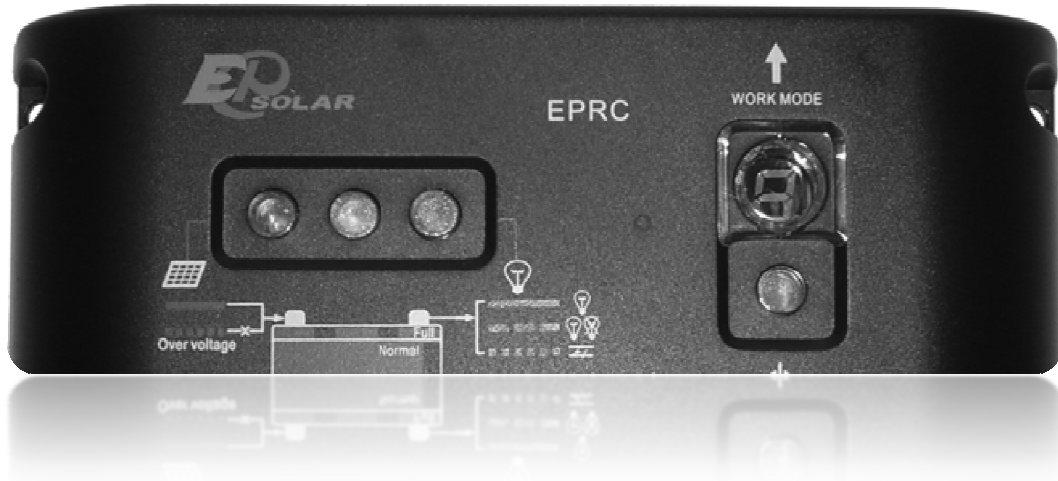


EPRC 12 Volt 10 Ampere Solar Charge Controller



User Manual [English]



Use this QR Code or visit manuals.onetruegem.com to download the most recent operation guide.

Purchase Date:

Serial Number:

Thank you for your interest in OTGP Solar Energy products. For proper care, maintenance and use, please adhere to the following safety guidelines.

SAFE USE AND WARNINGS



THIS SOLAR CHARGE CONTROLLER REQUIRES AT LEAST ONE 12 VOLT GEL, LEAD OR SEALED LEAD ACID BATTERY TO CHARGE, RECHARGE, MAINTAIN, AND (OPTIONALLY) POWER ELECTRONICS THROUGH ITS LOAD TERMINALS. NEVER INSTALL 12 VOLT BATTERIES WHERE SMALL CHILDREN AND ANIMALS CAN ACCESS THEM.

THIS SOLAR CHARGE CONTROLLER IS NOT WEATHERPROOF/RESISTANT; KEEP IN A DRY ENVIRONMENT AND AWAY FROM MOISTURE AT ALL TIMES.

WHEN POSSIBLE, USE BATTERY BOXES, NOT AIRTIGHT CONTAINERS, SPECIFICALLY DESIGNED TO ENCASE 12 VOLT BATTERIES; DO NOT REUSE BATTERY BOXES FOR ANY OTHER PURPOSE.

DO NOT USE THE CHARGE CONTROLLER'S BATTERY CHARGING FUNCTIONALITY ON BATTERIES OTHER THAN 12 VOLT GEL, LEAD OR SEALED LEAD ACID.

REMOVE JEWELRY BEFORE INSTALLING OR MAINTAINING BATTERIES. DO NOT PLACE METALS OR TOOLS ON TOP OF BATTERIES AT ANY TIME.

DO NOT CONNECT 12 VOLT VACUUMS, COFFEE MACHINES, HAIR DRYERS, IRONS, HIGH-INTENSITY LIGHTS, HEATED MUGS, TELEVISIONS AND COMPARABLE HIGH-CURRENT 12 VOLT DEVICES TO THE SOLAR CHARGE CONTROLLER; ONLY USE DEVICES REQUIRING LESS THAN 10 AMPERES AND WITHIN REASONABLE LIMITS OF A BATTERY OR BATTERY BANK'S CAPACITY.

DO NOT SMOKE OR USE INCENDIARY ITEMS NEAR THIS CHARGE CONTROLLER.

