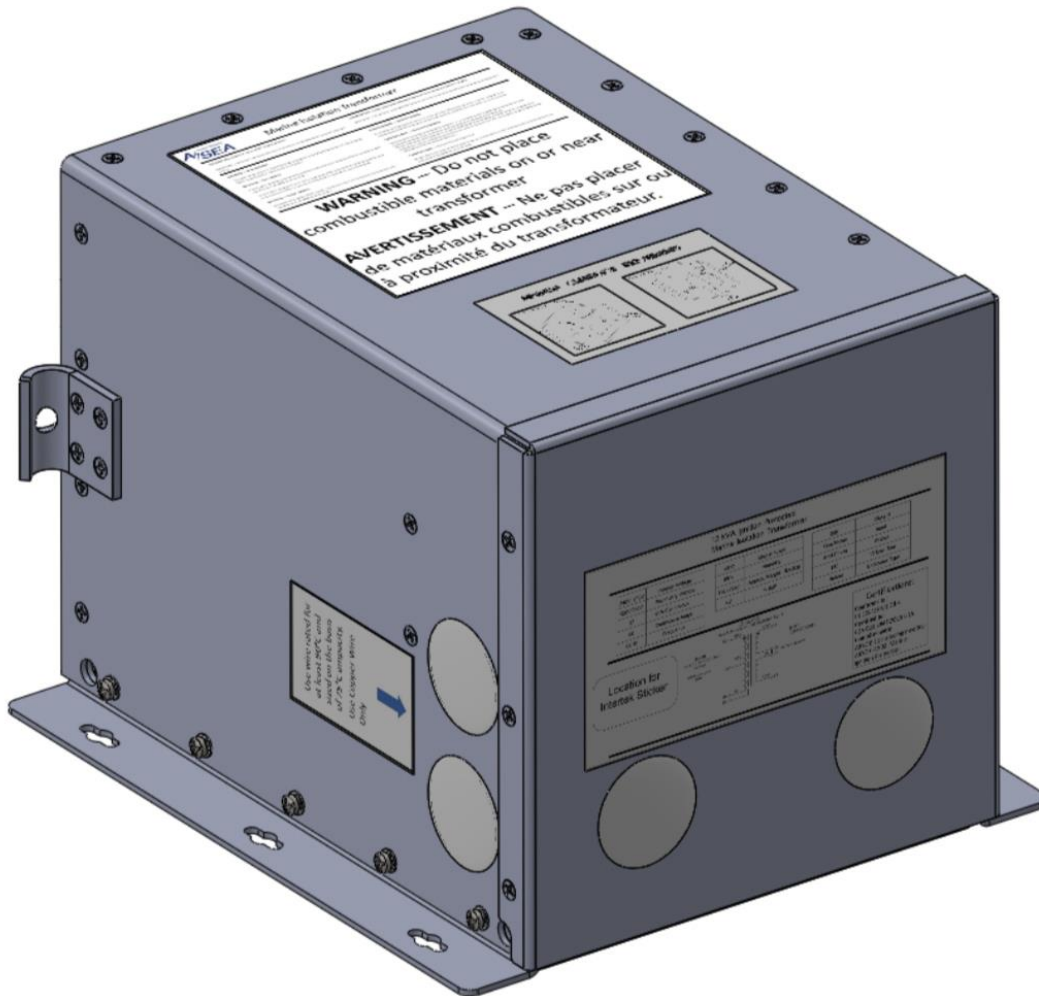


# Installation and Operations Manual



for the ASEA Power Systems  
Model 12kVA Ignition Protected  
Marine Isolation Transformer

P/N 634103  
Revision A

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## 1. USING THIS MANUAL

This manual has been written as an Operations Manual. Installation, operations, and preventative maintenance are covered in detail. This manual will cover the following model:

12kVA Isolation Transformer

It is important that the operator reads this manual prior to installing and operating the isolation transformer. A thorough understanding of the information covered in this manual is required for proper installation and operation. If any questions arise while reading this manual, the user is encouraged to contact ASEA Power Systems. ASEA Power Systems is located at:

ASEA Power Systems  
1580 Sunflower Ave, Suite 100  
Costa Mesa, CA. 92626  
Phone (714) 896-9695  
[service@aseapower.com](mailto:service@aseapower.com)  
[sales@aseapower.com](mailto:sales@aseapower.com)  
<http://www.aseapower.com>

## 2. SAFETY NOTICES

An isolation transformer can transfer large amounts of electrical energy very quickly, therefore when operating, maintaining, or adjusting the unit, all safety precautions and procedures must be followed. Read the text carefully and use professional skills and prudent care when performing the actions described in the text.

