

Gen4

SR-MPL Series MPL1210/1215/2410/2415/2420/2430/2440 Waterproof MPPT Charge Controller



SR-MPL1210-R

SR-MPL1215/2410-R

SR-MPL2415-R

SR-MPL2420-R

Main Features

- Using MovingTrack MPPT maximum power tracking technology, higher tracking efficiency and faster speed;
- Both lead-acid battery and lithium battery are applicable, operating parameters can be set by remote control;
- Using UltraGreen power control technology with extremely low power consumption and sleep current;
- Lead-acid battery multi-stage constant voltage charging with temperature compensation;
- Load has normally On mode , Light control + time control, charging only mode, easy to apply to different systems
- Battery charge and discharge high and low temperature protection, with operating temperature settable;
- Infrared wireless communication, allowing for setting/reading parameters, reading status, etc;
- Multiple protections such as battery/PV reverse polarity protection, Load shortcircuit/overcurrent protection, etc;
- Extensible to IoT remote communication monitoring function;
- Full aluminum housing, IP67 waterproof rating, applicable to a variety of harsh environments.



Products selection table

Product models	Description
MPL-R	MPPT Solar Charge Controller(-R: infrared remote control)
MPL-UL	With IoT remote control (built-in Lorawan module)
MPL-GP	With IoT remote control (built-in GPRS module)
MPL-C	With IoT remote control (RS485 interface, external communication module is required)
MPL-CT	With IoT remote control (TTL interface, external communication module is required)

Indicator and remote control status

The MPL series controllers have three red indicators

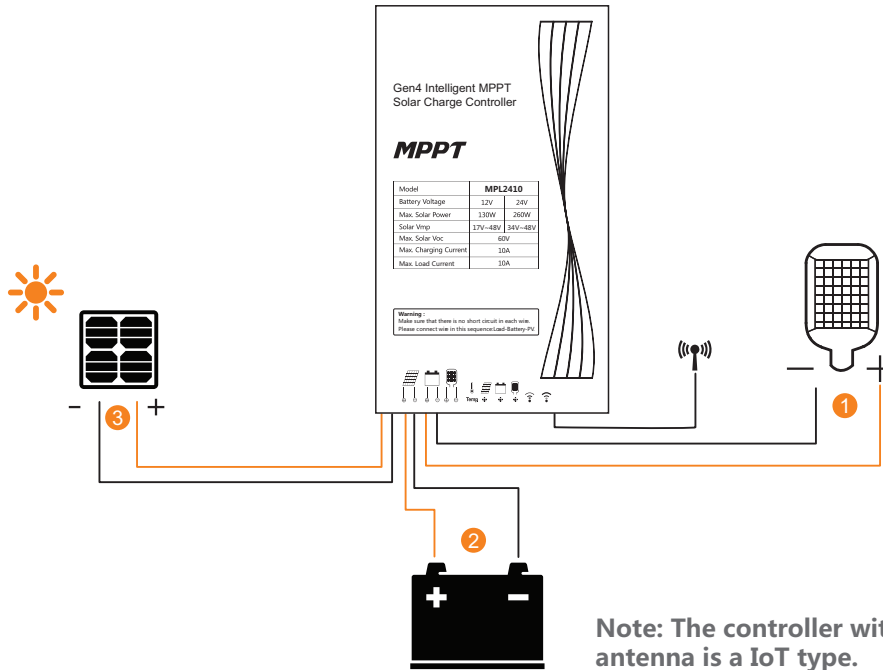
Three red indicators:

Indicator	Status	Description	Remote control system status
PV indicator	Steady on	Solar panel voltage is higher than light control voltage	Idle
	Off	Solar panel voltage is lower than light control voltage	Idle
	Double flash	Fully charged	Fully charged
	Slow flash	In charging	Charging
	Quick flash	BMS protection or BAT overvoltage or PV overvoltage or over temperature (ambient temperature) or power/ current limited charging	E-BMS Battery overvoltage PV panel overvoltage Over temperature Overcurrent
BAT indicator	Steady on	Battery works properly	Idle
	Off	Battery is not connected or lithium battery protection board over discharge protection	
	Quick flash	Battery over-discharge	Over discharge
LOAD indicator	Steady on	Load is turned on	Discharging
	Off	Load is turned off	Idle
	Quick flash	Load is short circuited	Short circuit