DO NOT USE THIS CHARGE CONTROLLER IN A FLAMMABLE ENVIRONMENT.

DO NOT CONNECT OTHER DEVICES DIRECTLY TO A BATTERY WHILE THE SOLAR CHARGE CONTROLLER IS CONNECTED.

WEAR SUITABLE PROTECTION, INCLUDING GLOVES, GOGGLES AND WORN CLOTHING AS SOME BATTERIES MAY SPILL ELECTROLYTE IF IMPROPERLY HANDLED AND RELEASE HAZARDOUS GASES.

WHEN USING A POWER INVERTER, ONLY USE IT IN AN INDOORS ENVIRONMENT AND DO NOT ALLOW SMALL CHILDREN OR ANIMALS NEAR IT.

DO NOT CONNECT THIS SOLAR CHARGE CONTROLLER TO A GRID-TIE INVERTER.

DO NOT CONNECT 12 VOLT BATTERIES IN SERIES FORMATION TO THIS SOLAR CHARGE CONTROLLER.

DO NOT ALLOW EXPOSED CABLES TO TOUCH AT ANY TIME DURING INSTALLATION OR MAINTENANCE.

DO NOT USE ABRASIVE CHEMICALS TO CLEAN THE SOLAR CHARGE CONTROLLER OR BATTERIES.

DO NOT DISCARD OLD OR WORN 12 VOLT BATTERIES IN TRASH CANS; IN CERTAIN COUNTRIES SUCH AS THE UNITED STATES, ANY RETAILER PROVIDING NEW 12 VOLT BATTERIES FOR SALE MUST ALSO ACCEPT THEM FOR RECYCLING BUT MAY CHARGE A NOMINAL FEE AS REQUIRED BY LAW.

ONETRUEGEM, LLC, ITS MANUFACTURERS AND ASSOCIATES WILL NOT BE HELD RESPONSIBLE FOR PERSONAL INJURY OF ANY KIND AS A RESULT OF USING THIS SOLAR CHARGE CONTROLLER. 12 VOLT GEL, LEAD, SEALED LEAD ACID BATTERIES AND MANY ELECTRONICS, WIRES AND NON-ELECTRICAL PRODUCTS ALIKE MAY HAVE A WARNING SIMILAR TO THE ONE SEEN BELOW IF THEY CONTAIN ANY AMOUNT OF LEAD, SOLD IN OR SHIPPED TO THE STATE OF CALIFORNIA, UNITED STATES AND WILL APPLY TO THE 12 VOLT BATTERY REQUIRED OF THIS PRODUCT:

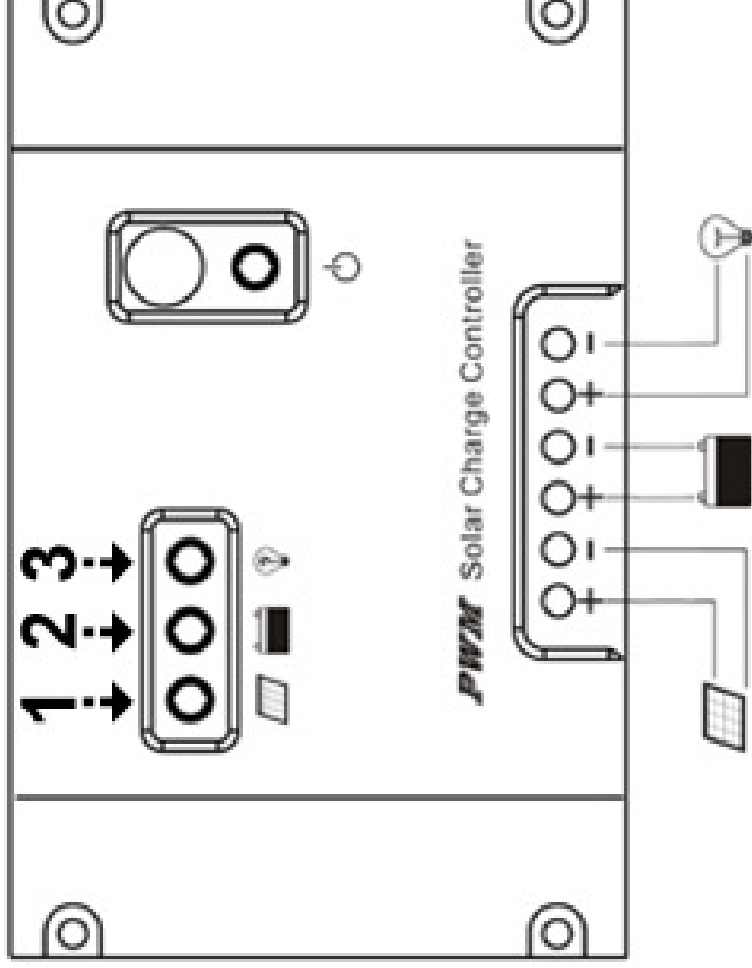
CALIFORNIA PROPOSITION 65 WARNING: BATTERY POSTS, TERMINALS AND RELATED ACCESSORIES CONTAIN LEAD AND LEAD COMPOUNDS, CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND REPRODUCTIVE HARM. BATTERIES ALSO CONTAIN OTHER CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER. WASH HANDS IMMEDIATELY AFTER HANDLING.

