

Type EP and EPT**Contents****Description**

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Product Description

Note: The following pages provide listings for most standard transformer ratings and catalog numbers. For other ratings or catalog numbers not shown, or for special enclosure types (including stainless steel), refer to Eaton.

Type EP and EPT

- Encapsulated design
- Suitable for indoor or outdoor applications
- Totally enclosed, non-ventilated enclosures
- Enclosures are NEMA 3R rated
- Mountable in any position indoors and upright-only outdoors
- 180°C insulation system
- 115°C rise standard; 80°C optional
- Available in ratings through 37.5 kVA single-phase; 75 kVA three-phase
- Types EP and EPT encapsulated transformers are specifically excluded from the scope of U.S. DOE energy efficiency requirements

Application Description

The basic purpose of a transformer is voltage transformation as near as practically possible to the load for economy and distribution of power. Typical loads for dry-type distribution transformers include lighting, heating, air conditioners, fans and machine tools. Such loads are found in commercial, institutional, industrial and residential structures.

Features, Benefits and Functions

- 60 Hz operation (50/60 Hz optional)
- Short-term overload capability as required by ANSI
- Meet NEMA ST-20 sound levels

Standards and Certifications

- UL listed
- CSA certified

**Industry Standards**

All Eaton 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.

Seismically Qualified

Eaton manufactured dry-type distribution transformers are seismically qualified and exceed requirements of the Uniform Building Code (UBC), International Building Code (IBC), and California Code Title 24.

Use table for catalog number breakdown only.

Do not use to create catalog numbers because all combinations may not be valid.

General-Purpose, NEMA TP-1 Energy-Efficient, Mini-Power Center, Shielded Isolation, Nonlinear K-Factor, Buck-Boost, Marine Duty Transformers—Example: S20N11S05A

Prefix Options		S 20	N 11	S 05	A	Suffix Options	
C	CSA labeled ventilated transformer					A...Y	①
Marine Duty						CU	②
Q	EPM marine (1-Ph encapsulated)					SS	③
L	EPTM Marine (3-Ph encapsulated)					ZZ	④
R	DS-3M marine (1-Ph ventilated)					NV	⑤
M	DT-3M marine (3-Ph ventilated)					X	⑥
Type		Primary Voltage		kVA		Temperature Rise	
S	EP (single-phase encapsulated)	13 = 110 x 220	03 = 3	37 = 37.5	52 = 250	T = 150°C rise with 220°C insulation system (ventilated); 115°C rise with 180°C insulation system (encapsulated and MPC three-phase)	J = 80°C rise with 200°C insulation system (ventilated)
Y	EPT (three-phase encapsulated)	12 = 120	05 = 5	45 = 45	33 = 300	P = 115°C rise with 130°C insulation system (encapsulated single-phase ≤2 kVA)	
T	DS-3 (single-phase ventilated)	10 = 120 x 240	06 = 6	50 = 50	54 = 333	S = 115°C rise with 180°C insulation system (encapsulated and MPC single-phase); 150°C rise with 220°C insulation system (ventilated single-phase)	
V	DT-3 (three-phase ventilated)	29 = 208	07 = 7.5	75 = 75	55 = 500	E = Electrostatically shielded	
P	Mini-power center	72 = 200	09 = 9	99 = 100	60 = 600		
Z	Class 1 Division 2 Groups A, B, C, D	25 = 220	10 = 10	12 = 112.5	77 = 750		
Nonlinear		23 = 230	15 = 15	49 = 150	11 = 1000		
H	KT-4 (three-phase ventilated)	24 = 240	01 = 1	67 = 167	14 = 1500		
B	KT-9 (three-phase ventilated)	20 = 240 x 480	21 = 22.5	22 = 225			
N	KT-13 (three-phase ventilated)	27 = 277	16 = 1.5				
G	KT-20 (three-phase ventilated)	38 = 380	25 = 25				
J	KT-30 (three-phase ventilated)	39 = 400	02 = 2				
HT	KT-4 (single-phase ventilated)	43 = 416					
NT	KT-13 (single-phase ventilated)	44 = 440					
GT	KT-20 (single-phase ventilated)	45 = 450					
Taps		48 = 480					
D	2 at +2.5%, 2 at -2.5%	57 = 575					
E	1 at +5%, 1 at -5%	60 = 600					
F	1 at -10%	42 = 2400					
G	2 at -5%	46 = 4160					
J	4 at -2.5%	49 = 4800					
K	1 at -10% x 2 at -5%	40 = Export model					
L	2 at -5% x 4 at -2.5%	54 = 120/208/240/277					
M	2 at +2.5%, 4 at -2.5%						
N	None						
R	1 at +5%, 2 at -5%						
P	1 at +5%, 2 at -5% x 2 at +2.5%, 4 at -2.5%						
T	1 at +4.2%, 1 at -4.2%						
U	1 at +2.5%, 3 at -2.5%						
W	1 at +3.5%, 1 at -3.5%						
X	2 at +3.1%, 2 at -3.1%						
Secondary Voltage							
04 = 12/24	31 = 220Y/127	35 = 440Y/254					
06 = 16/32	26 = 220 delta/110 midtap	62 = 460Y/266					
08 = 24/48	22 = 240 delta/120 midtap	47 = 480Y/277					
14 = 110/220	64 = 240Y/139	48 = 480 delta					
12 = 120	24 = 240 delta	60 = 600 delta					
11 = 120/240	21 = 240/480	61 = 600Y/346					
54 = 127/254	27 = 277	42 = 2400					
19 = 190Y/110	38 = 380 delta	41 = 4160Y/2400					
28 = 208Y/120	37 = 380Y/220	46 = 4160					
29 = 208	34 = 400Y/231	49 = 4800					
25 = 220 delta	51 = 416Y/240						

