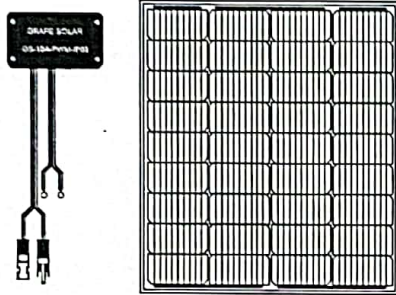




## 100 Watt Waterproof Charging Kit (GS-100-KIT-IP68) Quick Connect Guide



[diagrams not to scale]

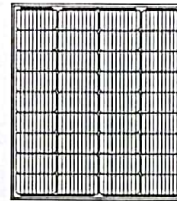
**IMPORTANT:** Please read GS-10A-PWM-IP68 PWM charge controller owner's manual and GS-STAR-100W connection guide (both included with products) before assembling kit.

For additional information about Grape Solar products:  
email [Support@GrapeSolar.com](mailto:Support@GrapeSolar.com), or  
call **1-877-264-1014** for live telephone support.

### 1 Check your order to make sure that all parts are included:

- ❶ GS- STAR-100W Solar Panel
- ❷ GS-PWM-10A-IP68

\*The GS-PWM-10A-IP68 is designed to charge 12 volt lead-acid battery ONLY, including AGM, flooded, sealed battery types.



❶



❷

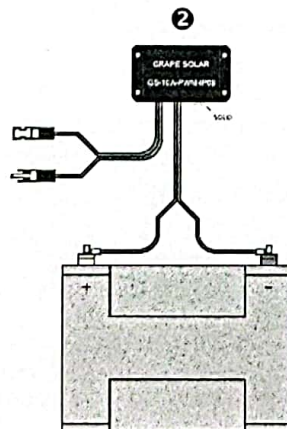
[diagrams not to scale]

Additional tools and equipment you will need:

- 12-Volt Deep-Cycle Battery Bank
- Voltmeter (for Troubleshooting)

**2** Mount the 100-watt solar panel ❶ so that it is facing due South at approximately the same angle as your latitude. The ideal area has full sun and no shading. If the following connections are made during daylight, cover the panel with cardboard, cloth, or a similar opaque material so that the panel does not output power.

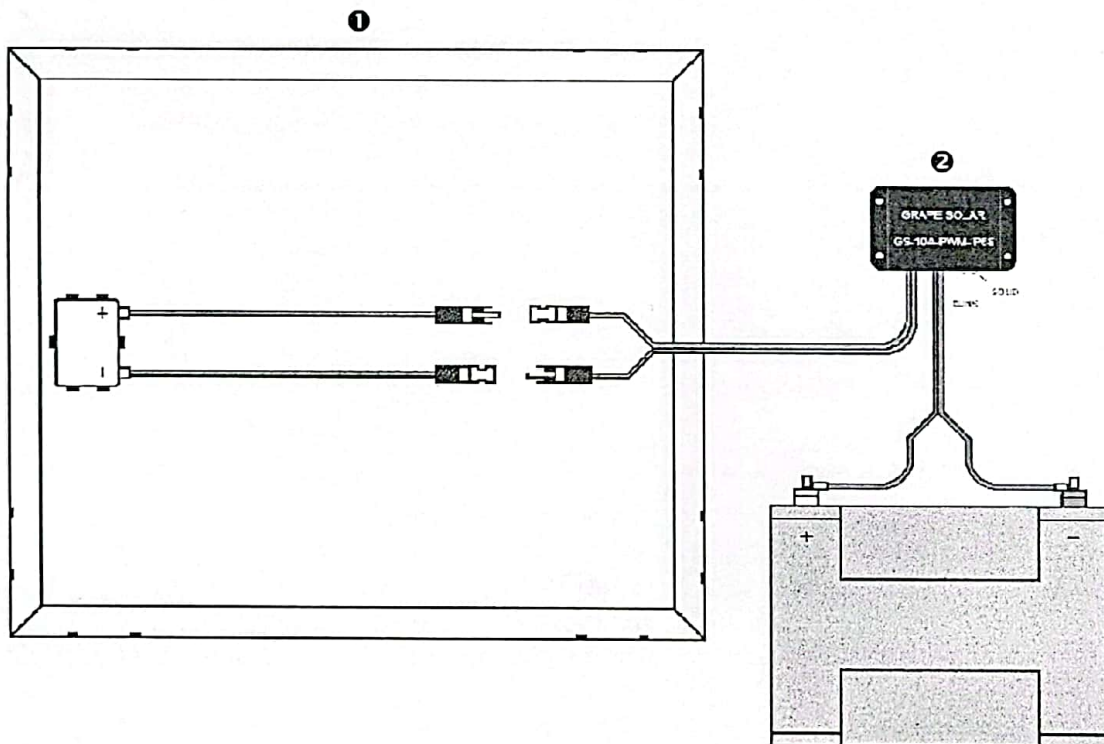
**3** Connect the ring lug ends of GS-PWM-10A-IP68 ❷ to the positive and negative terminals of a 12V deep cycle battery (not included in kit). If your battery has sufficient charge, the LED light on the far side of the charge controller should light up.