## **WARNING**

- **THIS EQUIPMENT CONTAINS HIGH ENERGY, LOW IMPEDANCE CIRCUITS! LETHAL POTENTIALS ARE CONTAINED WITHIN THE SYSTEM EVEN WHEN IT APPEARS NON-OPERATIONAL.**
- **CARE MUST BE EXERCISED WHEN SERVICING THIS EQUIPMENT IN ORDER TO PREVENT SERIOUS OPERATOR INJURY OR EQUIPMENT DAMAGE.**
- **DO NOT WORK ON OR OPERATE THIS EQUIPMENT UNLESS YOU ARE FULLY QUALIFIED TO DO SO. NEVER WORK ALONE.**
- **DO NOT REMOVE THE SHORE CORD FROM THE DOCK PEDESTAL WITHOUT FIRST OPENING THE DOCK OR YACHT BREAKER. FAILURE TO DO SO MAY RESULT IN DAMAGE TO THE TRANSFORMER AND PEDESTAL.**
- **OBSERVE THE FOLLOWING WHEN SERVICE AND MAINTENANCE ARE REQUIRED:**
  - **REMOVE ALL JEWELRY FROM ARMS, NECK AND HANDS WHEN SERVICING THIS EQUIPMENT. THIS PREVENTS THE POSSIBILITY OF SHORTING THROUGH THE JEWELRY, OR ELECTROCUTION OF THE OPERATOR.**
  - **WEAR SAFETY GLASSES WHEN SERVICING THIS EQUIPMENT TO PREVENT EYE INJURY DUE TO FLYING PARTICLES CAUSED BY ACCIDENTAL SHORT CIRCUIT CONDITIONS.**
  - **DO NOT REMOVE ANY PANELS OR COVERS WITHOUT FIRST OPENING ALL SHORE POWER AND SWITCHGEAR CIRCUIT BREAKERS DISTRIBUTING POWER TO AND FROM THE TRANSFORMER, AND THEN REMOVING THE INPUT SERVICE.**
  - **SERVICE SHOULD BE REFERRED TO PERSONNEL AUTHORIZED BY THE FACTORY TO SERVICE THIS EQUIPMENT.**

### 3. INTRODUCTION TO THE ISOLATION TRANSFORMER

The 12kVA Isolation Transformer is an ABYC E-11, ABYC C-1500 ignition protected compliant marine-grade isolation transformer intended for boats built for operating at 240 volts/50 amps connecting to a 208 volt/50 amp or 240/50-amp shore power pedestal. When properly installed, it will electrically isolate AC shore power from the boat's AC power system, ~~blocking any and prevent~~ stray DC currents from ~~a shorted wire on the vessel passing~~ through the ~~surrounding water decreasing shore power connections that might otherwise cause~~ galvanic corrosion of ~~precious the ship's~~ metal components and ~~preventing stray zincs~~. Proper installation as an ABYC Isolation Transformer or Polarization Transformer with further prevent the flow of DC currents ~~from finding shore ground reducing the risk of electric shock drowning (ESD) through ground conductors~~.

With an isolation transformer, power is transmitted to the boat via the **magnetic field** in the core. There is **NO direct connection**. The shore power earth terminates on the shield of the transformer, and a new ground is created for the ship. The two grounds are not connected – so fault current will not flow between them.