12 Volt 10 Ampere Solar Charge Controller

The EPRC 12 Volt 10 Ampere Solar Charge Controller regulates the amount of power received from solar panels and automatically adjusts the amount of power a battery or battery bank needs. It serves several purposes; if the amount of sunlight is too strong, it prevents damage to batteries. During the evening or when there is insufficient daylight, it prevents batteries from damaging a solar array.

A device can be connected to the Charge Controller for 12 Volt output, up to 10 Amperes, and be turned on and off from the Controller; this is known as “load” output. In addition, there are multiple modes to automatically turn a load on and off depending on the amount of daylight.

EPRC 12 Volt 10 Ampere Solar Charge Controller Interface



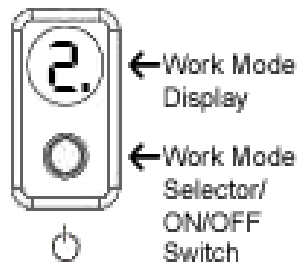
Status Light 1 (Solar Panel) is normally off and displays *solid green* when there is sufficient daylight while connected to compatible 12 Volt solar panels; it will *flash green* if there is an abnormality.

Status Light 2 (Battery) displays a battery's condition and charging status **at all times**. During the day, *solid green* indicates a battery is charging and will flash when fully charged. During the evening, *solid green* also represents a battery in good condition.

Solid orange indicates low battery power.

Solid red indicates a discharged battery and any activated loads will turn off.

Status Light 3 (Power Output/Load) is normally off and displays *solid red* when power is supplied to the load terminals; it will flash if there is an overload or short-circuit.



Work Mode Display shows the Solar Controller's currently programmed mode.

The Work Mode Selector serves several purposes; to program the controller, use it as an "ON/OFF" switch for 12 Volt electronics and reset the system in abnormal conditions.

The Solar Controller has a total of 16 different modes (15 Usable, 1 Test Mode). These modes are shown on the Solar Controller's Work Mode Display when the Work Mode Selector is pushed once.

The following explains each of the solar controller's modes and how to set them.

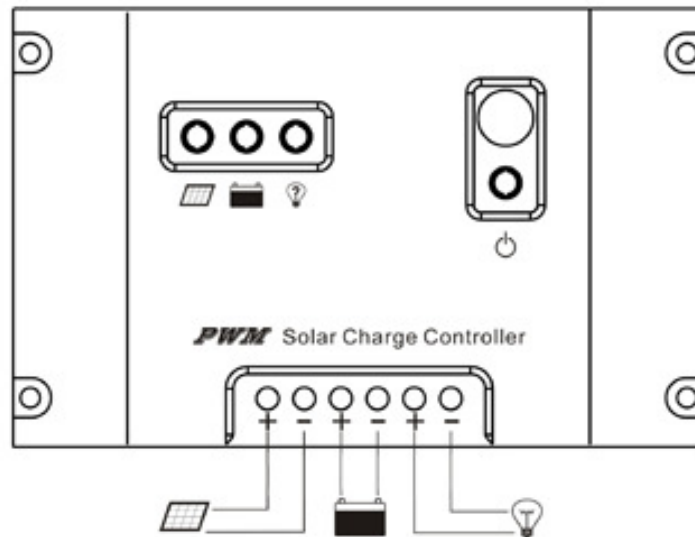
- 0** For Mode 0, Status Light 3 (Power Output/Load) terminals will automatically activate 10 minutes after Sunset/Dusk and deactivate at Sunrise/Dawn.
- 1** For Mode 1, Status Light 3 (Power Output/Load) terminals will automatically activate 10 minutes after Sunset/Dusk and turn off after **1 Hour**. The same applies to the following Work Modes and their respective duration.
- 2** 2 Hours
- 3** 3 Hours
- 4** 4 Hours
- 5** 5 Hours
- 6** 6 Hours
- 7** 7 Hours

