SKU: HCC80HTR-FC

尺寸：105X142 MM

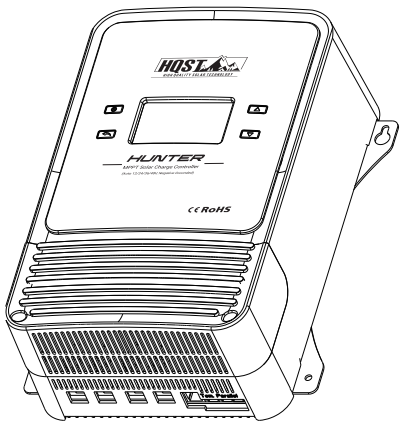
形式：骑马钉 共 28 页

材质：铜版纸128G

HQST
HIGH QUALITY SOLAR TECHNOLOGY

MPPT SOLAR CHARGE CONTROLLER

Model: M4880F/M48100F
SKU: HCC80HTR-FC/ HCC100HTR-FC



Download Charge Pro 2.0 app in Apple Store / Google Play Store

User Guide

SCAN ME

Customer Support Service

When you encounter any issues, contact our support team through one of the following methods:

- Scan the QR code to submit a support form
- Email us at: **sales@myhqsolar.com**
- Message the seller directly

Well, we understand you're busy. For faster support, please provide:

1. Order number and product serial number*.
2. Please include photos of the product issue, and if possible, a video would be preferred.

*Product Serial Number:
Usually consists of 13 to 20 alphanumeric characters, printed on a white sticker and attached to the product.

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WARNINGS AND TOOLS ICON CHART

Icons	Name	Description
	High Voltage	High voltage device. Installation should be performed by an electrician.
	High Temperature	This device will produce heat. Mount device away from other items.
	Environmental Hazard	Electronic Equipment. Do not put in landfill.
	Wire Cutter	A wire cutter is needed for cutting and stripping wires prior to connection.
	Multi-meter	A multimeter is needed for testing equipment and verifying polarity of cables.
	Anti-static Glove	Anti-static gloves are recommended to prevent controller damage caused by static electricity.
	Electrical Tape	Electrical tape is recommended to safely insulate spliced or bare wires.
	Screwdriver	A common size screwdriver is needed to attach wires to the controller.

SAFETY TIPS

- Review this manual thoroughly before attempting installation.
- Beware of any nearby electrical equipment that may interfere with installing this device.
- Solar panels can generate high voltages and currents, make sure your solar panels are completely covered from sunlight during installation. It is recommended that installation be performed by a quali fied electrician.
- Connecting wires to this device can generate sparks, please wear proper insulation gear while installing this device.
- To avoid damage to the battery or controller, use proper fuses in wiring. Please do not hesitate to contact the professionals if you need help with fuse sizing.
- Always keep children away from this device.
- Be certain to use the correct gauge of wire, see below for a table of recommended wire size for various current loads.

Solar Input Current	20A	40A	60A	80A	100A
Wire Cross Section Area (mm²)	4	8	12	16	20
Wire AWG	11	8	6	5	4

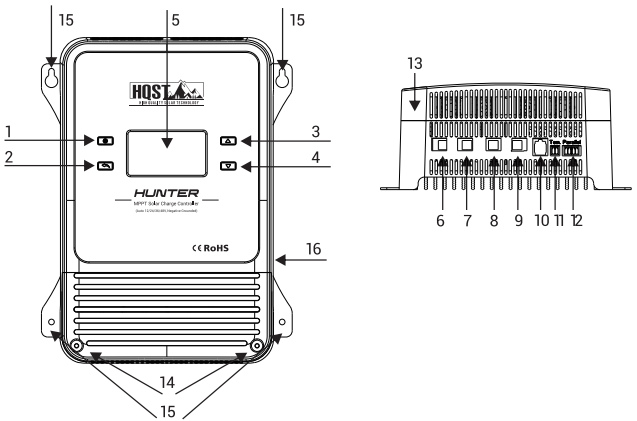
PRODUCT FEATURES

Thank you for choosing our products. This MPPT solar charge controller is a device for solar charge regulation. This device is mainly used in small and medium sized off-grid solar power systems.