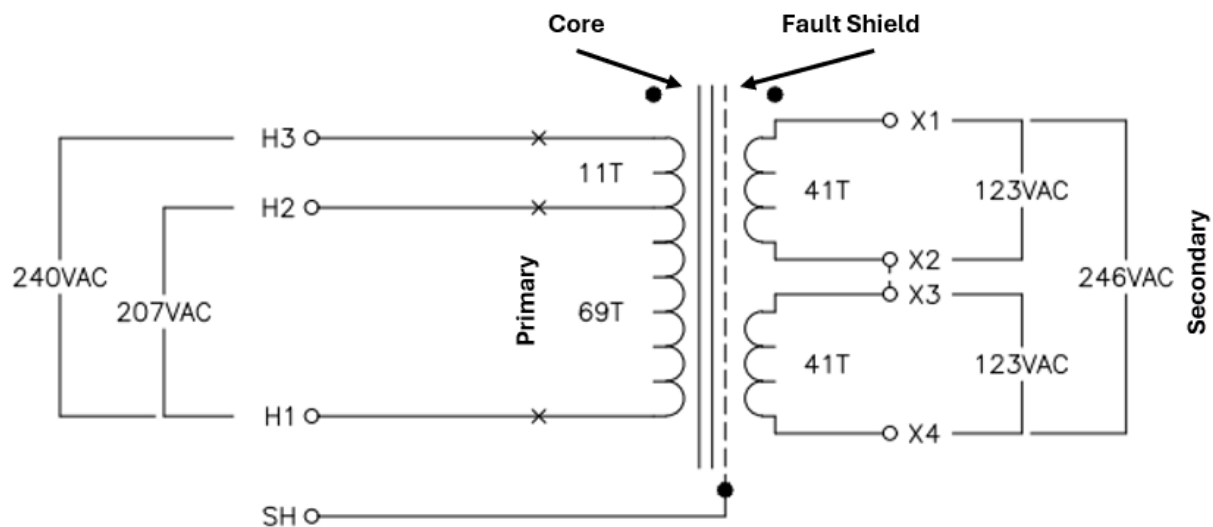


FIGURE 2 – SCHEMATIC

## 4. PRECAUTIONS

Wiring a marine vessel is an inherently dangerous task that should be performed by a properly trained person, otherwise shock or other damage to the unit or vessel can occur. For information regarding marine wiring standards and procedures, please contact the American Boat and Yacht Council (ABYC).

- **Environmental Precaution:** The Isolation Transformer has been certified as ignition protected and is intended for installation inside an engine room or elsewhere inside the boat that has adequate air flow. The location should not expose the unit to rain, snow, excessive moisture, or excessive heat.

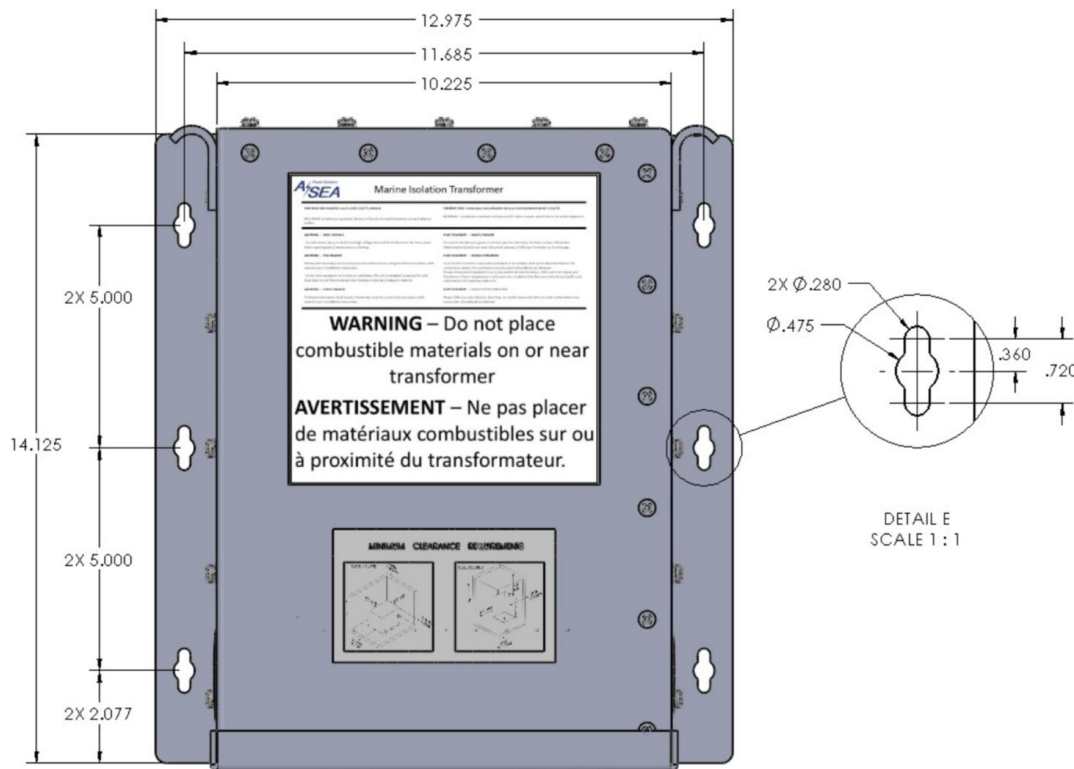
Note: This device is ignition protected in accordance with U.S. Coast Guard regulations under 33 CFR 183.410.

- **Application Precaution:** These units are intended for hard-wired, permanent, on-board applications. The risk of fire, electrical shock, or personal injury may occur if non-ASEA approved accessories are attached to the unit.
- **Damaged Unit Precaution:** If the unit has received a sharp blow, been dropped, immersed in water, or otherwise damaged, do not operate the Isolation Transformer. See the section in this manual on Warranty & Customer Service for replacement information.
- **Disassembly Precaution:** Do not attempt to disassemble the isolation transformer. Attempting non-approved wiring or maintenance or repair to the unit will result in negation of the warranty and may result in injury or death.

