

# Square D™ Brand EXN Low Voltage Distribution Transformers

## 7400CT1901

### Catalog

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## Product Description

The Square D™ Distribution Transformer is designed to supply power throughout the building. The transformer permits multiple voltages to be leveraged in the design of the system.

Some advantages to designing a system with low voltage transformers:

- Distributes a voltage higher than required by the load to limit wire losses and voltage drop
- Addition of source impedance to the system, reducing common overcurrent at normal voltages
- Mitigates harmonics through an internal magnetic circuit
- Allows system grounding closer to the load, reducing capacitive noise
- Can be designed for any output voltage that is required.

A few disadvantages to designing a system with low voltage distribution transformers:

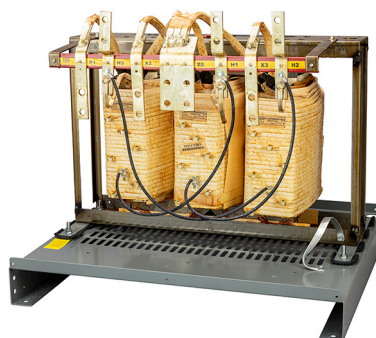
- Reduces overall efficiency of the system due to internal losses within the transformer
- Added heat to the building if installed indoors and in the HVAC system.

The impact on the efficiency of the system and the concerns for improvements in the market for energy consumption have led to low voltage distribution transformers being regulated through the Energy Policy and Conservation Act (United States) and Natural Resources (Canada).

Below are the efficiency ratings of Three-Phase Low Voltage Dry-Type Distribution Transformers:

Three-Phase	
kVA	Efficiency (%)
15	97.89
30	98.23
45	98.40
75	98.60
112.5	98.74
150	98.83
225	98.94
300	99.02
500	99.14
750	99.23
1000	99.28

**NOTE:** All efficiency values are at 35% of nameplate-rated load, determined according to the U.S. Department of Energy (DOE) Test Method for Measuring the Energy Consumption of Distribution Transformers under Appendix A to Subpart K of 10 CFR part 431.

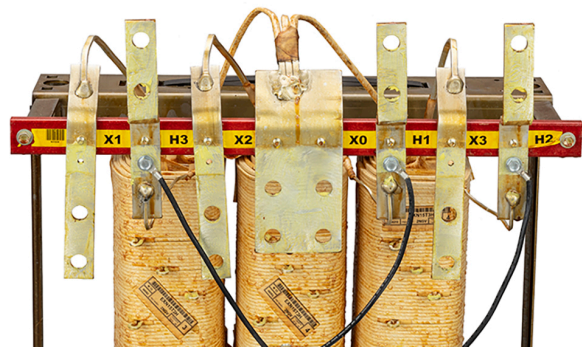
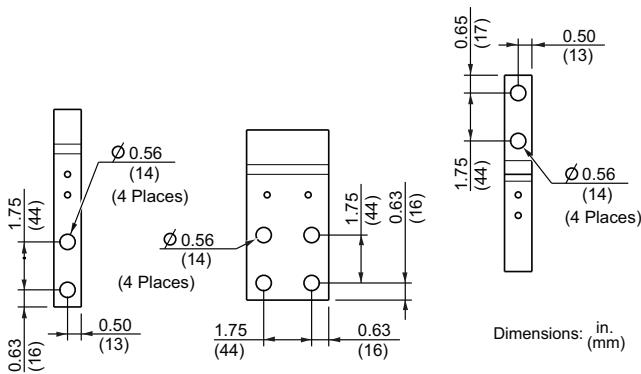


# EXN Energy Efficient Transformer Family

Square D transformers manufactured by Schneider Electric™ are optimized for performance, including the following components:

- **Coil**—Computer designed to reduce the losses with customized wire configurations used exclusively by Schneider Electric. Computer winding equipment minimizes variability during the winding process. Aluminum conductors come standard with copper conductors as a factory option.
- **Insulation System**—The system consists of a conductor wrap or coating, layer insulation, air gap spacing, and varnish material. The system is UL listed for a specific maximum temperature for average temperature rise, hot spot, and ambient temperature. Schneider Electric's EXN family of transformers have a 428°F (220°C) insulation system, with an average temperature rise maximum of 302°F (150°C).
- **Core**—EXN Transformers are designed with high-grade grain oriented, non-aging silicon steel laminations with high magnetic permeability, low hysteresis, and low eddy current losses. The computer-aided process allows the design to keep the magnetic flux densities well below the saturation point. The laminations are carefully and evenly stacked via distributive gap laminations, then clamped together to ensure an efficient magnetic circuit while providing a quiet quality offering of low voltage transformers.
- **Terminals**—Sized to allow the lugs to align with all corresponding Schneider Electric equipment (such as circuit breakers, switches, panelboards, switchboards, etc.). The terminal positioning separates the Primary and Secondary terminals and meets the National Electrical Code® (NEC®) minimum wire bending requirements. **Lugs are not shipped with the transformer.** This allows the installer the flexibility to order what is needed to meet any distribution system requirements. **NOTE:** Both mechanical and compression lug kits are available from Schneider Electric.

Terminals are standardized to National Electrical Manufacturers Association® (NEMA®) two-pole pad dimensions. The primary is oriented UP while the secondary is oriented DOWN (allowing for cables to be mounted front/back, allowing for multiple full-sized secondary cables to be landed).



## EXN — Enclosure 20M

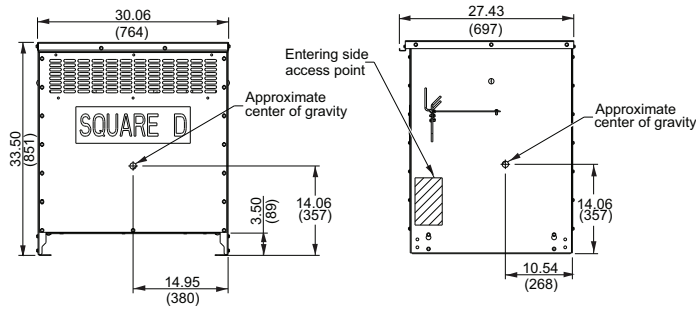
Cat. No.	DOE 2016 Efficiency Min. — 98.60%	Winding Material	Temp. Rise 220 Insulation	Core Loss	Coil Loss	%IZ	%IX	X/R	Weight (lbs.)
<b>75 kVA, 480 Delta 6-2.5%2+4- Taps, 208Y/120 Sound Level 44 dB (6 dB below ST-20)</b>									
EXN75T3H	98.63%	Al	150°C	142	2226	4.9	3.97	1.539	515
EXN75T3HCU	98.66%	Cu	150°C	142	2169	5.56	4.84	1.76	695
EXN75T3HB	98.74%	Al	80°C	153	1590	5.05	4.63	2.36	580
EXN75T3HBCU	98.74%	Cu	80°C	142	1687	5.61	5.22	2.03	733
EXN75T3HF	—	—	—	—	—	—	—	—	—
EXN75T3HFCU	—	—	—	—	—	—	—	—	—
EXN75T3HNL	—	—	—	—	—	—	—	—	—
EXN75T3HCUNL	—	—	—	—	—	—	—	—	—
<b>75 kVA, 600 Delta 6-2.5%2+4- Taps, 208Y/120 Sound Level 44 dB (6 dB below ST-20)</b>									
EXN75T65H	98.64%	Al	150°C	142	2193	5.52	4.77	1.72	692
EXN75T65HCU	98.66%	Cu	150°C	127	2259	4.67	3.63	1.24	621
<b>75 kVA, 480 Delta 6-2.5%2+4- Taps, 208Y/120 K-13 Rated, Sound Level 47 dB (6 dB below ST-20)</b>									
EXN75T3HNLP	98.70%	Al	150°C	153	1933	5.26	4.63	2.36	580
EXN75T3HCUNLP	98.65%	Cu	150°C	142	2169	5.56	4.82	2.13	700
<b>75 kVA, 192/200/208/216/232/240/248 Delta, 208Y/120, Sound Level 44 dB (6 dB below ST-20)</b>									
EXN75T3156H	—	Al	150°C	—	—	—	—	—	513
EXN75T3156HCU	—	Cu	150°C	—	—	—	—	—	621
<b>75 kVA, 480 Delta 6-2.5%2+4- Taps, 480Y/277, Sound Level 44 dB (6 dB below ST-20)</b>									
EXN75T1814H	—	Al	150°C	—	—	—	—	—	513
EXN75T1814HCU	—	Cu	150°C	—	—	—	—	—	621
<b>75 kVA, 192/200/208/216/232/240/248 Delta, 480Y/277, Sound Level 44 dB (6 dB below ST-20)</b>									
EXN75T3155H	—	Al	150°C	—	—	—	—	—	513
EXN75T3155HCU	—	Cu	150°C	—	—	—	—	—	621
<b>75 kVA, 480 Delta 6-2.5%2+4- Taps, 240 Delta, Sound Level 44 dB (6 dB below ST-20) [CT – 120CT 7.5% capacity]</b>									
EXN75T6H	—	Al	150°C	—	—	—	—	—	513
EXN75T6HCT	—	Al	150°C	—	—	—	—	—	513

