



# RPSTL 12/48M

## RemotePro®

### Remote Power System

- Wireless Base Stations and Client Devices
- Surveillance Cameras
- Remote Sensors
- Remote Lighting
- Off Grid Electronics



**Congratulations!** on your purchase of the RemotePro™ off-grid remote power system. Please take a moment to review this Qwik Install Guide before assembly or battery installation. Other instructions come with other components of this kit. Be sure to review all instructions.



#### **DANGER! Avoid Powerlines! You Can Be Killed!**

When following the instructions in this guide take extreme care to avoid contact with overhead power lines, lights and power circuits. Contact with power lines, lights or power circuits may be fatal. We recommend to install no closer than 20 feet to any power lines.

**Safety:** For your own protection, follow these safety rules.

- Perform as many functions as possible on the ground
- Do not attempt to install on a rainy, windy or snowy day or if there is ice or snow accumulation at the install site or if the site is wet.
- Make sure there are no people, pets, etc. below when you are working on a roof or ladder.



**Recommended Tools:** Phillips Screwdriver, 13mm and 10mm Wrench, 5/16" nut driver, Flat Blade Screwdriver



**Please help preserve the environment and return used batteries to an authorized depot. Most auto parts stores will pay you for old batteries.**

# Qwik Install

**CAUTION: Be sure to connect the battery to the controller first and disconnect it last. Connecting solar panels to the controller without the battery connected could damage the controller.**

**Note:** There are two different styles of solar panel mounts used for these systems. For the 340W solar panel array the mount is a side of pole mount where the user supplies the 2-4" pole. For the 720W and 1440W solar panels, the mount is a top of pole mount which includes the pole. It requires a poured cement foundation.



**STEP 1:** Assemble the solar panel mount and set the correct tilt angle based on your Latitude. There is a useful tool to calculate optimum angle at <https://calculators.tyconsystems.com>.

If you will be using a fixed angle all year we recommend using the optimum angle for winter sun. You can also calculate winter tilt using: Your\_Latitude\*0.9+30. Solar panels should face south if you are in the northern hemisphere. When mounting the enclosure, be sure to mount low enough so the door of the enclosure clears the solar panels when opened. We suggest mounting the enclosure so it is shaded by the panels during the day.

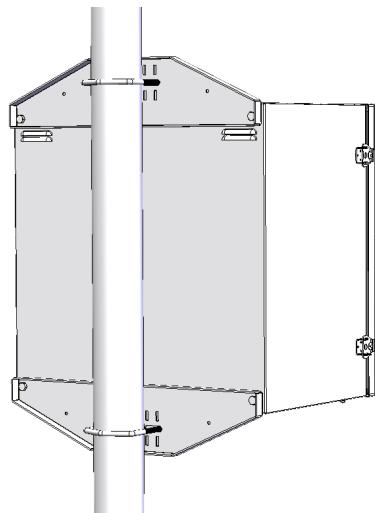


**STEP 2:** Attach the solar panels to the solar panel mount so that the wire junction box is towards the top or side. Connect the solar panel MC-4 connectors in series configuration. For the 1440W solar array wire panels in series and parallel configuration.

**TIP:** We strongly recommend installing the batteries and other equipment in the enclosure **after** mounting the enclosure to the pole.

**STEP 3:** Attach top and bottom brackets to the enclosure.

**STEP 4:** Mount the enclosure to the pole using U-Bolts and/or 4 hose



clamps. The enclosure can also be wall mounted using appropriate lag bolts (supplied by customer).

**STEP 5:** Attach the included DIN Rail to the door using hardware provided.

**STEP 6:** Install 4 cable feedthroughs to the bottom of the enclosure.

**TIP:** *There are multiple cable gland feedthrough in the bottom of the enclosure. If you are not using any of the feedthrough you can cut a short piece of wire, put it through the cable gland and tighten the cable gland on the wire to seal it.*

**STEP 7:** Remove the fuse from the battery cable(s) and connect wires to the batteries, then install the batteries.

**STEP 8:** Attach the green DIN Rail clips to the MPPT controller bracket using screws provided and attach the bracket to the controller. The extra parts aren't used. Remove the small plate on the controller back to access the wire terminal screws. Connect the battery wires and the wires from the PowerVent™ fan to the controller battery input for 12V or 24V battery configuration and directly to one or two of the batteries if 48V configuration. Be sure to observe proper polarity. (RED=+).



