



Solar Charge Controller 30A-MPPT-RVC with optional Remote Display RD-MPPT-RVC

OWNER/OEM INSTALLATION MANUAL

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Introduction

KEEP THIS GUIDE IN A SAFE PLACE FOR FUTURE REFERENCE.
INSTALLATION MUST BE PERFORMED BY A TRAINED TECHNICIAN
ACCORDING TO LOCAL AND NATIONAL STANDARDS.

THANK YOU for purchasing the state of the art, Jaboni Power Products (JPP) MPPT Solar Charge Controller. With proper maintenance our product offers you a reliable means of converting solar energy to 12Vdc voltage to charge your low voltage battery system in an effective and efficient manner. Our controller also protects your battery from being overcharged by the solar panel.

The unit can communicate over the RVC-bus with an optional JPP "Remote" connected directly to the unit or other installed devices, including third party displays.

Safety

NOTE: THIS EQUIPMENT DOES NOT CONTAIN ANY SERVICEABLE PARTS. DO NOT OPEN.

 **EXPLOSION HAZARD:**

DO NOT use the unit in enclosed, non-ventilated areas, in the vicinity of flammable fumes or gasses such as propane tanks or battery compartments, exposure to high heat or prolonged freezing conditions. These may decrease the working life of the unit or void the warranty.

- Use only with 12Vdc battery systems.
- **Do not** exceed the voltage and current ratings of the controller.
- Use only a solar array rated for 12Vdc batteries (40 Voc max.).
- **Do not** short circuit the solar array and/or the load while connected to the unit.
This will permanently damage the unit and not be covered under warranty
- Protect the controller from direct sunlight.

Install the unit as close to the battery bank as possible. The battery acts as a low pass filter reducing the chance for electrical noise, ripple, and interferences that may get into the unit. We recommend using battery wires (+ and -) no longer than 6 feet each one when possible.

Installation

THIS UNIT WAS DESIGNED TO FUNCTION IN A PROTECTED ENVIRONMENT.

MOUNTING YOUR DEVICE

Select a mounting location near batteries. Mount device in an area not used for storing items, as this could reduce clearance requirements, obstruct ventilation openings and affect the performance of the controller. Select a mounting location that will prevent excessive heat, water, moisture, dust and dirt entering the unit. All installation should be tested for overall performance.

ELECTRICAL LIMITS:

Please verify that the voltages of the battery and DC-power system is 12 Vdc, and expected solar input between 16 and 40 Vdc.

- Recommended fuse or breaker ratings: 30 A at PV input, 40 A at Batt.
- A Programming Cable is available as an option to update firmware if it is available and for diagnosis.

ORIENTATION:

The Charge Controller Unit must be installed with the cooling fins vertically oriented. Ensure a minimum of free space of 2 inches all around the unit.

BATTERY & SOLAR CONNECTIONS

CONNECTIONS:

All wires should be connected without voltage present (e.g. Trip breaker, remove fuses, cover solar panels).

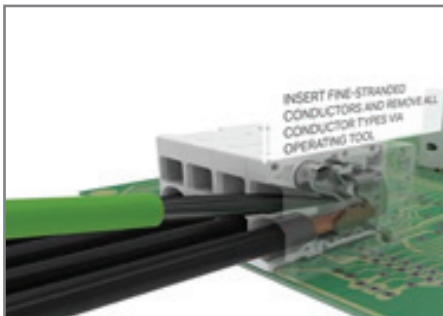
WARNING:

Wrong wire connections will damage the unit and void any warranty.

PUSH-IN CONNECTORS

Push the tab inside the rectangular hole of the connector using a small flat screwdriver, and plug the stripped wire into the circular hole. Then remove the screwdriver. The connector should hold the wire.

To disconnect the wire, use a flat screwdriver, as indicated above, and pull the wire out.



RVC CONNECTOR:

Through the RVC port, the Charge Controller Unit can be connected to either the optional JPP Remote, or to an on-board RVC network with its third party display.