All units above ship in Type 2 enclosure – 20M, minimum rear and side clearance 1/2–inch – Front Clearance for ventilated opening is six inches (must meet minimum code access requirements).

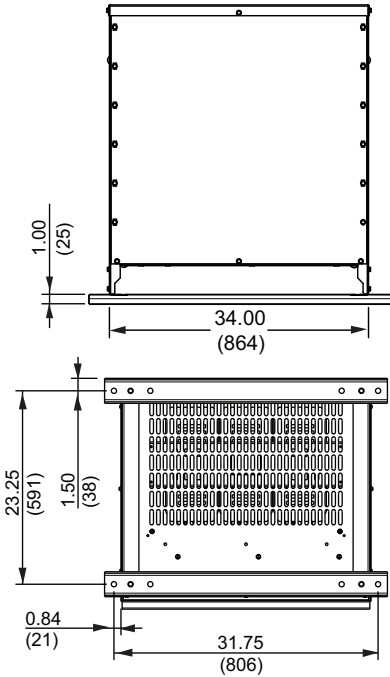
To be compliant with the seismic requirements of ASCE/SEI 7. This unit is self-certified to ICS ES AC156 by shake table qualifications testing.

# 20M Accessories

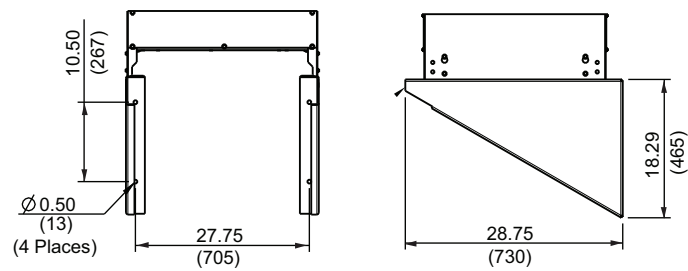
**Weathershield — Convert from Type 2 to Type 3R**  
**7400WS20M**



