



# GALVANIC ISOLATOR

## Model GI-N

### Installation Instructions 30 or 50 amps

#### SUMMARY

The SmartShore Marine Galvanic Isolator provides approximately 1.2 volts isolation in the ground lead of your shore power supply to isolate electrolytic voltages from the dock, while passing safety currents to ground in the event of a short circuit, or power leakage on your boat.

#### FEATURES

- 50-amp AC continuous rating.
- Use on any shore power connection up to 50 amps.
- Only one required for dual 30-amp connections.
- Works on 115- or 230-volt supply, single or three phase. Will work on foreign hook-ups with ground wire.
- Failsafe, Meets ABYC standards. (When fitted with a remote monitor - not included)
- Waterproof - will operate underwater
- No heat produced under normal use.
- Two 18" 10-gauge Marine Grade leads.
- Non-metallic housing with mounting tabs.
- Ignition protected for use in explosive atmospheres.
- Suitable for operation up to 122 F or 50 C
- Mounting and connection hardware included.
- Very compact size, 4" x 3" x 1.5"

#### THEORY OF OPERATION

Boats with metal in contact with water are subject to galvanic corrosion when connected to shore power as a result of connection to the common AC grounding conductor. This connection will affect the vessel's cathodic protection system resulting in abnormal deterioration of the zincs. It can result in damaging corrosion of the underwater equipment.

It is necessary for safety reasons to have the hull and exposed metal fixtures connected to ground to prevent electrical shock in the event of a failure in the AC wiring or an appliance. Without that ground connection, the boat could become alive at the line voltage which could injure or kill when stepping onto the boat, or swimming in close proximity.

If an electrical fault doesn't trip the breaker, the ground connection has to be able to withstand rated current indefinitely to conduct the fault current and prevent dangerous voltages. The SmartShore Marine Galvanic Isolator is rated for 50-amp AC continuous current and is individually tested to 135% of this rating.

Naturally occurring electrolysis voltages are typically less than 1.5 volts. The galvanic isolator provides a very high resistance to these voltages to isolate them from the boat. Once the 1.5-volt threshold is exceeded the connection is established to conduct current and protect from shock.

#### SAFETY CONSIDERATIONS

The galvanic isolator is connected between the internal grounding system on your boat and the ground lead of the shore power cable(s). This connection is important for safety considerations and you should not attempt this installation unless you understand the circuit and are competent in this type of electrical work.

internal or remote status monitoring. Although highly reliable, it should be tested once per season, and re-tested after a condition that may have influenced it, such as a lightning strike in the vicinity, or an on-board electrical short that either caused a circuit breaker or fuse to blow or used the ground for the neutral conductor.

#### INSTALLATION

1. Mount the isolator inside the vessel to any convenient surface within about 15-inches of the shore power entry connector using the screws supplied. The maximum ambient temperature should not exceed 122 F or 50 C.
2. Disconnect the shore power cord to prevent electric shock while working on the connector.
3. Remove the existing ground wire from the shore power connector. The ground wire should be green, or green with a yellow stripe. If there is any uncertainty to which is the ground wire, get competent help before proceeding.
4. Connect either of the green leads from the isolator to the vacated terminal of the shore power connector.
5. Connect the other green lead from the isolator to the vessel ground wire you removed, using the compression connector supplied. Shorten the leads if necessary.
6. Dress and attach the wires so they are firmly fastened. It is not necessary to insulate the compression connector but you can wrap it with insulation tape if desired.
7. For dual 30-amp cords, connect their ground terminals together before passing through the galvanic isolator. See the schematic diagram on the next page.
8. IF THE ENTRY ACCESS ABOVE IS INCONVENIENT OR COVERED, CHOOSE THE NEXT DOWNSTREAM GROUND CONNECTION LOCATION.

Note that it may be necessary to isolate your cable TV connection for full electrolysis protection.

#### TESTING

Remove the shore power cable and use a meter having the diode test function. Test the isolator in both directions and each reading should be between 0.7- and 1.4-volts. This reading is very dependent on the type of meter since there are two diodes and meters are intended for testing only one.