These MPPT charge controllers have features as follows:

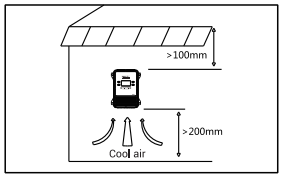
- By continuously checking solar panel power output changes, the controllers employ multiple MPPT charge algorithms in combination to boost charging efficiency in different weather and temperature conditions.
- Built-in buffer, allows max 25% exceeding rated power input.
- Charging modes available for most common deep-cycle battery types in the market, including AGM (sealed lead acid batteries), GEL, Flooded, and Lithium.
- Built-in BT communication module for operation on mobile phone APP. For extending BT transmission distance, you can also connect external BT module (optional, not included in the package).
- Auto recognition of 12V/24V/36V/48V battery system voltage. Lithium battery excluded from this feature.
- Supports recording of system running data including power generated and power utilized for up to 300 days, compatible with monitoring App through iOS and Android.
- We have built-in BT communication module in this controller and we provide APP Charge Pro 2.0 for mobile phone monitoring and operation. You can search "Charge Pro 2.0" and download the APP at iOS APP Store and Google Play Store.
- Industrial grade design with reverse polarity protection for solar panels and battery.

DEVICE DIAGRAM



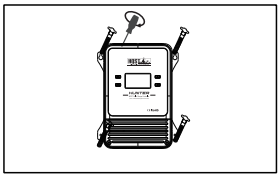
#	Description	#	Description
1	Setting	9	BAT Negative Terminal
2	Back	10	RS485 Communication Port
3	Plus	11	Extemal Temperature Port
4	Minus	12	Parallel Wired Port
5	LCD Screen	13	End Cover
6	PV Positive Terminal	14	End Cover Installation Hole
7	PV Negative Terminal	15	Installation Hole
8	BAT Positive Terminal	16	Grounded

MOUNTING INSTRUCTION



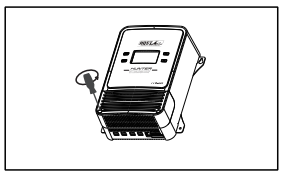
Step 1: Site Selection

Ensure a dry, well-ventilated installation environment with no obstructions in all directions, allowing ample space for heat dissipation due to high power output.



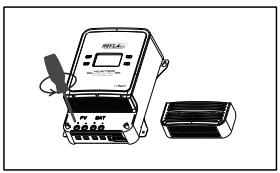
Step 2: Fixing

Choose self-tapping or other screws for flexible installation. Ensure a secure fix to prevent loosening.



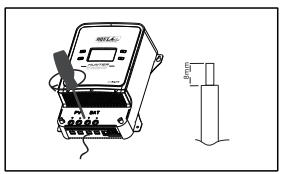
Step 3: Remove End Cover

Use a cross or flathead screwdriver to unscrew and remove the two hidden screws on the end cover counterclockwise for wiring.



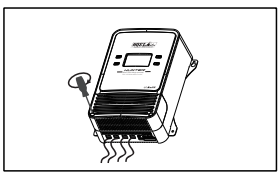
Step 4: Loosen Screws

Set aside the end cover and use a screwdriver to unscrew all wiring screws counterclockwise until resistance is felt.



Step 5: Wiring

Prepare PV and battery wiring, optional communication, temperature control, or parallel connections. Strip wires and insert them into corresponding ports. Tighten screws clockwise, and consider installing circuit breakers for both PV and batteries.

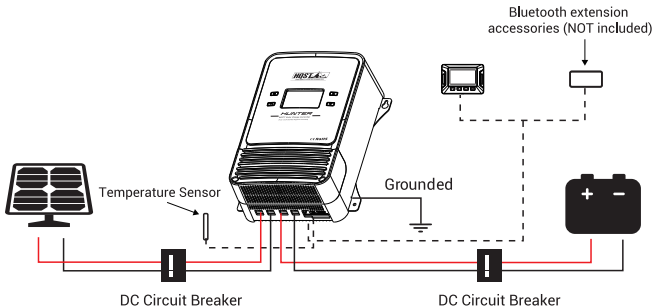


Step 6: Reinstall End Cover

Reinstall the screws clockwise that were removed, securing the end cover in place.

