature or burning/discoloration. Tighten the terminal screws to the recommended torque.
- Inspect for dirt, nesting insects, and corrosion. Clean as required.

# 5. Display and parameter setting, Monitoring

The MPPT controllers possess: Two different screen models as following:

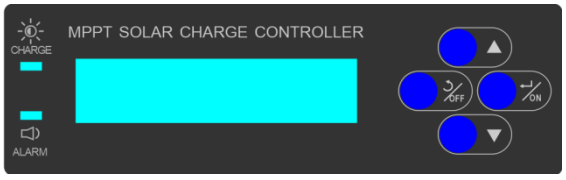
| SCC20A SCC30A SCC40A |
|---|
| PV: 96V P: 240W<br>U: 24V I: 10A |
| Switch Off Volt<br>Volt: 21.0V |
| SCC-40A-MPPT<br>48V-SYSTEM |
| Time: 06:44<br>Date:2018-01-01 |
| Port:1<br>DC Load : ON/OFF |
| Bat Type: GEL<br>Bat Temp: 25C |
| Charging Mode:<br>CC Mode Charging |
| Bulk Volt: 28.4V<br>Float Volt:27.4V |

| SCC60A SCC80A SCC100A |
|---|
| PV:120V P:3264W<br>U:54.4V I:60A<br>Bat CAP: 86%<br>Today：3.5KWH |
| Switch Off: 42.0V<br>Load Curr:4.2A<br>Bat Temp: 25C<br>Chg Mode: No Chg |
| Time:14:25<br>Date:2018-01-01<br>DC Load: ON/OFF<br>Max. Curr: 60.0A |
| IP:192.168.1.18<br>Gate：192.168.1.1<br>Port：8888<br>RS485 Add：1 |
| Type：Gel<br>Bulk Volt: 56.8V<br>Float Volt: 54.8V<br>Equal Volt: 57.6V |

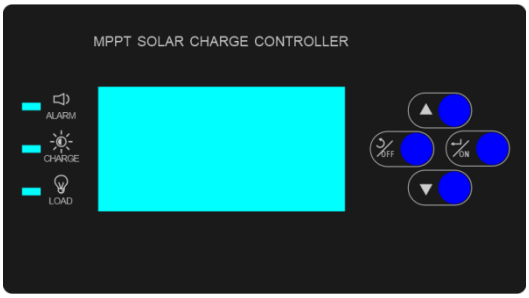
Customer can revise and set the default parameter according to your system design. Battery type, Bulk charge, Float charge voltage, Load off voltage, Load Off/On, Date/Time , Communication ID are able to change through the screen button setting.

Function Keys

| Function Key | Description |
|---|---|
| ESC | To exit setting mode |
| UP | To go to previous selection |
| DOWN | To go to next selection |
| ENTER | To confirm the selection in setting mode or enter setting |
| ON/OFF | Press 2 second will turn on/off the DC load |




**SCC20A SCC30A SCC40A**




**SCC60A SCC80A SCC100A**

# 6. Troubleshooting

Battery Charging and Performance Issues

Problem: No LCD or LED indications, controller does not appear to be power.

Solution:

With a multi-meter, check the voltage at the battery terminals on the controller. Battery voltage must be 9 VDC or greater. If the voltage on the battery terminals of the controller is between 9 and 60 VDC and no LED or LCD indicate, contact your authorized dealer for service. If no voltage is measured, check wiring connections, fuses

Problem:

The controller is not charging the battery.

Solution:

If the LCD indication is normal, check the fuses, breakers and wiring connections in the solar array wiring. With a multi-meter, check the array voltage directly at the controller solar input terminals. Input voltage must be greater than the Minimum start-up voltage before charging will begin.

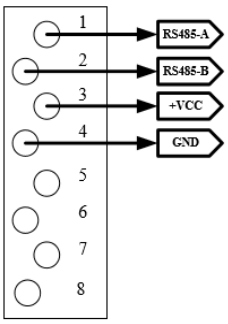
Network and Communication Issues.