If you don't have a diode test meter, a more positive test is to place the isolator in series with any 12-volt lamp and measure the voltage across the isolator with the lamp on, which should read between 0.9- and 1.6 volts. You should then reverse the connection to the isolator and repeat the test with the current flowing the opposite direction. A

## SmartShore Marine

**1 Year Factory-Direct Warranty from Date of Purchase**

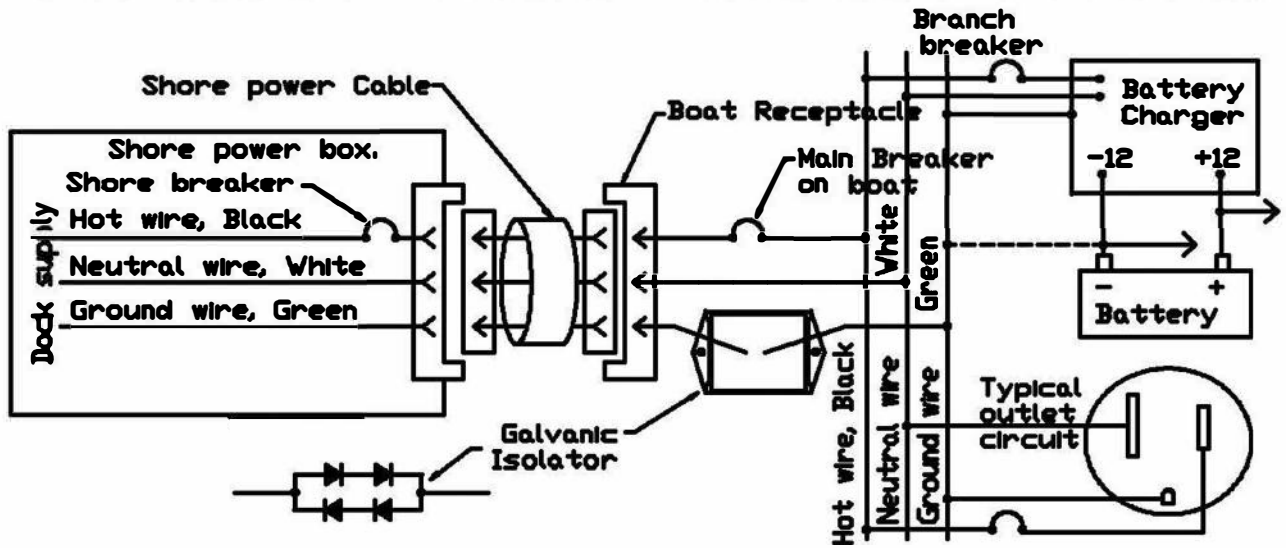
**INSTALLATION HELP** [www.smartshoremarine.com](http://www.smartshoremarine.com)

**TECHNICAL EMAIL** [tech@smartshoremarine.com](mailto:tech@smartshoremarine.com)

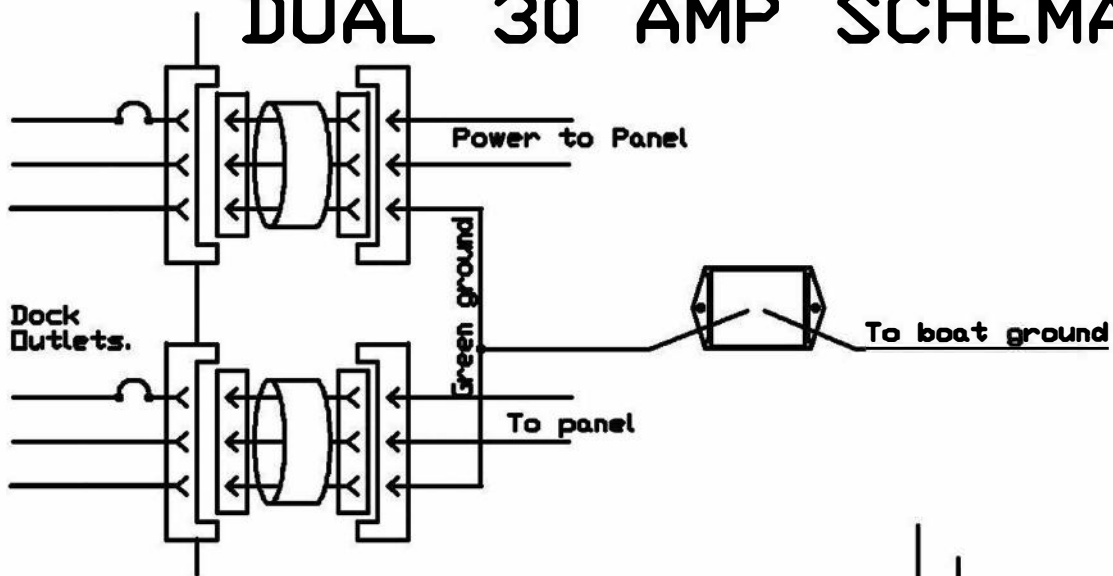
The failsafe SmartShore Marine Galvanic Isolator DOES NOT call 901-382-8888.

Made in the USA

# TYPICAL 30AMP SHORE POWER



# DUAL 30 AMP SCHEMATIC



# 50 AMP 220V

