MPPT Solar Charge Controller

MCR Series

12V/24V (Auto) 10A – 30A

12V/24V/48V (Auto) 30A – 60A

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PRODUCT INTRODUCTION

This MCR series MPPT solar charge controller automatically detects 12V or 24V or 48V DC system voltages. It can be compatible with various Deep Cycle battery options: Sealed, Gel, Flooded, and Lithium or User-defined. Innovative MPPT technology with high tracking efficiency up to 99% and peak conversion efficiency of 97%. Touch LCD screen and LED indicators for displaying system operation information, customizable parameters, and error codes. It also has electronic protection against reverse polarity, overcharging, over-discharging, overload, short-circuiting, and reverse current.

The MCR Series Charge Controller is suitable for various off-grid solar applications. It protects the battery from becoming over-charged by the solar modules and over-discharged by the loads. By constantly monitoring the voltage and current output of your solar (PV) panels, MPPT technology ensures that every drop of available power is rinsed out of your panels, and harvested for storage.

It is widely used in many fields such as RVs, communication base stations, household systems and field monitoring.

PRODUCT FEATURES

High Efficiency

12V/24V or 12V/24V/48V
Automatic Detection

Support Many Types Batteries

Scientific Battery Management Method

LCD Display + Communication Interface

Multi-protections

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1. Wide DC voltage input range, suitable for various common solar panel specifications
2. Automatically detects 12V/24V/48V DC system voltages
3. Touch LCD screen and LED indicators for operation information, customizable parameters, and error codes
4. Three-stage charging optimizes battery performance.
5. MPPT tracking efficiency up to 99%
6. Deep Cycle Sealed, Gel, Flooded, and Lithium battery option ready
7. Ability to output in parallel to power DC loads
8. Over-temperature protection and power de-rating when temperature is high
9. Die-cast aluminum design allows for efficient heat dissipation
10. RS485 communication port with standard Modbus protocol

PRODUCT DETAILS
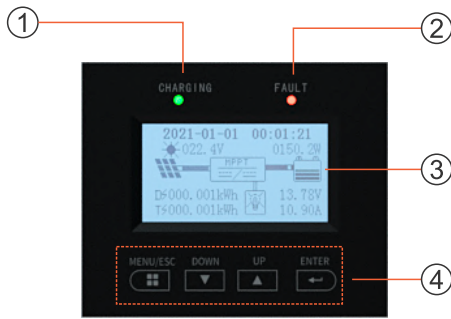
1.Charging Indicator

2.Fault Indicator

3.LCD Display
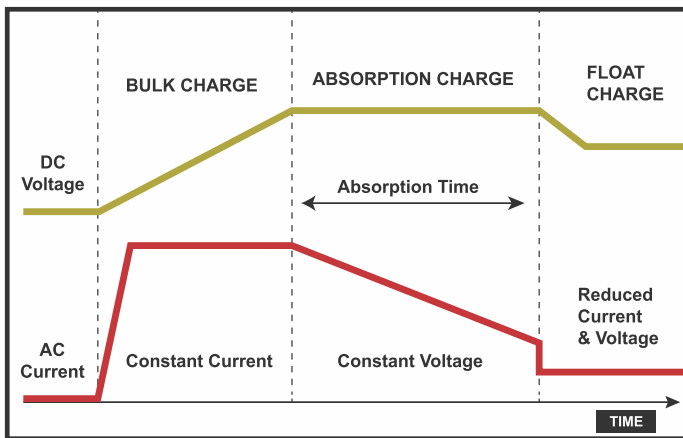
4.Function Buttons

5.Solar Module Connection Terminal

6.Battery Connection Terminal

7.DC Load Connection Terminal

8.RS485 Interface

CHARGING LOGIC

This unit charge controller has a 3-stage battery charging algorithm for a rapid, efficient and safe battery charging.

Bulk Charge:

This algorithm is used for day to day charging. It uses 100% of available solar power to recharge the battery and is equivalent to constant current.

Absorption Charge:

When the battery has charged to the Absorption voltage set-point, it undergoes an absorption stage which is equivalent to constant voltage regulation to prevent heating and excessive gassing in the battery.

Float Charge:

After Absorption Charge, the controller will reduce the battery voltage to a float voltage set point. Once the battery is fully charged, there will be no more chemical reactions and all the charge current would turn into heat or gas. Because of this, the charge controller will reduce the voltage charge to smaller quantity, while lightly charging the battery. The purpose for this is to offset the power consumption while maintaining a full battery storage capacity. In the event that a load drawn from the battery exceeds the charge current, the controller will no longer be able to maintain the battery to a Float set point and the controller will end the float charge stage and refer back to bulk charging.