Problem:

Can’t connect to the controller via communication port.

6.1 communication port pin define

Make sure that your cable match the RS485 communication port. The communication port is RS485.



# 7. Warranty Claim Procedure and Datasheet

**AIMS Power® PRODUCT WARRANTY POLICY**

AIMS Power® will either repair, replace, or refund at its option, defective AIMS Power® branded products according to the specified warranty periods below:

All AIMS Power® branded products—1 year warranty unless noted differently on product. Warranty is void if product has been altered, scratched, damaged or tampered with in any way.

**WARRANTY EXCLUSIONS AND LIMITATIONS**

This warranty does not apply under the following conditions:

- Damage by accident, negligence, abuse or improper use.
- PV or Load current exceeding the rating of the product.
- Unauthorized product modification or attempted repair.
- Damage occurring during shipment.
- Damage results from acts of nature such as lightning and weather extremes.

**TO RETURN MERCHANDISE:**

OBTAIN A RMA #

1. All returns must have a RMA number for processing.

2. Packages without a RMA number on the outside of the package will not be accepted.

RETURN PACKAGING – Repack the product in its original packaging, along with all manuals and related materials. Place the packaged product in a protective outer box. The RMA number must be clearly marked on the outside box / package. Please Note: We must receive all original products in order to process your return or exchange. AIMS Power® is not responsible for products that are damaged due to poor packaging or lost shipments. Remember to keep your Tracking Number.

RETURN SHIPPING CHARGES – The customer is responsible for shipping charges on returned products; AIMS® will send replacements via Ground freight at no charge. We recommend shipping via ground.

RETURN SHIPPING METHOD – AIMS Power® strongly recommends you fully insure your return shipment in case it is lost or damaged in transit. We also recommend you use a carrier that can provide you with proof of delivery for your protection. Remember to keep your Tracking Number.

PRODUCT DAMAGED IN TRANSIT – If your product arrived DAMAGED in transit, it is best to REFUSE it back to the carrier attempting delivery. Please inform AIMS Power® of the refusal. If you accept the package, make sure it is noted on the carrier's delivery record in order for AIMS Power® to file a damage claim. Save the merchandise and the original box and packing it arrived in; notify AIMS Power®

immediately to arrange for a carrier inspection and pick up of the damaged merchandise.

**RETURNED PRODUCT CONDITION:**

LIKE NEW CONDITION – All returned products must be returned 100% complete, including all of its components, all original boxes and packing materials, manuals, blank warranty cards and other accessories provided by the manufacturer.

INCOMPLETE, SCRATCHED or DAMAGED CONDITION – AIMS Power® reserves the right to refuse crediting the customer's account and the product will be returned to the customer.

DEFECTIVE PRODUCT – After 30 days, defective product may be returned for repair or exchange, only at AIMS's discretion.

Upon receipt of an RMA number, ship returns to the following address:

AIMS Power®

Attn: Returns Dept.

9736 South Virginia Street, Suite A

Reno, NV 89511

(775)359-6703

Any legal action to enforce any of the terms of this or any other agreement shall be governed by the laws of the State of Nevada and may be instituted in state or federal court.

AIMS Power Warranty Instructions:

This product is designed using the most modern digital technology and under very strict quality control and testing guide lines. If however you feel this product is not performing as it should, please contact us:

techsupport@aimscorp.net or (775)359-6703

We will do our best to resolve your concerns. If the product needs repair or replacement, make sure to keep your receipt/invoice, as that will need to be sent back along with the package and RA# prepaid to AIMS. You have a full 1 year from date of purchase warranty.

This warranty is valid worldwide with the exception that freight and duty charges incurred outside the contiguous 48 United States will be prepaid by customer.

Except as provided above, AIMS makes no warranty of any kind, express or implied, including without limitation the implied warranties of merchantability and fitness for a particular purpose. In no event shall AIMS be liable for indirect, special or consequential damages. This warranty only applies to AIMS Power branded products. All other name brand products are warranted by and according to their respective manufacturer. Please do not attempt to return non-AIMS Power branded products to AIMS Power.