**CAUTION:** Reverse polarity connections will damage the equipment.

**STEP 9:** Connect the included solar panel cable to the MPPT controller PV inputs (Red to PV+). Don't connect the solar cable to solar panel connectors until the controller is connected to the batteries.

**STEP 10:** Connect your load to the MPPT Controller load output. When the MPPT controller is energized with full battery voltage the load will turn on automatically.



**STEP 11:** Replace the wire terminal access door on the back of the MPPT controller and mount the MPPT controller to the DIN rail mounted on the enclosure door.

**STEP 12:** Double check wiring and then re-install the battery cable fuse to energize the system. The MPPT controller will power up and automatically detect the battery configuration. The display is activated by vibration, so to turn on the display, tap the glass cover. Once the controller is energized, connect the solar panel connectors to the solar cable coming from the MPPT controller PV input.

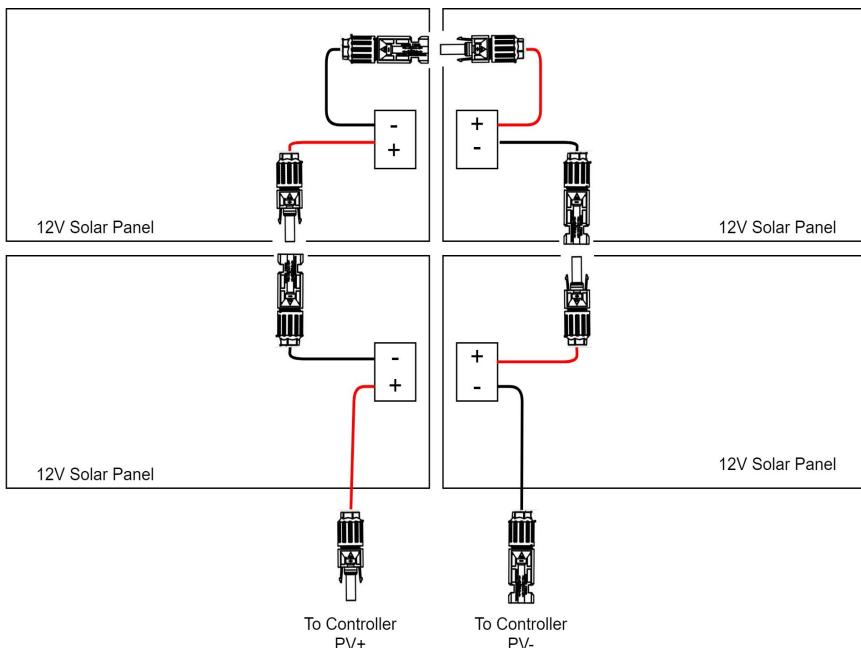
**CAUTION:** Reverse polarity connections will cause damage.

**Important Note:** The MPPT Controller ships with AUTO detection of battery voltage enabled. We suggest changing this to a fixed 24V, if using a 24V battery configuration, or fixed 48V, if using 48V configuration, so that the system can recover automatically if, by chance, the batteries get drained completely. See MPPT controller user manual for specific instructions.

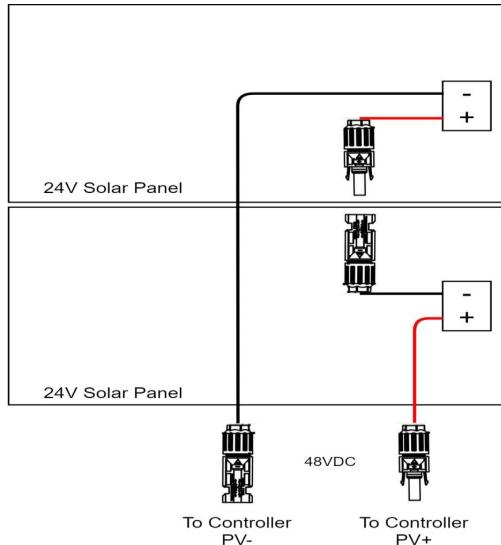
**STEP 13:** Make sure lid gasket is clean and free from any particles, then carefully close the cover, making sure that wires are clear of the seam and hinge area. Use your own lock to secure the door.