WIRE CONNECTION SEQUENCE

Current	80A	100A
DC Circuit Breaker	100A	125A



During installation of the controller, please follow the order of connection below:

1. Connect the positive battery wire followed by the negative battery wire.
2. Make sure your solar panels are fully covered to prevent electrical shock.
3. Connect the positive solar array output wire followed by the negative solar array output wire.
4. Connect the external temperature sensor to its terminal shown above, and attach or stick the temperature sensor to the battery side.
5. Download APP Charge Pro 2.0 and turn on the BT function in the mobile phone. Testing the APP function with the controller.

Connecting to the Charge Pro 2.0 app (iOS/iPadOS)

(iOS/iPadOS)

Download on the App Store

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Download the **Charge Pro 2.0** app (iOS/iPadOS) to set up your charge controller and monitor real-time data for enhanced charging experience.

Connecting to the Charge Pro 2.0 app (Android)

(Android)

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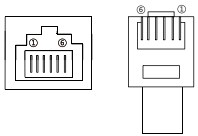
Download the **Charge Pro 2.0** app (Android) to set up your charge controller and monitor real-time data for enhanced charging experience.

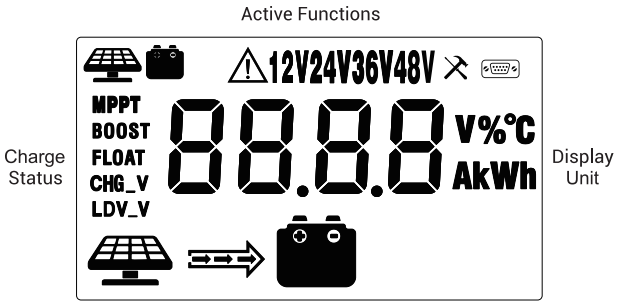
RS485 COMMUNICATION PORT



RS485 PIN (RJ12)					
PIN-1	PIN-2	PIN-3	PIN-4	PIN-5	PIN-6
VDD	VDD	GND	GND	D-	D+

*Support 3.3 V,20 mA

LCD DISPLAY INTERFACE OVERVIEW



LCD DISPLAY INTERFACE

Display Section	Display Layout
Charge Status	
Charge Mode & Parameter	
Active Functions	

LCD STATUS INFORMATION

Status Icon	Indication	Status	Description
MPPT	Charge Mode	Steady On	MPPT Charge Mode
BOOST			Boost Charge Mode
FLOAT			Float Charge Mode
		Off	Not Charging
CHG_V	Voltage Setting	On	Setting Charge Voltage
		Off	Charge Voltage Has Been Set
LDV_V	Over Discharge Volt Settings	On	Setting Charge Voltage
		Off	Charge Voltage Has Been Set
	Solar Icon	Steady On	Daylight Detected
		Off	No Daylight Detected
		Flash	Solar System Over Voltage
	Battery Icon	Steady On	Battery Connected and Functional
		Off	No Battery Connection
		Flash	Battery Over-Discharged
	Warning	On	System failure occurred
		Off	No System Failure
	Setting	On	Setting Mode
		Off	View Mode
	Communication	On	In the Modbus Communication
		Off	No Communication

* There is no charge mode displayed in the controller screen when it's in equalize charge mode.

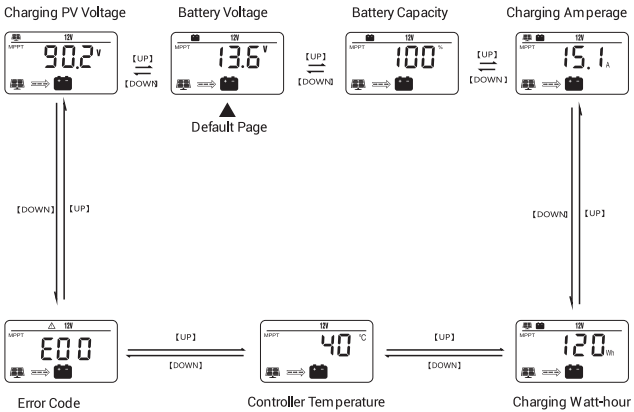
KEY FUNCTIONALITY CHART

Function Key	System Mode	Input	Input Function
	View Mode	Long Press	Enter SET mode
	View Mode	Short Press	View Previous Page
	View Mode	Short Press	View Next Page
	View Mode	Short Press	— — —