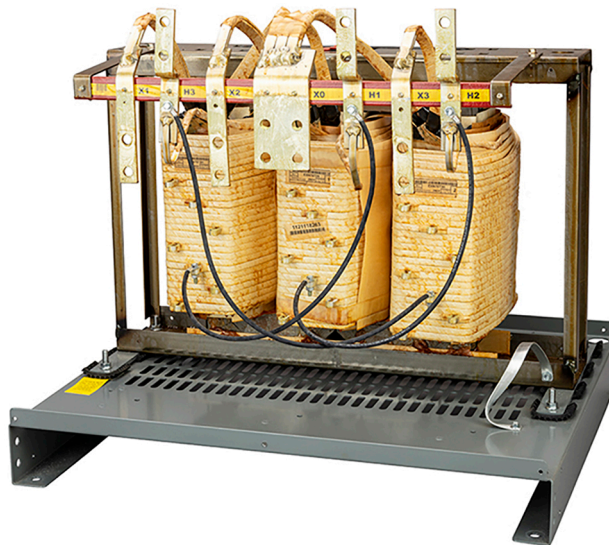
**Ceiling Mounting Bracket**  
**7400CMB18M19M20M**



**Wall Mounting Bracket**  
**7400WMB18M19M20M**



Dimensions: in. (mm)



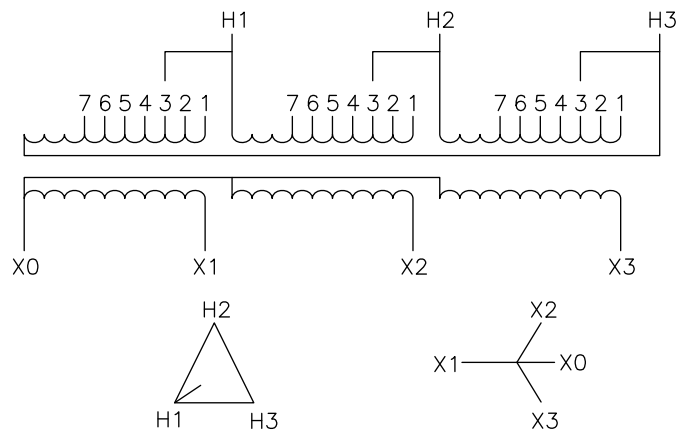
**EXN75T3H**

# Transformer Connections

Voltage Code "3"		Voltage Code "65"		Voltage Code "1814"	
Primary Volts	2-2.5% FCAN 4-2.5% FCBN	Primary Volts	2-2.5% FCAN 4-2.5% FCBN	Primary Volts	2-2.5% FCAN 4-2.5% FCBN
504	1	630	1	504	1
492	2	615	2	492	2
480	3	600	3	480	3
468	4	585	4	468	4
456	5	570	5	456	5
444	6	555	6	444	6
432	7	540	7	432	7

Voltage Code "3155"		Voltage Code "3156"	
Primary Volts	Full Capacity Taps	Primary Volts	Full Capacity Taps
248	1	248	1
240	2	240	2
232	3	232	3
216	4	216	4
208	5	208	5
200	6	200	6
192	7	192	7

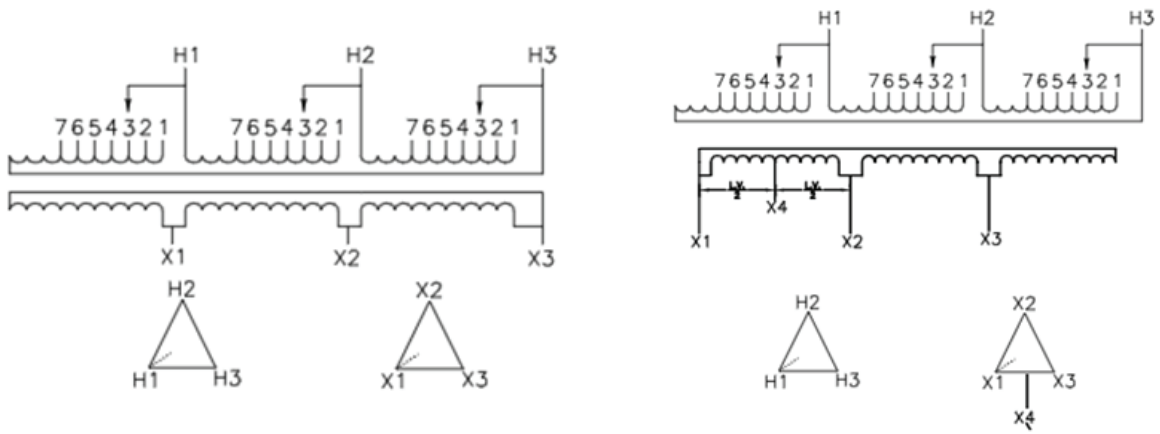
**NOTE:** Per UL 1561 unit shipped connected to 240 tap nameplate showing 240 V and 208 V as nominal.