Note: The following modes operate in the same manner but are followed by a **decimal**. Notice this change when reading the digital display.

0. 8 Hours
1. 9 Hours
2. 10 Hours
3. 11 Hours
4. 12 Hours
5. 13 Hours
6. The Solar Controller will act as an “ON/OFF” switch for loads by pushing the Work Mode Selector.
7. Solar Controller Test Mode will activate load terminals when there is insufficient daylight and deactivate when there is sufficient daylight.

Installation

A small, slot-type screwdriver is necessary to install cables into the Solar Controller. Do not use an electric screwdriver or drill. Loosen, do not remove, the six screws on the front of the Charge Controller by turning each COUNTER-CLOCKWISE; when tightening connections, turn each screw CLOCKWISE.



Solar Array Battery Load

Note: If you are required to handle a 12 Volt battery for the following steps, wear at least gloves and other protective clothing as necessary.

Connecting a 12 Volt Battery

Begin by installing cables into the battery terminals (located in the middle of the Charge Controller) and tighten the two battery terminal screws. Attach the other end of the cable to a battery beginning with its NEGATIVE connection.

The Solar Controller's battery indicator (Status Light 2) should activate, indicating one of the following conditions:

- SOLID GREEN: A battery is in good condition
- SOLID ORANGE: Low battery
- SOLID RED: Battery is in a discharged state and cannot be used until charged
- NO LIGHT indicates a battery is completely dead or improperly connected

The battery indicator will remain ON at all times and cannot be turned off unless the system is disconnected.

Connecting a Photovoltaic Panel

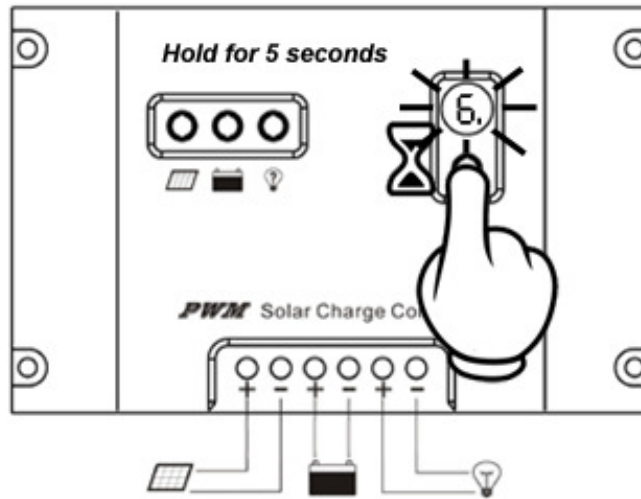
Connect a compatible 12 Volt solar panel to the Solar Controller's solar panel terminals beginning with its NEGATIVE end and tighten. Status Light 1 (Solar Panel) will turn Solid Green when a sufficient amount of daylight is present or "pulse" if improperly connected.

Load Connection (Optional)

When powering a 12 Volt device, connect it beginning with its NEGATIVE end into the Power/Output Load terminals.

Next, ensure that none of the other lights on the Controller have been activated. If Status Light 3 (Power Output/Load) is RED, push the Work Mode Selector once to turn it off. The digital display will momentarily show its programmed mode and clear shortly afterwards.

