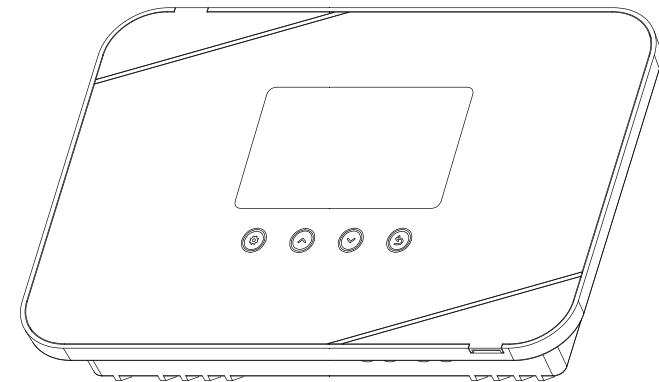


MPPT Solar Charge Controller

Flush Mount
Negative Grounded









M2430C

User Manual



*We may modify these specifications without prior notice.

1. 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 prior wires to connect.
	Multi-meter	A multi-meter 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.

2. Safety Tips

- It is very important to review this manual thoroughly before attempting installation.
- Beware of any nearby electrical equipment that may interfere with installing this device. And please don't plug in any AC source to this DC-DC product, or it may cause a fire or burn to the 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 qualified 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 professions if you need help with fuse sizing.
- This device is common negative designed, please wiring negative grounded if grounding job is required.
- Please don't keep the battery side open for long time, while the PV input keeps plugging in, or it may cause a screen failure in this device.
- 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	5A	10A	20A	30A
Wire Cross Section Area (mm ²)	1.5	2.5	5	8
Wire AWG	15	13	10	8

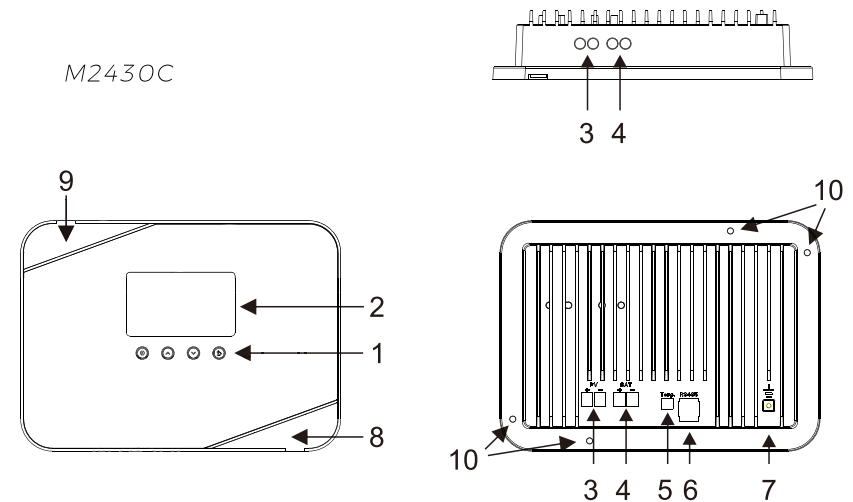
3. Product Features

Thank you for choosing our products. This solar charge controller is a device for solar charge regulation with the latest MPPT algorithm technology. This device is flush mount designed, mainly used in small and medium sized off-grid solar power systems, especially for system cabinet or RV use installation.

This MPPT charge controllers have features as follows:

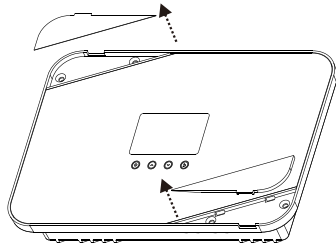
1. Aluminum casing + tempered glass cover + color screen displaying
 2. Flush mount design for cabinet or RV use installation
 3. Great charge performance in high temperature environment
 4. Built-in BT communication module for mobile phone APP operation
 5. Inside filled in with silicon/polyurethane for better cooling and waterproof
- 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.
 - Aluminum casing plus inside filled in complex silicon & polyurethane for a great cooling and waterproof system, ensures better charge performance in environment of high temperature and high humidity.
 - Tempered glass cover with back-lighted color LCD display, touch screen operation for better user experience. More advanced operations are available in mobile phone APP, or in the external remote LCD display device (DS, optional accessory, not in the standard package list)
 - Built-in buffer, allows max 25% exceeding rated power input.
 - With built-in BT communication module in this controller, we provide APP PVChargePro for mobile phone monitoring and operation. You can search "PVChargePro" and download the APP at IOS APP Store and Google Play Store.
 - Charging modes available for most common deep-cycle battery types in the market, including AGM (sealed lead acid batteries/SLD), GEL, Flooded, and Lithium. For more advanced settings, please operate in the mobile phone APP.
 - Auto recognition of 12V/24V 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.
 - Industrial grade design with full range of electronic protections, like reverse polarity protection for solar panels and battery wiring.

