

BZ PRODUCTS, INC.

INSTALLATION MANUAL

VERSION v2.2 10/07

MODEL BZ 240 PWM CHARGE CONTROLLER

**CAUTION! READ ALL INSTRUCTIONS PRIOR TO
INSTALLING OR USING THIS EQUIPMENT.**

SAFETY INSTRUCTIONS:

Refer service and installation to qualified service personal.

Incorrect installation may result in risk of fire. Remove all sources of electrical power, photovoltaic and battery before servicing equipment. Never charge a frozen battery. Warning batteries produce explosive gasses during normal operation. Install batteries in a well ventilated location. Follow battery and solar panel manufactures maintenance and operational recommendations. Install properly rated fuses.

**CONNECTING THE BATTERY REVERSE POLARITY TO THE PV
TERMINALS WILL DAMAGE THE BZ 240 AND WILL VOID THE WARRANTY.**

**CONNECTING THE BATTERY REVERSE POLARITY TO THE BATTERY
TERMINALS OF THE BZ 240 AND MAY DAMAGE THE CONTROLLER.**

DESCRIPTION: The BZ 240 PWM charge controller is a high efficiency, 12 volt only, shunt type charge controller capable of charge currents of 14 amps. Features include a low loss Schotkey diode to prevent night time battery discharge, three LED battery gage, easily adjusted float voltage, MOV lightning protection, battery voltage temperature compensation, easy installation, powder coated finish and five year limited warranty. The BZ 240 may be flush or surface mounted. Made in USA

SYSTEM LAYOUT: Plan your installation. Install the BZ 240 near the battery bank. Avoid installing the controller in wet, damp or confined locations. Do not install the BZ 240 in direct sunlight. Use short direct wiring to the controller, batteries and PV panels. Install the controller in accordance with all state, local and national electrical codes. Securely fasten the controller to a wall or other suitable structure. Provide support for all wiring. Provide proper ventilation for the batteries.

WIRE AND WIRING:

Wire connections are printed on the BZ 240 circuit board just below the wire connector.

Use high quality stranded wire in all installations. Solid wire is not recommended. The BZ 240 wire connectors will accept up to # 12 wire. Protect wire and fuse from damage.

Carefully plan the installation. Clearly labeling all wiring will simplify installation and help prevent wiring errors. Permanent wire markers are recommended for labeling all wiring. Rout wiring as directly as possible to the PV panels and battery. Take care to follow the wiring diagram exactly. Properly seal all wiring against water leaks. Provide proper ventilation for the batteries.

CAUTION: DISCONNECT ALL SOURCES OF ELECTRICAL POWER BEFORE CHANGING FUSES.

FUSES: Install a 20 amp fuse and fuse holder in the Battery + wire within 9” of the Battery + terminal. Install a 20 amp fuse and fuse holder in the PV + wire. See wiring diagram for details. Warranty is void if no fuses are installed.

OPERATION: Operation of the BZ 240 is fully automatic. When the battery voltage is lower than the float voltage, full solar charge current is applied to the battery. When the battery voltage equals the float voltage the BZ 240’s PWM circuitry activates and maintains the float voltage. During PWM operation battery charge current will diminish. **DURING OPERATION THE BZ 240 MAY FEEL WARM.**

Three LED’s indicated relative battery charge. The Green LED indicates full battery charge, yellow LED indicates about 2/3 charge and the red LED indicates about 1/3 charge remaining. When the red LED lights reduce power usage or stop using power until the batteries are recharged. When no LED’s are lit the battery is fully discharged. To avoid damaging the battery, do not discharge the battery completely.

**THE BZ 240 FLOAT VOLTAGE IS CALIBRATED TO 14.1 VOLTS.
NO ADJUSTMENT IS NEEDED WHEN USING WET LEAD ACID BATTERIES.**

FLOAT VOLTAGE CALIBRATION: Battery float voltage is the voltage that the BZ 240 allows the battery to charge up to and not exceed. Battery float voltage is pre-calibrated to 14. 1 volts. In most installations the float voltage needs no adjustment. Check battery manufactures recommendations for proper charge voltage.

Do not attempt to adjust the float voltage on cloudy or overcast days. To properly adjust the battery float voltage a Digital Volt Meter is required. Disconnect the battery from the BZ 240. Locate the float voltage adjustment control, see wiring diagram. Connect the Digital Volt Meter to the BATT+ and BATT - terminals of the BZ 240. Adjust the float voltage control, turning the float voltage control clock wise to increases the float voltage and counter clockwise to lower the float voltage, until the required float voltage is displayed on the Digital Volt Meter. Disconnect the Digital Volt Meter from the BZ 240 and reconnect the battery. Observe proper polarity when connecting the battery to the BZ 240.

MAINTENANCE: The BZ 240 requires little maintenance. Periodically clean the BZ 240 with a damp cloth. Inspect all wire and wire connections. Tighten and clean all connections as required. Recalibrate float voltage if required. Visually inspect the entire PV system for damage. Keep the PV array clean and properly aligned. Keep batteries clean. Follow battery manufactures maintenance recommendations.

WARRANTY: BZ Products, INC. Model BZ 240 is warranted to be free of defects in material and workmanship for five years from the date of purchase. Failure to provide correct installation, operation or care for this product, in accordance with this instruction manual, will void the warranty. Product liability shall be limited to repair or replacement, at the discretion of the manufacture. The manufacture is not responsible for the labor or other charges necessitated by the removal, transportation, or reinstallation of any defective product. Warranty does not cover damage due to, mishandling, abusive conditions, lightning, or exposure to weather. No specific claim of merchantability shall be assumed or implied beyond what is printed in this manual. No liability shall exist from circumstances arising from the inability to use this product, or it’s inappropriateness for any specific purpose. In all cases, it shall be the responsibility of the customer to insure a safe installation in compliance with local, state and national electrical codes.

RETURN PROCEDURE: To return a model BZ 240 for repair provide the following information. Name/Company name, return address, daytime phone number, description of failure, copy of sales receipt. Include \$10.00 for return shipping. Return to BZ Products, INC.

BZ PRODUCTS, INC.
7914 GRAVOIS ROAD
St. LOUIS MO 63123 USA (314) 644-2490 bzp@brick.com

BZ240 SPECIFICATIONS:

Solar panel current	14 amps continuous	Surge current	20 amps 15 min
Array voltage	30 volts open circuit	Control mode	PWM shunt control
Surge voltage	MOV clamp 33 VDC	Temp. Comp.	-18mV/° C nominal
Min battery voltage	Zero volts	Voltage drop	<.6 volts @ 14 amps
Operating temp.	-20 to + 50° C	Storage temp.	-30 to + 80°
Float voltage range	12.5 to 15.5 volts	Float regulation	± .05 volts nominal
Operating current	.02 amps nominal	Float voltage	14.1 volts
Wire size	# 12 AWG max	Battery size	120 amp hour min
Reverse current	.01 amps nominal	Weight	1 pound
Wire access	1/2" conduit	Size	4.7" X 4.7" X 1.5"
Lightning protection	10MM MOV	Mounting	flush/surface
Red Led	on > 11.7 VDC	Yellow Led	on > 12.7 VDC
Green Led	on >13.5 VDC	Finish	Black powder coat

Specifications subject to change without notice. Made in USA

BZ240 WIRING DIAGRAM

V2.2