Electrical wiring diagrams

A. Wiring diagram of the controller with built-in IoT module

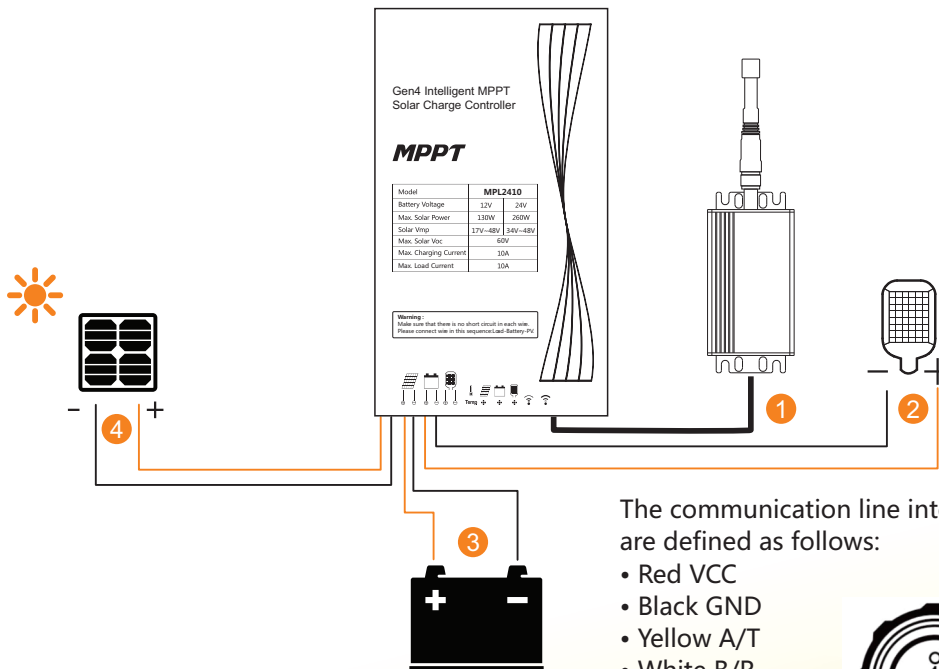
Wiring sequence: Firstly connect the load, then the battery and finally the solar panel.



Note: The controller with antenna is a IoT type.

B. Wiring diagram of the controller with external IoT module

Wiring sequence: Firstly connect the external IoT module, then the load, then the battery and finally the solar panel.

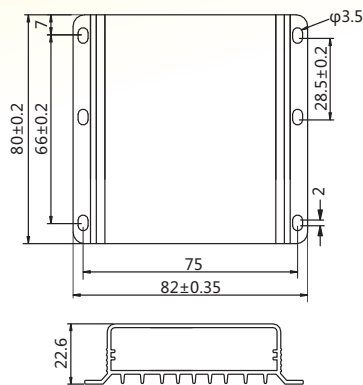


The communication line interfaces are defined as follows:

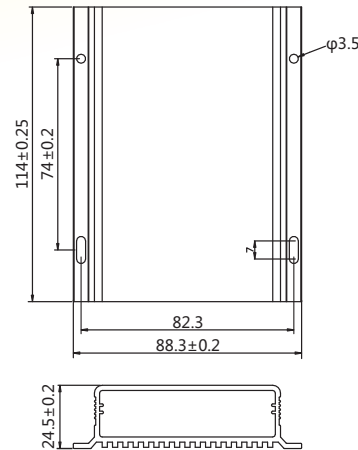
- Red VCC
- Black GND
- Yellow A/T
- White B/R



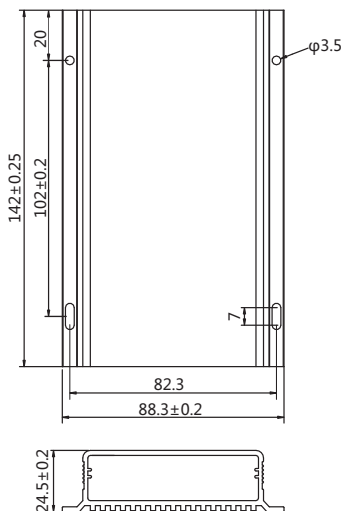
Installation method



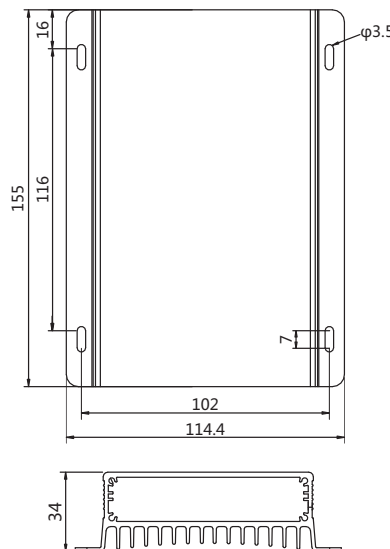
MPL1210 dimensions :
 Overall dimensions : 80*82*22.6mm
 Mounting dimensions : 66*75mm
 Mounting hole diameter : φ3.5mm



