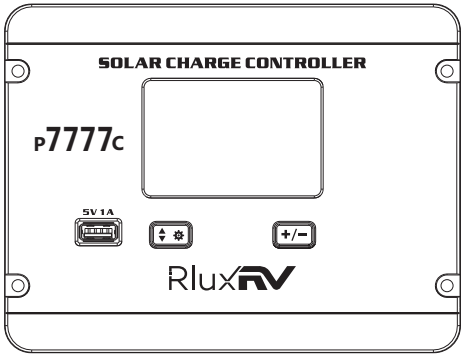


Solar Charge Controller

p7777c

User Manual



* 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 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. |

Product Features

Thank you for choosing our product. This device is a PWM 12/24V 30A charge controller ideal for many applications. It's flush mount design makes it perfect for solar power systems in RV's and boats. Please be sure to read through the following pages and familiarize yourself with the features and settings of the controller.

These charge controllers have these features:

- PCBA common negative design, necessary for all negative grounded solar power systems.
- 12/24V auto recognition for Flooded, AGM and GEL batteries. Lithium battery must be manually set.
- PWM 3-phase charging: equalize - boost- float (for Flooded, AGM and GEL).
- Flush mount design for easy installation, RV fixture or similar installation.
- Back light LCD display with informative pages (system status, current, voltage, voltage value settings, etc).
- 5V USB port for mobile device load. (plug and play)
- Multiple built in protections including solar reverse connection, battery reverse connection, and battery over-discharge protection.

INSTALLATION NOTES

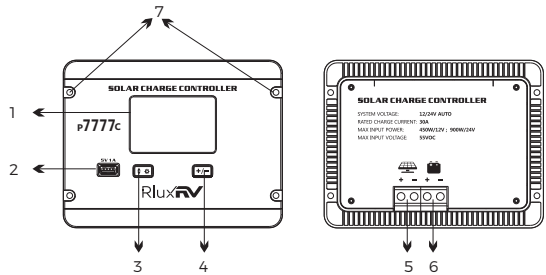
1) IMPORTANT REMINDERS

- * The battery must always be connected to the controller first.
- * Please note that the max PV input voltage is 55V open circuit voltage (Voc), so do not use solar module(s) with working voltage (Vmp) of more than 40V (refer to solar (PV) module specs).
- * Please note the max PV input power is 450W/12V or 900W/24V. Please do not exceed the rated power.
- * Do not change any settings in the "LI" battery mode if you are not using a lithium battery.
- * In the LI battery mode, you must set the battery system voltage (12 or 24V) manually.
- * If you would like to check the information in the "LI" battery mode settings, but not alter any settings, then you MUST remember to keep the right system voltage set (12 or 24V) before exiting from the settings.

2) HARDWARE SUGGESTIONS

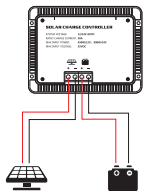
- * For maximum PWM charge efficiency, we suggest using solar modules with an output of 18V (Vmp) for a 12V battery system, and 36V (Vmp) module for 24V battery systems. You can still use modules with higher voltages but it may lead to a slightly lower charge efficiency. In all cases the solar (PV) input voltage (Vmp) must be higher than the battery voltage.
- * For safety and protection we suggest using a DC breaker or fuse between both the solar and the controller, as well as between the controller and the battery.

Device Diagram



| # | Description | # | Description |
|---|--------------------|---|-----------------------------|
| 1 | LCD Display Screen | 5 | Solar Terminals |
| 2 | 5V 1A USB Port | 6 | Battery Terminals |
| 3 | Function Key | 7 | Installation Mounting Holes |
| 4 | Parameter Key | | |

Wire Connection Sequences

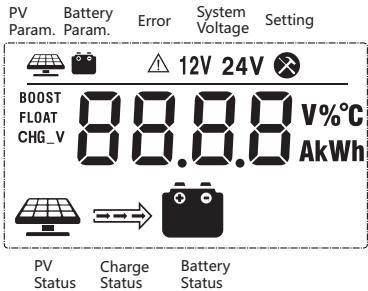


- Firstly: Connect the battery first, please choose cable accordingly.
- Secondly: Connect the solar panel second, please choose cable accordingly.