Programming the Solar Controller



To set a mode, hold down the Work Mode Selector for five seconds and release when the currently programmed mode begins to flash; while flashing, continuously press, not hold, the same button to cycle through modes and stop once the preferred mode appears on the digital display. The mode will flash for ten seconds, save to memory and the display will turn off five seconds later.

Work Modes 0 through 5. (with a decimal) functions after a 10-Minute evaluation of the quantity of light in the area and activate only if there is too little daylight to charge a battery. If a mode is changed while in operation, the Solar Controller will re-evaluate the light in the area for ten minutes and activate the load as necessary.

Work Mode 6., the “ON/OFF” mode, does not have a delay and can be used immediately after being programmed. This is the mode which allows the Charge Controller to act exclusively as an ON/OFF switch.

Work Mode 7. is a test mode which will activate once the system detects insufficient daylight and turn off when it detects sufficient daylight.

To check the Solar Controller's currently programmed mode, push the Work Mode Selector once and the display will be shown for fifteen seconds. If its mode is set to “ON/OFF,” or Mode 6., the load output will activate; push the Work Mode Selector again to turn it off.

Note: While the Solar Controller's mode will remain indefinitely programmed after a battery is disconnected, it will not function without one.

Questions and Troubleshooting

All three status lights on the Solar Charge Controller are on when they should not be.

There is a system fault; remove any loads and allow the Charge Controller 30 seconds to recover.

Status Light 1 (Solar Panel) quickly flashes.

There is a fault; verify the polarity of connections to the solar array and/or battery/battery bank.

Status Light 1 (Solar Panel) “flickers” when there is no battery attached.

When a solar panel is connected to a Solar Controller and a battery is not, Status Light 1 will continue to flicker until a battery is connected; this is normal.

Status Light 1 (Solar Panel) turns off after being connected to a battery.

When a solar system has sufficient daylight to operate but Status Light 1 doesn't turn on, this indicates the battery is in a highly-discharged state or dead; keep the solar system connected

and it should be able to charge the battery after several days, depending on the efficiency of a solar panel or array and quantity of light. When it has reached an acceptable level, Status Light 1 will activate and the Solar Controller will return to its factory settings; if its only purpose is to maintain a battery, ensure that Mode 6. is programmed and Status Light 3 (Power Output/Load) is OFF.

Status Light 2 (Battery) is off when it is sunny or there is an abundance of daylight.

There are several solutions to this problem:

- Ensure that a battery cable is properly connected to the correct terminals.
- Using a volt/multi-meter, measure the solar panel's open-circuit voltage and confirm it is within its voltage limits. If voltage is low or zero and there is sufficient daylight, a panel may require servicing; if voltage is within its stated limits, there may be a loose cable connection.

- Using a volt/multi-meter, measure the solar voltage and the battery voltage at the Solar Controller's terminals. If voltage at the terminals is the same for both (or within a few tenths of volts), then the Controller is charging its battery. On the other hand, if the solar voltage at the Charge Controller terminals is comparable to a solar panel's open circuit voltage and the battery voltage is low, the Controller is not properly charging and may be damaged.

Status Light 2 (Battery) flashes during evening hours.

- Fully charged batteries only flash during daylight hours and will be solid green all other times. If it flashes during evening hours, push the Work Mode Selector once to correct the display, whether a load is connected or not. If Status Light 3 (Power Output/Load) activates, push the Work Mode Selector again to turn it off.

Status Light 3 (Power Output/Load) is flashing red (load not operating properly).

There are several solutions to this problem:

- Check if the load is turned on. If a device connected to the Controller's load terminals has a fuse, ensure that the fuse is in working order.
- Check connections to the load, Charge Controller and battery. If using an extension or elongated cable, use a volt/multi-meter to make sure enough voltage is at the load end.
- If the indicator is flashing and there is no output, check if the device connected to the Solar Controller has short-circuit. If this is the case, disconnect the load, press the Work Mode Selector once and the Controller should operate normally after 10 seconds.
- If the indicator is flashing and there is no output, check if the load is over the Solar Controller's rated power. Reduce the load, press the Work Mode Selector once and the Controller should operate normally after 10 seconds.