4. Device Diagram

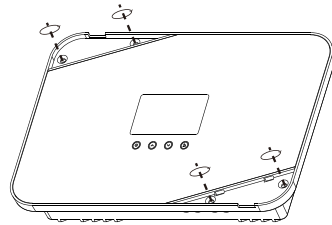


#	Description	#	Description
1	Touch Screen Button ([SET], [UP], [DOWN], [ESC])	6	Rs485 Communication Port
2	Color LCD Display Screen	7	Grounded Terminal
3	Solar Input Terminals	8	Magnetic Cover
4	Battery Terminals	9	Magnetic Cover
5	External Temperature Sensor Port	10	Installation Mounting Holes

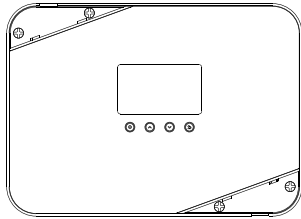
5. Fixture & Wiring Instructions



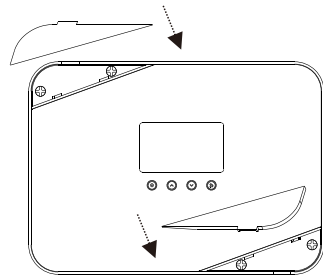
1. Remove the magnetic covers.



2. Check and confirm the screwing condition in the fixture surface, and tighten the screws according to the instruction in the picture.

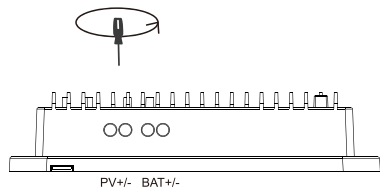


3. Check the fixture condition of the installation.

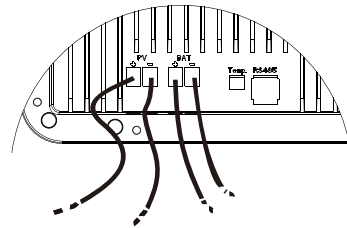


4. Put the magnetic cover back and clean the surface.

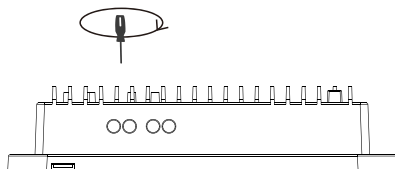
6. Wiring sequence



1. Unscrew the terminals completely, before inserting any wiring leads.



2. Insert the bare wire side of the cable to the terminals according to the right consequences.

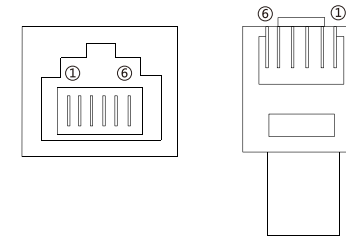


3. Tighten the terminal screws as much as possible

Installation Remarks:

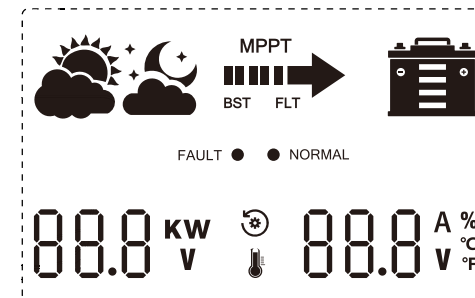
- Please make sure the battery wires would be connected first, and then connect the PV wires.
- If you need to re-wiring the device, please disconnect the PV side firstly before loose battery cables.
- For different installation conditions and requirements, we may either fix the controller first, then connect the wires, or we also may connect the wires first before we fix the controller.

7. RS485 connection diagram (Rj12)



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

8. LCD screen and indicator light introduction



The backlight in the screen will be on for 20 seconds with any button operation, or the screen would enter stand-by/power saving mode.

