

Type EP 3–25 kVA



Contents

Description

General-Purpose Encapsulated Transformers

Catalog Number Selection	V2-T2-94
Product Selection	V2-T2-94
Single-Phase	V2-T2-94
Three-Phase	V2-T2-100
Accessories	V2-T2-109
Technical Data and Specifications.	V2-T2-109

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

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.

General-Purpose Encapsulated Transformers

Single-Phase Encapsulated—Type EP, 60 Hz

277 Volts to 120/240 Volts ^①

2

kVA	Full Capacity Taps		Type	°C Temp. Rise	Frame	Wiring Diagram Number	Weight Lbs (kg)	Weathershield	Catalog Number
FCAN	FCBN								
0.5	—	—	EP	115	FR58AP	524A	26 (12)	Indoor–Outdoor	S27N11P51P
1	—	—	EP	115	FR59AP	524A	31 (14)	Indoor–Outdoor	S27N11P01P
1.5	—	—	EP	115	FR67P	524A	42 (19)	Indoor–Outdoor	S27N11P16P
2	—	—	EP	115	FR176P	524A	65 (30)	Indoor–Outdoor	S27N11P02P
3	—	—	EP	115	FR176	524A	55 (25)	Indoor–Outdoor	S27N11S03N
5	—	—	EP	115	FR177	524A	113 (51)	Indoor–Outdoor	S27N11S05N
7.5	—	—	EP	115	FR178	524A	123 (56)	Indoor–Outdoor	S27N11S07N
10	—	—	EP	115	FR179	524A	193 (88)	Indoor–Outdoor	S27N11S10N
15	—	—	EP	115	FR180	524A	180 (82)	Indoor–Outdoor	S27N11S15N
25	—	—	EP	115	FR182	524A	375 (170)	Indoor–Outdoor	S27N11S25N

240 x 480 Volts to 120/240 Volts

kVA	Full Capacity Taps		Type	°C Temp. Rise	Frame	Wiring Diagram Number	Weight Lbs (kg)	Weathershield	Catalog Number
FCAN	FCBN								
0.050	—	—	EP	115	FR52	3A	7 (3)	Indoor–Outdoor	S20N11S81N
0.075	—	—	EP	115	FR54	3A	7 (3)	Indoor–Outdoor	S20N11S85N
0.100	—	—	EP	115	FR54	3A	7 (3)	Indoor–Outdoor	S20N11S82N
0.150	—	—	EP	115	FR55	3A	8 (4)	Indoor–Outdoor	S20N11S83N
0.25	—	—	EP	115	FR57P	3A	12 (5)	Indoor–Outdoor	S20N11P26P
0.5	—	—	EP	115	FR57P	3A	16 (7)	Indoor–Outdoor	S20N11P51P
0.75	—	—	EP	115	FR58AP	3A	26 (12)	Indoor–Outdoor	S20N11P76P
1	—	—	EP	115	FR67P	3A	31 (14)	Indoor–Outdoor	S20N11P01P
1.5	—	—	EP	115	FR67P	3A	42 (19)	Indoor–Outdoor	S20N11P16P
2	—	—	EP	115	FR68P	3A	42 (19)	Indoor–Outdoor	S20N11P02P
3	—	—	EP	115	FR176	3A	65 (30)	Indoor–Outdoor	S20N11S03N
3	②	②	EP	115	FR176	3A	65 (30)	Indoor–Outdoor	S20K11S03N
5	—	—	EP	115	FR177	3A	113 (51)	Indoor–Outdoor	S20N11S05N
5	②	②	EP	115	FR177	9A	105 (48)	Indoor–Outdoor	S20K11S05N
7.5	—	—	EP	115	FR178	3A	105 (48)	Indoor–Outdoor	S20N11S07N
7.5	②	②	EP	115	FR178	9A	123 (56)	Indoor–Outdoor	S20K11S07N
10	—	—	EP	115	FR179	3A	193 (88)	Indoor–Outdoor	S20N11S10N
10	②	②	EP	115	FR179	9A	193 (88)	Indoor–Outdoor	S20K11S10N
15	—	—	EP	115	FR180	3A	216 (98)	Indoor–Outdoor	S20N11S15N
15	③	③	EP	115	FR180	23A	216 (98)	Indoor–Outdoor	S20L11S15N
25	—	—	EP	115	FR182	3A	385 (175)	Indoor–Outdoor	S20N11S25N
25	③	③	EP	115	FR182	23A	375 (170)	Indoor–Outdoor	S20L11S25N
37.5	③	③	EP	115	FR300A	248A	735 (334)	Indoor–Outdoor	S20L11S37 ^④

Notes

- ① Contact Eaton for availability of 0.05–0.25 kVA designs.
 ② 1 at +10% FCBN at 240 volts; 2 at –5% FCBN at 480 volts.
 ③ 2 at +5% FCBN at 240 volts; 4 at –2.5% FCBN at 480 volts.
 ④ Floor-mount only.

