

Attachment 1: Salient Characteristics

3-PHASE STEP-DOWN TRANSFORMER

Requiring Activity: Naval Postgraduate School

Department: Physics Department

Quantity: 1 Each

Requested Delivery Date: Delivery is required **within 8 months after date of award**

1. PURPOSE

The Naval Postgraduate School requires one custom-built, marine-grade, three-phase step-down transformer for use in a Naval Conex box environment aboard civilian research vessels. The transformer shall support safe and reliable operation in a shipboard/marine environment and shall meet the minimum technical requirements identified in this attachment.

2. GENERAL REQUIREMENT

The transformer shall support operation of a Naval Conex box used for physics research aboard civilian research vessels. Civilian research vessels generally provide 480 VAC or 440 VAC, 3-phase power, while the Conex box requires three 115 VAC multi-phase inputs. The transformer shall be suitable for shipboard deck use and compatible with the electrical, environmental, grounding, and mechanical requirements stated herein.

4. MANDATORY SALIENT CHARACTERISTICS

4.1 Electrical Requirements

The product offered shall:

1. Be a **3-phase step-down isolation transformer**.
2. Be **EMI shielded**.
3. Be **27 kVA or higher**.
4. Have input power of **480 VAC, 3-phase, 50A**.
5. Have multiple output power connections (e.g., **115 VAC, 3-phase, 30A**).
6. Accommodate common alternate input voltages, including **440 VAC** and **460 VAC**.
7. Have approximately **3% impedance**.
8. Be **copper wound**.

9. Meet **MIL-T-15108C**. This is a mandatory requirement.

4.2 Input/Output Configuration

The product offered shall:

1. Support the Conex box input arrangement consisting of:
 - Two **115 VAC, 3-phase, 30A** outputs
 - One **115 VAC, 1-phase, 30A** output (2 hot and 1 ground)
2. Provide **three outputs** through a distribution arrangement.
3. Fuse each output at **30A**.
4. Primary fuse, such as slow-blow or anti-surge fuse, for 50A
5. Use input wiring compatible with **6 AWG SIL-A-BLEND 200C/1000V or better**.
6. Use output wiring compatible with **8 AWG SIL-A-BLEND 200C/1000V or better**.
7. Maintain required conductor color coding as specified by the requiring activity.
8. Use the required connector/interface configuration or a fully compatible equivalent if approved by the Government (e.g., MS17344 and MS17346)

4.3 Grounding and Bonding

The product offered shall:

1. Be compatible with the required shipboard grounding arrangement, i.e., OPEN-DELTA
2. Provide bonding between the ship ground/hull ground, transformer grounding bus, and chassis as specified by the requiring activity.
3. Provide grounding support for the Conex box output arrangement.
4. Use a **green** ground conductor.
5. Accommodate the backup chassis-to-ship ground braid arrangement specified by the requiring activity.

4.4 Thermal Requirements

The product offered shall be rated for:

1. **50°C ambient temperature**
2. **115°C temperature rise**
3. **200°C insulation rating**.

4.5 Mechanical and Environmental Requirements

The product offered shall:

1. Be **marine grade**.
 2. Have a **NEMA 4 enclosure**.
 3. Include **casters**.
 4. Include **lifting eyes**.
 5. Include a **reinforced underside** suitable for crane or forklift movement and shipboard securement.
 6. Include **removable locking casters** for movement across deck and through ship access points.
 7. Be suitable for ship deck mounting and securement.
 8. Be compatible with the required deck mounting arrangement identified by the requiring activity.
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5. OPTIONAL CHARACTERISTICS

The following characteristic is optional and not required for technical acceptability:

1. Labeling or operating guidance indicates operation in shaded conditions rather than direct sunlight.
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6. DELIVERY REQUIREMENTS

6.1 Delivery Date

Required delivery date: Delivery is required **within 8 months after date of award**

6.2 Delivery Location

NPS Warehouse

1988 Lake Del Monte Drive -- Building 349
Monterey, CA 93943

Deliveries shall be made Monday through Friday between **0700-1130** and **1230-1600 PST**. The contractor shall include the Government contract number on the package and/or packing slip.

7. PRODUCT SUBMISSION REQUIREMENTS

Quoters shall provide sufficient technical documentation for the Government to determine compliance with all mandatory salient characteristics. At a minimum, the quoter shall provide:

1. Manufacturer name
2. Manufacturer part number
3. Product literature / cut sheet
4. Electrical specifications
5. Connector/interface details
6. Grounding/bonding details
7. Enclosure/environmental rating information
8. Mechanical configuration information
9. Dimensions and weight, if available
10. Evidence of compliance with **MIL-T-15108C**
11. A list of any exceptions

Failure to provide sufficient documentation may render the offer technically unacceptable.

8. TECHNICAL ACCEPTABILITY

A quotation shall be considered technically acceptable only if it meets all mandatory requirements of this attachment and includes sufficient supporting technical documentation to verify compliance.

Dated: 08/25/2026