Function Key	System Mode	Input	Input Function
	Set Mode	Long Press	Save Data & Exit SET Mode
		Short Press	Next Setting
	Set Mode	Short Press	Increase Parameter Value
	Set Mode	Short Press	Decrease Parameter Value
	Set Mode	Short Press	Exit SET Mode Without Saving

LCD DISPLAY RULES & CYCLES

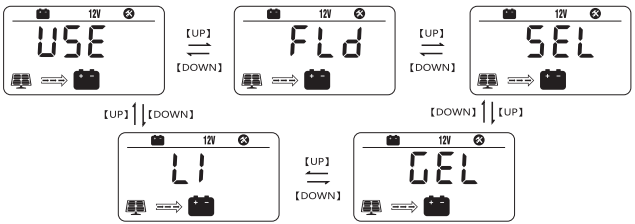
LCD Screen Display Cycle



The battery voltage view will be displayed by default. Use the up and down arrow keys to cycle through different views. The battery voltage view will resume upon 30 seconds of inactivity. The error code view will be displayed when an error is detected. The backlight on the screen will be on for 20 seconds with any button operation.

Setting Battery Mode

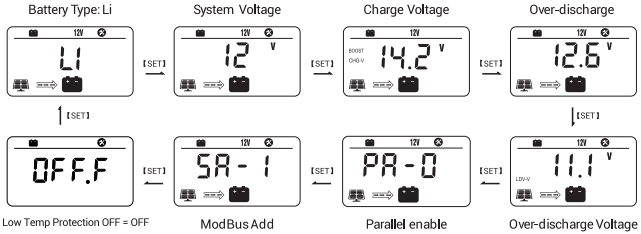
Enter SET mode by long pressing the SET key in any view page other than Load Mode. Use the up and down arrow keys to select battery mode, then long press SET key to save.

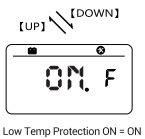


Abbreviations	Battery Types	Description
FLD	Flooded Battery	Auto-recognition with default parameters set for each type of battery.
SEL	Sealed/AGM Battery	
GEL	Gel Battery	
LI	Lithium Battery	Some parameters can be customized.
USE	Advanced User Mode	Most parameters can be customized.

For Battery Type: Li

Low Temperature Protection (Frozen Charge Prevention)

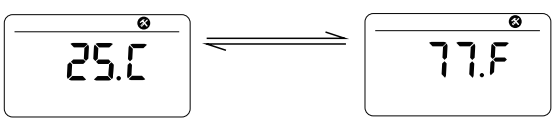




- Low temp charging cut off range : 23~41°F/ 0±5°C
- When the temperature reaches the specified on/off range, the low-temperature protection will automatically turn on/off after 30 seconds.

Temperature Unit Setting

In the temperature display interface, enter the temperature unit setting mode by long-pressing the setting button. You can switch between°F (Fahrenheit) and °C (Celsius) by pressing the up and down arrow keys. Long-press the setting button to confirm saving and exit, and short-press the ESC key to exit the setting without saving.



ERROR CODE CHART

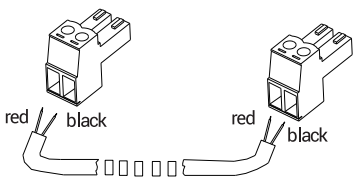
Code	Error	Description & Quick Troubleshoot
E00	No Error	No action needed.
E01	Battery Over-discharged	Battery voltage is too low. DC load will be turned off until battery re-charges to recovery voltage.
E02	Battery Over-voltage	Battery voltage has exceeded controller limit. Check battery bank voltage for compatibility with controller.
E06	Overheating	Controller exceeds operating temperature limit. Ensure the controller is placed in a well-ventilated cool, dry place.
E07	Environmental Overtemperature	The environment temperature sampled by the external temperature probe is too high.
E10	Solar Over-voltage	Solar array voltage exceeds controller rated input voltage. Decrease the voltage of solar panels connected to the controller.
E13	Solar Reverse Polarity	Solar array input wires connected with reverse polarity. Disconnect and re-connect with correct wire polarity.
E14	Battery Reverse Polarity	Battery connection wires connected with reverse polarity. Disconnect and re-connect with correct wire polarity.