## 5. MOUNTING LOCATION AND HARDWARE

The chosen mounting location should not be subject to water exposure, including splashing or rain. As mentioned above, if the unit is placed more than 10ft (3m) from the shore power electrical attachment point, an ELCI needs to be installed.

The isolation transformer can be mounted either in a vertical (wall mount) or horizontal (floor mount) configuration. The unit weighs approximately 160lbs (72kg), and will experience vibration and movement of the vessel, so ensure proper mounting hardware is used and the unit is secure. Take proper precautions to prevent dropping the unit if mounting in a vertical manner. Use 1/4" diameter screws/bolts that are corrosion resistant with locking washers. When drilling the mounting holes into the mounting structure, avoid contact with any wires or components on the backside of the mounting structure.

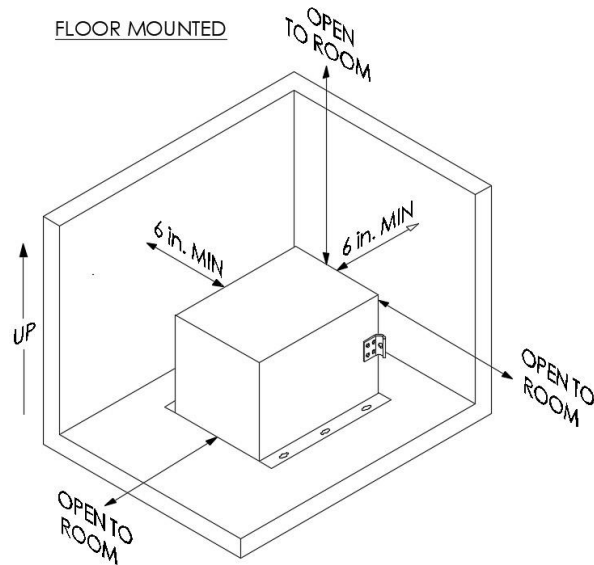


### Clearance Zones and Air Flow

During operation, the isolation transformer can reach an elevated temperature, so it is critical to maintain an unobstructed area (indicated below based on mounting method) around the unit for proper air flow. Sides not placed near an adjacent surface (side or ceiling) should be open to a room that is a sizeable space such that the heat generated from the unit can dissipate. Failure to keep proper clearances or allow dispersal of generated heat can cause the unit to overheat.

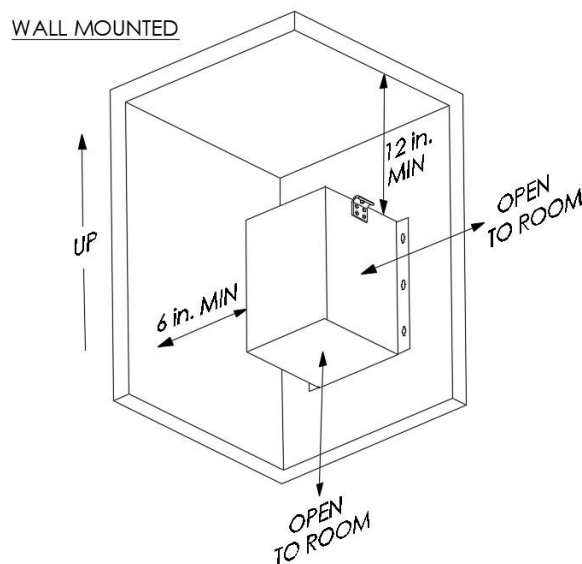
### *Floor Mount*

When mounted in the floor mount orientation, ensure that there is at least 6 inches of unobstructed clearance between the unit and a side wall and back wall.



### *Wall Mount*

When mounted in the wall mount orientation, ensure that there is at least 6 inches of unobstructed clearance between the unit and a side wall and 12 inches of unobstructed clearance between the unit and the ceiling.