#### MC-4 Connectorized Panels Wiring Configurations using MPPT Controllers

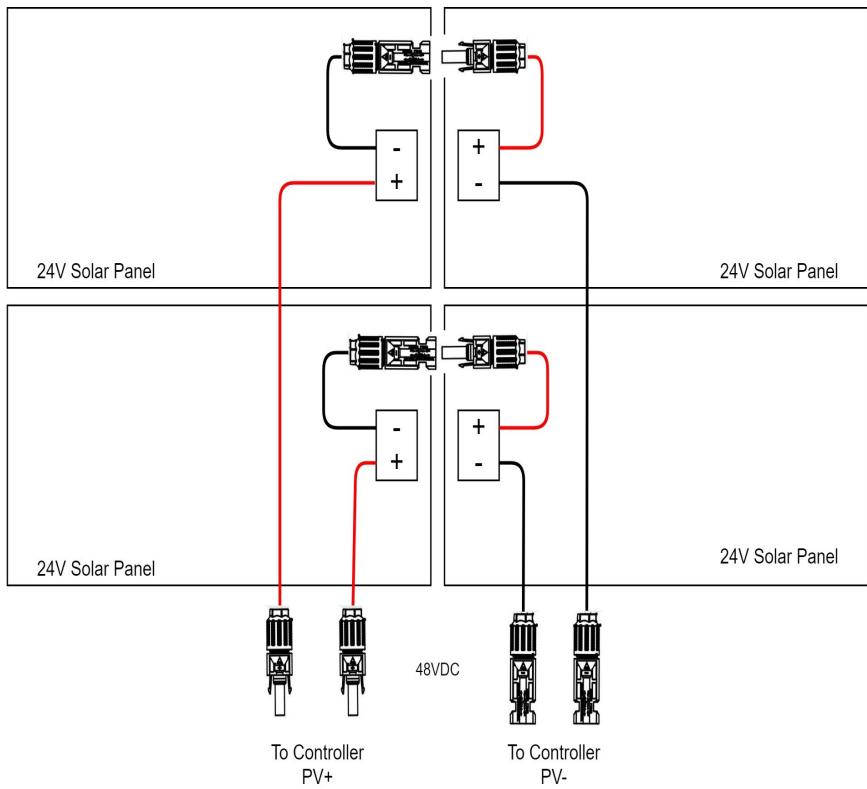
340W Four Panel Configuration for 12V or 24V or 48V Battery Configurations



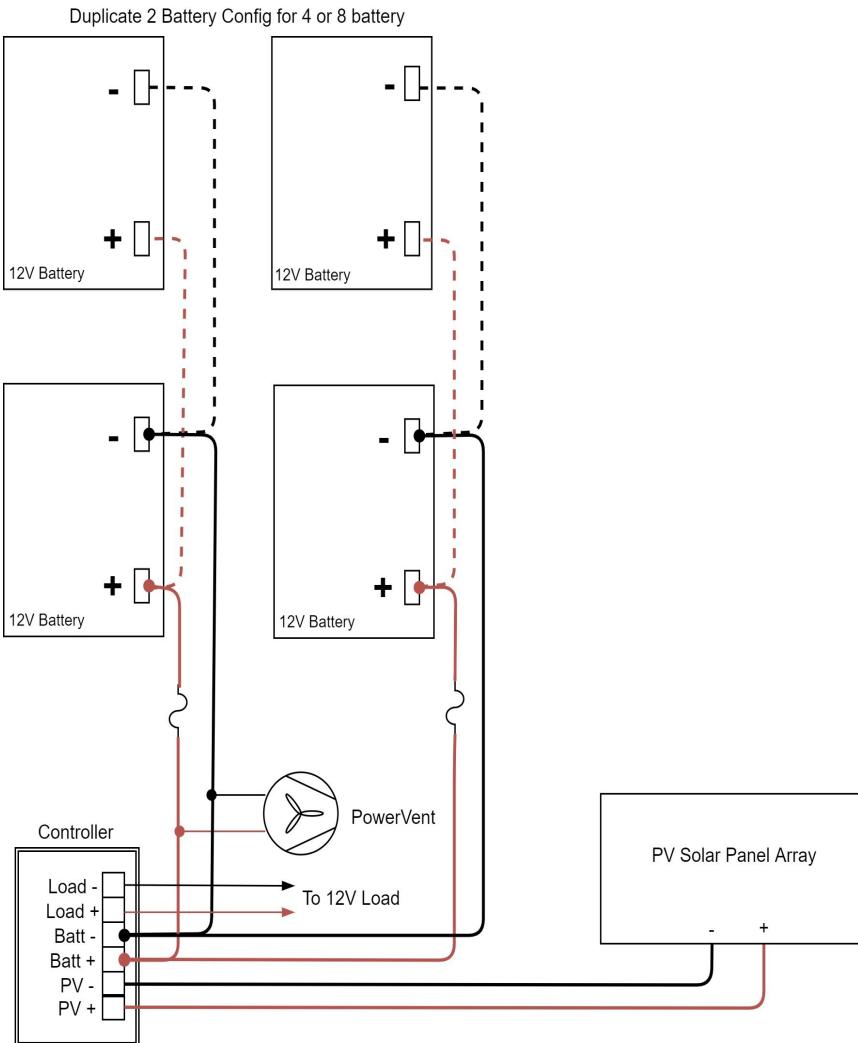
### 720W Two Panel Configuration for 12V or 24V or 48V Battery Configurations