8.1 LCD Display Interface

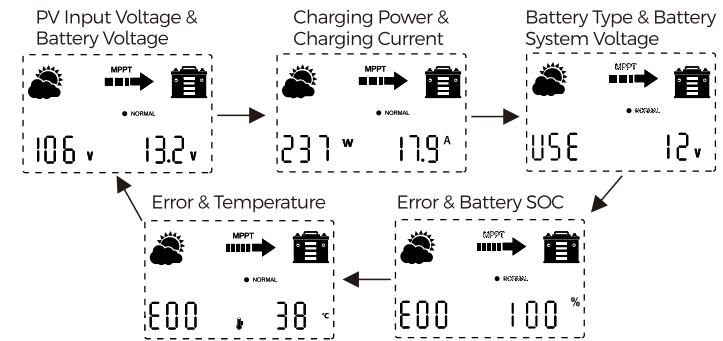
Display Items	Description	Displaying
Working Status	System Working Status	
Parameters View	Parameter Value Displaying	00.0 kW V 00.0 A % °C °F
System Error Status	System Error Information	FAULT ● ● NORMAL

8.2 LCD Status Information

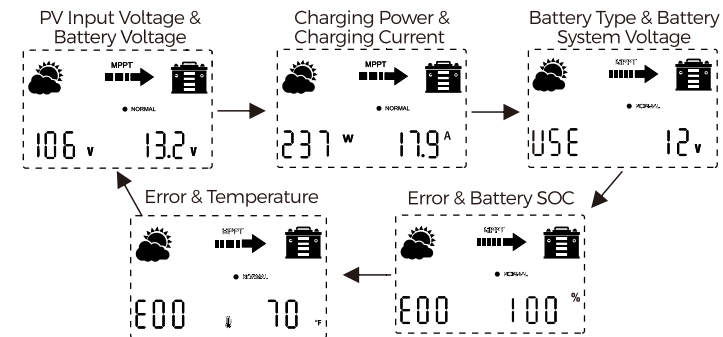
Status Icon	Indication	Status	Description
	PV Input Status	Steady On	In Daytime
		Off	Not in Daytime
		Steady On	In Nighttime
		Off	Not in Nighttime
	Charge Status	Flowing	Charging
		Steady On	In MPPT Charge
		Steady On	Or in Boost Charge
		Steady On	Or in Float Charge
	Error Icon	On	System in Error
	Normal Icon	On	System Normal
	Battery Icon	Steady On	No Battery Error
		Off	No Battery Input or Battery Reverse Polarity
		Fast Flash	Battery Over Voltage
	Setting Icon	Steady On	In Set Mode
		Off	In View Mode
	Temperature Icon	In Setting	Set Value of Temperature in °F or °C
		Not in Setting	View Temperature
	Parameter Displaying Values	In Setting	Set Parameter Value
		Not in Setting	View Parameter Value
	Unit Icon	On	Unit of the Relevant Value

8.3 Displaying Cycle Information

The screen displaying cycles through different views page by page as following pictures (with temperature unit Celsius C by default)



The screen displaying cycles through different views page by page as following pictures (with temperature unit set on F)



8.3 Displaying Cycle Information

4 LED indicators are placed underneath the below four touch screen operation keys.

Screen Status				
Not in Sleep Mode	—	Indicator lights on while being touched; lights off when no touches.		
In Sleep Mode	System Error	Off		Flash
	Solar Input Not in Charging	Off		Steady On
	Charging & Battery SOC <50%	Steady On	Three indicators flashing in a flow	
	Charging & Battery SOC <75%	Steady On		Two indicators flashing in a flow
Charging & Battery SOC >75%	Steady On			Flash

9. Button Instruction

Button	Current mode	Type	Description
	View Mode	Long Press	Enter setting mode
	View Mode	Short Press	View the previous page
	View Mode	Short Press	View the next page
	View Mode	Short Press	-

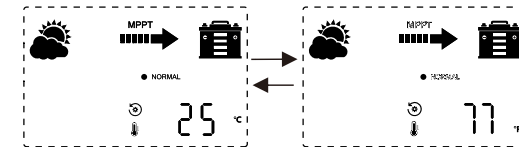
Button	Current mode	Type	Description
	Set Mode	Long Press	Save the setting value and exit the setting mode
		Short Press	Set the next parameter item
	Set Mode	Short Press	Set parameters by increasing value
	Set Mode	Short Press	Set parameters by decreasing value
	Set Mode	Short Press	Exit the setting mode without saving the setting value

Battery Type	Battery Description	Description
FLD	Lead-acid Battery	Parameters set on default, not adjustable. Battery system voltage automatically recognized.
SEL	Sealed Battery SLD / AGM	
GEL	Gel Battery	
LI	Lithium Battery	Battery system voltage and parameter settings are only allowed to set by APP operation or in the remote display.
USE	Advanced User Mode. For professions only	Battery system voltage and advanced parameter settings are only allowed to set by APP operation. Part of the parameters could be set in the remote display.

