

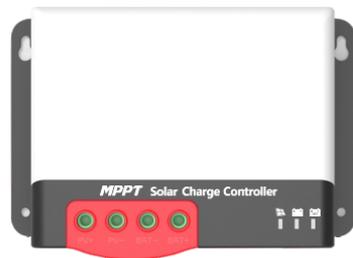
**MC Series MPPT Solar Charge Controller**  
**MC2420N10/ MC2430N10/ MC2440N10/ MC2450N10**

# User Manual

<b>Model</b>	MC2420N10	MC2430N10	MC2440N10	MC2450N10
<b>Battery voltage</b>	12V/24V			
<b>Max. PV open circuit voltage</b>	92V(25°C) : 100V(Lowest ambient temperature)			
<b>Charge current</b>	20A	30A	40A	50A
<b>Max. PV input power</b>	260W/12V 520W/24V	400W/12V 800W/24V	520W/12V 1040W/24V	660W/12V 1320W/24V

Material Code : 102949

Version: 1.03 The above information is subject to change without prior notice.





Dear users,

Thank you very much for choosing our products!

### Safety Instructions

1. Applicable voltage of the controller exceeds the safety voltage for human body, so please read the manual carefully before use and operate the controller only after safety operation training has been completed.
2. There are no parts inside the controller that need to be maintained or repaired. The user shall not disassemble and repair the controller.
3. Install the controller indoors to prevent exposure of components and prevent water from entering the controller.
4. Please install the controller in a well-ventilated place to prevent the heat sink from being overheated.
5. It is recommended to install a proper fuse or circuit breaker outside the controller.
6. Be sure to disconnect the wiring of PV array and the fuse or circuit breaker near battery terminal before installation and wiring adjustment of the controller.
7. Check that all wiring is tight after installation to avoid danger of heat accumulation due to poor connections.

 **Warning:** This operation is dangerous, so before operation, safety preparations must be made.

 **Caution:** This operation may have a destructive effect.

 **Reminder:** Suggestions and tips for operator.

## Table of Contents

<b>1. Introduction</b>	03
1.1 Overview	03
1.2 Features	03
1.3 Appearance	04
1.4 MPPT Technology Introductions	04
1.5 Charging Stage Introductions	05
<b>2. Installation</b>	07
2.1 Installation Precautions	07
2.2 Wiring Specifications	08
2.3 Installation and Wiring	08
<b>3. Product Operation and Display</b>	10
3.1 LED Indication	10
• PV array indication	10
• BAT indication	11
• BAT Type Indication	11
3.2. Keys Operation	11
<b>4. Product Protection and System Maintenance</b>	11
4.1 Protections	11
4.2 System Maintenance	12
<b>5. Technical Parameters</b>	13
5.1 Electrical parameters	13
5.2 Battery type default parameters	14
<b>6. Conversion Efficiency Curve</b>	15
6.1 12V System	15
6.1 24V System	15
<b>7. Product Dimensions</b>	16

01

.....02.....

.....  
.....

.....  
.....

### 1.3 Appearance

## 1.1 Overview

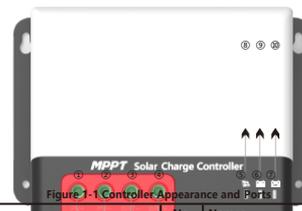
maximum energy tracking for solar panel. This technology allows the controller to quickly and accurately track the maximum power point of PV array in any environment, obtain the maximum energy of solar panel in real time, and significantly increase energy utilization efficiency of the solar energy system.

- This product can be connected to an external LCD screen for dynamic display of operating status, operating parameters, controller logs, control parameters, etc. The user can look up various parameters and can modify the control parameters as needed to suit different system requirements.
- The controller provides overall electronic fault self-test and powerful electronic protection functions which minimize

components damage due to installation error and system failure.

### 1.1 Features

- PowerCatcher maximum power point tracking technology allows the controller to track the maximum power point of solar panels even in a complex environment. Compared with the traditional MPPT tracking technology, it boasts faster response speed and higher tracking efficiency.
- A built-in maximum power point tracking (MPPT) algorithm can significantly increase energy utilization efficiency of the photovoltaic system, which is about 15% to 20% higher than traditional PWM charging.
- It provides an active charging voltage regulation feature. At battery open circuit or lithium battery BMS overcharge protection, the controller battery terminal will output the rated charging voltage value.
- MPPT tracking efficiency is up to 99.9%.
- Due to an advanced digital power technology, the circuit energy conversion efficiency is as high as 98%.
- Available in multiple battery types and support charging procedures of various types of batteries such as lithium battery, colloidal battery, sealed battery, vented battery, lithium battery, etc.
- A current-limited charging mode is available. When the power of solar panel is too large and the charging current is higher than the rated value, the controller automatically reduces the charging power so that the solar panel can operate at the rated charging current.
- Support automatic identification of lead-acid battery voltage.
- External LCD screen can be connected for viewing of equipment operating data and status, and modification of controller parameters is supported.
- Built-in over-temperature protection mechanism ensures that when temperature exceeds the set value of the device, the charging current decreases linearly with the temperature, thereby reducing the temperature rise of controller and avoiding high temperature damage.
- Temperature compensation and automatic adjustment of charge and discharge parameters help to improve battery life.
- Solar panel short circuit protection, battery open circuit protection and TVS lightning protection etc.



No.	Names	No.	Names
①	Solar panel "+" interface	⑥	Communication Interface
②	Solar panel "-" interface	⑦	Operation Keys
③	Battery "-" interface	⑧	PV charging indicator
④	Battery "+" interface	⑨	Battery Capacity Indicator
⑤	External temperature sampling interface	⑩	Battery type indicator

### 1.4 MPPT Technology Introductions

The Maximum Power Point Tracking (MPPT for short) system is an advanced charging technology that enables the solar panel to output more energy by adjusting operating conditions of the electrical module. Due to non-linear characteristics of solar array, there is maximum energy output point (maximum power point) of an array on its curve.

Traditional controller (switch charging technology and PWM charging technology) fails to maintain battery charging at this point, and therefore the maximum energy of the solar panel cannot be obtained. The solar charge controller with MPPT control technology, however, can track the array's maximum power point at all time to obtain the maximum energy to charge the battery.

Take a 12V system as an example. Peak voltage (V<sub>pp</sub>) of the solar panel is about 17V, while the battery voltage is about 12V. In general, when the controller is charging the battery, the voltage of solar panel is about 12V and does not fully contribute its maximum power. But, MPPT controller can overcome this problem. It constantly adjusts the input voltage and current of the solar panel to achieve the maximum input power.

Compared to the traditional PWM controller, the MPPT controller can provide the maximum power of the solar panel and thus can provide a larger charging current. In general, the MPPT controller can improve the energy utilization by 15% -20% compared with the PWM controller.