To use a third-party display, the system integrator needs to program the display. See the Datasheet for the RVC codes to use.

T. R. CONNECTOR:

The T.R. connector holds the jumper that enables the terminator resistor for the RVC network. If the Charge Controller is not the last unit on the RVC network, this jumper has to be removed.



GROUND LUG CONNECTOR:

This connector is provided for electrical ground purpose. No additional adjustments are needed for the unit to function.

Operation

REMOTE DISPLAY

The optional JPP Remote Display features buttons to scroll UP, DOWN over the 2x16 character LCD display, MENU and ON/OFF.

The Remote Display gives access to solar and battery status information, and allows the user to vary some operating settings of the Charge Controller Unit.

To use a third-party display, the system integrator needs to program the display. See the Data-sheet for the RVC codes to use.

NOTE: THE DESCRIPTION OF OPERATION REFERS TO CONTROLS AND DISPLAY MESSAGES USING THE JPP REMOTE DISPLAY PANEL. IF ANOTHER DISPLAY IS USED ON THE RVC NETWORK EQUIVALENT COMMANDS AND MESSAGES WILL BE AVAILABLE.

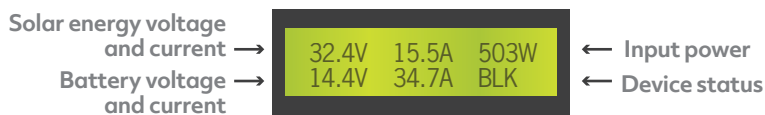
Connect the RJ plug of the remote cable to the port identified as REMOTE on the back of the Remote unit and the Molex plug to the Molex jack on the Charge Controller Unit.



To turn on the unit, press the ON/OFF button on the Remote. If there is power available from the solar array, the display status will change from "OFF" to "BLK" (Bulk charging mode). If not, the display will show "STBY" (standby) and the unit will wait until the solar array has enough voltage to start charging automatically. To turn off the unit, press the "ON/OFF" button again. The display status will change to "OFF".

DISPLAY MENU AND USER CONTROLS

Press the “MENU” button to show the first menu option. Press it again to go to the next option. To change the value of the option, press the “UP” or “DOWN” buttons. After changing the value of the option shown, press “ON/OFF” to save the new value. The display will show the main screen (voltage, current and device status). If no button is pressed within five seconds after changing a value, the display will return to the main screen without changing the setting.



The available options are:

- Charger RVC instance: Selects the Charge Controller to be managed (range 1 to 3). Default: 1.
- Maximum output current: Configures the output current (range 1 to 30 amps). Default: 30.
- Battery type: Sets the battery type (options are wet lead-acid, AGM, gel and lithium). Default: wet lead-acid.
- LCD Contrast: Changes the contrast of the display (range from 1 to 9). Default: 5.
- Communication port: Changes the configuration of the port to allow a technician to connect the Unit to a PC (options are CAN and PC). Default: CAN.

The DIP Switch located on the back of the Remote Unit enables (switch 1 on) or disables (switch 1 off) the terminator resistor and sets the RVC instance number of the display in case there are more displays sharing the same network as follows:

Switch 2 & 3 in ON position	None	2	3	2,3
Instance	1	2	3	4

In case the Remote shows strange characters or does not respond to buttons, you can reset it without disconnecting it. Simply press briefly “UP”, “DOWN” and “MENU” at the same time and the Remote will restart with the factory defaults.

The Charge Controller Unit is intended to be used with a display, although the Unit can be disconnected from the Remote or display and it will keep working autonomously after the Unit is on.

The Unit has a communication port, a RESET button, a DIP switch and 1 LED indicator (See Datasheet).

The communication port allows a qualified technician to do firmware upgrade, adjust factory parameters and diagnosis if required. This is done using a special cable provided by the factory. The RESET button is used to reinitiate the unit (Hard-Reset) if it misbehaves, and to upgrade the software with a new version.