For additional products such as:

- Modified sine wave inverters
- Pure sine wave inverters
- Low Frequency Inverters
- Solar Charge Controllers
- Micro Grid Tied Inverters
- Inverter Chargers and Automatic transfer switches
- Converters AC-DC and DC-DC
- Custom cut cables
- Batteries
- Solar Panels & Racks

Please visit our web site: www.aimscorp.net

To find out where to buy any of our products, you may also e-mail: sales@aimscorp.net or call (775)359-6703.

## Data Sheet

| Model | SCC20A MPPT | SCC30A MPPT | SCC40AMPPT | SCC60AMPPT | SCC80AMPPT | SCC100AMPPT |
|---|---|---|---|---|---|---|
| Solar System Voltage | 12V/24V | | 12V/24V/36V/48V | | | |
| Electrical | | | | | | |
| PV operating voltage | 18~100Vdc@12V<br>34~100Vdc@24V | | 15~150Vdc@12V<br>34~150Vdc@24V<br>50~150Vdc@36V<br>60~150Vdc@48V | | | |
| Max. PV open circuit voltage | 100Vdc | | 150Vdc | | | |
| Rated PV input | 12V 400W<br>24V 800W | | 12V 500W<br>24V 1000W<br>36V 1500W<br>48V 2000W | 12V 800W<br>24V 1700W<br>36V 2400W<br>48V 3400W | 12V 1200W<br>24V 2400W<br>36V 3600W<br>48V 4800W | 12V 1400W<br>24V 2800W<br>36V 4200W<br>48V 5600W |
| Max. charging current | 20A | 30A | 40A | 60A | 80A | 100A |
| Max. DC load current | 30A | | 40A | 60A | | |
| Self Consumption | ＜2W | | | ＜4W | | |
| Conversion Efficiency | 97% | 97% | 97.5% | 98% | 98.5% | |
| Protection | Overload, short circuit, high voltage ,high temperature protection | | | | | |
| Battery charging | | | | | | |
| Battery Type | Gel, Sealed ,AGM, Flooded, Lithium ,User define | | | | | |
| Charging Algorithm | 3-stage: Bulk, Absorption, Float | | 4-stage: Bulk, Absorption, Float, Equalize | | | |
| Bulk charge voltage | Sealed:14.4V AGM Gel:14.2V Flooded:14.6V User define:10-15V | | | | | |
| Float charge voltage | Sealed/Gel/AMG:13.7V Flooded:13.6V User define :10-15V | | | | | |
| Equalize charge voltage | Sealed:14.6V AGM:14.8V Flooded:14.8V User define :10-15V | | | | | |
| Low voltage reconnect voltage | 12.5V | | | | | |
| Low voltage disconnect voltage | 10.5V (10.5~12.5V Adjustable) | | | | | |
| Temperature compensation | -5mV/℃ /2V with BTS(Optional) | | | | | |
| Communication | | | | | | |
| Communication Port | --- | | RS485 | | | |
| Mechanical | | | | | | |
| Net weight | 1.8KG | 2KG | 3.5KG | 7KG | 8,5kg | 9KG |
| Gross weight | 2.2KG | 2.5KG | 4KG | 8KG | 9.2KG | 10KG |
| Dimensions | 210*180*65 | 210*180*70 | 270*185*90 | 305*227*120 | 353*227*120 | 417*227*120 |
| Packing box | 250*240*140 | 250*240*140 | 320*260*155 | 470*353*215 | 525*353*215 | 561*353*215 |
| Cooling | Heatsink cooling | | | | | |
| Enclosure | IP43 | | | | | |
| Environment | | | | | | |
| Ambient Temperature | -25~60℃ ( Derating from 45℃) | | | | | |
| Storage Temperature | -40℃~+80℃ | | | | | |
| Humidity | 100% non-condensing | | | | | |
| Warranty | Two Years | | | | | |