Notes

- ① Model number is not used on newly designed/redesigned transformers.
- ② Copper windings.
- ③ Grade 304 stainless steel enclosure (does not imply a NEMA 4X rating).
- ④ Open type core and coil assembly.
- ⑤ Totally enclosed non-ventilated DS-3 or DT-3.
- ⑥ 50/60 Hz.
- ⑦ Low sound design. LS47 indicates low sound equal to 47 dB; LS42 indicates 42 dB.

- ⑧ Fungus proof.
- ⑨ Certified test report of standard production tests for the specific serial number to be shipped.
- ⑩ Certified sound level report.
- ⑪ CE Marked.
- ⑫ Thermal indicator embedded in center coil. Suffix "TT" indicates two thermal indicators of different temperature ratings, are installed.
- ⑬ CSL3 DOE 2007 energy-efficient.
- ⑭ NEMA 4X Grade 304 stainless steel enclosure.
- ⑮ Easy install base.

- ⑯ Grade 316 stainless steel enclosure (does not imply NEMA 4X rating).
- ⑰ Integral 2-inch infrared viewing window.
- ⑱ Integral 3-inch infrared viewing window.
- ⑲ Integral 4-inch infrared viewing window.
- ⑳ Electrostatic shield.
- ㉑ Double aluminum electrostatic shield.
- ㉒ Double neutral.
- ㉓ TP-1 energy-efficient.
- ㉔ 2016 enclosure construction (Non-TP1 energy-efficient).
- ㉕ TP-1 energy-efficient with 2016 enclosure construction.

For Eaton's industrial control transformers catalog number selection, see Volume 7—Logic Control, Operator Interface and Connectivity Solutions, **CA08100008E**, Tab 7.

Contact your local Eaton sales office for voltage combinations not shown.

Product Selection

Single-Phase Transformers

How to Select Single-Phase Units

1. Determine the primary (source) voltage—the voltage presently available.
2. Determine the secondary (load) voltage—the voltage needed at the load.
3. Determine the kVA load:
 - If the load is defined in kVA, a transformer can be selected from the tabulated data
 - If the load rating is given in amperes, determine the load kVA from the chart (below right). To determine kVA when volts and amperes are known, use the formula:

$$kVA = \frac{\text{Volts} \times \text{Amperes}}{1000}$$

- If the load is an AC motor, determine the minimum transformer kVA from the chart at the right
- Select a transformer rating equal to or greater than the load kVA.

4. Define tap arrangements needed.
5. Define temperature rise.

Using the above procedure, select the transformer from the listings in this catalog.

Single-Phase AC Motors

Horsepower	Full Load Amperes				Minimum Transformer kVA ^①
	115 Volts	208 Volts	220 Volts	230 Volts	
1/6	4.4	2.4	2.3	2.2	0.53
1/4	5.8	3.2	3.0	2.9	0.70
1/3	7.2	4.0	3.8	3.6	0.87
1/2	9.8	5.4	5.1	4.9	1.18
3/4	13.8	7.6	7.2	6.9	1.66
1	16	8.8	8.4	8	1.92
1-1/2	20	11.0	10.4	10	2.40
2	24	13.2	12.5	12	2.88
3	34	18.7	17.8	17	4.10
5	56	30.8	29.3	28	6.72
7-1/2	80	44	42	40	9.6
10	100	55	52	50	12.0

Full Load Current in Amperes—Single-Phase Circuits

kVA	Voltage								
	120	208	220	240	277	480	600	2400	4160
0.25	2.0	1.2	1.1	1.0	0.9	0.5	0.4	0.10	0.06
0.50	4.2	2.4	2.3	2.1	1.8	1.0	0.8	0.21	0.12
0.75	6.3	3.6	3.4	3.1	2.7	1.6	1.3	0.31	0.18
1	8.3	4.8	4.5	4.2	3.6	2.1	1.7	0.42	0.24
1.5	12.5	7.2	6.8	6.2	5.4	3.1	2.5	0.63	0.36
2	16.7	9.6	9.1	8.3	7.2	4.2	3.3	0.83	0.48
3	25	14.4	13.6	12.5	10.8	6.2	5.0	1.2	0.72
5	41	24.0	22.7	20.8	18.0	10.4	8.3	2.1	1.2
7.5	62	36	34	31	27	15.6	12.5	3.1	1.8
10	83	48	45	41	36	20.8	16.7	4.2	2.4
15	125	72	68	62	54	31	25	6.2	3.6
25	208	120	114	104	90	52	41	10.4	6.0
37.5	312	180	170	156	135	78	62	15.6	9.0
50	416	240	227	208	180	104	83	20.8	12.0
75	625	360	341	312	270	156	125	31.3	18.0
100	833	480	455	416	361	208	166	41.7	24.0
167	1391	802	759	695	602	347	278	69.6	40.1

