

MGM Transformer

600V Class Dry-Type K-Factor Rated
Distribution Transformer
Specification Guide



MGM Transformer Company
5701 Smithway Street
Commerce, CA 90040
www.mgmtransformer.com
Phone: 323.726.0888
Fax: 323.726.8224

1.0 Scope

1.1 The basis for this specification is the MGM Transformer Company design for Dry-type distribution transformers for non-linear loads single and three phase primary and secondary voltages of 600V and less and capacity ratings through 1500kVA.

Note: Paragraphs and words marked in [] are alternates. Select only one.

This specification provides the technical requirements for the design, manufacture, and testing of 600V class dry-type k-factor rated transformers. The service conditions shall be as specified in the "Usual Service Conditions" section of C57.12.01.

This specification covers only the general requirements of the transformer.

2.0 Codes and Standards

2.1 The ventilated dry-type transformers and protection devices in this specification are designed and manufactured according to latest revision of the following standards (unless otherwise noted).

- (a) Transformers 1000kVA and smaller shall be listed by Underwriters Laboratories.
- (b) Conform to the requirements of ANSI/NFPA 70.
- (c) Transformers are to be manufactured and tested in accordance with NEMA ST20.
- (d) IEEE C57.12.01, General Requirements for Dry-Type Distribution and Power Transformers Including Those with Solid Cast and / or Resin-Encapsulated Windings

2.2 (NEC) National Electrical Code

It shall be the Seller's responsibility to be, or to become, knowledgeable of the requirements of these Codes and Standards. Any required changes or alterations to the equipment to meet the Codes and Standards requirements shall be at the expense of the Seller.

Equipment proposed by the Seller that cannot fully meet the requirements of this specification shall have all exceptions clearly stated in the proposal. No exception shall be allowed, unless approved by the Buyer in writing.

3.0 Quality Assurance

The manufacturer shall have a well-documented quality assurance program, which includes procedures for all activities in order entry, design, material procurement, manufacturing processes, testing, shipping and post shipment.

The manufacturer shall have specialized in the design, manufacture and assembly of k-factor rated dry-type distribution transformers for a minimum of {25} years.

The transformers shall be manufactured by a company, which is certified to ISO, 9001:2000 for design and manufacture of Power, Distribution and Specialty Dry Type Transformers.

The test floor shall have a documented calibration program. All equipment shall receive regular calibrations. Calibration standards shall be traceable to National Bureau of Standards. Records of all equipment calibration shall be made available to the Buyer upon request.

Measured values of electric power, voltage, current, resistance, and temperatures are used in the calculations of reported data. To ensure sufficient accuracy in the measured and calculated data the test system accuracy requirements listed in ANSI C57.12.01 Table 3 shall be met as a minimum.

4.0 Products

4.1 Manufacturer Information

- (a) Transformers shall be as manufactured by MGM Transformer Company.
- (b) Manufacturer shall be a registered firm in accordance with ISO 9001:2000 SIC 3612 (US); which is the design and manufacture of low voltage dry type power, distribution and specialty transformers.

4.2 Ratings Information

- (a) Neither the primary nor the secondary temperature shall exceed 220°C at any point in the coils while carrying their full rating of non-sinusoidal load. Transformers are to be UL listed and labeled for [K-4] [K-13] as defined as the sum of fundamental and harmonic $I_h(\text{pu})^2 h^2$ per UL 1561. Transformers evaluated by the UL K-Factor evaluation shall be listed for 150°C average temperature rise.
- (b) All insulating materials are to exceed NEMA ST20 standards and be rated for 220°C UL component recognized insulation system.
- (c) K-Factor rated transformers shall have an impedance range of 3% to 6%, and shall have a minimum reactance of 2% in order to help reduce neutral current when supplying loads with large amounts of third harmonic current
- (d) Transformers in most cases shall have a minimum of (4) 2.5% full capacity primary taps.
- (e) Transformers 15kVA and larger shall be 150°C temperature rise above 30°C ambient. The maximum temperature of the top of the enclosure shall not exceed 50°C rise above a 30°C ambient.
- (f) The transformer(s) shall be rated according to the following schedule:
 - Identification Number
 - kVA Rating
 - Voltages
 - Phase
 - Frequency
 - K-Factor
 - Temperature Rise

4.3 Construction

- (a) Transformer coils shall be of the continuous wound construction and shall be impregnated with nonhygroscopic, thermosetting varnish
- (b) All cores to be constructed with low hysteresis and eddy current losses. Magnetic flux densities are to be kept well below the saturation point to prevent core overheating. The completed core and coil shall be bolted to the base of the enclosure but isolated by means of rubber vibration-absorbing mounts. There shall be no metal-to-metal contact between the core and coil and the enclosure except for a flexible safety ground strap. Sound isolation systems requiring the complete removal of all fastening devices will not be acceptable.
- (c) The core of the transformer shall be visibly grounded to the enclosure by means of a flexible grounding conductor sized in accordance with applicable UL and NEC standards.
- (d) The transformer enclosures shall be ventilated and be fabricated of heavy gauge, sheet steel construction. The entire enclosure shall be finished utilizing a continuous process consisting of degreasing, cleaning and phosphatizing, followed by electrostatic deposition of polymer polyester powder coating and baking cycle to provide uniform coating of all edges and surfaces. The coating shall be UL recognized for outdoor use. The coating color shall be ANSI 61.
- (e) Transformers shall be supplied with quality, full width electrostatic shields resulting in a maximum effective coupling capacitance between primary and secondary of 33 Pico farads.

4.4 Documentation

When requested, manufacturer shall provide copies of following documents to buyer for review:

- A certified test report containing minimum information per IEEE C57.12.91
- Installation, maintenance, and operating instructions.
- Outline Drawing
- Connection Diagram
- Nameplate Drawings
- Spare parts list
- Applicable wiring diagrams

4.5 Sound Levels

(f) Sound levels shall be calculated by the manufacturer not to exceed the following:

- 15 to 50KVA - 45dB
- 51 to 150kVA - 50dB
- 151 to 300kVA - 55dB
- 301 to 500kVA - 60dB
- 501 to 700kVA - 62dB
- 701 to 1000kVA - 64dB
- 1001 to 1500kVA - 65dB

Note: Lower sound levels may be desirable for critical areas such as hospitals, schools or office areas. Contact an MGM Transformer Company representative for specific recommendations.

4.6 Optional Accessories

- (a) [Provide weathershields for units ID#_____750kVA max.]
- (b) [Provide wall mounting brackets for units ID#_____75kVA max.]