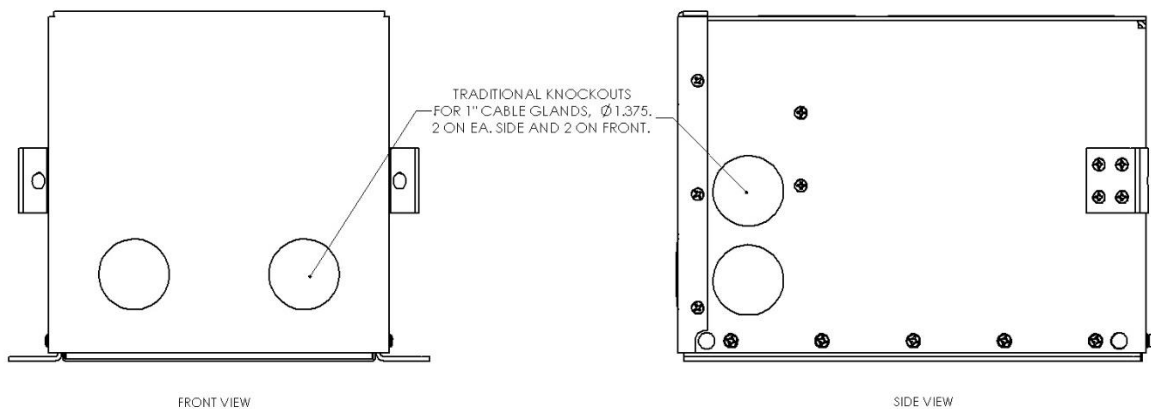
## 6. INSTALLATION AND WIRING

The *ABYC E-11 AC and DC Electrical Systems on Boats* specification allows for two wiring methods for the installation of an isolation transformer: as a traditional isolation transformer and as a polarization transformer. If wiring the unit as a polarization transformer, this wiring method bypasses the AC grounding conductor isolation provided by the isolation transformer between the vessel and the shore, thereby requiring the use of a galvanic isolator to decrease galvanic corrosion.

Per ABYC E-11.11 installations where an isolation transformer is installed within 10ft (3m) of the shore power inlet or the electrical attachment point of a permanently installed shore power cord, an ELCI or Type A residual current device (RCD) is not required.

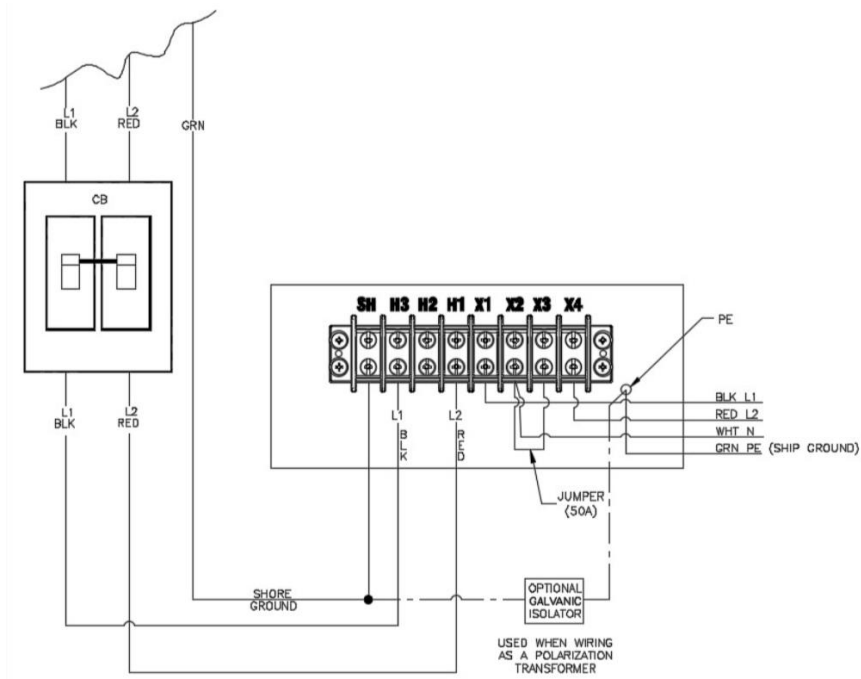
Consult the ABYC E-11 specification for proper wire sizing when choosing the power cables connecting to the isolation transformer. The isolation transformer is designed with 6 knockouts to allow for installation flexibility that is used with standard 2" cable glands. All wiring needs to be routed to avoid sharp edges or hot surfaces.

Upon completion of the wiring of the isolation transformer, ensure that all connections are tight, and the top cover is secured using the provided screws. Power should only be applied after all the wiring steps have been completed.



