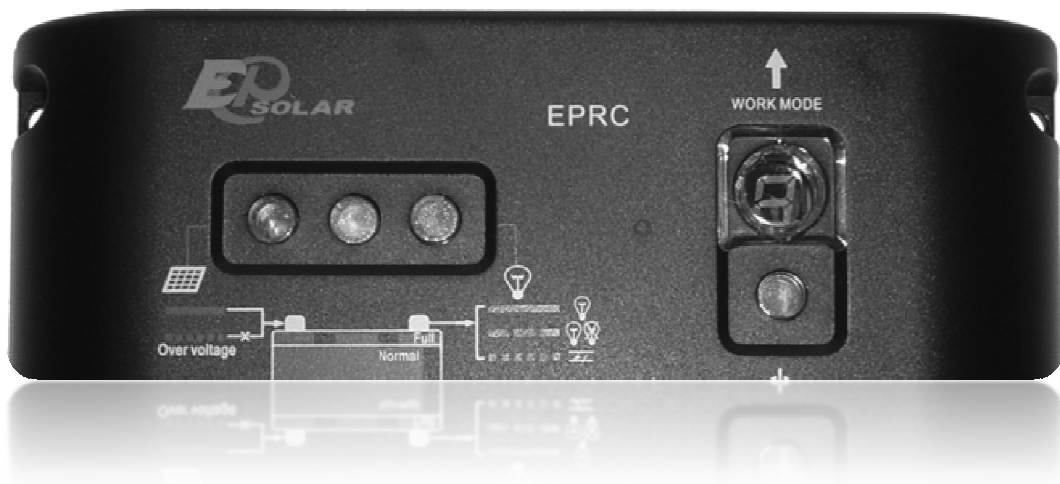


EPRC 12/24 Volt 10 Ampere Solar Charge Controller



Supplemental Guide [English]



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

Purchase Date ▼

Serial Number¹ ▼

(found on bottom or rear of main component)

Warranty Overview

This product has a TWO (2) YEAR warranty providing protection from manufacturer defects and operability failure under normal use for the intended application(s).

Manufacturer: Beijing EPSolar Technology Co., Ltd.

Location: Beijing, China

Website: <http://www.epsolarpv.com>

Phone Number: 8289-4962 or 8289-4112

Fax Number: 8289-4882

Not located in the manufacturer's country? Visit this product's information page by accessing our storefront through **onetruegem.com** to learn how to dial these numbers.

E-Mail: info@epsolarpv.com

¹Only applicable for products with warranty service by OTGP Solar Energy.

SAFE USE AND WARNINGS



THIS SOLAR CHARGE CONTROLLER REQUIRES AT LEAST ONE 12 OR 24 VOLT SEALED LEAD ACID BATTERY TO CHARGE, RECHARGE, MAINTAIN, AND (OPTIONALLY) POWER ELECTRONICS THROUGH ITS LOAD TERMINALS. **NEVER INSTALL BATTERIES WHERE SMALL CHILDREN AND ANIMALS CAN ACCESS THEM OR ATTEMPT TO CHARGE ANY OTHER BATTERY TYPE.**

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

USE BATTERY BOXES, NOT AIRTIGHT CONTAINERS, DESIGNED TO CONTAIN BATTERIES; DO NOT REUSE BATTERY BOXES FOR ANY OTHER PURPOSE OR PLACE THE SOLAR CHARGE CONTROLLER IN THE IMMEDIATE AREA OF A BATTERY OR BATTERY BANK.

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

DO NOT CONNECT 12 OR 24 VOLT VACUUMS, COFFEE MACHINES, HAIR DRYERS, IRONS, HIGH-INTENSITY LIGHTS, HEATED MUGS, TELEVISIONS AND COMPARABLE HIGH-CURRENT 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 OR USE IN A FLAMMABLE ENVIRONMENT.

DO NOT CONNECT OTHER DEVICES DIRECTLY TO A BATTERY OR BATTERY BANK WHILE A 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 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 ALLOW EXPOSED CABLES TO TOUCH AT ANY TIME DURING INSTALLATION OR MAINTENANCE.

DO NOT USE ABRASIVE CHEMICALS TO CLEAN THE SOLAR CHARGE CONTROLLER, BATTERY, OR BATTERY BANK.

