

### General Purpose Dry Type 600 Volts and Below Overview

Public Law 109-58 of the Energy Policy Act of 2005 authorized the Department of Energy to evaluate and set minimum Efficiency Levels for Low Voltage Distribution Transformers.

According to Department of Energy Federal Registry Final Rule 10 CFR Part 429 and 431, *Low-Voltage Dry-Type Distribution Transformers*, the efficiency of a low-voltage, dry-type, distribution transformer manufactured on or after January 1, 2007 (and prior to January 1, 2016), shall be no less than that required for its kVA rating in the Table 1 below. In April 2013, the Department of Energy ruled the efficiency of a low-voltage dry-type distribution transformers manufactured on or after January 1, 2016, shall be no less than that required in Table 4 below.

Prior to January 1, 2016 Table 1 Energy Conservation Standards for Low-Voltage Dry-Type Distribution Transformers			
Single phase		Three phase	
kVA	Efficiency (%)	kVA	Efficiency (%)
15	97.7	15	97.0
25	98.0	30	97.5
37.5	98.2	45	97.7
50	98.3	75	98.0
75	98.5	112.5	98.2
100	98.6	150	98.8
167	98.7	225	98.5
250	98.8	300	98.6
333	98.9	500	98.7
—	—	750	98.8
—	—	1000	98.9

After January 1, 2016 Table 4 Energy Conservation Standards for Low-Voltage Dry-Type Distribution Transformers			
Single phase		Three phase	
kVA	Efficiency (%)	kVA	Efficiency (%)
15	97.70	15	97.89
25	98.00	30	98.23
37.5	98.20	45	98.40
50	98.30	75	98.60
75	98.50	112.5	98.74
100	98.60	150	98.83
167	98.70	225	98.94
250	98.80	300	99.02
333	98.90	500	99.14
—	—	750	99.23
—	—	1000	99.28

#### Must Comply with Tables Above

Distribution transformers include three-phase and single-phase, General Purpose Ventilated Transformers, Watchdog Low Temperature Rise Ventilated Transformers, transformers designed for harmonic loads (K-rated and harmonic mitigating).

#### Exempt From Tables Above

Transformers excluded from the distribution transformers: Resin Encapsulated (Sealed) Transformers, Non-Ventilated Transformers, Auto-Transformers, and Drive Isolation Transformers.

#### New Three Phase Product Offering – EX

Complies with Table 4, designed to complete the electrical distribution system incorporating other Schneider Electric equipment.

- Wire range on terminals equivalent to circuit breakers, switches, panelboards, and switchboards
- Inrush design to allow PowerPact circuit breakers to be set up to energize the transformer
- IZ levels to limit let through current

Available in the following family of products:

- Three Phase General Purpose – Aluminum and Copper Windings
  - Sound level 3dB below ST-20 standard
  - 1/2 inch minimum clearance from rear and sides
- Watchdog Low Temperature Rise – Aluminum and Copper Windings
  - 80°C Rise – reduction of BTUs at 75% and 100% loading points
- Harmonic Solution – Aluminum and Copper Windings
  - K-9 rated, to meet K-7 harmonic load profiles
  - Zigzag secondary to limit voltage distortion during harmonic loads and improved efficiency at load levels above 50%



[1] Efficiencies are determined at the following reference conditions:  
(1) for no-load losses, at the temperature of 20 °C;  
(2) for load-losses, at the temperature of 75 °C and 35 percent of nameplate load.

(Source: Table 4–2 of National Electrical Manufacturers Association (NEMA) Standard TP–1–2002, *Guide for Determining Energy Efficiency for Distribution Transformers*.)