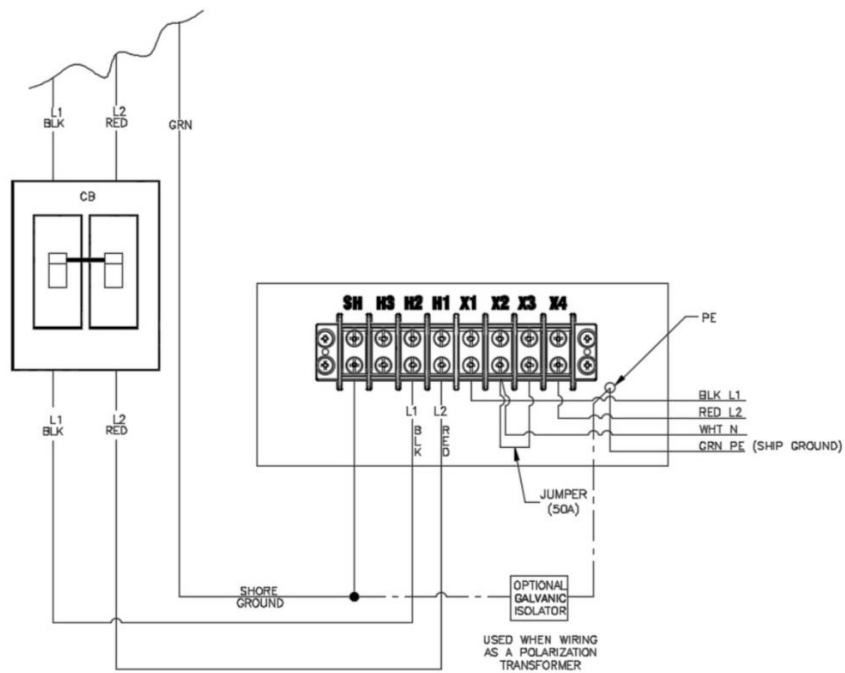
## Wiring the Transformer – Electrical Wiring Diagram

240V -> 240V



240VAC SHORE INPUT  
CONNECTION DEPICTED.