*Still need help? Please contact us via **sales@myhqsolar.com**

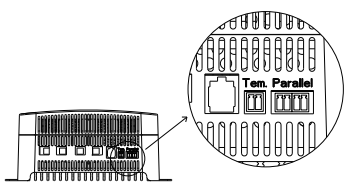
PARALLEL SETTINGS

The controller supports up to 9 parallel operations. During the process of parallel operation, the user needs to manually activate the parallel switch and set the parallel machine address, which is the same as the Modbus address.

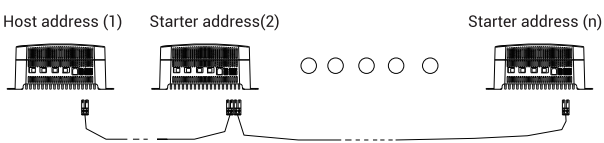
1. The parallel connection cables are ready as shown in the picture. Please make sure that the wire sequence is consistent.



2. The parallel ports are as follows.



3. The parallel connection is as shown in the diagram below (n must be less than 10).



Parallel Software Settings

Parallel Enable

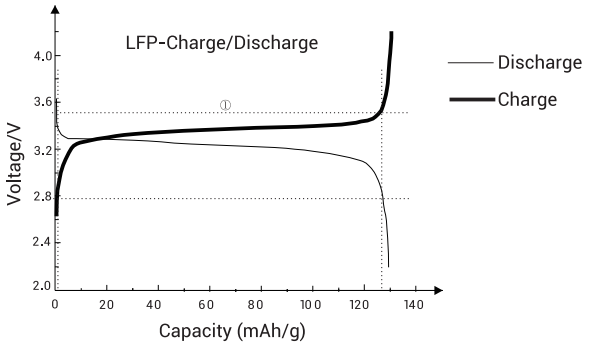
Modbus Add

1. Parallel operation is enabled by switching between PA-0 and PA-1. PA-1 initiates the parallel function; otherwise, the parallel function is turned off.
2. After activating the parallel function, users also need to set the master and slave machines. SA-1 represents the host with address 1, and the range can be set from SA-1 to SA-9. Addresses 2-9 correspond to the Modbus addresses of the starter machines as 1-9. Ensure that the corresponding Modbus communication address is adjusted accordingly.

LITHIUM BATTERY SETTING

Note: The charging voltage of lithium batteries cannot be set based on the theoretical voltage parameters of the battery because the charging and overcharging voltages specified by the battery manufacturer are the same. For instance, in a 12V system, the theoretical charging voltage is 12.6V. If it is mistakenly set to 12.6V, it may trigger the battery's BMS/protection board, activating protection measures.

The charge and discharge characteristic curve of Lithium iron phosphate is illustrated in the figure below, representing a single 18650 battery. The area enclosed by the dotted lines 1-4 signifies the battery capacity. As shown in the figure under the condition of charging with 3.55V and discharging with 28V, the battery capacity accounts for more than 95%. Therefore, it is strongly recommended that customers configure the charging settings according to the table parameters.



Recommended Charging Parameter Table for 3.7V Ternary Lithium Batteries

System Voltage (series number)	Charging Voltage	Overcharge Protection Voltage	Overcharge Recovery Voltage	Over-discharge Recovery Voltage	Over-discharge Voltage
Single String	4V	4.2V	3.9V	3.3V	3.1V
12V (3 in series)	12V	12.6V	11.7V	9.9V	9.3V
24V (7 in series)	28V	29.4V	27.3V	23.1V	21.7V
36V (9 in series)	36V	37.8V	35.1V	29.7V	27.9V
48V (12 in series)	48V	50.4V	46.8V	39.6V	37.2V

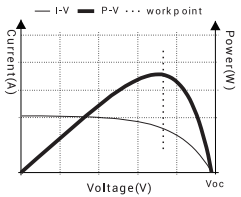
Recommended Charging Parameters Table for Lithium Iron Phosphate Batteries