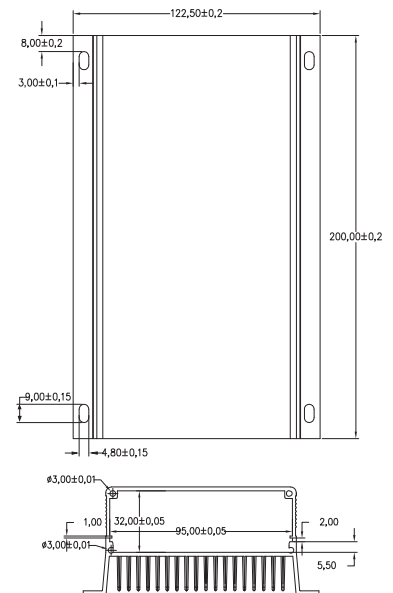
MPL1215/MPL2410 dimensions :
 Overall dimensions : 114*88.3*24.5mm
 Mounting dimensions : 74*82.3mm
 Mounting hole diameter : φ3.5mm



MPL2415 dimensions :
 Overall dimensions : 142*88.3*24.5mm
 Mounting dimensions : 102*82.3mm
 Mounting hole diameter : φ3.5mm



MPL2420 dimensions :
 Overall dimensions : 155*114.4*34mm
 Mounting dimensions : 116*102mm
 Mounting hole diameter : φ3.5mm



MPL2430/MPL2440 dimensions :
 Overall dimensions : 200*122.5*56mm
 Mounting dimensions : 175*113mm
 Mounting hole diameter : φ3.5mm

Load mode

1. Light control + time control mode:

When the working time in the first period is set to "1 ~ 14", When no sunlight is present, the solar panel voltage is lower than the light control on voltage, and after a time delay, the controller will switch on the load. The load will be switched off after working for a preset period of time and the maximum working time is 15 hours.

2. Normally on mode:

When the working time in the first period is set to "15", the load is a normally open module, The energized load keeps outputting, and this mode is suitable for loads which need 24-hour power supply.

3. Charging mode:

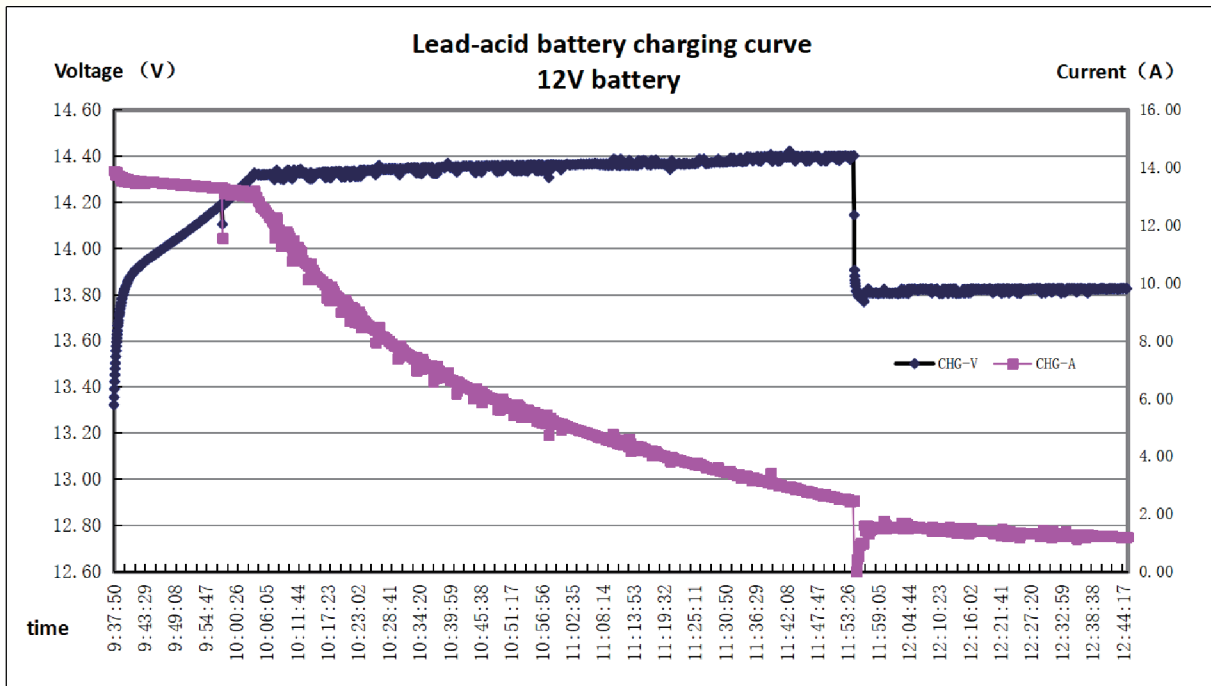
When the working time in the first period is set to "0", the load does not work, only the charging function, charging during the day, and automatically entering the sleep mode at night, reducing system loss.