LCD Display Interface Overview

1) Display Overview

You can check system information in the LCD display, including PV input voltage, charge current, battery voltage, battery capacity, controller temperature, error code and battery setting pages. Here is an overall picture of the LCD display:



2) Solar (PV), Battery & Charge Indications

| Status Icon | Indication | Status | Description |
|-------------|--------------------|---------------|--|
| | PV Indication | Steady ON | PV volt higher than light control volt |
| | | OFF | PV volt lower than light control volt |
| | | Slow flash ON | Charging |
| | | Fast flash ON | PV over voltage |
| | Battery Indication | Steady ON | Battery is ok |
| | | OFF | Battery is not ok |
| | | Fast flash ON | Battery over discharge |
| | Charge Indication | Floating | Charging |
| | | No float | No charge |

LCD Display Rules & Cycles

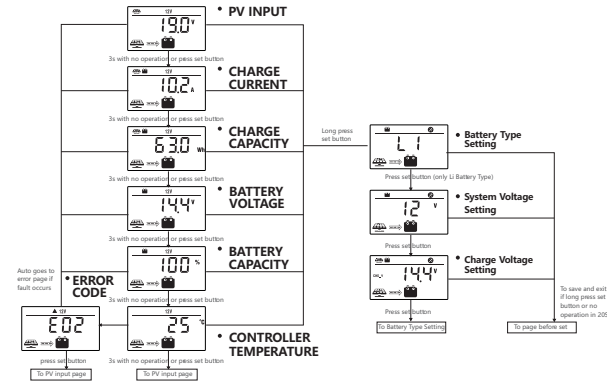
1) Button Setting Info

There are 2 buttons on the controller for operations and settings. Check the below diagram for setting details.

| Function Key | System Mode | Input | Input Function |
|--------------|----------------|-------------|----------------------------------|
| | In Setting | Long press | Enter page not for settings |
| | In Setting | Short press | Enter next page for settings |
| | Not in Setting | Long press | Enter page for settings |
| | Not in Setting | Short press | Enter next page not for settings |
| | In Setting | Long press | No function |
| | In Setting | Short press | To adjust parameter |
| | Not in Setting | Long press | No function |
| | Not in Setting | Short press | No function |

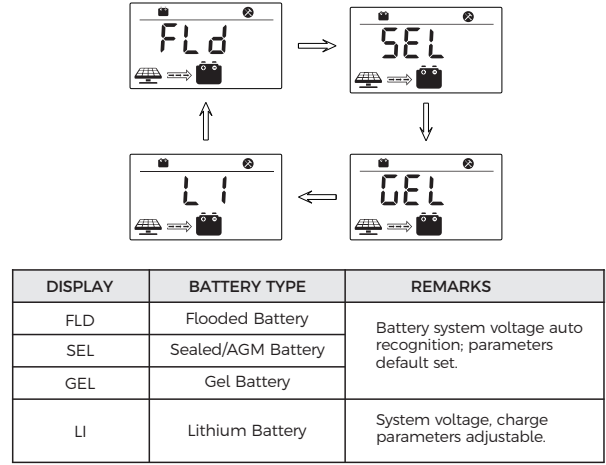
Remarks: "In Setting" means the user is in process of setting parameters.

2) Information Pages



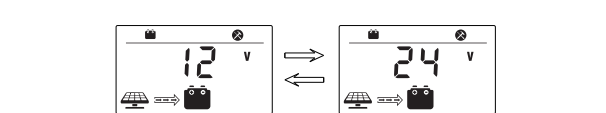
Battery Type & Parameter Settings

1) Battery Type Setting

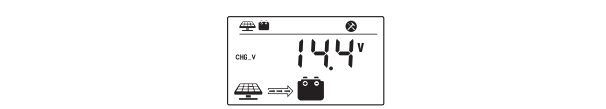


| DISPLAY | BATTERY TYPE | REMARKS |
|---------|--------------------|--|
| FLD | Flooded Battery | Battery system voltage auto recognition; parameters default set. |
| SEL | Sealed/AGM Battery | |
| GEL | Gel Battery | |
| LI | Lithium Battery | System voltage, charge parameters adjustable. |

2) Battery System Voltage Setting (only for lithium battery)



3) Charge Voltage Setting (only for lithium battery)