System Voltage (series number)	Charging Voltage	Overcharge Protection Voltage	Overcharge Recovery Voltage	Over-discharge Recovery Voltage	Over-discharge Voltage
Single String	3.55V	3.65V	3.4V	3V	2.8V
12V (4 in series)	14.2V	14.6V	13.6V	12.6V	11.1V
24V (8 in series)	28.4V	29.2V	27.2V	25.2V	22.2V
36V (12 in series)	42.6V	43.8V	40.8V	37.8V	33.3V
48V (16 in series)	56.8V	58.4V	54.4V	50.4V	44.4V

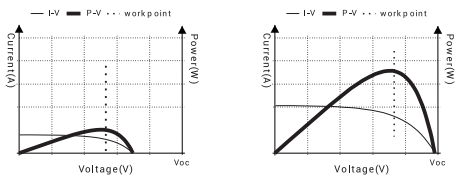
Note: The values listed under 'Overcharge Protection Voltage' and 'Overcharge Recovery Voltage' in the table above refer to typical parameters in the BMS or battery protection board and are for reference only. The 'Charging Voltage' corresponds to the Boost charging voltage of the controller, the 'Over-discharge Recovery Voltage' corresponds to the over-discharge recovery of the controller, and the 'Over-discharge Voltage' corresponds to the over-discharge voltage of the controller.

MPPT INTRODUCTION

MPPT is the abbreviation for Maximum Power Point Tracking. Due to the characteristics of photovoltaic curves, it is desirable to trace the following working points when utilizing photovoltaic energy for charging.

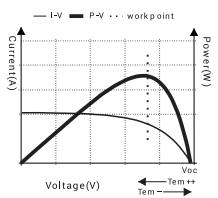


1. The photovoltaic power generation is particularly affected by external factors, so selecting the appropriate installation location and angle is particularly important.



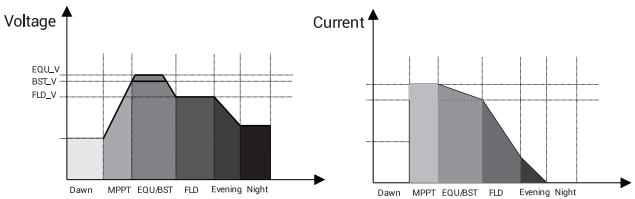
Weak Light　　Strong Light

2. Photovoltaics are sensitive to temperature changes, as depicted below. Higher temperatures lead to lower open circuit voltage (Voc), while the total output power changes relatively little.

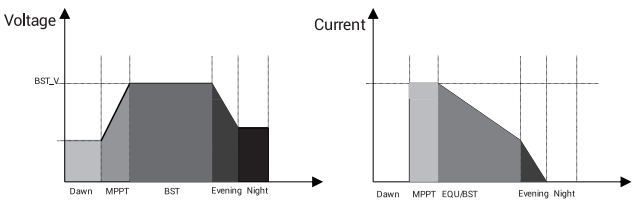


INTRODUCTION OF LEAD ACID AND LITHIUM BATTERY CHARGING

1. Lead-acid three stage charging



2. Lithium battery charging



TECHNICAL PARAMETERS

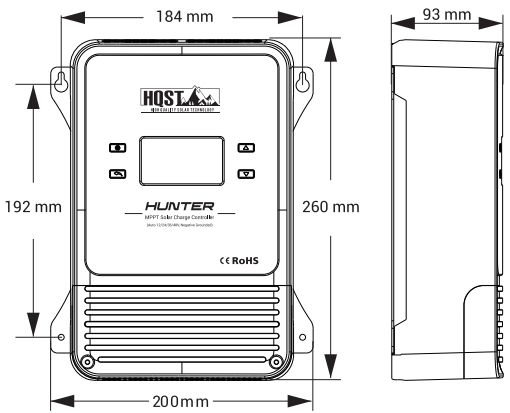
The variable 'n' is adopted as a multiplying factor when calculating parameter voltages. The rule for 'n' is listed as follows: if the battery system voltage is 12V, n=1; 24V, n=2; 36V, n=3; 48V, n=4.