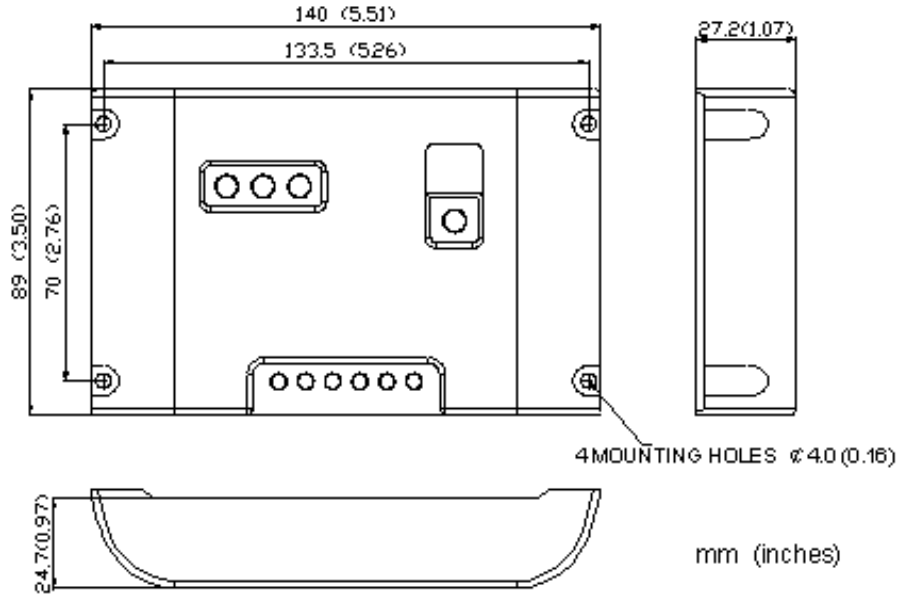
Solar Controller Maintenance

The following inspections and maintenance tasks are recommended periodically for best performance.

- When performing maintenance requiring cable adjustment, **disconnect its battery first**; remove connections on the battery, then from the Solar Controller.
- Always make sure there is no corrosion around battery terminals.
- Make sure solar panels and loads do not exceed the Solar Controller's ratings.
- Tighten all terminals screws. Inspect for loose, broken or burnt wire connections. Be certain no loose wire strands are touching other terminals.
- Set the Work Mode to 6. or 7. to verify manual and automatic load activation (respectively).

- Ensure the Solar Controller is securely mounted or placed upright in a clean environment. Inspect for dirt, debris, insects and corrosion.
- Be sure not to place objects on or around the Controller; air must freely flow around it.
- Avoid placing the Solar Controller in high heat or moist conditions which will affect the Controller's performance or completely damage it.
- Make sure the Solar Controller's Work Mode is set to the desired mode.
- Make sure solar panels connected to the Solar Controller are free of dirt, debris, dust and chemicals.
- Periodically clean solar panels with tepid water; do not use chemicals.

Technical Information



Rated Charge Current	10.0 Amperes
Rated Load Current	10.0 Amperes
Float Charge Voltage	13.6 Volts
No Load Current	≤ 6 mA
Charging Circuit Voltage Drop	≤ 0.26 Volts
Load Circuit Voltage Drop	≤ 0.15 Volts

Over Voltage Protection	17.0 Volts
Working Temperature	Between -31°F (-35° C) and 131°F (55° C)
Equalization Voltage	14.6 Volts for 30 Minutes
Boost Voltage	14.4 Volts for 30 Minutes
Charge Return Voltage	13.2 Volts
Temperature Compensation	-30mV
Low Voltage Indicator	12.0 Volts
Over Discharge Protection/Load Disconnect	11.1 Volts
Over Discharge Return Voltage/Load Reconnect	12.6 Volts
Control Mode	Pulse Width Modulation Charge

Warranty Information

The EPRC 12 Volt 10 Ampere Solar Charge Controller is for personal use only and has a Manufacturer's, Elemental and Accidental Warranty which expires ONE (1) YEAR from the actual shipment or in-person sale date. This warranty is nontransferable; only the original intended end-user may exercise warranty rights. Manufacturer defects, Elemental or Accidental damage to any part of this product will be repaired or replaced at no charge once ONETRUEGEM, LLC receives the components under distress. Protection against theft or vandalism are not covered.