Technical parameters

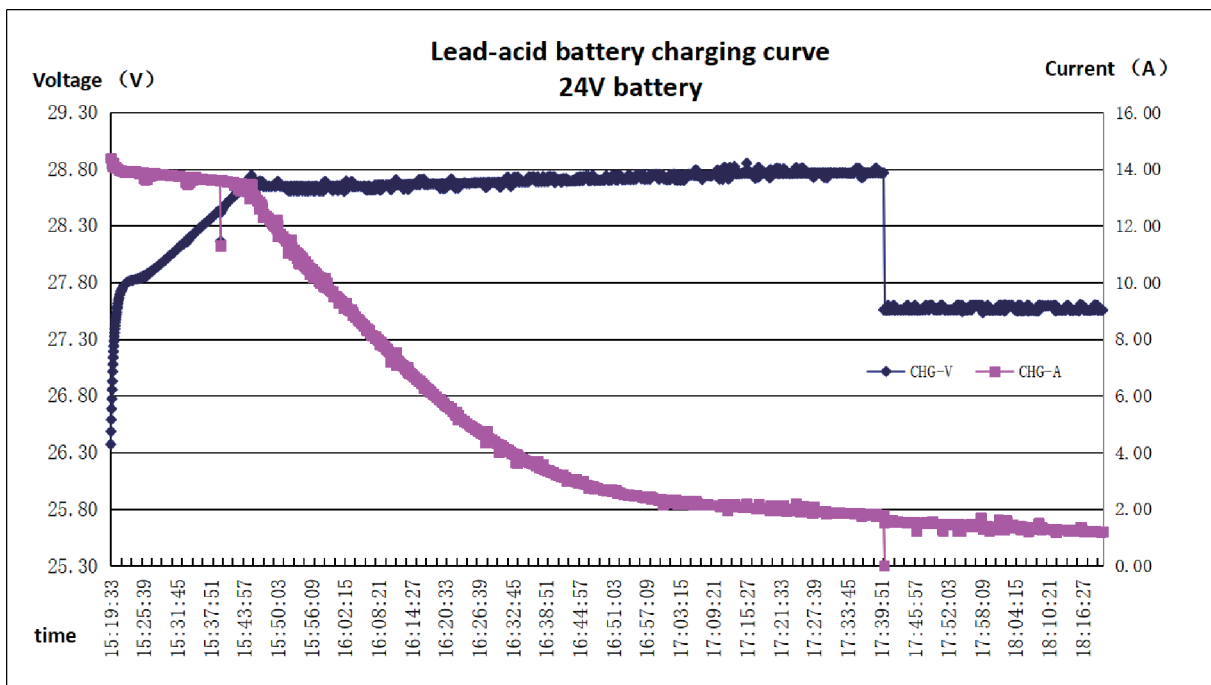
Items	Values							Adjustable	Default	
Model	MPL1210	MPL1215	MPL2410	MPL2415	MPL2420	MPL2430	MPL2440			
Controller type	-R: infrared remote control; -C: with 485 communication interface									
System voltage	12V		12V/24V					√	Lead-acid	
Static power consumption	-R:≤5mA	-R:≤6mA	-R:≤6mA/12V ≤4mA/24V		-R:≤6mA/12V ≤10mA/24V					
Sleep power consumption	≤1mA			≤2mA						
Load Maximum current	10A	15A	10A	15A	20A	30A				
Load working period	normally On mode/9-Period + Pre-dawn lighting									
Period adjustment range	1min / 10min									
Maximum solar input power	130W/12V	200W/12V	130W/12V 260W/24V	200W/12V 400W/24V	260W/12V 520W/24V	400W/12V 800W/24V	550W/12V 1100W/24V			
Maximum charge current	10A	15A	10A	15A	20A	30A				
Maximum solar input voltage	≤50V	≤35V	≤60V		≤100V					
MPPT Tracking efficiency	≥99%									
Charging conversion eff.	85%-98%									
Over voltage	PB-16.0V ; LI-charging voltage+2V ; ×2/24V system									
Limited charge voltage	PB-15.5V ; LI-charging voltage+1V ; ×2/24V system									
Equalizing charge voltage	PB-14.6V ; LI-without balanced charge ; ×2/24V system									
Equalizing charge interval	Pb:30 days ; Li:no ;									
Boost charge voltage (lead-acid)	8.5V ~ 17.00V settable ; ×2/24V system							√	14.4V	
Charge voltage (lithium)	8.5V ~ 17.00V settable ; ×2/24V system							√	13.8V	
Floating charge voltage (lead-acid)	8.5V ~ 17.00V settable ; ×2/24V system							√	13.8V	
Charge return voltage(lithium)	8.5V ~ 17.00V settable ; ×2/24V system							√	11.0V	
Over discharge voltage	8.5V ~ 17.00V settable ; ×2/24V system							√	12.5V	
Over discharge return voltage	8.5V ~ 17.00V settable ; ×2/24V system							√	12.5V	
Light control voltage	3V ~ 11V ; ×2/24V system							√	5V	
Temperature compensation coefficient	PB : -3.0mV/°C/2V ; lithium battery: no compensation									
Light control delay	5s ~ 60s/2min ~ 60min							√	10s	
High temperature charge	40°C ~ +90°C							√	65°C	
Low temperature charge	0°C ~ -35°C							√	-35°C	
Operating temperature	-35°C ~ +65°C									
IP rating	IP67									
Protections	Battery reverse polarity protection, solar panel reverse polarity protection, solar panel over-voltage protection, lithium battery overcharge and over-discharge protection, lithium battery BMS overcharge detection protection, load shortcircuit, load open circuit and short circuit protection									
Weight	260g	400g	510g	770g	1800g					