10.2 Temperature unit setting:

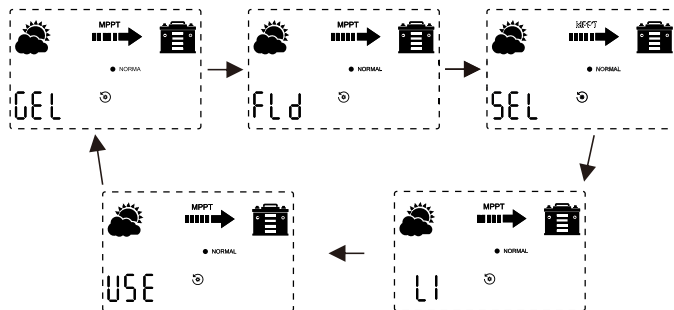
In the [Temperature] page, to set the temperature unit.

$$^{\circ}\text{F} = ^{\circ}\text{C} * 1.8 + 32.$$

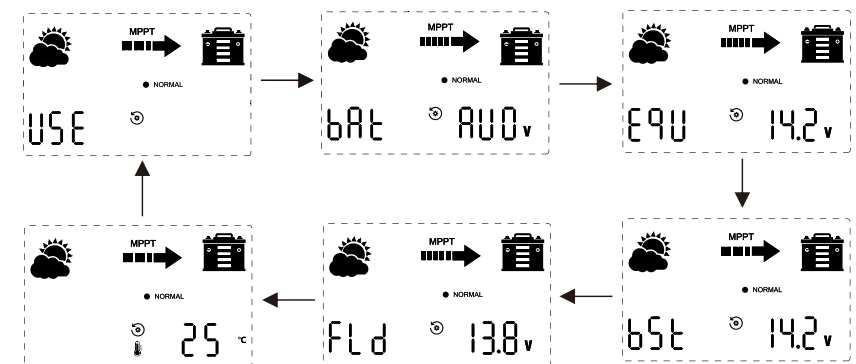


10. Setting Parameters

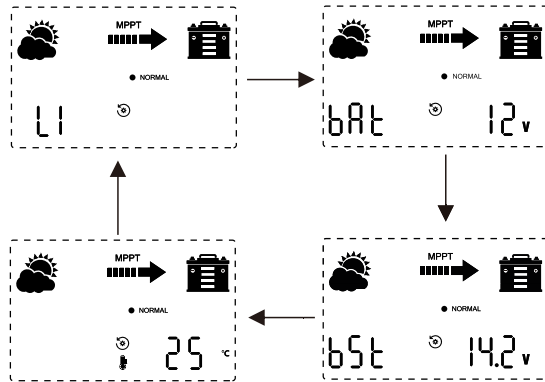
10.1 Battery Type Setting



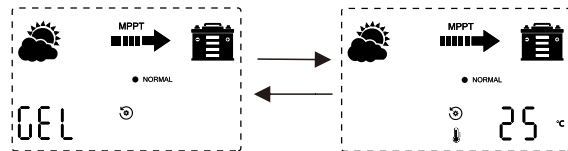
10.3 Advanced USER Mode Battery Setting



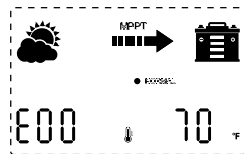
10.4 LI Mode Battery setting



10.5 Other battery settings (GEL as an example)



10.6 Error Code



11. Button Instruction

Code	Error	Description	Quick Troubleshoot
E00	No Error	-	-
E02	Battery Over-voltage	Battery voltage has exceeded controller limit.	Check battery bank voltage for compatibility with controller.
E06	Equipment Overheating	Controller exceeds operating temperature limit.	Ensure the controller is placed in a well-ventilated cool, dry place.
E07	Environment Over-temperature	The device working surrounding temperature is too high, and the controller would stop charging anytime.	Try to lower the working surrounding temperature.
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.

