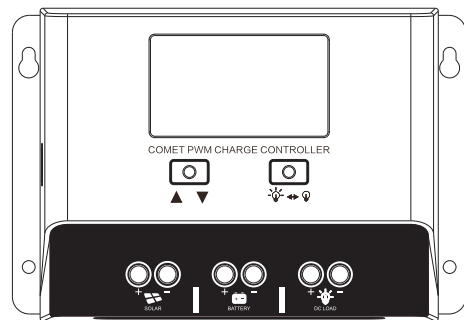


PWM Charge Controller Negative Grounded P2430N / P2440N User Manual



Operation APP
(IOS + Android)



PVChargePro

*We may modify these specifications without prior notice.

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 Stripper	A wire cutter is needed for cutting and stripping wires prior to connection.
	Multimeter	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 when attaching wires to the controller.

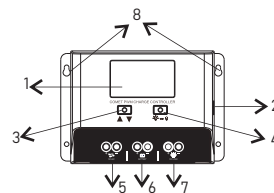
Product Features

Thank you for choosing our product. This PWM solar charge controller is a device for solar charge regulation and direct current output load control. This device is mainly used in small & medium sized off-grid solar power systems, up to 12KW.

These charge controllers have these features:

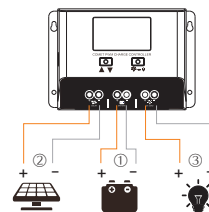
- Pre-set charging modes available for most common deep-cycle battery types in the market, including AGM (sealed lead acid batteries), GEL, Flooded, and Lithium mode with customized parameters. User mode for professions to set for full battery parameters (operation on APP).
- Automatic recognition of 12V/24V battery system for AGM/GEL/Flooded battery.
- Provides multiple load control mode options for light based, time based and manually adjusted scenarios.
- Industrial grade design with reverse polarity protection for solar panels, battery and load.
- 5V 1A USB outlet provides charging for mobile devices.
- We provide for this controller APP PVChargePro for mobile phone monitoring and operation.
- You can search "PVChargePro" and download the APP at IOS APP Store and Google Play Store.

Device Diagram



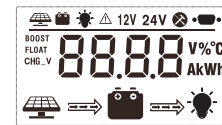
#	Description	#	Description
1	LCD Display Screen	5	Solar Terminals
2	5V 1A USB Port	6	Battery Terminals
3	Function Key	7	Load Terminals
4	Setting/Load Key	8	Installation Mounting Holes

Wire Connection Sequences



During installation of your PWM controller, please follow below order of connection:
 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. Connect the positive solar array output wire followed by the negative solar array output wire.
 3. Connect the DC load wiring to the DC load output (if applicable)
 4. Download APP PVChargePro and turn on the Bluetooth function in the mobile phone. Testing the APP function with the controller.

LCD Display Interface Overview

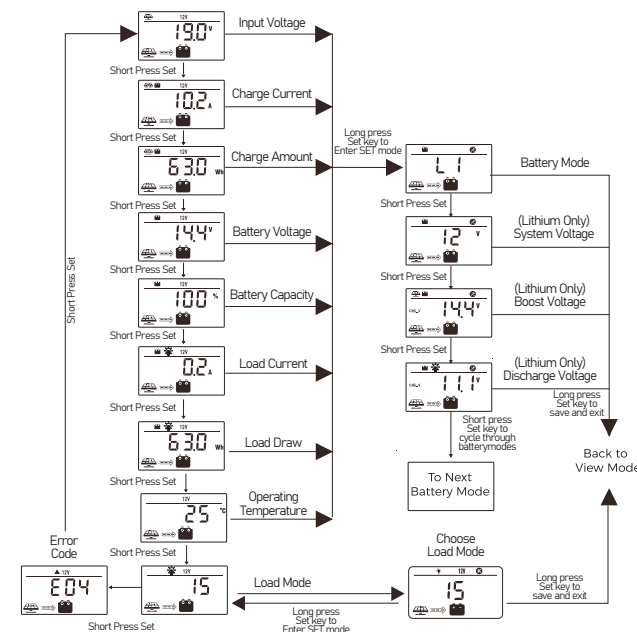


Status Icon	Status	Description
	On	Daylight Detected
	Off	Daylight Not Detected
	Slow Blink	Solar Charging Battery
	On	Battery Connected and Functional
	Off	No Battery Connection
	Fast Blink	Battery Over-Discharged
	Flowing	Charging or Dis-charging
	Off	Not Charging or No Load

Key Functionality Chart

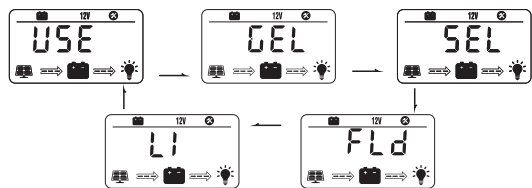
Function Key	System Mode	Input	Input Function
	View Mode	Long Press	Enter SET mode
		Short Press	View Next Page
	View Mode	Long Press	N/A
		Short Press	Switch Load On/Off (Manual Control Program Only)
	Set Mode	Long Press	Save Data & Exit SET Mode
		Short Press	View Next Page
	Set Mode	Long Press	N/A
		Short Press	Adjust parameter

LCD Display Rules & Cycles



- The information pages in the screen will be automatically turning to the next page every 5 seconds and keep lasting. The user also can use up and down keys to cycle through different pages.
- The error code page will be displayed when an error is detected.