Error Code Chart

Due to a variety of potential issues, the controller may sometimes display an error code on the LCD screen. If this happens please refer to the below diagram:

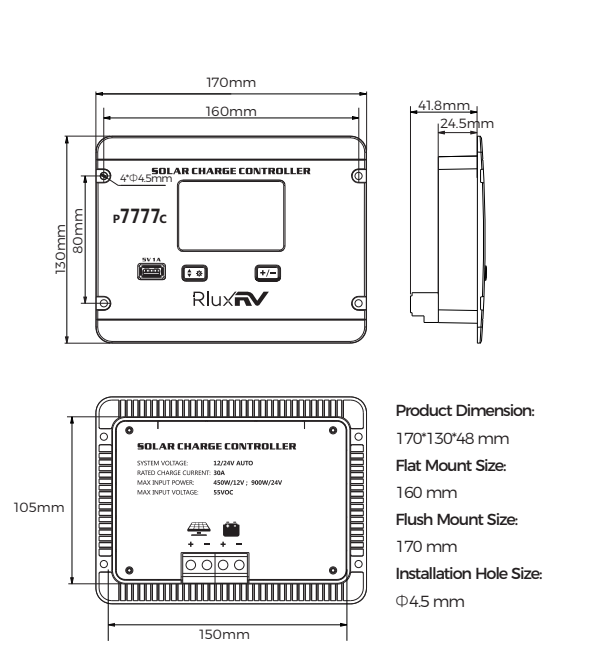
| Code | Error | Description & Quick Troubleshoot |
|------|-------------------------|--|
| E00 | No error | No action needed. |
| E01 | Battery Over-discharged | Battery voltage is too low. DC load will be turned off until battery re-charges to recovery voltage. |
| E02 | Battery Over-voltage | Battery voltage has exceeded controller limit. Check battery bank voltage for compatibilit with controller. |
| E06 | Overheating | Controller temperature limit. Ensure the controller is placed in a well-ventilated cool, dry place. |
| E08 | Solar Over Amperage | Solar array amperage exceeds controller rated input amperage. Decrease the amperage 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 | PV anti-connection | Solar (PV) module +polarity reverse-connection |
| E14 | Battery anti-connection | Battery +- polarity reverse-connection |

* Please contact professions for technical support on additional trouble shooting.

Controller Specification

| Parameter | Value |
|-------------------------------|--|
| Model No. | p7777c |
| Battery System Voltage | 12V/24V Auto (FLD/CEL/SLD) Manual (Li) |
| No-load Loss | 8ma (12V), 12ma (24V) |
| Max Solar Input Voltage | <55Voc |
| Rated Solar Charge Current | 30A |
| Max Solar Input Power | 450W/12V; 900W/24V |
| Light Control Voltage | 5V(12V system) ;10V(24V system) |
| Light Control Delay Time | 10s |
| USB Output | 5V1A |
| Operating Temperature | -35°C ~ +45°C |
| IP Protection | IP32 |
| Net Weight | 0.45 kg |
| Operating Altitude | ≤ 3000 meters |
| Controller Dimension | 170*130*48 mm |
| Battery Parameters | |
| Battery Types | FLD SEL GEL LI |
| Equalize Charge Voltage | 14.8V(12V) 29.6V(24V) 14.6V(12V) 29.2V(24V) -- -- |
| Boost Charge Voltage | 14.6V(12V) 29.2V(24V) 14.4V(12V) 28.8V(24V) 14.2V(12V) 28.4V(24V) 14.2V(12V) 28.4V(24V) (adjustable) |
| Float Charge Voltage | 13.8V(12V); 27.6V(24V) -- |
| Boost Charge Recovery Voltage | 13.2V(12V); 26.4V(24V) -- |
| Over Discharge Recovery Volt. | 12.6V (12V) / 25.2V (24V) 12.6V (12V) / 25.2V (24V) *auto adjusted to over-discharge volt |
| Over Discharge Voltage | 11.1V (12V) / 22.2V (24V) 11.1V (12V) / 22.2V (24V) adjustable |

Product Dimensions



Product Dimension:
170*130*48 mm
Flat Mount Size:
160 mm
Flush Mount Size:
170 mm
Installation Hole Size:
Φ4.5 mm

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

Radiation Exposure Statement

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance of 20cm from your body.