General

Eaton’s Cooper Power Systems manufactures a complete line of single-phase overhead-type distribution transformers. Single-phase transformers are available as conventional (5-167kVA), completely self-protected (CSP 5-75kVA), or MagneX™ interrupter-protected (5-167kVA) in a variety of ratings to meet or exceed the requirements of applicable ANSI® and NEMA® standards. Units designed per Rural Utilities Service (RUS) standards are also available.

CSP transformers have direct connected primary arresters, secondary circuit breakers, and internal primary voltage fuses. This eliminates the need for separately mounted protective devices and provides reduced installation costs.

The MagneX interrupter is an overcurrent protective device that protects distribution transformers from damaging overloads and secondary faults, and is also used for switching the transformer “on” or “off.”

Transformers shown include, first and second, single-phase overhead conventional transformers, and third, MagneX interrupter-protected transformer.
Standard features

- Meet or exceeds ANSI® and NEMA® standards
- Meets DOE Energy Efficiency Standard 10 CFR Part 431 for distribution transformers
- EPRI recommended interlaced core-type design (5-75 kVA)
- Tank coating exceeds IEEE Std C57.12.31™-2010 standard
- Cover with a minimum dielectric strength of 8 kV
- Tin-plated high and low-voltage bushing terminals to accommodate aluminum or copper conductors
- Laser-engraved nameplate
- Wet process porcelain high-voltage bushings resistant to high-voltage corona
- Tank grounding provisions
- Envirotrend™ FR3™ fluid or electrical grade mineral oil
- Heavy-duty lifting lugs and hanger brackets per ANSI® requirements1
- Visible cover ground on units with cover-mounted bushings
- Recessed tank bottom that offers protection when sliding over rough surfaces
- Automatic pressure relief device
- Polymer low-voltage bushings (5-75 kVA)
- Arrester mounting and grounding provisions
- Internal mark indicating the proper oil level
- Permanently stamped secondary leads to ensure proper identification
- Corrosion-resistant cover band
- Quality System ISO 9001 certified

Optional accessories

- Taps either two 2.5 % above and below; four 2.5% below; NEMA® taps or special taps
- Externally-operable tap changer switches for safe operation
- Multiple voltage primaries (5-75kVA)
- Externally-operable multiple voltage switches for safe operation
- High corrosion area protection with 304 or 409 stainless steel hardware and tanks
- MagneX™ interrupter
- Birdguards
- Envirotrend™ FR3™ fluid where less-flammable fluid is required and superior environmental characteristics are desired
- Cover with a minimum dielectric strength of 15 kV
- Extra creep high voltage bushings (up to 150 kV BIL)
- Porcelain low-voltage bushings
- Canadian Standards Association (CSA) conforming design
- Special designs conforming to international specifications
- Drain/sampling valve
- Pressure vacuum gauge (tank size limitations apply)
- Filter press connections
- Temperature gauge (tank size limitations apply)
- Liquid level gauge (tank size limitations apply)
- High efficiency transformers at 0.05% or higher above DOE efficiency

1 Lugs and brackets per ANSI requirements up to 4500 lbs.

Figure 1. Single-phase overhead CSP transformer.
Single-phase overhead conventional

Product Scope:
kVA: 5-167
Primary Voltage: 2400-19,920 V
Secondary Voltage: 120-600 V

Table 1. Typical dimensions and Weights\(^2,3\)

<table>
<thead>
<tr>
<th>kVA</th>
<th>≤75 kV BIL</th>
<th>95 kV BIL</th>
<th>125 kV BIL</th>
<th>150 kV BIL</th>
<th>≤75 kV BIL</th>
<th>≥95 kV BIL</th>
<th>&quot;C&quot;(^1)</th>
<th>Approx. Weight (lbs.)</th>
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1 Includes sidewall mount H.V. bushings.
2 Includes radiators.
3 Weights, gallons of fluid and dimensions are for reference only, and not for construction. Please contact Eaton’s Cooper Power Systems for exact dimensions.

Single-phase overhead completely self protected (CSP)

Product Scope:
kVA: 5-75
Primary Voltage: 2400-19,920 V
Secondary Voltage: 120-600 V

Table 2. Typical Dimensions and Weights\(^2,3\)

<table>
<thead>
<tr>
<th>kVA</th>
<th>≤75 kV BIL</th>
<th>95 kV BIL</th>
<th>125 kV BIL</th>
<th>150 kV BIL</th>
<th>≤75 kV BIL</th>
<th>≥95 kV BIL</th>
<th>&quot;C&quot;(^1)</th>
<th>Approx. Weight (lbs.)</th>
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<tr>
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<td>1600</td>
</tr>
</tbody>
</table>

1 Includes sidewall mount H.V. bushings.
2 Includes Radiators.
3 Weights, gallons of fluid and dimensions are for reference only, and not for construction. Please contact Eaton’s Cooper Power Systems for exact dimensions.
4 MagneX interrupter Only
**Protection options**

- High fire point Envirotemp™ FR3™ fluid for increased fire safety
- Secondary breaker with weak link for secondary fault and overload protection (5-75 kVA)
- Primary weak link fuse
- Current-limiting fuse for high interrupting ratings and limiting fault currents
- Low-voltage distribution class MOV arrester – internally or externally mounted
- MagneX interrupter (Primary Breaker) with isolation link
- MagneX interrupter (Primary Breaker) with partial range current-limiting fuse
- Lightning arresters for primary over-voltage protection: direct connected, normal or heavy duty metal oxide varistor (MOV) either internal (VariSTAR™), or external UltraSIL Polymer-Housed Evolution or UltraSIL™ Polymer-Housed VariSTAR arrester with polymer housing.

**Quality control**

Single-phase overhead-type transformers manufactured by Cooper Power Systems provide outstanding performance. All transformers from Cooper Power Systems pass tests as prescribed by ANSI® prior to shipment. Cores and coils are designed for high reliability and low field failure rates. The domed cover design in conjunction with the formed cover band provides increased pressure withstand capability, eliminates bushing overhang and improves cover retention. The high-voltage bushing design improves gasket protection and seal. The low-voltage polymer bushing virtually eliminates ultraviolet deterioration with its captured gasket, compression-limiting design. Transformers are designed and manufactured to be corrosion-resistant. Special attention is given to all welded external parts, to avoid moisture entrapment that can lead to corrosion problems. The recessed bottom design, as well as the stainless steel cover band ends, provide corrosion protection in areas that are more susceptible to coating damage during handling. All coating systems exceed IEEE Std C57.12.31™-2010 standard.

The Quality System at Eaton’s Cooper Power Systems Transformer Products is ISO 9001 certified.

**Fluid options**

Transformers can be filled with standard electrical grade mineral insulating oil, Envirotemp™ FR3™ fluid, or other dielectric coolants.

For fire-sensitive locations, Envirotemp™ FR3™ fluid, a fire resistant natural ester-based fluid is recommended. Envirotemp™ FR3™ fluid also offers the benefits of a soy oil-based dielectric coolant that is sustainable and has unique environmental and material properties in addition to increased fire safety over conventional mineral oil.

Check with Eaton’s Cooper Power Systems for the availability of other dielectric coolants in single-phase, pad-mounted transformers.