DO NOT DISCARD OLD OR WORN BATTERIES IN TRASH CANS; IN CERTAIN COUNTRIES SUCH AS THE UNITED STATES, A RETAILER PROVIDING NEW 12 OR 24 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. 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 BATTERY OR BATTERY BANK 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.

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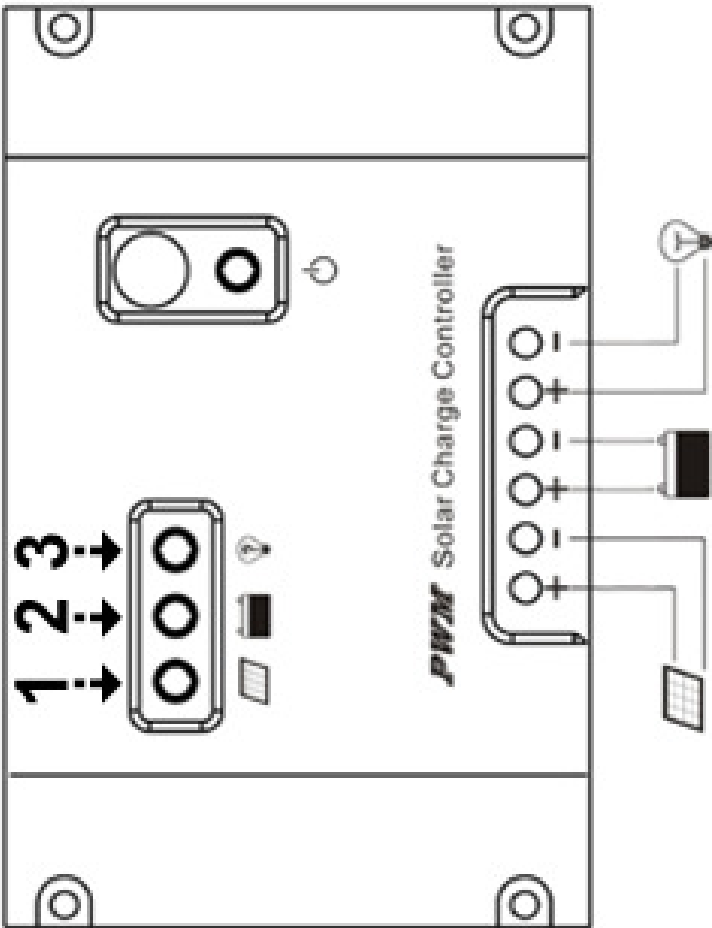
EPRC 12/24 Volt 10 Ampere Solar Charge Controller

A solar charge controller is a conduit that regulates the amount of power received from solar panels to charge energy-storing units, usually batteries. Their use is critical for solar systems of any size to properly function and provide a host of benefits for long-term use.

The EPRC 12/24 Volt 10 Ampere Solar Charge Controller is capable of storing energy in a 12 or 24 Volt battery or battery bank. If the amount of sunlight is too strong, it protects batteries from overcharging. During the evening or when there is insufficient daylight, it prevents batteries from damaging a solar panel or array.

A device can be connected to the Charge Controller for 12 or 24 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.

Solar Charge Controller Interface



Solar Array Battery Load

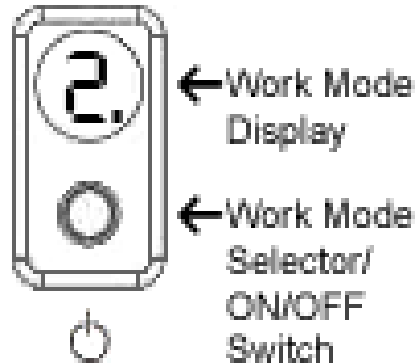
Status Light 1 (Solar Panel) is normally off and displays *solid green* when there is sufficient daylight while connected to compatible 12/24 Volt solar panels; it will *flash green* if the system's voltage is too high.

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; *All lights on* or *Status Light 1* displaying *solid green* while Status Light 2 is *solid red* indicates a system fault.