\*12V deep cycle battery not included with kit  
[diagrams not to scale]



- 4** Connect the positive and negative MC4 style connectors on the GS-STAR-100W ❶ solar panel to the positive and negative MC4 style receptacles on the GS-PWM-10A-IP68 ❷. Uncover your panel during daylight, when the solar panel is producing power, the LED light on the inside of the charge controller should light up and blink.
- A 100-watt solar panel will put out an average power output of 300 watt-hours per day based on continuous US solar irradiation average level.



\*12V deep cycle battery not included with kit

[diagrams not to scale]

**DISCLAIMER:**

Installations of this kit could be subject to national and local building and electrical codes. Installers should have adequate knowledge of national and local code to ensure the installation passes inspection by the local electric authority.

Proper fuses or breakers should be used to comply with all local and national codes. Contact Grape Solar for specific recommendations.

All batteries used for this system should be identical. Do not mix battery types or sizes. Do not mix old batteries with new batteries. Performance and charging anomalies can occur if types, sizes, or age of batteries are not identical.

Grape Solar does not warrant the accuracy, sufficiency, or suitability to all customers of any technical or other information provided in product manuals. Grape Solar does not claim any responsibility or liability for losses, damages, costs or other expenses whether special, indirect, consequential or incidental, which might arise out of the use of such information.



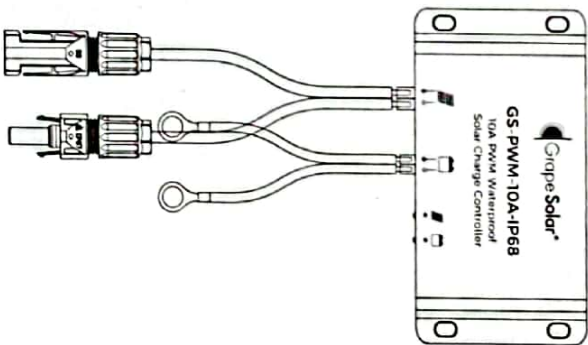
## Controller Specification

Parameter	Values
Max. Solar Input Voltage	< 30V
Max. Solar Input Current	10A
Max. Solar Input Wattage	150W
Compatible Battery Types	AGM/Gel/Flooded
Battery System Voltage	12V ONLY
Equalize Charge Voltage	14.6V
Equalize Charge Duration	1 Hour
Boost Charge Voltage	14.4V
Boost Charge Duration	2 Hours
Boost Charge Recovery	13.2V
Float Charge Voltage	13.8V
Over-discharge Voltage	11.1V
Over-discharge Recovery	12.6V
No-load Loss	8mA
Operating Temperature	-31°F to 140°F

**CAUTION:** Do not use controller in enclosed spaces with limited air flow, as the controller can heat up quickly. Do not use on non-specified battery types such as lithium-ion, and 24V/48V systems.

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## Grape Solar GS-PWM-10A-IP68 Waterproof Charge Controller Quick Start Manual



\*Diagram not to scale.