This warranty may be used a maximum of one time during the warranty period with no extension to the original warranty or new warranty issuance; this means that if a component is damaged and we repair or replace it, the one-time-use warranty for this product will be exhausted. Our service to customers does not end when a warranty has expired; we may be contacted at any time for assistance.

The following explains the Warranty in detail, with examples, written in CAPITAL LETTERS for clarity. ONETRUEGEM, LLC, its manufacturers and associates may appear as "we," "our," or "us" and customers, potential and actual, may be referred to as "you."

ONETRUEGEM, LLC WARRANTS THIS PRODUCT FOR A TOTAL OF ONE (1) YEAR FROM THE ACTUAL SHIPMENT OR IN-PERSON SALE DATE TO ALL CUSTOMERS, DOMESTIC AND INTERNATIONAL, TO BE FREE FROM MANUFACTURER DEFECTS, ELEMENTAL AND ACCIDENTAL DAMAGE. DAMAGE CAUSED TO THE AFFECTED DEVICE(S) MUST RENDER COMPONENTS COMPLETELY UNUSABLE. ONETRUEGEM, LLC IS THE SOLE INTERPRETER OF WHAT QUALIFIES AS MANUFACTURER DEFECTS, ELEMENTAL AND ACCIDENTAL DAMAGE AS OUTLINED BELOW:

MANUFACTURER DEFECTS INCLUDES AND IS LIMITED TO:

- OPERABILITY FAILURE UNDER NORMAL CONDITIONS
- LOOSE CONNECTIONS WHILE PERFORMING GENERAL MAINTENANCE

ELEMENTAL DAMAGE INCLUDES AND IS LIMITED TO:

- WIND (HURRICANE/TYPHOON, TORNADO, SEVERE WIND-RELATED DAMAGE)
- WATER (FLOODING, TSUNAMIS, SNOW, ICE AND WATER-RELATED DAMAGE)
- EARTH (EROSION, MUDSLIDES, EARTHQUAKES OR DAMAGE DUE TO NATURALLY DISTRESSED GEOGRAPHY)
- FIRE (FIRE CAUSED BY NATURAL WEATHER PATTERNS OR NATURAL DISASTERS ONLY)
- LIGHTNING (DIRECT DAMAGE CAUSED BY LIGHTNING STRIKE)

ACCIDENTAL DAMAGE INCLUDES AND IS LIMITED TO:

- FALLING FROM ANY HEIGHT
- MOISTURE AND CORROSION
- INSECT INFESTATION
- HEAVY WEIGHT/CRUSHING FORCE
- ANIMALS OF ANY SIZE
- MOUNTING HARDWARE MARRING OR OTHERWISE DAMAGING EQUIPMENT
- FAULTY INSTALLATION
- SHORTING CONTROLLER FUSE

FOR ALL CUSTOMERS, DOMESTIC AND INTERNATIONAL, WE WILL:

- REPAIR OR REPLACE THE SOLAR CHARGE CONTROLLER

ONETRUEGEM, LLC, ITS MANUFACTURERS AND ASSOCIATES WILL NOT PROVIDE WARRANTY SERVICE DUE TO INTENTIONAL DAMAGE OR ABUSE AND ARE NOT RESPONSIBLE FOR BATTERIES OR ANY OTHER DEVICE WHICH HAS BEEN DAMAGED AS A RESULT OF BEING CONNECTED TO ANY PART OF THIS PRODUCT. YOU MUST SEND PRODUCTS COVERED UNDER WARRANTY TO ONETRUEGEM, LLC FOR REPAIR OR REPLACEMENT. SHIPPING FEES AND RELATED EXPENSES FOR SENDING ITEMS TO US FOR WARRANTY SERVICE ARE NOT REFUNDED. WHEN ONETRUEGEM, LLC, ITS MANUFACTURERS AND ASSOCIATES RETURN ITEMS COVERED UNDER THE WARRANTY PERIOD, ALL FEES AND EXPENSES, INCLUDING SHIPPING, ARE PAID BY US.

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