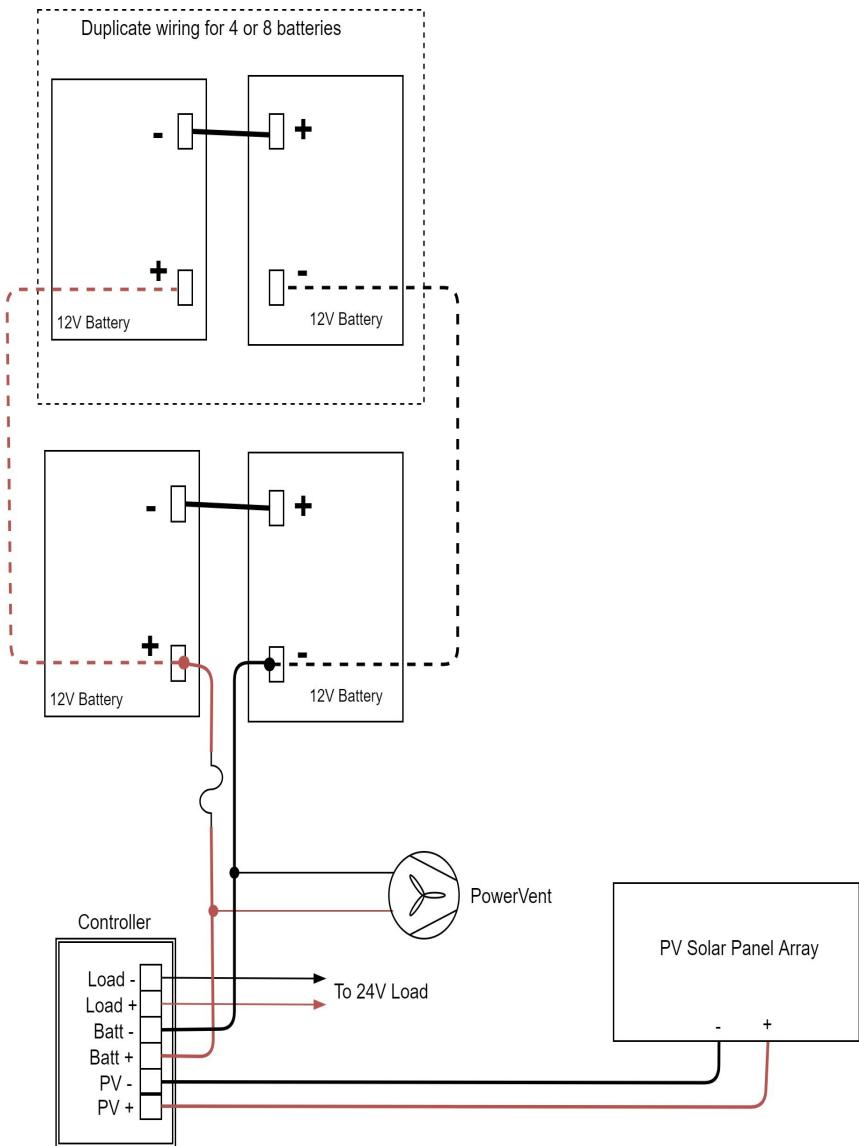
### 1440W Four Panel Configuration for 24V or 48V Battery Configurations



**CAUTION:** Be sure to connect the battery to the controller first and disconnect it last. Connecting solar panels to the controller without the battery connected could damage the controller.