Contact your local Eaton sales office for CE Mark transformer requirements. For other ratings or catalog numbers not shown, or for special enclosure types (including stainless steel), refer to Eaton. Frame drawings/dimensions information begins on **Page V2-T2-215**.

S10N04A83N

Catalog Number Selection

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

2

S10N04P16P

T S 20 N 11 S 05 A

Prefix Options	Primary Voltage	kVA	Suffix Options																																								
C = CSA labeled ventilated transformer Marine Duty QS = EPM marine (1-Ph encapsulated) LY = EPTM Marine (3-Ph encapsulated) RT = DS-3M marine (1-Ph ventilated) MV = DT-3M marine (3-Ph ventilated)	13 = 110 x 220 12 = 120 10 = 120 x 240 29 = 208 72 = 200 25 = 220 23 = 230 24 = 240 20 = 240 x 480 27 = 277 38 = 380 39 = 400 43 = 416 44 = 440 45 = 450 48 = 480 57 = 575 60 = 600 42 = 2400 46 = 4160 49 = 4800 40 = Export model 54 = 120/208/240/277	<table> <tr> <td>81 = 0.05</td><td>03 = 3</td><td>37 = 37.5</td><td>52 = 250</td></tr> <tr> <td>85 = 0.075</td><td>05 = 5</td><td>45 = 45</td><td>33 = 300</td></tr> <tr> <td>82 = 0.10</td><td>06 = 6</td><td>50 = 50</td><td>54 = 333</td></tr> <tr> <td>83 = 0.15</td><td>07 = 7.5</td><td>75 = 75</td><td>55 = 500</td></tr> <tr> <td>26 = 0.25</td><td>09 = 9</td><td>99 = 100</td><td>60 = 600</td></tr> <tr> <td>51 = 0.50</td><td>10 = 10</td><td>12 = 112.5</td><td>77 = 750</td></tr> <tr> <td>76 = 0.75</td><td>15 = 15</td><td>49 = 150</td><td>11 = 1000</td></tr> <tr> <td>01 = 1</td><td>21 = 22.5</td><td>67 = 167</td><td>14 = 1500</td></tr> <tr> <td>16 = 1.5</td><td>25 = 25</td><td>22 = 225</td><td></td></tr> <tr> <td>02 = 2</td><td>30 = 30</td><td></td><td></td></tr> </table>	81 = 0.05	03 = 3	37 = 37.5	52 = 250	85 = 0.075	05 = 5	45 = 45	33 = 300	82 = 0.10	06 = 6	50 = 50	54 = 333	83 = 0.15	07 = 7.5	75 = 75	55 = 500	26 = 0.25	09 = 9	99 = 100	60 = 600	51 = 0.50	10 = 10	12 = 112.5	77 = 750	76 = 0.75	15 = 15	49 = 150	11 = 1000	01 = 1	21 = 22.5	67 = 167	14 = 1500	16 = 1.5	25 = 25	22 = 225		02 = 2	30 = 30			A...Y = ① CU = ② SS = ③ ZZ = ④ NV = ⑤ X = ⑥ LS = ⑦ AF = ⑧ TR = ⑨ SR = ⑩ CE = ⑪ T = ⑫ EE = ⑬ NON = ⑭ POS = ⑮ NEG = ⑯ THR = ⑰ E3 = ⑱ SS4X = ⑲ Z = ⑳ S6 = ㉑ I2 = ㉒ I3 = ㉓ I4 = ㉔ N3 = ㉕
81 = 0.05	03 = 3	37 = 37.5	52 = 250																																								
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Type	Taps	Temperature Rise																																									
S = EP (single-phase encapsulated) Y = EPT (three-phase encapsulated) T = DS-3 (single-phase ventilated) V = DT-3 (three-phase ventilated) P = Mini-power center Z = Class 1 Division 2 Groups A, B, C, D X = Harmonic mitigating (three-phase ventilated) Nonlinear H = KT-4 (three-phase ventilated) B = KT-9 (three-phase ventilated) N = KT-13 (three-phase ventilated) G = KT-20 (three-phase ventilated) J = KT-30 (three-phase ventilated) A = KT-40 (three-phase ventilated) K = KT-50 (three-phase ventilated) HT = KT-4 (single-phase ventilated) NT = KT-13 (single-phase ventilated) GT = KT-20 (single-phase ventilated)	D = 2 at +2.5%, 2 at -2.5% E = 1 at +5%, 1 at -5% F = 1 at -10% G = 2 at -5% J = 4 at -2.5% K = 1 at -10% x 2 at -5% L = 2 at -5% x 4 at -2.5% 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%	T = 150°C rise with 220°C insulation system (ventilated) F = 115°C rise with 220°C insulation system (ventilated) B = 80°C rise with 220°C insulation system (ventilated) H = 130°C rise with 200°C insulation system (ventilated) G = 115°C rise with 200°C insulation system (ventilated) J = 80°C rise with 220°C insulation system (ventilated) P = 115°C rise with 130°C insulation system (encapsulated) S = 115°C rise with 180°C insulation system (encapsulated and MPC) L = 80°C rise with 180°C insulation system (encapsulated and MPC)																																									
		Secondary Voltage																																									
		04 = 12/24 06 = 16/32 08 = 24/48 14 = 110/220 12 = 120 10 = 120 x 240 11 = 120/240 54 = 127/254 19 = 190Y/110 28 = 208Y/120 29 = 208 25 = 220 delta 31 = 220Y/127 26 = 220 delta/110 midtap 22 = 240 delta/120 midtap 64 = 240Y/139 24 = 240 delta 20 = 240 x 480 21 = 240/480 27 = 277 38 = 380 delta 37 = 380Y/220 34 = 400Y/231 51 = 416Y/240 35 = 440Y/254 62 = 460Y/266 47 = 480Y/277 48 = 480 delta 60 = 600 delta 61 = 600Y/346 42 = 2400 41 = 4160Y/2400 46 = 4160 49 = 4800																																									