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>■ IP68 level waterproof</li> <li>■ PWM 3-stage charge</li> <li>■ For 12V batteries only</li> </ul> | <ul style="list-style-type: none"> <li>■ LED status indicator</li> <li>■ Connectors included</li> <li>■ Extra cable length</li> </ul> |
|---|---|

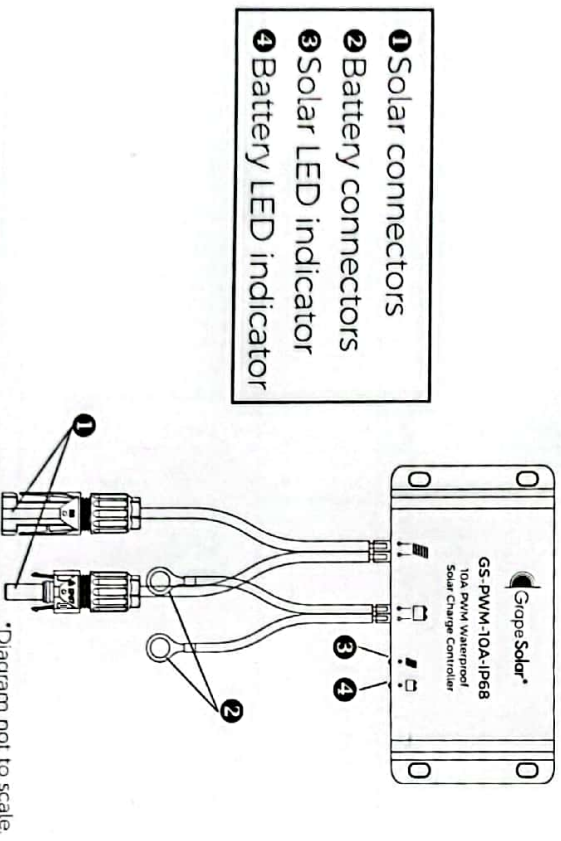
## QUICK START GUIDE

**STEP 1.** Connect the ring lugs **2** to your 12V deep cycle battery. This controller supports common lead-acid battery types including AGM/Gel/Flooded.

If your battery has sufficient charge, the battery LED indicator **4** should light up solid.

**STEP 2.** Connect the MC4 style solar connectors **1** to a 12V solar panel rated no more than 150 watts. As the battery charges, the solar LED indicator **3** should begin to slow flash.

When you need to disconnect the system, follow a reverse order of disconnecting the solar panel first before disconnecting the battery.



\*Diagram not to scale.

## LED Indication Chart

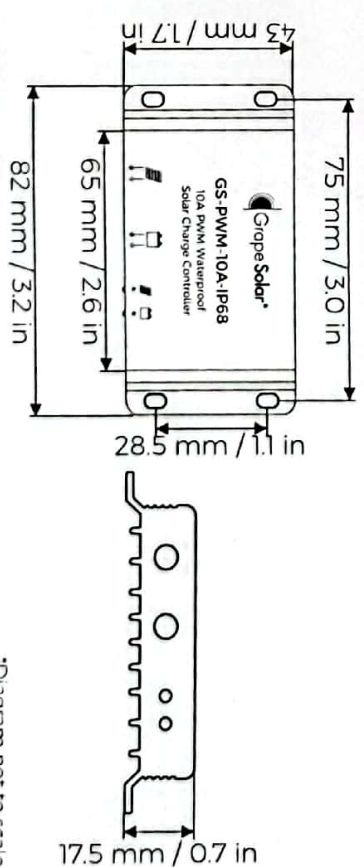
Signal		System Status
Off		*Solar not charging
Solar LED Indicator	Solid On	Solar voltage detected
	Slow Flash	Charging battery
Battery LED Indicator	Quick Flash	**Solar over-voltage alert
	Off	No charge from battery
	Solid On	Battery connected
Quick Flash		***Over-discharge alert

\* This indicator is generally off during night time.

\*\* Check to ensure your solar array is 30 volts or less.

\*\*\* Battery is almost drained. Make sure your battery is fully charged at least once a month to prevent damage and improve product life.

## Product Dimension



\*Diagram not to scale.