



Solar
Technology
International

PV Logic[®]

User manual



MPPT Pro

Solar Charge Controller

Covering

15A MPPT charge controller 12V/24V DC (STCC15M)

Important: please read before first use.

Technical helpline
01684 774 000

Installation and operation manual

Specification Summary

- Nominal system voltage: 12/24VDC*
- Maximum PV input voltage: 68VDC

*The controller will recognise the system rated voltage upon first connection. If the battery voltage is lower than 16V, it will recognise the system as 12V. If the battery voltage is greater than 16V, it will recognise the system as 24V.

You can charge a 12V battery with a panel rated between 16V and 68V (VOC), and a 24V battery with a panel rated between 27V and 68V (VOC).

Important safety information

General safety information

- Read all of the instructions and cautions in the manual before beginning installation.
- There are no user serviceable parts inside the controller. Do not disassemble or attempt to repair it.
- Install external fuses/breakers as required.
- Disconnect the solar module and fuse/breakers near to the battery before installing or adjusting the controller.
- Protect the controller from moisture to prevent damage.
- Ensure that the power connections are securely tightened to prevent arcing and excessive heating due to loose connections.

General information

- 12/24V automatic recognition.
- Efficient MPPT charging algorithms can increase power transfer from solar panels to batteries by up to 20% compared to PWM solar charge controllers, also extending battery lifespan.
- Unique dual battery charging function.
- Supports two different battery charging profiles e.g. AGM and LiFePO₄.
- Automatic lithium battery wake function, sends a 0.5 second pulse every 10 minutes if no battery is detected.
- Bluetooth interface.
- Reverse current protection.
- Overheating protection.
- Logging facility for system startup, battery connection, battery offline, charging started, charging stopped and battery configuration changed.
- Optional remote display (available separately).

This controller is for off-grid solar systems and has the additional functionality that it can charge two batteries alternately. The charging process has been optimised for long battery life and improved system performance. The comprehensive self-diagnostics and electronic protection functions can prevent damage from installation mistakes or system faults.

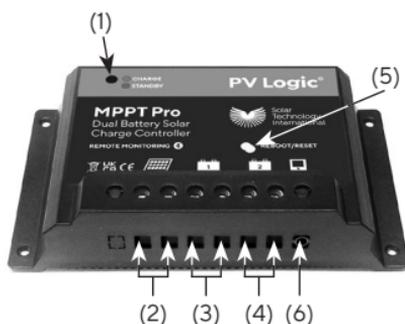
Though the controller is easy to operate and use, please take your time to read this manual and become familiar with it. This will help you make full use of all the available functions to maximise your solar system's efficiency.

This controller is designed to prioritise the battery connected to the 'Battery 1' connections first, before then allowing a charge to the battery on the 'Battery 2' connections. In practice this means that 'Battery 1' will be around 70% + charged before the controller will start charging 'Battery 2'. It will then bring the batteries up evenly to a full charge.

Please note: If you are charging two interconnected batteries on the same circuit (e.g., connected in parallel), only connect the pair of batteries to 'Battery 1.' Do not connect the second battery to 'Battery 2.' The 'Battery 2' connection is meant solely for charging a completely separate circuit, such as the engine battery of a motorhome.

Product features

- (1) Solar charging status LED indicator
- (2) Solar module terminals, connect to solar module
- (3) Battery terminals, connect to battery 1
- (4) Battery terminals, connect to battery 2
- (5) Reboot/Reset Button
- (6) Remote display connection.

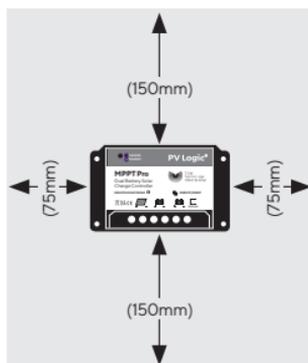


Installation instructions

Note – When mounting the controller, ensure free air through the controller heat sink (back plate). There should be at least 6 inches (150mm) of clearance above and below the controller and 3 inches (75mm) each side to allow for cooling. If mounted in an enclosure, ventilation is highly recommended.

WARNING: Risk of explosion!

Never install the controller in a sealed enclosure along with batteries! Do not install in a confined area where battery gasses can accumulate.



1. Choose mounting location. Locate the controller on a vertical surface protected from direct sun, high temperature and water.
2. Ensure there is proper clearance. Position the controller where it will be mounted. Confirm that there is enough space to run wires and adequate room above and below the controller for airflow.
3. Mark and drill holes. Use a pencil or pen to mark the four mounting hole locations on the mounting surface and drill pilot holes.
4. Secure controller. Place the controller on the surface and align the mounting holes with the drilled holes in step 3.
5. Secure the controller in place using self tapping screws (not supplied).