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 Modes



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 12/24 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

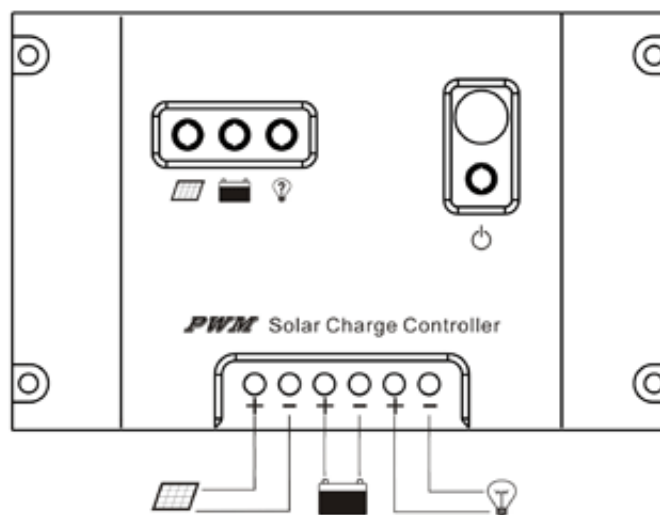
7 7 Hours

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 deficient daylight and deactivate in sufficient daylight; this is similar to Mode 0 without a delay.

Setup and Installation

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



If you are required to handle a 12 or 24 Volt battery for the following steps, wear at least gloves and other protective clothing as necessary.

Connecting a 12 or 24 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.

Note: The solar controller automatically selects 12 or 24 Volt operation depending on connectivity. Maintain consistency with the voltage used for solar input, battery input, and (optional) load output. Other configurations may permanently damage components.

Connecting a Photovoltaic Panel

Connect a compatible 12 or 24 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.

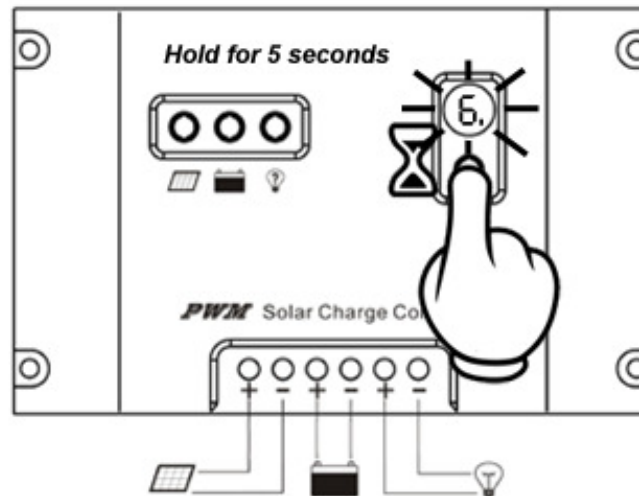
Load Connection (Optional)

When powering a 12 or 24 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 that allows the Charge Controller to act exclusively as an ON/OFF switch.

Work Mode 7. is a test mode that will activate once the system detects a deficient amount of daylight and turn off when it detects sufficient daylight; this differs from Mode 0 as it does not have a delay.

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 solar panel/array for a few seconds to allow it to recover. An abnormal state may also be present when Status Light 1 (Solar Panel) and Status Light 2 (Battery) are solid green and red, respectively.

Status Light 1 (Solar Panel) quickly flashes.

There is a fault or the system's voltage is too high; verify the polarity of connections to the solar array and/or battery/battery bank.