A typical curve

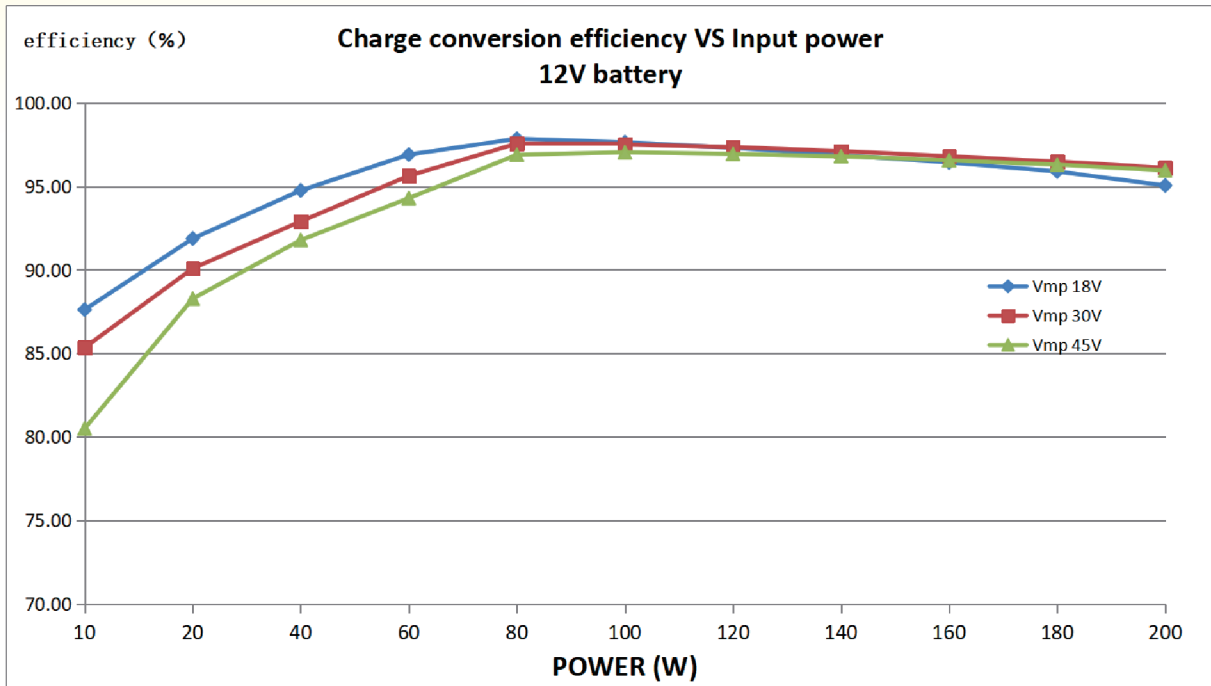
12V Lead-acid Battery Charging Curve



24V Lead-acid Battery Charging Curve



Charge Conversion Efficiency VS Input Power -12V battery



Charge Conversion Efficiency VS Input Power -24V battery

