Low Voltage General Purpose Transformers

			
UL Listed, CSA Certified **Single Phase** **Type 1-E** **Encapsulated**	**UL Listed** **Three Phase** **Type 3-E** **Encapsulated**	**UL listed** **Single Phase** **Type 1-V** **Ventilated**	**UL Listed** **Three Phase** **Type 3-V** **Ventilated**
Type 1-E general purpose transformers are single phase, resin encapsulated designs suitable for indoor or outdoor applications. It's totally enclosed, non-ventilated enclosure make it ideally suited for use in areas that contain dust, moisture, or corrosive fumes. Available in ratings through 25 KVA type 1-E transformers can be mounted in any position for indoor installations and in upright positions only for outdoor installations.	Type 3-E resin encapsulated, 3-phase transformers are available in ratings of 3-75 KVA. Its totally enclosed non-ventilated enclosure makes the 3-E ideally suited for outdoor as well as indoor locations. Type 3-E transformers utilize the 185°C insulation system with 115°C rise. 3-E transformers 3-15 KVA are T-T connected.	1-V general purpose transformers are single phase ventilated units designed primarily for indoor locations (also for outdoor , 600 volt class with the addition of weathershields). The 1-V utilizes a 220°C insulation system with 150°C rise and is available in ratings of 15-167 KVA. 1-V products are compliant to DOE 2016.	The 3-phase 3-V ventilated dry-type is available in ratings of 15-750 KVA. Its 220°C insulation system (150°C rise) is self-extinguishing. 3-V enclosures are designed for indoor locations (or outdoor, 600 volt class with addition of weathershields). 3-V products are compliant to DOE 2016.

Mounting

Units installed outdoors must be mounted in upright position.

Efficiency

The Micron series of ventilated, three-phase, 600 volt class general purpose distribution transformers meet the DOE 2016 efficiency requirements and federal energy efficiency laws. New distribution transformers installed in the United States are required to meet these energy efficiency requirements as of January 2016.

Winding Terminations

Primary and secondary windings are terminated in the wiring compartment. Encapsulated units have copper leads or stabs brought out for connections. Micron recommends external cables be rated 90°C (sized at 75°C ampacity) for encapsulated designs.

Series-Multiple Windings

Series-multiple windings consist of 2 similar coils in each winding which can be connected in series or parallel (multiple). Transformers with series-multiple windings are designated with an "**X**" or"**/**" between the voltage ratings. such as primary voltage of "120**/**240" or "240 **X** 480". If the series-multiple winding is designated by an "**X**" the winding can be connected only for a series or parallel. With the"**/**" designation, a mid-point also becomes available in addition to the series or parallel connection. As an example, a 120 **X** 240 winding can be connected for either 120 (parallel) or 240 (series), but a 120**/**240 winding can be connected for 120 (parallel), or 240 (series), or 240 with a 120 mid-point.

General Information

Industry Standards

All Micron dry-type distribution and control transformers are built and tested in accordance with applicable NEMA, ANSI and IEEE standards. All 600 volt class transformers are UL listed unless otherwise noted.

Seismic Qualified

The Micron family of dry-type distribution transformers is seismically tested, seismically qualified, and exceeds requirements of the Uniform Building Code (UBC) and California Code Title 24.

Frequency

Micron standard dry-type distribution transformers are designed for 60 Hz operation. Transformers required for other frequencies must be specifically designed.

Overload Capability

Short term overload is designed into transformers as required by ANSI. Basically, dry-type distribution transformers will deliver 200% nameplate load for one-half hour; 150% load for one-hour; and 125% load for four-hours without being damaged provided that a constant 50% load precedes and follows the overload. See ANSI C57 .96-01.250 for additional limitations.

Continuous overload capacity is not deliberately designed into a transformer because the design objective is to be within the allowed winding temperature rise with nameplate loading.

Insulation System & Temperature Rise

Industry standards classify insulation systems and rise as shown below:

Insulation System Classification

Ambient	+ Winding Rise	+ Hot Spot	= Temp. Class
40°C	55°C	10°C	105°C
40°C	80°C	30°C	150°C
40°C	115°C	30°C	185°C

The design life of transformers having different insulation systems is the same – the lower temperature systems are designed for the same life as the higher temperature systems.

Sound Levels

KVA	NEMA Average[1] Sound Level in dB
0-9	40
10-50	45
51-150	50
151-300	55
301-500	60

All Micron 600 volt class dry-type distribution transformers are designed to meet NEMA ST-20 levels as listed.

[1]. Applies to general purpose transformers only.