Setting Battery Mode

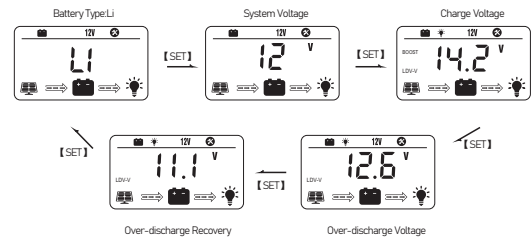


Abbreviations	Battery Types	Description
FLD	Flooded Battery	Auto-recognition with default parameters set for each type of batteries.
SEL	Sealed/AGM Battery	
GEL	Gel Battery	Some parameters can be customized.
LI	Lithium Battery	
User	Advanced User Mode	Most parameters can be customized. Operation only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

Advance Battery Settings

- In Lithium mode, short press the arrow key again to cycle through each parameter view.
- Use the load key to adjust parameter value, then long press arrow key to save and exit.

For Battery Type: Li

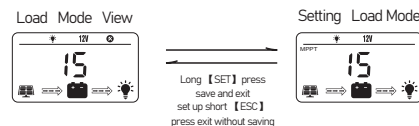


For Battery Type: USER

* Please search "PVChargePro" and download the relevant APP in either IOS APP Store or Google Play Store. For USER battery mode settings, please use APP for operation. Parameter setting password: 123456

Load Mode Settings

Enter Load SET Mode by pressing the function key in Load Mode view only. Short press the arrow key to cycle through load modes before long pressing the function key again to save and exit.



Mode	Definition	Description
0	Daylight Auto-Control	The PV voltage turns on the load when it is night
1-14	Daylight On/Timer Off	DC load turns on when daylight is detected. DC load turns off according to timer. Mode 1 = turn off after 1 hour, etc.
15	Manual Mode	DC load turns on/off by pressing the load key.
16	Testing Mode	DC load turns on and off in a quick succession.
17	Always on	DC Load Stays On.

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.
E04	Load Short Circuit	DC load short circuit.
E05	Load Overload	DC load power draw exceeds controller capability. Reduce load size or upgrade to a higher load capacity controller.
E06	Overheating	Controller exceeds operating temperature limit. Ensure the controller is placed in a well-ventilated cool, dry place.
E08	Solar Over-ampereage	Solar array ampereage exceeds controller rated input ampereage. Decrease the ampereage of solar panels connected to the controller or upgrade to a higher rated controller.
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 reversepolarity. Disconnect and re-connect with correct wire polarity.
E14	Battery Reverse Polarity	Battery connection wires connected with reversepolarity. Disconnect and re-connect with correct wire polarity.

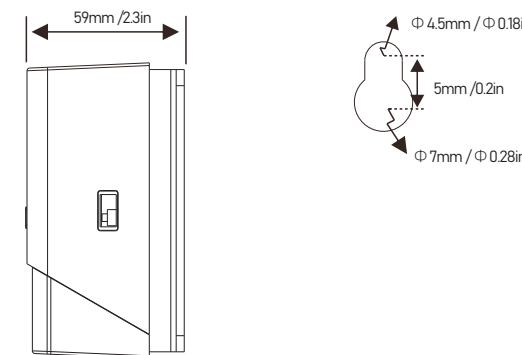
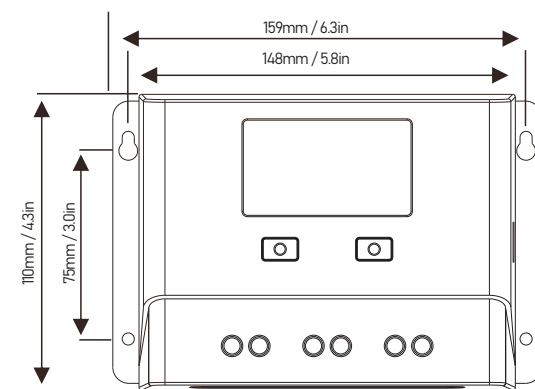
* Please contact professions for technical support on additional troubleshooting.

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.

Parameter	Value				
Model No.	P2430N	P2440N			
System Wiring Grounded	Negative Grounded				
Battery System Voltage	12V/24V Auto (FLD/GEL/SLD) Manual (Li/User)				
No-load Loss	8ma (12V), 12ma (24V)				
Max Solar Input Voltage	<100Voc				
Rated Solar Charge Current	30A	40A			
Max Solar Input Power	450W/12V 900W/24V	600W/12V 1200W/24V			
Light Control Voltage	5V*n				
Light Control Delay Time	10s				
Max Load Output Current	30A	40A			
USB Output	5V 1A				
Operating Temperature	-35°C ~ +45°C				
IP Protection	IP32				
Net Weight	0.65 kg				
Communication	Built-in Bluetooth Module for APP Operation				
Operating Altitude	≤ 3000 meters				
Controller Dimension	159*118*59 mm				
Parameter	Battery Parameters				
Battery Types	FLD	SEL	GEL (default)	USER (APP)	LI (adjustable)
Equalize Charge Voltage	14.8V*n	14.6V*n	--	Default	--
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	12.6V*n			Default: GEL	--
Over-discharge Voltage	11.1V*n			Default: GEL	Default: 11.1V*n

Product Dimensions



Product Dimension: 159*118*59mm / 6.3*4.6*2.3 inch
 Installation Area Dimension: 148*75mm / 5.8*3.0 inch
 Installation Hole Size: Φ 4.5 and Φ 7mm / Φ 0.18 and Φ 0.28 inch