The DIP switch sets the RVC instance of the device, 1 by default. The options are:



Switch in ON position	None	1	2	1,2
Instance	1	2	3	4

The LED indicates the unit status as shown:

LED	Status
Off	Off or not energized
Slow blink	Standby mode
Steady	Charging
Fast blink	Faulty condition

The Charge Controller Unit must be turned on or off using the Remote or a third-party display using the appropriate RVC commands. Also, the output current and the battery type of the Charge Controller Unit must be configured using these ways.

The current can be adjusted from 1 to 30 DC amps and the battery type can be wet (lead-acid), gel, AGM or Lithium.

When the unit starts charging the battery bank, it will try to reach the maximum output current setting in MPPT mode.

With solar panels connected, the digital control system applies a 3-stage charging algorithm: Bulk Charge, Absorption Charge, Float Charge, in accordance with the state of the battery charge and the type of battery selected.

The Unit will enter into standby mode if the solar panel voltage drops below minimum acceptable voltage during the charge (for example, at night). The unit will return to charge mode when the solar panel voltage is acceptable again.

TESTING

The Charge Controller Unit is powered from the 12V battery bank. If the unit is connected only to the solar array, it won't turn on.

Connect a JPP Remote, if available, to the Charge Controller Unit using the Remote Cable; otherwise, connect the Charge Controller Unit to the RVC network using the appropriate cable. Allow power to the unit from the battery and then the solar panels.

Start the Charge Controller by pressing the ON/OFF button of the Remote or the appropriate command using the third-party display. Wait until the display shows the voltages, currents and status of the system. When finished testing, turn the system off by pressing the ON/OFF button of the Remote or the appropriate command using third-party display.

Care & Maintenance

The Charge Controller is maintenance free. Depending on the type of batteries installed, your batteries may still need maintenance.

Ensure the controller is installed INDOORS in a dry location and away from heat and moisture sources.

The following periodic inspections and maintenance tasks are highly recommended for best performance:

- Check for any rusting or corrosion around the battery terminals
- Verify that the connected solar panels and loads do not exceed the unit rating
- Tighten all the terminal screws and inspect for any loose, broken, corroded, humidity, and burned wire connections.
- Ensure solar panel is mounted properly, trying to avoid partial shadows on them.
- Check for any dirt, debris, or corrosion on the solar panels.
- Periodically clean the solar panels with water. Do not use chemicals.

It is recommended to verify the battery state of charge regularly, that the connected DC loads do not exceed the maximum rating of the unit, and that the average total power consumption of the DC loads is less than the one that can be produced by the solar panel array.

Troubleshooting

ERROR CODES

There are certain conditions that will shut down the unit and the remote display will show a fault code. **These conditions and fault codes are:**

Message	Possible cause	Action to take
High battery voltage	The battery bank is receiving charge from another controller; Battery cable loose or was disconnected while charging	Check if another controller is charging/equalizing the bank. Turn off unit and check connections
Low battery voltage	Battery bank is discharged; One or more batteries are damaged	Disconnect loads from battery bank before trying to charge again. Check battery conditions and replace if necessary
High temperature	Poor ventilation around the unit High ambient temperature; Continuous overload current	Make sure unit has enough room to dissipate heat. Turn off unit and let it cool down. Check if loads are draining too much current from batteries. Disconnect unnecessary loads
High output current	A load was connected suddenly to battery bank; Short circuit at the output	Check loads and battery connections
High solar panel voltage	The solar array voltage is higher than the limit of the charger	Verify the solar panel array configuration / connections

- When an error code occurs, the unit will interrupt charging and remain idle. After removing the cause, press the ON/OFF button to reset the fault and press it again to reinitiate the unit.
- If the condition disappears but the fault code remains, the device may have problems and should be sent to a Repair Center.
- By default, the error will be reset after one minute and will return to the last normal status (STANBY, ON or OFF mode).
- If abnormal behavior is present, you can reset the Charge Controller Unit without disconnecting it. Simply press briefly the RESET button. The unit will restart, keeping the battery type and maximum current configurations intact.