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 NEMA TP-1 efficient.

- ⑭ 0° phase-shift (used with HMTs).
- ⑮ +15° phase-shift (used with HMTs).
- ⑯ -15° phase-shift (used with HMTs).
- ⑰ -30° phase-shift (used with HMTs).
- ⑱ CSL3 DOE 2007 energy-efficient.
- ⑲ NEMA 4X Grade 304 stainless steel enclosure.
- ㉑ Easy install base.
- ㉒ Grade 316 stainless steel enclosure (does not imply NEMA 4X rating).
- ㉓ Integral 2-inch infrared viewing window.
- ㉔ Integral 3-inch infrared viewing window.
- ㉕ Integral 4-inch infrared viewing window.
- ㉖ NEMA Premium® Efficient.

For Eaton's industrial control transformers catalog number selection, see **Page V2-T2-188**.

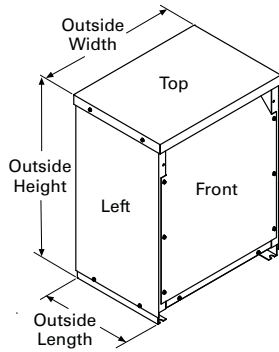
Contact your local Eaton sales office for voltage combinations not shown. Use table for catalog number breakdown only. Do not use to create catalog numbers because all combinations may not be valid.

Dimensions

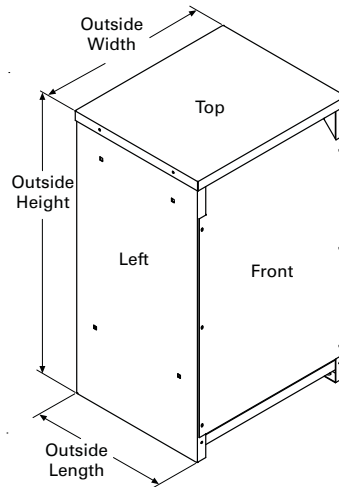
Approximate Dimensions in Inches (mm)

2

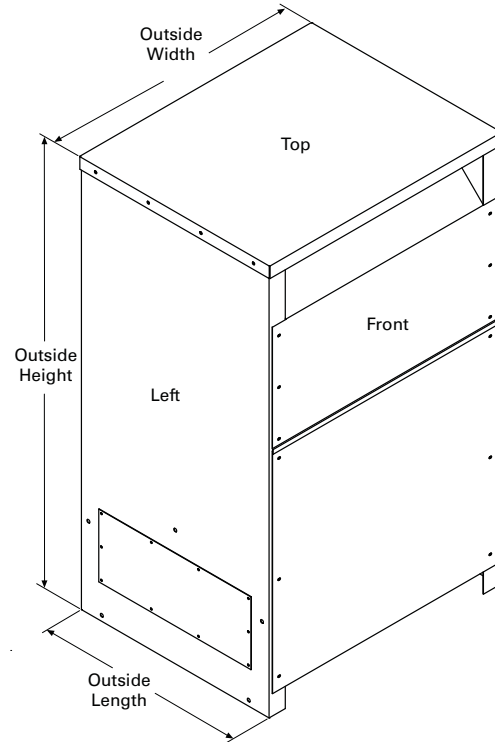
Enclosure Dimensional Drawings—Ventilated Transformers



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	1	33.75 (857.3)	22.45 (570.2)	17.40 (442.0)
FR843	1	38.70 (983.0)	23.51 (597.2)	24.38 (619.3)
FR844	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, 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)
FR919	3	75.00 (1905.0)	44.20 (1122.7)	36.23 (920.2)
FR920	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)