



Charge Controller—4.5A 12V

Part# (GCC-4.5A Kit)

Includes: All Connections to hook up to Ganz Semi-Flexible Solar Panels

Parts List: (Included)

- 1 - Charge Controller
- 1 - Black 2 ft. Battery Cable with Ring Terminal
- 1 - Red 2 ft. Battery Cable with Ring Terminal
- 4 - Blue Wire Nuts (twist on wire connector)

OPERATOR'S MANUAL

1.0 SPECIFICATION SUMMARY

System Volts 12 V

Max. Solar Input 30 V / 70W

Rated Solar Input 4.5 A

Max. Input (5 min.) 5.5 A

PWM Set point 14.1 V

Accuracy +/-60 mV

Min. Operating Volts 6V

Self-consumption 6 mA

Max. Solar Short Circuit Rating 5.5 A

PWM Temp Compensation -28 mV/°C

Reverse Current Leakage <10 uA

Ambient Temperature Range -40 to +60 °C

Relative Humidity 100%

2.0 SAFETY INSTRUCTIONS

- ❖ Follow these instructions carefully during installation.
- ❖ **WARNING** - Be very careful when working with batteries. Lead acid batteries can generate explosive gases, and short circuits can draw thousands of amps from the battery. Read all instructions provided with the battery.
- ❖ Do not exceed the voltage or current ratings of the controller. Use only with a 12 volt battery.
- ❖ **Do not SHORT CIRCUIT** the solar array while connected to the controller. This will **DAMAGE** the controller.
- ❖ The negative system conductor should be properly grounded for most effective lightning protection.

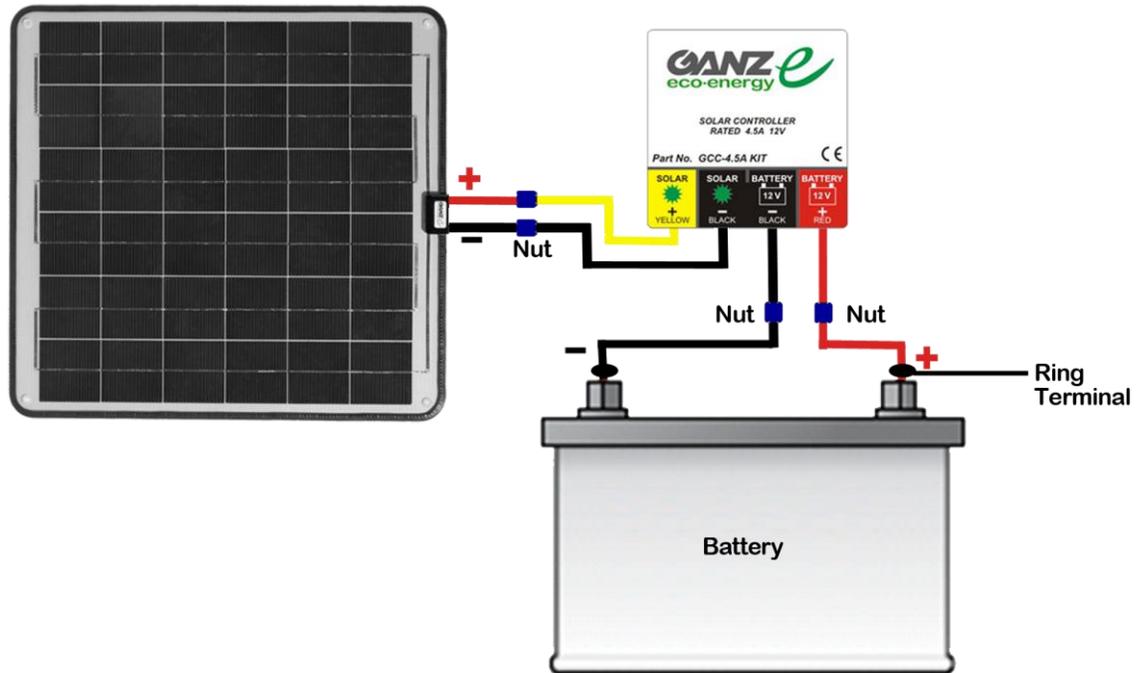
BOAT INSTALLATION



WARNING: Only ground the DC system to battery negative (one-point ground). Never ground the DC system to the boat bonding system or to any metallic part, fixture, or component on the boat.

