

Dry Type Distribution Transformers

Low Temperature Rise

SolaHD Low Temperature Rise transformers feature a 220°C insulation system and temperature rise of only 80°C or 115°C under full nameplate load. Reduction in temperature rise increases reliability.

The 35°C thermal reserve on 115°C rise units and 70°C reserve on 80°C rise units definitely mean higher reliability. The extra benefit is being able to operate either of these transformers as a 150°C rise unit and have a short term overload capacity of 15-30% *without* compromising normal life expectancy (See Figure 2).

Low temperature rise transformers are designed for any critical application requiring extra overload capability and cooler operating temperatures. All are available with either a 115°C or 80°C thermal rise and a Class 220°C insulation system.

Features

- Energy Efficient Compliant to DOE 2016 ¹
- Extra thermal reserve
- Enhanced Enclosure Designs (15-112.5kVA)
- Meets transit test requirements for ISTA (International Safe Transit Association)
- Quiet operation with sound levels 3-6 dB below the NEMA ST-20 requirements

Accessories and Optional Design Styles

- Weather Shields (UL Listed/NEMA Type 3R)
- Copper Wound designs
- Alternative voltages
- Wall mounting brackets
- Open core and coil designs

Selection Tables:

Low Temperature Rise, Single Phase, 80°C Rise

Group 1: 240 x 480 Volt Primary, 120/240 Secondary, 60 Hz, 80°C Rise

kVA	Catalog Number 80°C Rise	Type 3R Weather Shield ²	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ³	Elec Conn ³	Primary Amps	Secondary Amps
15	ES5HB15S	WS-15	28 (711)	16 (406)	16 (406)	265 (120)	1	1	62.5/31.3	125/62.5
25	ES5HB25S	WS-17	31 (787)	18 (457)	18 (457)	340 (154)	1	1	104/52.1	208/104
37.5	ES5HB37S	WS-17	31 (787)	18 (457)	18 (457)	425 (193)	1	1	156/78	313/156
50	ES5HB50S	WS-09	44 (1118)	23 (584)	21 (533)	655 (297)	1	1	208/104	416/208
75	ES5HB75S	WS-09	44 (1118)	23 (584)	21 (533)	750 (340)	1	1	313/156	625/313
100	ES5HB100S	WS-16	46 (1168)	26 (660)	24 (610)	980 (445)	1	1	417/208	833/417

Notes:

1. DOE 2016 refers to Department of Energy CFR (Code of Federal Regulations) title 10, part 431.196.

2. Weather shields (set of two) must be ordered separately.

3. Design Styles and Electrical Connections can be found at the end of the Ventilated Distribution Transformers section.

* Not all optional designs are UL listed. Contact Technical Services.