**Energy Efficient Single Phase and Single Phase Watchdog**

**Table 14.6: EE Single Phase; 60 Hz; 120/240 Vac Secondary; cULus Listed**

kVA	Catalog No.	Minimum Efficiency @ 35% 75° C	Full Capacity Taps <sup>[6]</sup>	Degree C Temp. Rise	Insulation Class	%I <sub>Z</sub>	Sound Level dB	Weight (lbs) <sup>[7]</sup>	Enclosure <sup>[8]</sup>
<b>240 x 480 Vac Primary, Aluminum Windings</b>									
15	EE15S3H	97.70%	480 Vac 6-2.5% 2+4- 240 Vac 3-5% 1+2-	150	220	6.1%	45dB	215	17D
25	EE25S3H	98.00%		150	220	5.9%	45dB	275	17H
37.5	EE37S3H	98.20%		150	220	6.1%	45dB	340	18H
50	EE50S3H	98.30%		150	220	5.1%	45dB	395	18H
75	EE75S3H	98.50%		150	220	5.7%	50dB	619	21D
100	EE100S3H	98.60%		150	220	4.7%	50dB	682	22D
167	EE167S3H	98.70%		150	220	3.9%	55dB	982	24D
250	EE250S3H	98.80%		150	220	5.7%	55dB	1060	25D
333	EE333S3H	98.90%		150	220	6.3%	60dB	1854	31D
<b>600 Vac Primary, Aluminum Windings</b>									
15	EE15S3534H	97.70%	6-2.5%2+4-	150	220	4.0	45dB	215	17D
25	EE25S3534H	98.00%	6-2.5%2+4-	150	220	4.3	45dB	275	17H
37.5	EE37S3534H	98.20%	6-2.5%2+4-	150	220	3.8	45dB	400	18H
50	EE50S3534H	98.30%	6-2.5%2+4-	150	220	4.2	45dB	450	18H
75	EE75S3534H	98.50%	6-2.5%2+4-	150	220	3.2	50dB	605	21D
100	EE100S3534H	98.60%	6-2.5%2+4-	150	220	2.9	50dB	795	22D
167	EE167S3534H	98.70%	6-2.5%2+4-	150	220	4.7	55dB	985	24D
250	EE250S3534H	98.80%	6-2.5%2+4-	150	220	—	55dB	1065	25D
333	EE333S3534H	98.90%	6-2.5%2+4-	150	220	—	60dB	1865	31D
<b>208 Vac Primary, Aluminum Windings</b>									
15	EE15S60H	97.70%	2- 5% FCBN	150	220	4.3	45dB	200	17D
25	EE25S60H	98.00%	2- 5% FCBN	150	220	4.1	45dB	275	17H
37.5	EE37S60H	98.20%	2- 5% FCBN	150	220	3.6	45dB	397	18H
50	EE50S60H	98.30%	2- 5% FCBN	150	220	5.7	45dB	420	18H
75	EE75S60H	98.50%	2- 5% FCBN	150	220	3.6	50dB	621	21D
100	EE100S60H	98.60%	2- 5% FCBN	150	220	6.3	50dB	795	22D
167	EE167S60H	98.70%	2- 5% FCBN	150	220	4.2	55dB	985	24D
<b>277 Vac Primary, Aluminum Windings</b>									
15	EE15S61H	97.70%	2- 5% FCBN	150	220	5.8	45dB	225	17D
25	EE25S61H	98.00%	2- 5% FCBN	150	220	5.8	45dB	285	17H
37.5	EE37S61H	98.20%	2- 5% FCBN	150	220	5.7	45dB	410	18H
50	EE50S61H	98.30%	2- 5% FCBN	150	220	5.1	45dB	460	18H
75	EE75S61H	98.50%	2- 5% FCBN	150	220	5.6	50dB	630	21D
100	EE100S61H	98.60%	2- 5% FCBN	150	220	6.5	50dB	795	22D
167	EE167S61H	98.70%	2- 5% FCBN	150	220	4.9	55dB	995	24D

**Table 14.7: EE Single Phase Watchdog Transformers: 60 Hz, cULus Listed**

kVA	Catalog No.	Minimum Efficiency @ 35% 75° C	Full Capacity Taps	Degree C Temp. Rise	Insulation Class	%I <sub>Z</sub>	Sound Level dB	Weight (lbs) <sup>[7]</sup>	Enclosure <sup>[8]</sup>
<b>240 x 480 Vac Primary, 120/240 Vac Secondary, Aluminum Windings</b>									
15	EE15S3HF	97.70%	480 Vac 6-2.5% 2+4- 240 Vac 3-5% 1+2-	115	220	3.5%	45dB	275	17D
25	EE25S3HF	98.00%		115	220	4.0%	45dB	340	18H
37.5	EE37S3HF	98.20%		115	220	3.7%	45dB	395	18H
50	EE50S3HF	98.30%		115	220	3.7%	45dB	620	21D
75	EE75S3HF	98.50%		115	220	3.5%	50dB	685	22D
100	EE100S3HF	98.60%		115	220	3.5%	50dB	985	24D
15	EE15S3HB	97.70%		80	220	1.7%	45dB	280	17D
25	EE25S3HB	98.00%		80	220	3.9%	45dB	345	18H
37.5	EE37S3HB	98.20%		80	220	3.7%	45dB	400	18H
50	EE50S3HB	98.30%		80	220	3.6%	45dB	625	21D
75	EE75S3HB	98.50%		80	220	3.4%	50dB	690	22D
100	EE100S3HB	98.60%		80	220	3.4%	50dB	995	24D

Other Primary and Secondary combinations are available via the Schneider Electric Product Configurator. Contact your local Schneider Electric representative for more information.

[6] FCBN = Full Capacity Below Normal.  
[7] Not for construction, Contact your local Schneider Electric representative for certified prints.  
[8] For enclosure styles, see Table 14.8 Enclosure Dimensions and Accessories, page 14-6