Wiring

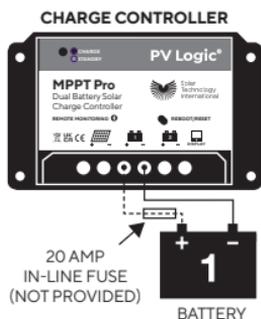
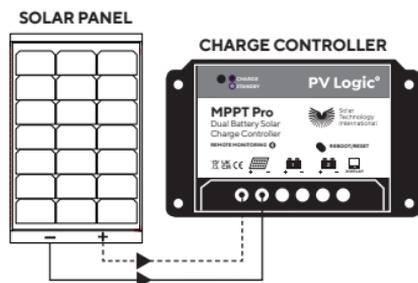
WARNING: Risk of explosion or fire! Never short circuit battery positive (+) and negative (-).

WARNING: Risk of electric shock! Exercise caution when handling solar wiring. The solar panel(s) high voltage output can cause severe shock or injury. Cover the solar panel(s) from the sun before installing solar wiring.

When installing a fuse and holder, make sure that the distance between the fuse holder and the positive terminal of battery is at most 150mm. Only install a fuse holder when setting up. Do not insert a fuse at this time.

Solar connection

Connect the + and - from the solar panel to the solar inputs on the charge controller.

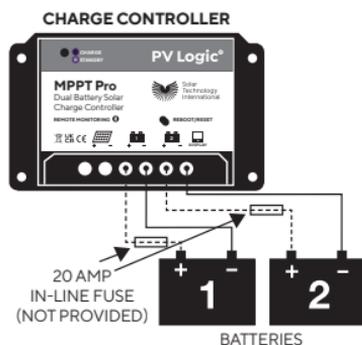


Battery 1 connection

Connect the + and - from the 1st battery via a fuse holder (with fuse removed) to the 'Battery 1' output on the charge controller. This connection is prioritised by default.

Battery 2 connection (optional)

Connect the + and - from the 2nd battery via a fuse holder (with fuse removed) to the 'Battery 2' output on the charge controller. This connection is typically used for the vehicle battery.



Please note that the positive from 'Battery 2' must be on a separate electrical circuit and not connected back to the positive of 'Battery 1' in any way. Failure to observe this precaution may result in blown fuses, batteries being drained, or damage to the controller.

Once all connections are made please double-check the wiring. Confirm correct polarity at each connection. Verify that all four or six (if a second battery is being charged) terminals are tightened and then replace the fuse(s) back into the holders. Now uncover the solar panel(s).

When power is applied from the battery and the controller starts, the battery LED will indicate the status as indicated in the Operation section.

Operation

Solar charging status indicator:

- **OFF** = No solar or battery power available.
- **GREEN ON** = Whenever sunlight is available for battery charging and a battery is connected.
- **RED ON** = Either the battery is not connected e.g. a blown fuse, or the solar panel is not producing power e.g. it is dark outside.
- **RED FLASHING** = Critical operations are being performed, e.g. saving controller operating parameters, updating firmware or controller is in firmware recovery mode.

REBOOT. Click the 'Reboot/Reset' button on the controller once to reboot the controller. The controller will restart after a few seconds.

FACTORY RESET. Press AND HOLD the 'Reboot/Reset' button for more than 15 seconds to return the controller to factory default settings. This will erase the battery profile configurations as well as the Bluetooth name and password. After performing this operation, make sure the battery profiles are reconfigured.

FIRMWARE UPDATE. Use PVMobileSuite to connect to the controller (see the section below for download information). Select the 'Active Monitor' tab, then the 'Device Info' menu, and then click the 'Check for Update' button (Fig 1). If an update has been released and you wish to install it, click the 'Update' button.

NOTE - You must stay on the update progress page during the update and don't let the App close; otherwise, the update will fail.

During the update, the controller's light will flash red, but once the update is complete, the controller will automatically reboot, and the controller's light will come back on solidly. The reboot process will disconnect the App, so restart and reconnect it to the controller as usual.

Should the update fail due to Bluetooth communication problems, simply rerun the update process. The controller will automatically enter normal working mode if the firmware upgrade is not performed within 30 seconds. If you need further assistance with this process, please visit the support section of our website.



Fig 1

Connecting the MPPT Pro to your Bluetooth enabled device



MPPT Pro
App Icon

1. Download and install the software 'PVMobileSuite' from Apple 'App Store' or Android 'Google Play' or go to www.solartechtechnology.co.uk/support-1/pv-logic/controller-support/15-amp-mppt/
2. Once the App is installed on your device, if the controller is powered up and you are within 8m, open the App and click 'Connect'. You will see 'PV-xxxxxx', 6 numbers (Fig 2). Take a note of these numbers as you will be asked to enter them (as a passcode) when you press PV-xxxxxx. Enter only the 6 numbers.



Fig 2

Note – You will need to log in each time you start up the App – the xxxxxx will be in a number format and that is your passcode to get into the controller.



Fig 3



Fig 4



Fig 5



Fig 5a

- Your App will now connect to the controller and display the screen in Fig 3.
- Clicking on the 'Activity Monitor' will give you the screen shown in Fig 4. This screen gives you information on what your solar system is doing as well as the charge in the batteries.
- Clicking the 'back arrow' (top left) will take you back to the main screen.

