

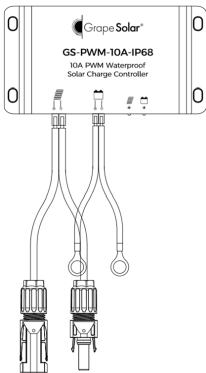
# Grape Solar

## GS-PWM-10A-IP68

Waterproof Charge Controller

### Quick Start Manual

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\*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> |
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## QUICK START GUIDE

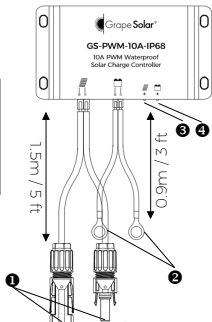
**STEP 1.** Connect the ring lugs **2** to your 12V deep cycle battery. This controller supports common lead-acid battery types including AGM/Gel/Flooded.

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.

- 1** Solar connectors
- 2** Battery connectors
- 3** Solar LED indicator
- 4** Battery LED indicator



## LED Indication Chart

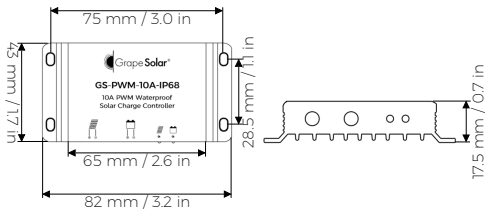
	Signal	System Status
Solar LED Indicator	Off	*Solar not charging
	Solid On	Solar voltage detected
	Slow Flash	Charging battery
	Quick Flash	**Solar over-voltage alert
Battery LED Indicator	Off	No charge from battery
	Solid On	Battery connected
	Quick Flash	***Over-discharge alert

\* 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

## 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.