Voltage Code "6"

Primary Volts	2-2.5% FCAN 4-2.5% FCBN
504	1
492	2
480	3
468	4
456	5
444	6
432	7

NOTE: "CT" 120 V center tap limited to 7.5% capacity.



## Overcurrent Protection

When voltage is applied to the input winding of a transformer, there can be a brief period of inrush current until the transformer core stabilizes. Inrush lasts approximately six power cycles, or about 0.1 seconds. The magnitude of the inrush varies depending on when the switch closes on the power wave, so that inrush can be anywhere from zero to greater than the full load current rating of the transformer.

In addition, the impedance of the supply system can influence the amount of inrush current the transformer can draw. To avoid tripping circuit breakers or blowing fuses on the primary side of the transformer during energizing, careful coordination of fuse sizes or circuit breaker handle ratings and magnetic trip settings is essential. This coordination requires information about maximum possible inrush to be expected from the particular transformer in question.

In order to provide optimal coordination and prevent possible inrush nuisance tripping, the primary overcurrent protection should be adjusted based on the maximum inrush current. This will result in the primary overcurrent protection exceeding the 125% allowance in the NEC for primary-only protection, and secondary protection will be required.

### Inrush Information

Cat. No.	Primary Voltage	Primary Nameplate Current	Max RMS Inrush Amperes	RMS Peak Inrush Multiplier
<i>EXN15T3H</i>	480	18.04	270	14.96X
EXN15T3HCU			267	14.799
EXN15T3HB			219	12.16X
EXN15T3HBCU			220	12.194
<i>EXN15T65H</i>	600	14.43	217	15.034
<i>EXN15T65HCU</i>			221	15.311
EXN15T3HNLP	480	18.04	239	13.247
EXN15T3HCUNLP			220	12.194
EXN15T3156H	240	36.08		
	208	41.64		
EXN15T3156HCU	240	36.08		
	208	41.64		
EXN15T1814H	480	18.04		
EXN15T1814HCU				
EXN15T3155H	240	36.08		
	208	41.64		
EXN15T3155HCU	240	36.08		
	208	41.64		
EXN15T6H	480	18.04		
EXN15T6HCT				

Cat. No.	Primary Voltage	Primary Nameplate Current	Max RMS Inrush Amperes	RMS Peak Inrush Multiplier
EXN30T3H	480	36.08	536	14.86X
EXN30T3HCU			430	11.917
EXN30T3HB			370	10.25X
EXN30T3HBCU			581	16.101
<i>EXN30T65H</i>	600	28.87	399	13.822
<i>EXN30T65HCU</i>			363	12.58X
EXN30T3HNLP	480	36.08	420	11.639
EXN30T3HCUNLP			581	16.101
EXN30T3156H	240	72.17		
	208	83.27		
<i>EXN30T3156HCU</i>	240	72.17		
	208	83.27		
EXN30T1814H	480	36.08		
<i>EXN30T1814HCU</i>				
EXN30T3155H	240	72.17		
	208	83.27		
<i>EXN30T3155HCU</i>	240	72.17		
	208	83.27		
EXN30T6H	480	36.08		
EXN30T6HCT				