*Note: the missing error codes in the above chart indicates that this controller has no such error or alarm condition

12. Controller Specification

The variable “n” is adopted as a multiplying factor when calculating parameter voltages, the rule for “n” is listed as: if battery system voltage is 12V, n=1; 24V, n=2.

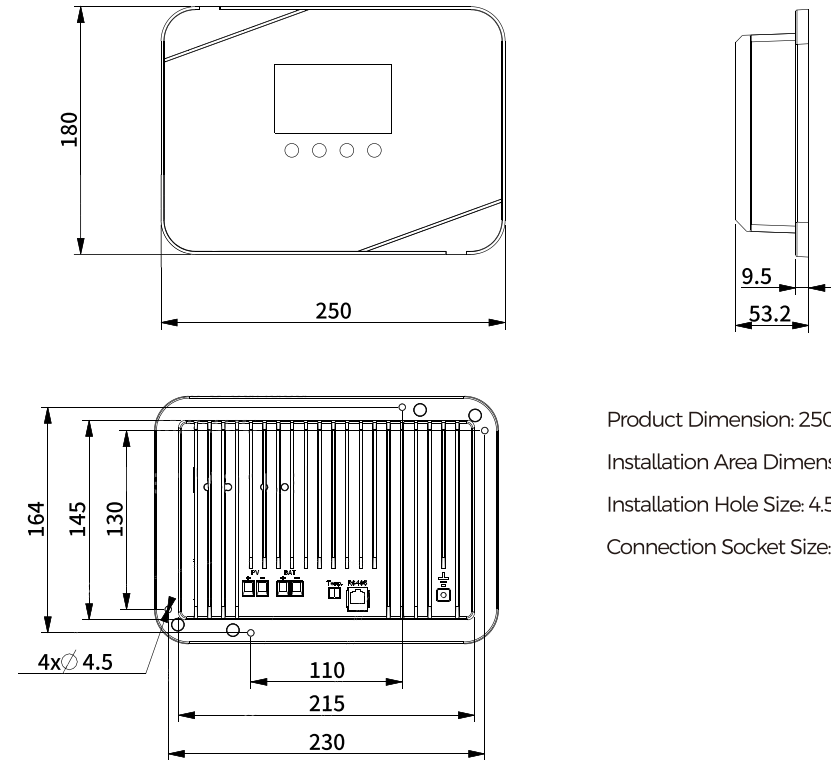
For example, the equalize charge voltage for a 12V FLD (Flooded) battery bank is $14.8V \times 1 = 14.8V$. The equalizing charge voltage for a 24V FLD (Flooded) battery bank is $14.8V \times 2 = 29.6V$.

Controller Parameter	Value
Model No.	M2430C
System Wiring	Negative Grounded
Grounded	12V/24V
Battery System Voltage	Auto (FLD/GEL/SLD) Manual (Li/User)
No-load Loss	12ma/12V; 10ma/24V;
Max Solar Input Voltage	<100Voc
Rated Solar Charge Current	30A
Max Solar Input Power	450W/12V; 900W/24V;
Operating Temperature	-35°C ~ +45°C
IP Protection	IP34
Net Weight	2.2 kg
Communication Port	RS485+Bluetooth(APP)
Operating Altitude	≤ 3000 meters
Controller Dimension	250*180*50mm

Battery Voltages	Battery Parameters				
Battery Types	FLD	SEL	GEL (default)	USER (adjustable)	LI (adjustable)
Equalize Charge Voltage	$14.8V \times n$	$14.6V \times n$	—	Default	—
Boost Charge Voltage	$14.6V \times n$	$14.4V \times n$	$14.2V \times n$	Default: GEL	Default: $14.2V \times n$
Float Charge Voltage		$13.8V \times n$		Default: GEL	—
Boost Charge Recovery Voltage		$13.2V \times n$		Default: GEL	—
Over-discharge Recovery Voltage		—		—	—
Over-discharge Voltage		—		—	—
Auto Temperature Compensation		$-3mV/2V/^{\circ}C$		Default: GEL	—

Accessory List	Package Status
External Temperature Sensor	Yes
Remote LCD Meter	Optional
Bluetooth Module	Yes/Inbuilt
Parallel Charge Use Cable	Optional
Installation Guidance Paper	Yes
User Manual	Yes

13. Size



Product Dimension: 250*180*53,2mm
 Installation Area Dimension: 164*215mm
 Installation Hole Size: 4.5mm
 Connection Socket Size: 7.5*7.5mm