Solar Power System Connection:

Power Inverter + Battery + Solar Panels + Grid + Applicaiton Loads

Setting UP Off Grid Solar System

The MPPT solar charge controller regulates the charging and discharging of the battery, and controls the PV solar panels and the battery's power output to the load according to the power demand of the load, which is the core part of the whole photovoltaic power system.
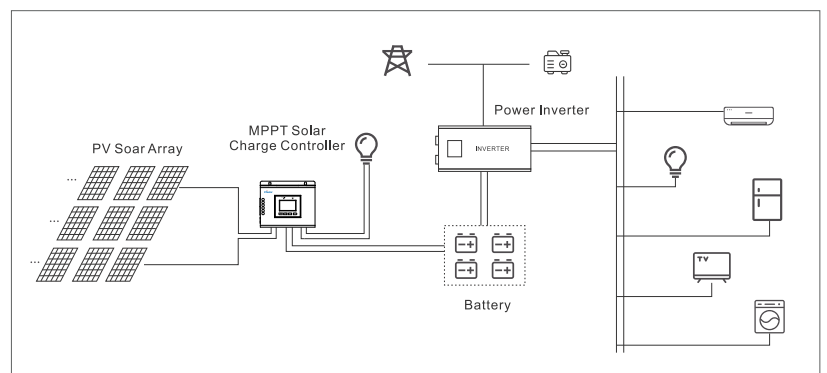
SELECTION GUIDE

Model		MCR1024	MCR2024	MCR3024	MCR3048	MCR4048	MCR5048	MCR6048
MPPT Efficiency		> 99%						
System Voltage		12V/24V(Auto)			12V/24V/48V(Auto)			
Dimension (WxDxH mm)		193x103x65		162x150x78	200x168x94			
Net Weight(kg)		0.75		1.30	1.80			
INPUT								
Max. PV Input Voltage		55VDC		100VDC	170VDC			
MPPT Operating Voltage Range	12V	18VDC-50VDC		18VDC-95VDC	18VDC-150VDC			
	24V	34VDC-50VDC		34VDC-95VDC	34VDC-150VDC			
	48V	-			65VDC-150VDC			
Low Voltage Protection	12V	16VDC			16VDC			
	24V	30VDC			30VDC			
	48V	-			60VDC			
High-voltage Protection		55VDC		100VDC	170VDC			
PV Rated Input Power	12V	150W	280W	428W	428W	570W	713W	855W
	24V	300W	560W	856W	856W	1140W	1426W	1710W
	48V	-			1712W	2280W	2852W	3420W
DC LOAD OUTPUT								
Load Voltage		Same as battery voltage						
Load Current		10A (20A optional)			20A			
Load Control Mode		ON/OFF, PV voltage control, time control, PV + time control						
CHARGE								
Battery Type		Sealed Lead Acid, Gel, Flooded, Lithium-ion, User-defined						
Charging Mode		MPPT (Maximum Power Point Tracking)						
Charging Current		10A	20A	30A	30A	40A	50A	60A
Charging Method		Three-stage: CC (Constant current) - CV (Constant voltage) - CF (Float charge)						
Temperature compensation		-3mV/℃/2V (Default)						
Float Charging Voltage (Lead Acid Default)	12V	13.8VDC (Settable)			13.8VDC (Settable)			
	24V	27.6VDC (Settable)			27.6VDC (Settable)			
	48V	-			55.2VDC (Settable)			
Boost Charging Voltage (Lead Acid Default)	12V	14.5VDC (Settable)			14.5VDC (Settable)			
	24V	29.0VDC (Settable)			29.0VDC (Settable)			
	48V	-			58.0VDC (Settable)			
SYSTEM								
Protection Function		Input low/over voltage, input/output polarity reverse connection, short circuit, over temperature, battery shedding etc.						
Display		Touch LCD + LED						
Cooling method		Forced Air Cooling						
Standby power		< 2W						
Communication		RS485						
ENVIRONMENT								
Relative Humidity		0 ~ 90% RH (non-condensing)						
Altitude		< 3000m						
Operating Temperature		-20℃~+40℃						
Storage Temperature		-40℃~+75℃						
Protection Level		IP21						

Product specifications are subject to change without further notice.

Guangdong Prostar New Energy Technology Co., Ltd.