- The Battery Options screen (see Fig 5) displays all the settings for the batteries. If 'BAT1' is highlighted, those are the current settings for Battery 1. Please select the appropriate battery type from the available options: **AGM, Gel, Flooded, LiFePO4, or Custom**. If required, select 'BAT2' and choose the correct battery type for the battery connected to Battery 2 (see Fig 6). Once you have selected the battery types for both batteries, press the 'Send' button at the bottom of the screen.



Fig 6

- This action will bring up the 'Send Battery Options' popup (see Fig 5a). Tick the options for BAT1 and BAT2 as appropriate, then click the 'Send' button to transmit the settings and information to the controller.

Note: The controller will reboot with the new battery profiles, so you will need to reconnect via Bluetooth.

- To create a custom set of battery settings (only do this if you are familiar with all the battery settings), follow these steps:

Select the appropriate battery for your custom settings (BAT1 or BAT2). Click on the 'Custom' tab.

From the system voltage drop-down menu, choose the correct voltage for your battery.

You can now modify the settings as needed. Once you have finished making changes, click the 'Send' button. When the 'Send Battery Options' popup appears, make sure only the battery you want to change to a custom profile is selected, then click 'Send'. The controller will reboot with the new battery profile, and you will need to reconnect via Bluetooth.

After reconnecting, select 'Profiles', then choose 'Save Current' and provide a name for the profile. This will save the custom settings in the App.

8. Clicking the 'Dashboard' button will display the screen depicted in Fig 7. This screen provides a clear graphical representation of the solar input and battery status. The arrow next to the central solar dial indicates which battery is currently being charged. By default, the primary charging battery is 'BAT1', but this can be changed using the Primary/Secondary toggle buttons on the screen. If the battery charging priority is changed, the controller will switch the charge several minutes after the selection is made.

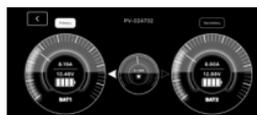


Fig 7

9. Clicking the three lines  at the top left corner of the home screen (Fig 8) will display various options. From this menu, you can change the language, view the user manual, and access details about the App.

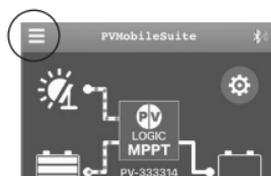


Fig 8

Troubleshooting

- **The charging indicator is off during the day when the solar panel is exposed to bright daylight.**

- Solar panel(s) disconnected.
- Check that the solar panel and battery wire connections are correct and tight and that the battery fuse(s) are OK.

NOTE – If the LED is off:

- Measure the battery voltage with a multimeter. At least 11V is needed to start the controller.
- Measure the input voltage from the solar panel (typically 17-25V), as this MUST be higher than the battery voltage for the controller to charge the battery.

Technical specifications

| | |
|-------------------------------------|----------------------------------------------------------|
| Nominal System Voltage | 12/24VDC (automatic system voltage recognition) |
| Battery Voltage Range | 8-48V |
| Rated Battery Current/Solar Current | 15A |
| Self-consumption | ≤24mA |
| Solar input | 68V max 225W max (up to 400W with 24V battery) |
| Operating temperature | -35°C to +55°C |
| Thermal protection | 13A limit at 80°C 10A limit at 85°C 5A limit at 90°C |
| Overall dimensions | 150 x 85 x 40mm |
| Mounting hole size (in case) | 3.8mm |
| Terminals | 6mm ² |
| Net weight | 220g |

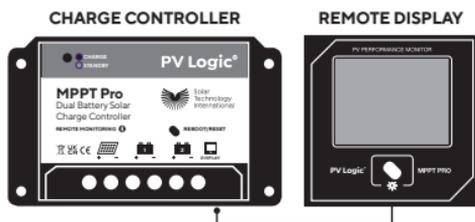
The below information is based on a 12V/24V Lead Acid battery however, this can change depending on the type of battery being charged.

| | |
|---------------------------------|-------------|
| Over Voltage Disconnect Voltage | 16V/32V |
| Charging Limit Voltage | 15.5V/31V |
| Equalise Charging Voltage | 14.8V/29.6V |
| Float Charging Voltage | 13.8V/27.6V |

Accessories

MPPT Pro remote display (STCC15DIS)

Remote back lit LCD display showing the current solar charging status, battery status (both batteries) and charging current. Includes a 5m cable that simply plugs into the bottom of the MPPT Pro controller.



Warranty

This Solar Charge Controller is supplied with a 24-month warranty. Should a failure occur during this time Solar Technology International Ltd will repair or replace any faulty part, at its discretion. Solar Technology International Ltd does not accept liability for any 3rd party damage howsoever caused, or any costs associated with the return of faulty products. To make a warranty claim please telephone Solar Technology International Ltd on +44 (0) 1684 774000.

These warranty conditions in no way affect your statutory rights. A full set of Solar Technology International Ltd terms and conditions are available on request.

Solar Technology International Ltd

We manufacture some of the world's most advanced solar energy products. To find out more please visit solartechtechnology.co.uk

If you have any questions about this product or regarding these instructions please contact the Solar Technology International Technical Help Line on +44 (0) 1684 774000, email support@solartechtechnology.co.uk or alternatively please write to: Solar Technology International Ltd, Unit 6, Station Drive, Bredon, GL20 7HH, UK.



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