3.0 OPERATION AND FUNCTIONS

- ❖ 100% SOLID STATE: All power switching is done with MOSFETs. No mechanical relays are used.
- ❖ The **Ganz** controller wires are rated for outdoor use, size 16 AWG, with Hypalon insulation.
- ❖ BATTERY CHARGE REGULATION: **Ganz** controller uses an advanced series PWM charge control for constant voltage charging. A true 0 to 100% PWM duty cycle is very fast and stable for highly efficient charging.
- ❖ TEMPERATURE COMPENSATION: A sensor measures ambient temperature and corrects the constant voltage set point by $-28 \text{ mV per } ^\circ\text{C}$ with a 25°C reference. This works best if the controller and battery are in a similar thermal environment.
- ❖ The **Ganz** controller prevents the battery from discharging through the solar array at night. There is no need to install a blocking diode for this purpose.



4.0 INSTALLATION

1. **Ganz** 4.5A charge controller can be mounted in any position. It is best to mount to a vertical surface and allow space for air flow through the controller.
2. First connect the charge controller black wire (-) to the black 2 ft. battery cable using the blue wire nut or marine grade splice (supplied by user)
3. Connect the charge controller red wire (+) to the red 2 ft. battery cable using the blue wire nut.
4. Connect the ring terminal of black battery (-) wire to the battery.
5. Connect ring terminal of red battery (+) wire to the battery.
6. Connect the other black wire from the controller to the black (-) wire of the solar panel using the blue wire nuts.
7. Connect the yellow wire from the controller to the red (+) of the solar panel using the blue wire nut.
8. Be very careful not to short circuit the solar array, or the controller will be damaged.
9. **Ganz** 4.5A charge controller prevents reverse current leakage at night, so a blocking diode is not required in the system.
10. **Ganz** 4.5A can be mounted outdoors. Do not expose to ambient temperatures above 60°C. Make sure that water will drain from inside the case.

5.0 INSPECTION AND MAINTENANCE

At least once per year, inspect the controller to ensure best performance.

- Confirm that the solar array is not exceeding the charge controller rating.
- Inspect the wire connections.
- Inspect for dirt, insects and corrosion. Clean as required.
- Check that the air flow through the charge controller is not blocked.
- Confirm that water is not collecting inside the case.

6.0 TROUBLESHOOTING

The **Ganz** charge controller can be tested with a power supply used in place of either the solar array or the battery. Observe the following cautions:

- Current limit the power supply to 2 amps.
- Set the power supply to 15 volts DC.
- Connect only one power supply to the controller.

IF THE BATTERY IS NOT CHARGING:

If the controller is regulating (in PWM), then the controller is charging and operating correctly. If the battery voltage is low (under 12.5V - this test will not work if the charger is regulating in PWM), then measure the solar voltage and battery voltage close to the controller. If the voltages are within a few tenths of volts, the array is charging the battery. If the solar voltage is close to 20 volts and the battery voltage is low, the controller is not charging the battery and may be damaged.

IF THE BATTERY VOLTAGE IS TOO HIGH:

First account for the temperature compensation (for example: 32F = 14.8 charging volts). Next, disconnect the solar array and measure the voltage at the controller's solar yellow and black leads. If battery voltage is measured at the solar leads, the controller may be damaged.

Warranty: 5 Year Limited Warranty - Please contact the distributor where controller was originally purchased to obtain an RA# (Return Authorization). An RA# must be issued before returning any product.



NY: 55 Mall Dr., Commack, NY 11725 800.422-6707
CA: 20521 Earl St., Torrance, CA 90503 800 888-0131
www.cbcamerica.com/eco-energy