

SECTION 26 22 13 – LOW-VOLTAGE DRY-TYPE TRANSFORMERS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following types of dry-type transformers rated 600 V and less, with capacities up to 1000 kVA:
  - 1. Distribution transformers.

1.2 SUBMITTALS

- A. Product Data: Include rated nameplate data, capacities, weights, dimensions, minimum clearances, installed devices and features, and performance for each type and size of transformer indicated.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 1. Wiring Diagrams: Power, signal, and control wiring.
- C. Vibration Isolators: Provide product data on vibration isolators to be provided at each transformer. Refer to Paragraph "Installation," below.

1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain each transformer type through one source from a single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with IEEE C57.12.91, "Test Code for Dry-Type Distribution and Power Transformers."

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Temporary Heating: Apply temporary heat according to manufacturer's written instructions within the enclosure of each ventilated-type unit, throughout periods during which equipment is not energized and when transformer is not in a space that is continuously under normal control of temperature and humidity.

1.5 COORDINATION

- A. Coordinate size and location of concrete bases with actual transformer provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.
- B. Coordinate installation of wall-mounting and structure-hanging supports with actual transformer provided.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Square D Company. – Base Bid
- B. GE by ABB equivalent. – Alternate Bid
- C. No Other Manufacturers Will Be Considered.

2.2 GENERAL TRANSFORMER REQUIREMENTS

- A. Description: Factory-assembled and -tested, air-cooled units for 60-Hz service.
- B. Cores: Grain-oriented, non-aging silicon steel.
- C. Coils: Continuous windings without splices except for taps.
  - 1. Internal Coil Connections: Brazed or pressure type.
  - 2. Coil Material: Aluminum.

2.3 DISTRIBUTION TRANSFORMERS

- A. Comply with NEMA ST 20, and list and label as complying with UL 1561.
- B. Cores: One leg per phase.
- C. Enclosure: Ventilated, NEMA 250.
  - 1. Provide NEMA Type 2 for interior applications and NEMA Type 3R for exterior applications unless otherwise noted on the drawings.
  - 2. Core and coil shall be encapsulated within resin compound, sealing out moisture and air.
- D. Insulation Class: 220 deg C, UL-component-recognized insulation system with a maximum of 115 deg C rise above 40 deg C ambient temperature.
- E. Energy Efficiency for Transformers Rated 15 kVA and Larger:
  - 1. Marked as compliant with currently adopted DOE and Energy Code efficiency levels by qualified electrical testing laboratory recognized by authorities having jurisdiction.
  - 2. Tested according to NEMA TP 2.
- F. Wall Brackets: Manufacturer's standard brackets.
- G. Low-Sound-Level Requirements: Maximum sound levels shall meet NEMA ST 20 standard sound levels when factory tested according to IEEE C57.12.91.

2.4 SOURCE QUALITY CONTROL

- A. Test and inspect transformers according to IEEE C57.12.91.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions for compliance with enclosure- and ambient-temperature requirements for each transformer.
- B. Verify that field measurements are as needed to maintain working clearances required by NFPA 70 and manufacturer's written instructions.
- C. Examine walls, floors, roofs, and concrete bases for suitable mounting conditions where transformers will be installed.
- D. Verify that ground connections are in place.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install wall-mounting transformers level and plumb with wall brackets fabricated by transformer manufacturer.
- B. Construct concrete bases and anchor floor-mounting transformers according to manufacturer's written instructions. Provide 4" concrete housekeeping pad under transformer.
- C. Provide vibration isolation pads at transformers providing a minimum static deflection of 0.3 inches similar to Kinetics 2" KIP.
- D. Verify all dimensions in the field.
- E. Adjust transformer secondary voltages to provide the required voltage at the loads.

3.3 IDENTIFICATION

- A. The requirements listed below are in addition to the requirements listed in Division 26 "Electrical Identification."
- B. Nameplates: Engraved, laminated-plastic or metal nameplate for each transformer, mounted with corrosion-resistant screws.

3.4 CONNECTIONS

- A. Connect ground equipment.
- B. Connect wiring.
- C. Tighten electrical connectors and terminals in accordance with manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- D. Upon completion of the installation, an infrared scan shall be provided for all bolted connections. Correct any deficiencies.

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- E. Conduit connections to transformers shall employ sufficient length of flexible conduit to create a U-shaped bend.

3.5 ADJUSTING

- A. Record transformer secondary voltage at unit for at least 48 hours of typical occupancy period. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 5 percent and not being lower than nameplate voltage minus 3 percent at maximum load conditions. Submit recording and tap settings as test results.
- B. Output Settings Report: Prepare written report recording output voltages and tap settings.

3.6 CLEANING

- A. Vacuum dirt and debris; do not use compressed air to assist in cleaning.

END OF SECTION 26 22 13