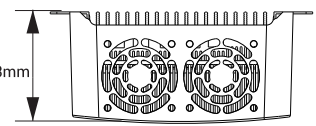
For example, the equalize charge voltage for a 12V FLD (Flooded) battery bank is 14.8V * 1 = 14.8V. The equalizing charge voltage for a 24V FLD (Flooded) battery bank is 14.8V * 2 = 29.6V.

Parameter	Value	
Model No.	M4880F	M48100F
System Wiring Grounded	Negative Grounded	
Battery System Voltage	12V/24V/36V/48V Auto (FLD/GEL/SEL/USE) Manual (LI/USE)	
No-load Loss	12mA (12V), 10mA (24V), 8mA (36V), 6mA (48V)	
Max Solar Input Voltage	<150 Voc	
Rated Solar Charge Current	80A	100A
Max Solar Input Power	1200W/12V; 2400W/24V 3600W/36V; 4800W/48V	1500W/12V; 3000W/24V 4500W/36V; 6000W/48V
Operating Temperature	-13°F ~ 113°F / -25°C ~ +45°C	
Fan-on Temperature	>113°F / 45°C	
Storage Temperature	-40°F ~ 176°F / -40°C ~ +80°C	
IP Protection	IP32	
Net Weight	4.4 lbs / 2.0 kg	4.4 lbs / 2.0 kg
Communication Port	RS485 (RJ12) + BT (Optional)	
Support Parallel	Support parallel (up to 9 units)	
Operating Altitude	≤ 3000 meters	
Controller Dimensions	10 x 7.9 x 3.7 in / 260 x 200 x 93 mm	

Parameter	Battery Parameters				
Battery Types	FLD	SEL	GEL (default)	USE (adjustable)	Li (adjustable)
Equalize Charge Voltage	14.8V*n	14.6V*n	–	–	–
Boost Charge Voltage	14.6V*n	14.4V*n	14.2V*n	Default: GEL	Default: 14.2V*n
Float Charge Voltage	13.8V*n			Default: GEL	–
Boost Charge Recovery Voltage	13.2V*n			Default: GEL	–
Over-discharge Recovery Voltage	–			–	–
Over-discharge Voltage	–			–	–
AutoTemperature Compensation	-3mV/2V/°C			Default: GEL	–

PRODUCT DIMENSIONS





Model: M4880F/M48100F
Product Dimensions: 260*200*93mm
Installation Area Dimension: 192*184mm
Installation Hole Size: φ5mm& φ10mm
Connection Socket Size: 10*10mm

WARRANTY

- HQST products are covered by a 12-month limited warranty from the original purchase date. If any problems occur, please contact our support team.
- We only provide after-sales services for products that are sold by HQST or retailers and distributors authorized by HQST. If you have purchased your unit from other channels, please contact your seller for more information about return and warranty.

The warranty will not cover damage caused by:

- Intentional damage.
- Natural disasters like earthquakes, fires, etc.
- Improper use or failure to follow instructions.
- Disassembly leading to damage or malfunction.

CUSTOMER SUPPORT

- If you have any questions or concerns, please send us an email at **sales@myhqsolar.com**
- Visit our official website: **hqsolarpower.com**

WHO WE ARE

- Established in 2015, HQST has a mission to deliver the most economical solar power solutions for everyone, everywhere, empowering individuals with a bright, safe, and sustainable future.
- At HQST, we prioritize product quality and service above all else. We use high-quality, long-lasting materials, ensuring decades of usability. Our quick response service assists you with any issues during usage, making DIY solar systems easy.
- No matter where you are or where you're going, HQST is dedicated to empowering you with the most cost-efficient solar solutions.

WHAT WE PROVIDE

- **Solar Kits:** Pack all the components needed to build a solar-powered system.
- **Solar Panels:** The most cost-efficient and sustainable way to power your adventures.
- **Solar Charge Controllers:** Regulate incoming solar power to maintain the battery's stable performance.
- **Batteries:** Store electricity to supply power off-grid or in emergencies.
- **Inverters:** Convert DC power into AC power to operate most household appliances.
- **Accessories:** Complete your solar setup with wiring and mounting accessories.

US
hqsolarpower.com
sales@myhqsolar.com