Warranty

Jaboni Power Products extends to the original owner a One Year Limited Product Warranty. This Warranty is in effect from the date of original purchase for a period of one (1) year. This Limited Warranty is extended specifically for and is limited to recreational vehicle or Specialty Vehicle application and is valid only within the continental United States, Alaska, Hawaii and the provinces of Canada. JPP warrants to the original owner that its products are free from defects in material and workmanship, under normal use and service, based on its intended use and function. This Warranty is limited to the repair or replacement, at JPP's discretion, of any defective parts or defective assembly. Any implied warranties of merchantability or fitness for intended use are limited in duration unless applicable State Law provides otherwise. You may have other rights as specified by each individual state.

EXCLUSIONS

The OEM Warranty specifically does not apply to the following:

Any JPP product that has been repaired or altered by any unauthorized person. Any damage caused by misuse, faulty installation, testing, negligence, accident or any JPP product installed in a commercial vehicle. Any JPP product whose serial number has been defaced, altered or removed. Any JPP product whose installation has not been in accordance with the JPP written instruction. Any consequential damages arising from the loss of use of the product including, but not limited to, inconvenience, loss of service, loss of revenue, loss or damage to personal property and cost of all services performed in removing or replacing the JPP product. Specifications are subject to change without notice or obligation.

CONSUMER WARRANTY CLAIM PROCEDURE

Upon determination and validation by an authorized OEM dealer that a JPP product has a defect, the dealer shall contact JPP warranty service and obtain a return goods authorization (RGA) number. This number must appear on all correspondence with warranty service. Upon validation of the warranty, JPP, at its discretion, shall either repair or replace the product with a like product. For ease of identification. The RGA number must be placed on the outside of the carton used to return the product.

Do not mark directly on the product. The product must be packaged properly to avoid further damage, which could cause a non-warrantable condition.

Data Sheet

SOLAR CHARGE CONTROLLER FOR RECREATIONAL VEHICLES 30A-MPPT-RVC

SPECIFICATIONS

Electrical and Physical Specifications 30A-MPPT-RVC

Parameter	Value	Unit
Nominal system voltage	12	VDC
Minimum solar array voltage	15	VDC
Maximum solar array voltage	45	VDC
Maximum output current	30	ADC
Battery voltage range	8 - 16	VDC
Maximum input power	550	Watts
Peak efficiency	97	%
Operating consumption	30 - 40	mA
Dimensions	11.23x12.21x8.22	cm
Humidity (non condensing)	95	%
Operating temperature	0 to 50	°C
Overall volume	1127	cm ³
Weight	0.82	Kg
Wire gauge	8 - 12	AWG
Communication protocol	RVC (Can Bus)	

Electrical and Physical Specifications JPP Remote Display

Parameter	Value	Unit
Display	2-line, 16 character LCD	
Communication protocol	RVC (Can Bus)	
Dimensions	9.53x12.07x2.94	cm
Weight	0.09	Kg

30A-MPPT-RVC Conditions

Protection

Solar array reverse polarity	Yes
Over temperature	Yes
Over current	Yes
Reverse current from battery to panel	Yes
Short circuit	External fuse/breaker supplied by user
Battery reverse polarity	External fuse/breaker supplied by user

Battery charger profiles

Type	Stage	Value	Unit
Sealed / Gel	Bulk	14.2	VDC
	Absorption	14.2	VDC
	Float	13.2	VDC
AGM	Bulk	14.6	VDC
	Absorption	14.6	VDC
	Float	13.5	VDC
Flooded /Wet	Bulk	14.4	VDC
	Absorption	14.4	VDC
	Float	13.4	VDC
Lithium	Bulk	14.4	VDC
	Absorption	14.4	VDC
	Float	13.6	VDC