



Hammond Power
Solutions Inc.

HPS FORTRESS™

1.2kV Class Commercial Potted Distribution Transformer Typical Specification

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1 GENERAL

1.1 SCOPE

- A This section defines dry-type, encapsulated enclosed transformers as indicated.

1.2 RELATED DOCUMENTS

- A Drawing and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section

1.3 REFERENCES

- A ANSI C57.12.01/NEMA ST 20-Dry Type Transformer For General Applications
- B IEEE C57.110-1998
- C UL certified (UL file number: E258346), CSA

1.4 SUBMITALS

- A Submit shop drawing and product data for approval and final documentation in the quantities listed according to the Conditions of the contract.
 - i Customer name. Customer location and customer order number shall identify all transmittals.
 - ii Product Data including KVA rating, Temperature Rise, Detailed enclosure dimensions, Primary & Secondary nominal voltages, primary voltage taps, no load & full load losses per NEMA ST20, impedances, unit weight, warranty.

1.5 STORAGE AND HANDLING

- A Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from potential damage from weather and construction operations. Store so condensation will not form on or in the transformer housing and if necessary, apply temporary heat where required to obtain suitable service conditions.
- B Handle transformer using proper equipment for lifting and handling, use when necessary lifting eye and/or brackets provided for that purpose.

1.6 WARRANTY

- A The transformer shall carry a 10 year limited warranty.
(For details refer to the manufacturer's published warranty)

2 PRODUCTS

2.1 GENERAL CONSTRUCTION:

- A All single phase and three phase transformers shall be encapsulated type. The primary side of each transformer shall, if applicable, be provided with taps that meet or exceed NEMA standards.
- B Transformers shall be designed, constructed and rated in accordance with UL, CSA and NEMA. If shipping to Europe, transformer will also have to be manufactured in accordance to CE standards and carry a CE mark.

2.2 VOLTAGE AND kVA REQUIREMENTS:

- A Single Phase Primary and Secondary Voltage Combinations:
[120x240-120/240][120/208/240/277-120/240][208x416-120/240][240x480-120/240]
[277-120/240][277/480-120/240][347/380-120/240][600-120/240]
[190/200/208/220/240x380/400/415/440/480-120/240][other] Volts
- B Three Phase Primary and Secondary Voltage Combinations:
[208-208Y/120][208-480Y/277][240-208Y/120][240-480Y/277][480-208Y/120]
[480-240D/120CT][600-208Y/120][600-240D][other] Volts

- C kVA Rating: Single Phase - [.05][.10][.15][.20][.25][.35][.50][.75][1][1.5][2][3][5][7.5][10][15][25][37.5][other] kVA
 Three Phase – [2][3][6][9][15][30][45][75][other] kVA
- D System Frequency: 60 [50][other] Hertz

2.3 BASIC REQUIREMENTS:

- A Standard impedance at 60Hz:
 2% to 5% (up to 10 kVA), 4% to 6.5% (above 10 kVA)
- B Name Plate Rating: Linear load, 60Hz
- C Single-phase or three-phase, common core construction. Convection air cooled.
- D Insulation Class: [130°C][180°C][other].
- E Taps: [1 x ± 5% (1FCAN, 1FCBN)][2 x ± 2.5% (2FCAN, 2FCBN)][2 x +2.5%, 4 x -2.5% (2FCAN, 4FCBN)][2 x - 5% (2FCBN)][none][other].
- F Core construction: high grade non-aging, fully processed silicon steel laminations or better.
- G Coil conductors: copper windings, with terminations brazed, welded or bolted.
- H Electrostatic Shielding on all single phase units over 0.50 kVA and all three phase units.
- I Impregnation: vacuum impregnated core & coils.
- J Sound level to meet NEMA ST-20.
- K Enclosure: ventilated, NEMA 3R[other].
- L Enclosure Finish: ANSI 61 Grey suitable for UL50 outdoor applications [other].
- M Transformers shall terminate in either leads or mounting pads. Mounting lugs will be included on all units up to and including 270 amp ratings. Contractors shall provide all necessary lugs not already provided with transformer.
- N UL listed, CSA approved, [CE Mark].
- O Silicon Brass (or approved equivalent) hardware.
- P Built to NEMA ST-20 and in accordance with all applicable UL, CSA and ANSI/IEEE standards.
- Q Seismic: are designed and manufactured to comply with the specification, "IBC 2006; Section 1613; Earthquake Loads" with the site specific parameters of "Occupancy Category III: Special Occupancy": $IP=1.25$ and "Site Profile Type: $SD=$ Stiff Soil" with the seismic forces defined as "Spectral Acceleration for Short Periods: $SS= 1.0g$ ". (Applicable to floor mounted units only.)

OPTIONS:

- Wall Mounting Kits

2.4 ACCEPTABLE PRODUCT AND MANUFACTURER:

- A **HPS FORTRESS™** transformer, Hammond Power Solutions Inc. (Canada: 1-888-798-8882 / U.S.: 1-866-705-4684).
- B Substitutions are permitted, subject to meeting all requirements of this specification and also having written approval by engineering 10 days prior to bid closing.

3 EXECUTION

3.1 INSTALLATION

- A The installing contractor shall install the HPS Fortress™ Encapsulated Distribution Transformer per the manufacturer's recommended installation practices as found in the installation, operation, and maintenance manual and comply with all applicable codes.
- B Make sure that the transformer is level.
- C Check for damage and loose connections.
- D Mount transformer to comply with all applicable codes.
- E Install seismic restraint where indicated on the drawing.
- F Coordinate all work in this section with all work of other sections.
- G Take Infrared Picture to verify connections accuracy or deficiencies.
- H Prior to energizing transformer, verify secondary voltages and if necessary adjust secondary taps.
- I Report for the Commission of the transformer shall include:
 - Primary & Secondary Voltages
 - Primary & secondary THDi & THDv