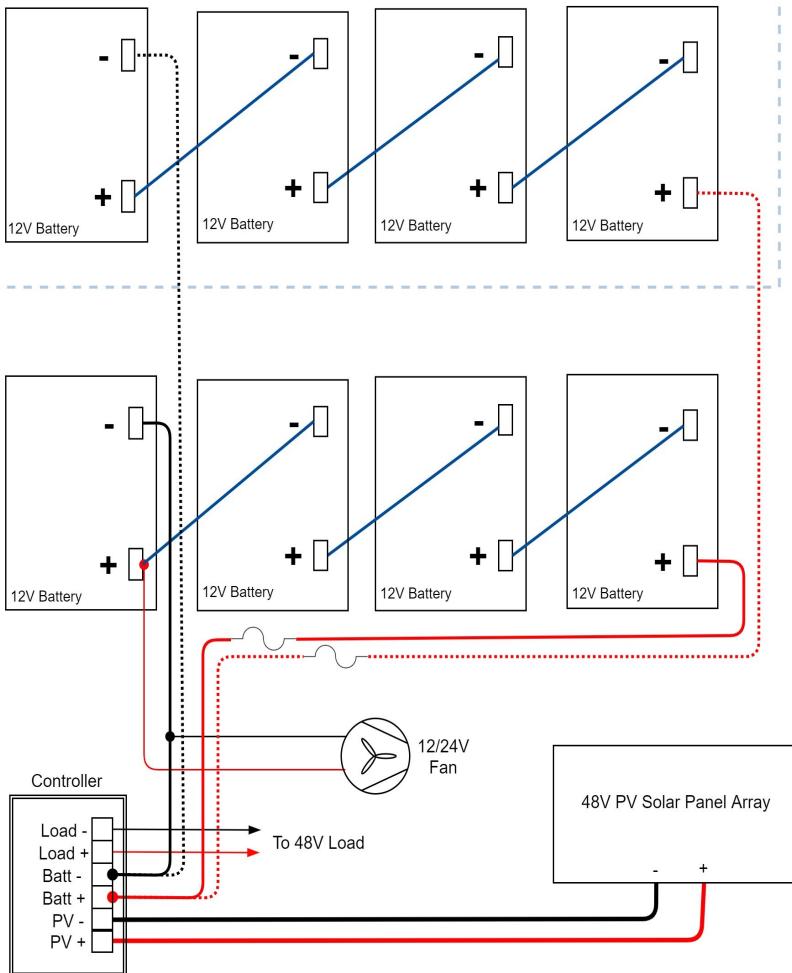


## RemotePro 12V Wiring Diagram



## RemotePro 24V Wiring Diagram

For 8 Batteries: duplicate the 4 battery arrangement and add another battery cable represented by dotted lines.



# RemotePro 48V Battery Wiring Diagram

## TECH CORNER

### *Additional Information you may find useful*

**1. CONTROLLER:** The 60A MPPT controller turns off power to the 30A load if the voltage gets too low and automatically turns the load power back on when the voltage recovers. This protects battery from overdischarge and increases battery life and performance.

**2. Fuse:** There is a fuse in the battery cable (30A). The fuse is in-line with battery power. If fuse is blown there was some sort of short in the battery connection and the controller will appear dead. Replace with a 30A fuse.

**3. VENTING:** The enclosure is vented thru the PowerVent™. The 12/24V fan is thermostatically controlled and will turn on when the temperature inside the enclosure exceeds 45° C.

**4. BATTERY MAINTENANCE:** The batteries used in the RemotePro® systems don't require any maintenance. They should last up to 5 years in normal use.

**NOTE: Never store batteries for a long time in a discharged state or it will kill the battery. Especially in cold temperatures.**

**5. Remote Monitoring:** There is an RS485 port on the MPPT controller. This port is a special port to interface to the Tycon **TPDIN-Monitor WEB3 V2** using a **TPDIN-CABLE-485** cable for remote monitoring via Ethernet.

The RS485 port can also be used with the Tycon **TP-SC-WiFi** to provide connectivity to a wireless network. To provide a connection to a PC, use the **TP-SC-USB-RS485**. Software and instructions are available at [tyconsystems.com](http://tyconsystems.com).