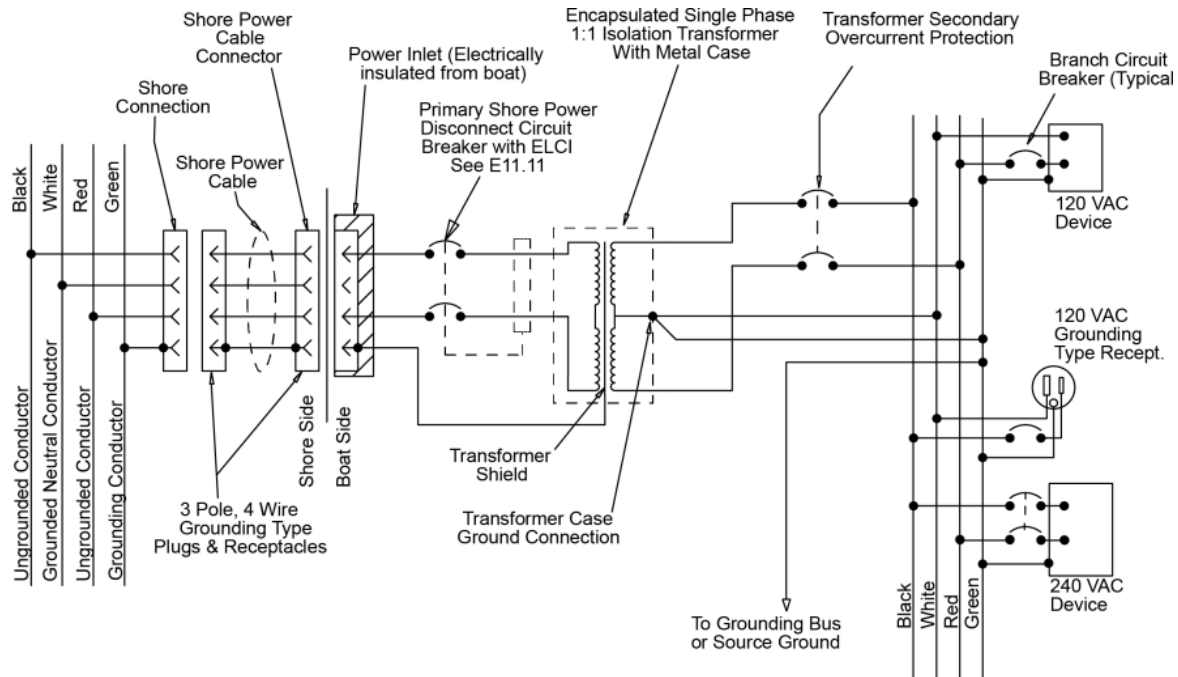
208V -> 240V



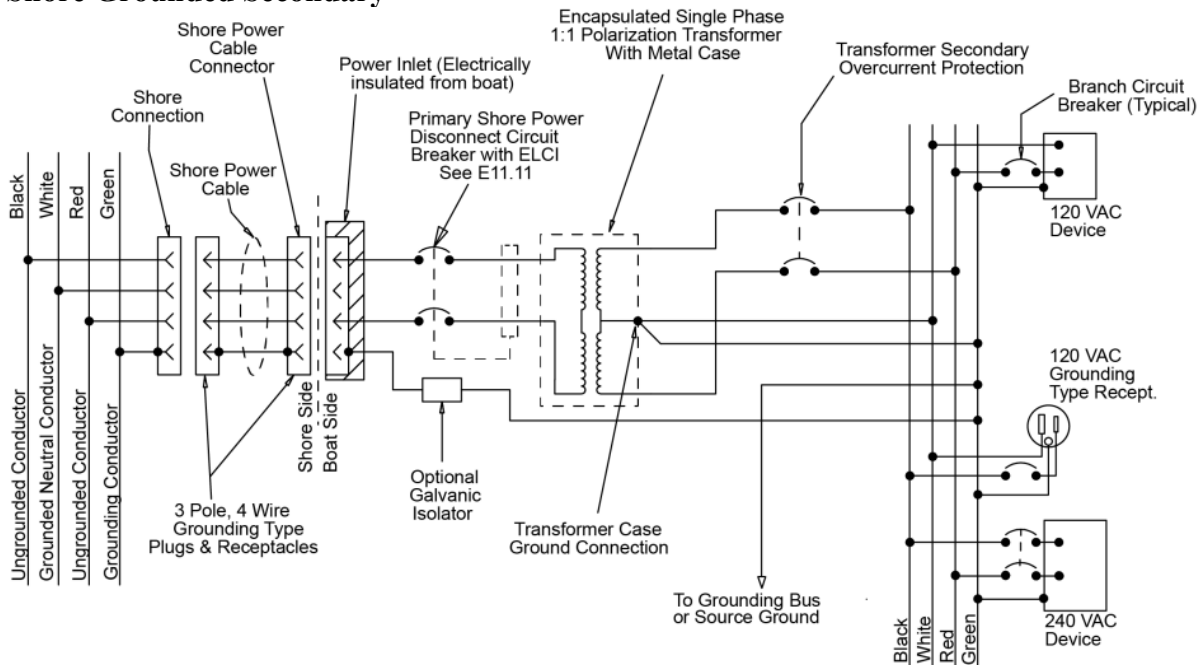
FOR 208VAC OPERATION,  
MOVE L1 CABLE FROM H3 TO H2.

## ABYC E-11 System Diagrams:

### Isolation Transformer System with Single Phase 240 V Input, 120/240 V Output with Boat Grounded Secondary, Transformer Shield Grounded on the Shore, Transformer Metal Case Grounded on the Boat



### Polarization Transformer System with a Single Phase 240 V Input, 120/240 V Output, and Shore Grounded Secondary



## 7. MAINTENANCE OF THE ISOLATION TRANSFORMER

Once the unit is installed, the unit should undergo periodic maintenance of the device, ensuring:

- the cables are still attached and secure to the terminal block
- the cable glands are secure
- there is no debris or moisture or pooling liquid within the terminal block area
- the unit is secure to the wall/floor
- there is no combustible material around the unit

## 8. TESTING AND TROUBLESHOOTING

To test that the unit is functioning properly, use a multimeter to measure the output voltage. Contact a certified ASEA technician if the multimeter shows a 5% lower or higher than expected difference between the input 240VAC and the and the transformer output voltage.

## 9. WARRANTY AND CUSTOMER SERVICE

ASEA Power Systems warrants each unit to be free from defects in material and workmanship. For a period of five years after purchasing, ASEA Power Systems will repair or replace any unit returned to our plant by the original buyer, with shipping both ways prepaid by the buyer.

ASEA Power Systems is not responsible for consequential damage arising from the use of its equipment. It does not apply to extensively modified or non-standard systems. Debit memos for returned units are not accepted and will cause return of the unit without repair.

ASEA Power Systems does not authorize the use of any of its products or systems for use as an AC voltage supply (source) for life support systems. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with this Operations Manual, can be reasonably expected to result in significant injury to the user.

ASEA Power Systems certifies that this product was thoroughly tested and inspected and found to meet or exceed its published specifications when shipped from the factory.