Cat. No.	Primary Voltage	Primary Nameplate Current	Max RMS Inrush Amperes	RMS Peak Inrush Multiplier
<i>EXN45T3H</i>	480	54.13	586	10.82X
EXN45T3HCU			709	13.099
EXN45T3HB			590	10.90X
EXN45T3HBCU			528	9.75
<i>EXN45T65H</i>	600	43.30	473	10.92X
<i>EXN45T65HCU</i>			571	13.187
EXN45T3HNLP	480	54.13	515	9.52X
EXN45T3HCUNLP			528	9.75X
EXN45T3156H	240	108.25		
	208	124.91		
<i>EXN45T3156HCU</i>	240	108.25		
	208	124.91		
<i>EXN45T1814H</i>	480	54.13		
<i>EXN45T1814HCU</i>				
EXN45T3155H	240	108.25		
	208	124.91		
<i>EXN45T3155HCU</i>	240	108.25		
	208	124.91		
<i>EXN45T6H</i>	480	54.13		
<i>EXN45T6HCT</i>				

Cat. No.	Primary Voltage	Primary Nameplate Current	Max RMS Inrush Amperes	RMS Peak Inrush Multiplier
<i>EXN75T3H</i>	480	90.21	822	9.11X
<i>EXN75T3HCU</i>			734	8.14X
<i>EXN75T3HB</i>			771	8.55X
<i>EXN75T3HBCU</i>			706	7.826
<i>EXN75T65H</i>	600	72.17	593	8.22X
<i>EXN75T65HCU</i>			951	13.177
<i>EXN75T3HNLP</i>	480	90.21	771	8.547
<i>EXN75T3HCUNLP</i>			739	8.192
<i>EXN75T3156H</i>	240	180.42		
	208	208.18		
<i>EXN75T3156HCU</i>	240	180.42		
	208	208.18		
<i>EXN75T1814H</i>	480	90.21		
<i>EXN75T1814HCU</i>				
<i>EXN75T3155H</i>	240	180.42		
	208	208.18		
<i>EXN75T3155HCU</i>	240	180.42		
	208	208.18		
<i>EXN75T6H</i>	480	90.21		
<i>EXN75T6HCT</i>				

Cat. No.	Primary Voltage	Primary Name-plate Current	Circuit Breaker Handle Ratings	Schneider Electric Circuit Breaker Family		
				E-Frame	B-Frame	H-Frame
EXN15T3H	480 Delta	18.04	25	Max inrush exceeds trip curve	Fixed (BD/BG/BJ)	Fixed (HD/HG/HJ/HL/HR)
			30			
			35	Fixed (ED/EG/EJ)		
			40			
			45			
EXN30T3H	480 Delta	36.08	50	Max inrush exceeds trip curve	Max inrush exceeds trip curve	Electronic trip setting (HD/HG/HJ/HL/HR)
			60			
			70	Fixed (ED/EG/EJ)	Fixed (BD/BG/BJ)	Fixed (HD/HG/HJ/HL/HR)
			80			
			90			
			100			
EXN45T3H	480 Delta	54.13	70	Max inrush exceeds trip curve	Max inrush exceeds trip curve	Electronic trip setting (HD/HG/HJ/HL/HR)
			80			
			90	Fixed (ED/EG/EJ)	Fixed (BD/BG/BJ)	Fixed (HD/HG/HJ/HL/HR)
			100			
			110			
			125			
EXN75T3H	480 Delta	90.21	125	Fixed (ED, EG, EJ)	Fixed (BD, BG, BJ)	Electronic trip setting (HD/HG/HJ/HL/HR)
			150	—	—	
			<b>Handle Ratings</b>	<b>J-Frame</b>	<b>L-Frame</b>	
			125	Fixed (JD/JG/JJ/JL/JR)	Electronic trip setting (LD/LG/LJ/LL/LR)	
			150			
			175			
			200			
225						