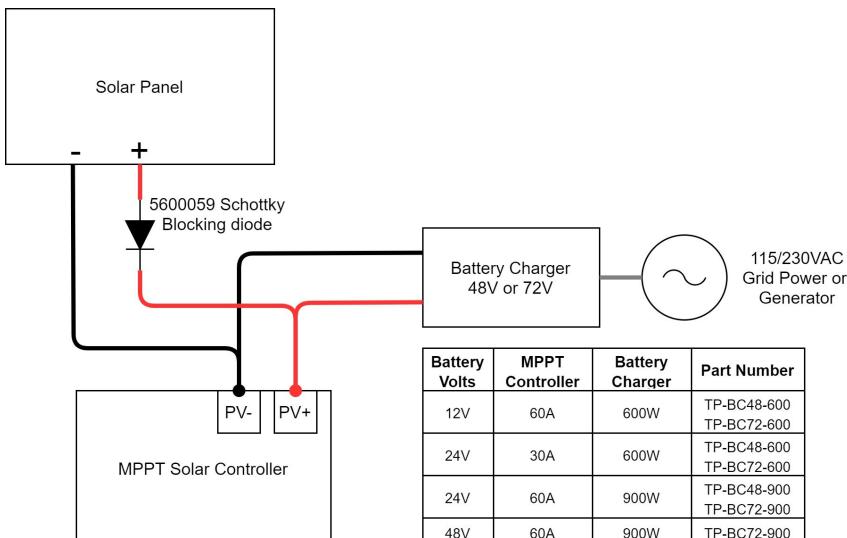
**6. BATTERY OVERDISCHARGE:** We highly recommend hooking all equipment loads to the controller load output. This output will disconnect the load if the battery voltage drops below 11V (12V battery) or 22V (24V battery) or 44V (48V battery) and this will protect the battery from over-discharge. If batteries get completely discharged (<10V) because the equipment was connected directly to the battery, you will reduce the battery life and you will most likely need to recondition them with a good quality 10A automotive battery charger. Avoid charging for longer than 24hrs to avoid battery damage. Once they are back to a normal operating range, the integrated charge controller will maintain the charge.

### **7. TROUBLESHOOTING:**

**A. There is no load output from the controller**—If battery voltage is too low the charge controller will turn off the load outputs. On a 12V battery system the load will turn off if battery is <11V. On a 24V battery system the load will turn off at <22V. On a 48V system the load

will turn off at <44V. The load will turn back on automatically when the battery voltage recovers. See controller user guide for more detail.

- B. **Why is my solar panel voltage so high?**- Open circuit voltage on a 12V panel is around 23V, and about 47V on a 24V panel. With MPPT controllers, the most efficient operation is achieved by wiring 12V or 24V panels in series. On 24V panels the controller can only handle two panels in series because four 24V panels in series would exceed the controller max voltage. So in 4 panel configurations wire the panels in series/parallel configuration.
- C. **My system turns off at night and comes back on in the morning?**- This is a sure sign that the solar panels and/or battery capacity can't support the load. You should measure your actual load and recalculate to make sure you have adequate capacity. Go to <https://calculators.tyconsystems.com> to calculate your expected system capabilities.
- D. **Can I charge my batteries from AC power?** Tycon offers 600W and 900W AC/DC battery chargers that can be used in parallel with the solar controller to charge batteries from AC power from the grid or a generator. It requires a blocking diode (5600059).



# SPECIFICATIONS

Subject to change without notice

	12V	24V	48V
<b>Battery Capacity (12V)</b>	200 or 400Ah		
<b>Reserve Power @ Rated Load</b>	>24 hours		
<b>Load Output (unregulated)</b>	12V 30A	24V 30A	48V 30A
<b>Battery Voltage (DC)</b>	12V	24V	48V
<b>Battery Type</b>	Valve Regulated Sealed Lead Acid AGM or Lithium LiFePO4		
<b>Battery Life</b>	5 Years AGM; 10 Years Lithium		
<b>Controller Type</b>	60A MPPT—Temperature Compensated		
<b>Over-Voltage Protection</b>	16V	32V	64V
<b>Bulk Charge</b>	14.4V	28.8V	57.6V
<b>Float Charge</b>	13.8V	27.6V	55.2V
<b>Over-discharge protection</b>	11.1V	22.2V	44.4V
<b>Over-discharge recovery volts</b>	12.6V	25.2V	50.4V
<b>Controller Self Consumption</b>	<1W		
<b>Enclosure Type</b>	Powder Coat Steel		
<b>Wind Survivability</b>	90MPH		
<b>Operating Temperature</b>	-30°C to +60°C AGM 0°C to +60°C Lithium		

12/24V 60A MPPT  
Negative Ground



12/24/48V 60A MPPT  
Positive Ground



## **Limited Warranty**

The RemotePro® products are supplied with a limited 36 month warranty which covers material and workmanship defects. This warranty does not cover the following:

- Parts requiring replacement due to improper installation, misuse, poor site conditions, faulty power, etc.
- Lightning or weather damage.
- Physical damage to the external & internal parts.
- Products that have been opened, altered, or defaced.
- Water damage for units that were not mounted according to user manual.
- Usage other than in accordance with instructions and the normal intended use.

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