## 10. CERTIFICATIONS

The ASEA 12kVA marine isolation transformer meets ABYC E-11 requirements for isolation transformers having obtained the following certifications:

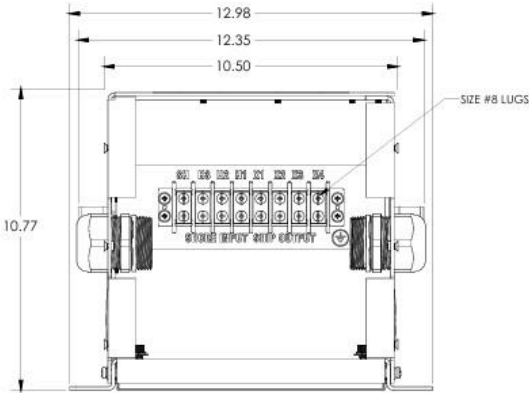
ABYC C-1500: Ignition Protection for Marine Products

UL 1561: Standard for Dry-Type General Purpose and Power Transformers

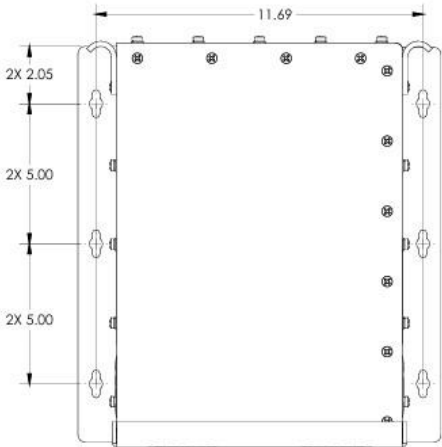
## 11. SPECIFICATIONS

Feature	Specification
Dimensions (H x W x D) –	Inches - 10.6 x 10.2 x 14.2 Centimeters – 26.9 x 25.9 x 36.1
Dimensions with mounting flange (H x W x D)	Inches - 10.6 x 12.4 x 14.2 Centimeters – 26.9 x 31.5 x 36.1
Approximate Weight	160 lbs (73kg)
Input voltage	240V/208V
Input Current	50 A
Output Voltage	120V/240V
Output Current	50A/43A (when connected with 208V input)
Operating Frequency	60 Hz

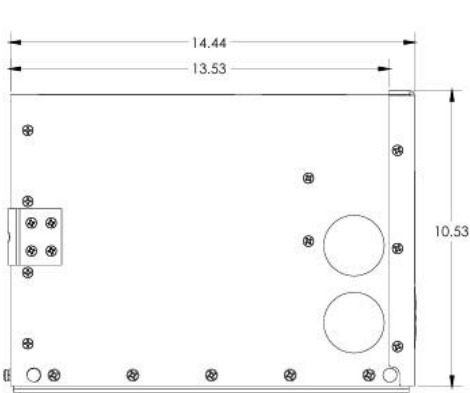
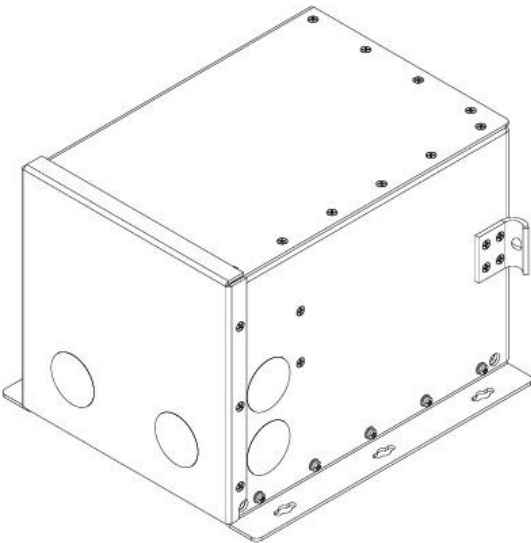
12. DRAWING



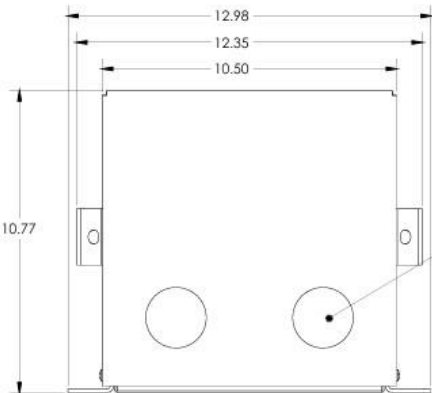
TYPICAL ELECTRICAL WIRING



TOP VIEW

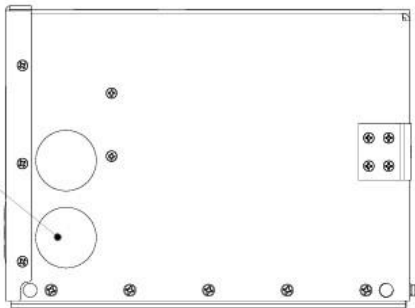


LEFT VIEW



FRONT VIEW

TRADITIONAL KNOCKOUTS  
FOR 1" CABLE GLANDS, Ø1.375.  
2 ON EA. SIDE AND 2 ON FRONT.



RIGHT VIEW