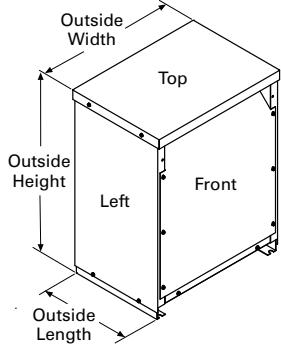
Notes

- ① If motors are started more than once per hour, increase minimum transformer kVA by 20%.
- When motor service factor is greater than 1, increase full load amperes proportionally.
- Example: If service factor is 1.15, increase above ampere values by 15%.

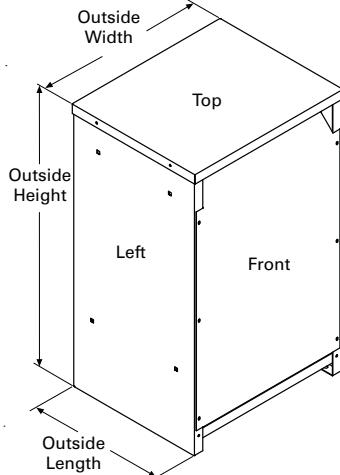
Dimensions

Approximate Dimensions in Inches (mm)

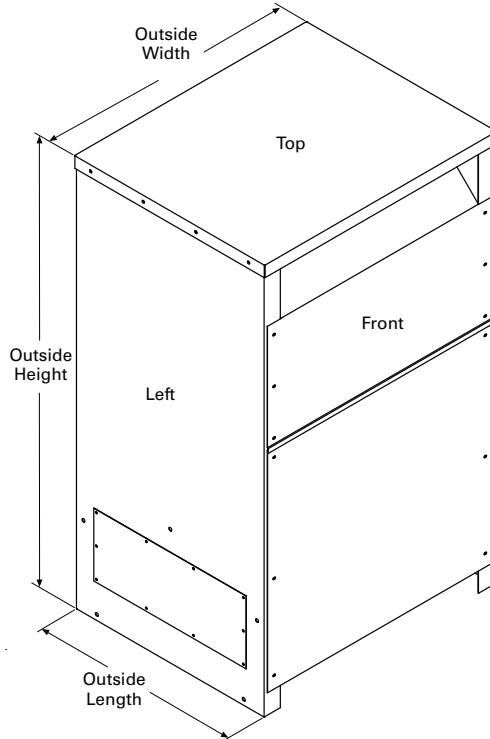
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Enclosure Dimensional Drawings—Ventilated Transformers

Drawing 1



Drawing 2



Drawing 3

Frame	Drawing Number	Dimensions	Height	Width	Length
FR816	1		31.30 (795.0)	22.89 (581.4)	18.39 (467.2)
FR818	1		37.59 (954.8)	22.89 (581.4)	20.36 (517.1)
FR819	2		42.03 (1067.6)	24.22 (615.2)	23.84 (605.5)
FR820	2		42.03 (1067.6)	24.22 (615.2)	23.84 (605.5)
FR814	2		62.91 (1597.9)	29.97 (761.2)	33.97 (862.8)
FR842, 842A	1		33.75 (857.3)	22.45 (570.2)	17.40 (442.0)
FR843, 843A	1		38.70 (983.0)	23.51 (597.2)	24.38 (619.3)
FR844, 844A	2		44.92 (1141.0)	26.27 (667.3)	27.12 (688.8)
FR821	2		62.91 (1597.9)	29.97 (761.2)	33.97 (862.8)
FR912D	1		30.00 (762.0)	23.00 (584.2)	16.50 (419.1)
FR914D/FR914F	1		39.00 (990.6)	29.00 (736.6)	22.00 (558.8)
FR915D/FR915F	1		39.00 (990.6)	29.00 (736.6)	22.00 (558.8)
FR916A	2		48.56 (1233.4)	28.22 (716.8)	23.42 (594.9)
FR917	2		56.17 (1426.7)	31.44 (798.6)	24.67 (626.6)
FR918A	2		62.18 (1579.4)	31.44 (798.6)	30.68 (779.3)
FR923	2		57.54 (1461.5)	36.69 (931.9)	32.65 (829.3)
FR924	2		68.37 (1736.6)	44.46 (1129.3)	36.44 (925.6)
FR928	2		56.16 (1426.5)	32.93 (836.4)	27.97 (710.4)
FR929	2		59.56 (1512.8)	36.72 (932.7)	32.50 (825.5)
FR919E	3		75.00 (1905.0)	44.20 (1122.7)	36.23 (920.2)
FR920E	3		75.00 (1905.0)	44.20 (1122.7)	36.23 (920.2)
FR922	3		90.00 (2286.0)	69.26 (1759.2)	42.65 (1083.3)