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

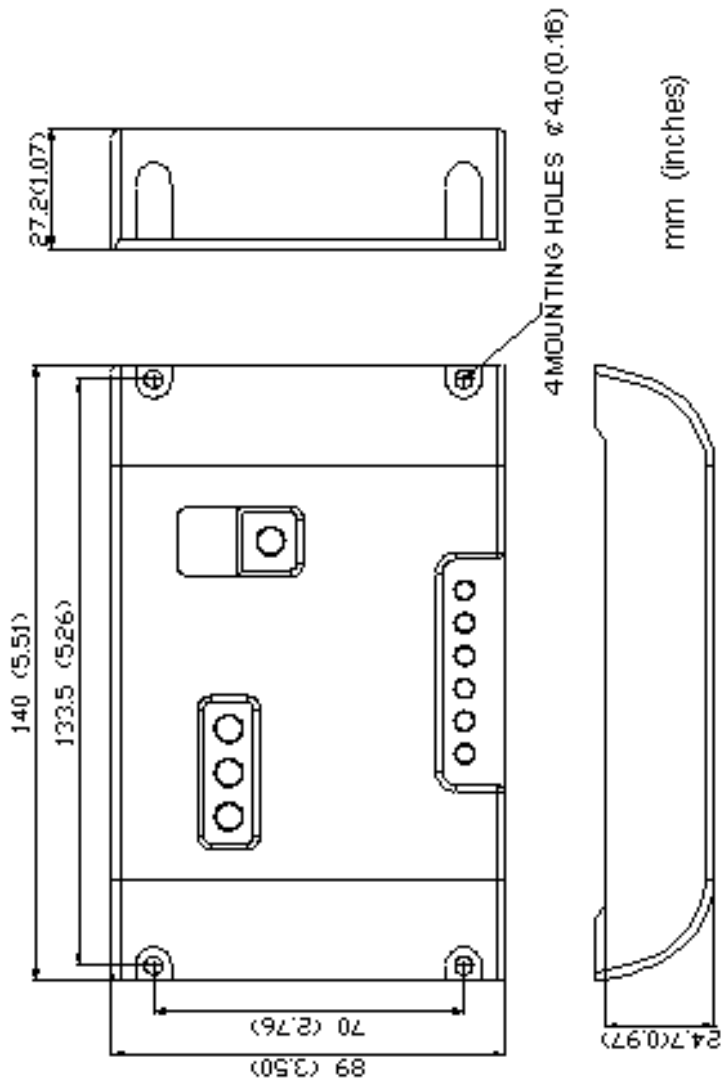
The following inspections and maintenance tasks are recommended periodically for best performance.

When performing maintenance, disconnect any battery first; remove connections on a 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 that 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



System Voltage	12 or 24 Volt
Maximum Solar Array Current	10.0 Amperes (12 or 24 Volt)
Nominal Battery Current	10.0 Amperes
Rated Load Current	10.0 Amperes
Idle (No Load) Current	≤6mA
Current Overload	25% for 1 Minute (12 or 24 Volt)
Charging Circuit Voltage Drop	≤0.26 Volts
Discharge Circuit Voltage Drop	≤0.15 Volts
Float Charge Voltage	12 Volt: 13.7 Volts; 24 Volt: 27.4 Volts
Over Voltage Protection	12 Volt: 17.0 Volts; 24 Volt: 34.0 Volts
Equalization Voltage	12 Volt: 14.8 Volts; 24 Volt: 29.6 Volts for 1 Hour
Boost Voltage	12 Volt: 14.4 Volts; 24 Volt: 28.8 Volts for 1 Hour
Low Voltage Reconnect	12 Volt: 12.6 Volts; 24 Volt: 25.2 Volts
Over Discharge Protection/Load Disconnect	12 Volt: 11.1 Volts; 24 Volt: 22.2 Volts
Temperature Compensation	12 Volt: -30mV; 24 Volt: -60mV
Operating Temperature Range	-31°F (-35° C) and 131°F (55° C)
Terminal Wire Size	2.5mm ² (Maximum)
Control Mode	Pulse Width Modulation

(Optional) OTGP Solar Energy Warranty Information

This section is only applicable to customers who acquired warranty fulfillment by OTGP Solar Energy at the time of purchase. To begin the warranty process, visit support.onetruegem.com.

The EPRC10-EC 12/24 Volt 10 Ampere Solar Charge Controller is for non-commercial use only and has a warranty that expires TWO (2) YEARS 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 and operability failure under normal use for the intended application(s), elemental, and accidental damage to any part of this product will be repaired or replaced at no charge once ONETRUEGEM, LLC receives the product or component under distress. Theft or vandalism is not covered by this warranty.

Warranty rights may be exercised a maximum of ONE time during the warranty period with no new warranty issuance; this means if a product or component is damaged and we repair or replace it, the one-time-use warranty for the affected product or component will be exhausted. Our service to customers does not end when a warranty expires; 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 TWO (2) YEARS 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 A PRODUCT OR COMPONENT 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 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 MAY BE REFUNDED IF WE DO NOT OTHERWISE PROVIDE A PREPAID METHOD TO RETURN AFFECTED PRODUCTS AND/OR COMPONENTS. WHEN WE RETURN PRODUCTS TO CUSTOMERS COVERED UNDER THE WARRANTY PERIOD, SHIPPING FEES AND EXPENSES ARE PAID IN WHOLE BY US.

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