Certifications and Compliances

-  Listed: E25872
- UL 1561

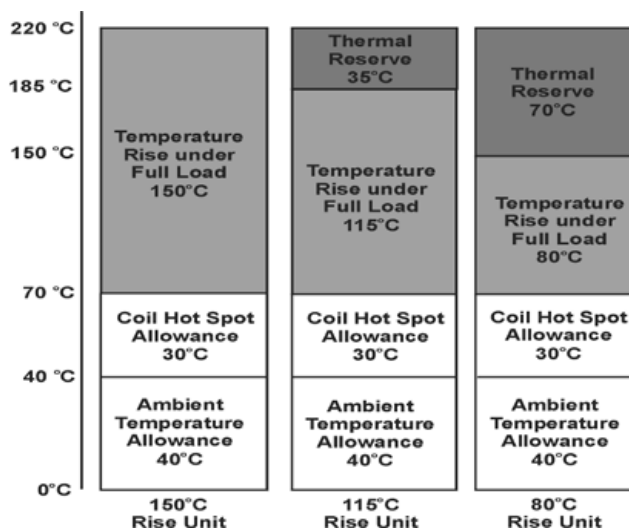


Figure 2

Dry Type Distribution Transformers

Selection Tables: Low Temperature Rise, Three Phase, 80°C Rise

Group A: 480 Δ Primary, 208Y/120 Secondary, 60 Hz, 80°C Rise

kVA	Catalog Number 80°C Rise	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	EE2HB15S	WS-14	28 (711)	23 (584)	19 (483)	358 (162)	2	5	18.1	41.7
30	EE2HB30S	WS-14	28 (711)	23 (584)	19 (483)	438 (198)	2	5	36.1	83.4
45	EE2HB45S	WS-30	34 (864)	28 (711)	26 (660)	660 (229)	2	5	54.2	125
75	EE2HB75S	WS-30	34 (864)	28 (711)	26 (660)	835 (378)	2	5	90.3	208
112.5	E2HB112S	WS-10	44 (1118)	33 (838)	21 (533)	1005 (456)	1	5	135	313
150	E2HB150S	WS-11	46 (1168)	36 (914)	24 (610)	1368 (621)	1	5	181	417
225	E2HB225S	WS-11	46 (1168)	36 (914)	24 (610)	1479 (671)	1	5	271	625
300	E2HB300S	WS-12	65 (1651)	45 (1143)	35 (889)	2457 (1114)	1	5	361	834

Group B: 480 Δ Primary, 240 Δ Secondary with 120 V Reduced Capacity Center Tap ³, 80°C Rise

kVA	Catalog Number 80°C Rise	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	EE5HB15S	WS-14	28 (711)	23 (584)	19 (483)	358 (162)	2	6	18.1	36.1
30	EE5HB30S	WS-14	28 (711)	23 (584)	19 (483)	438 (198)	2	6	36.1	72.3
45	EE5HB45S	WS-30	34 (864)	28 (711)	26 (660)	660 (299)	2	6	54.2	108
75	EE5HB75S	WS-30	34 (864)	28 (711)	26 (660)	835 (378)	2	6	90.3	181
112.5	E5HB112S	WS-10	44 (1118)	33 (838)	21 (533)	1009 (458)	1	6	135	271
150	E5HB150S	WS-11	46 (1168)	36 (914)	24 (610)	1367 (620)	1	6	181	361
225	E5HB225S	WS-11	46 (1168)	36 (914)	24 (610)	1478 (670)	1	6	271	542
300	E5HB300S	WS-12	65 (1651)	45 (1143)	35 (889)	2457 (1114)	1	6	361	723

Notes:

1. Weather shields (set of two) must be ordered separately.
2. Design Styles and Electrical Connections can be found at the end of the Ventilated Distribution Transformers section.
3. Refer to Capacity of Center Tap in Center Tap Delta Transformers at the beginning of this section.

Dry Type Distribution Transformers

Selection Tables: Low Temperature Rise, Single Phase, 115°C Rise

Group 1: 240 x 480 Volt Primary, 120/240 Secondary, 60 Hz, 115°C Rise

kVA	Catalog Number 115°C Rise	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	ES5HF15S	WS-15	28 (711)	16 (406)	16 (406)	210 (95)	1	1	62.5/31.3	125/62.5
25	ES5HF25S	WS-15	28 (711)	16 (406)	16 (406)	245 (111)	1	1	104/52.1	208/104
37.5	ES5HF37S	WS-17	31 (787)	18 (457)	18 (457)	340 (154)	1	1	156/78	313/156
50	ES5HF50S	WS-17	31(787)	18(457)	18 (457)	425 (193)	1	1	208/104	416/208
75	ES5HF75S	WS-09	44 (1118)	23 (584)	21 (533)	610 (277)	1	1	313/156	625/313
100	ES5HF100S	WS-09	44 (1118)	23 (584)	21 (533)	750 (340)	1	1	417/208	833/417

Selection Tables: Low Temperature Rise, Three Phase, 115°C Rise

Group A: 480 Δ Primary, 208Y/120 Secondary, 60 Hz, 115°C Rise

kVA	Catalog Number 115°C Rise	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	EE2HF15S	WS-02	23 (584)	18 (457)	17 (432)	223 (101)	2	5	18.1	41.7
30	EE2HF30S	WS-14	28 (711)	23 (584)	19 (483)	358 (162)	2	5	36.1	83.4
45	EE2HF45S	WS-14	28 (711)	23 (584)	19 (483)	438 (198)	2	5	54.2	125
75	EE2HF75S	WS-30	34 (864)	28 (711)	26 (660)	660 (299)	2	5	90.3	208
112.5	EE2HF112S	WS-30	34 (864)	28 (711)	26 (660)	835 (378)	2	5	135	313
150	E2HF150S	WS-10	44 (1118)	33 (838)	21 (533)	1002 (454)	1	5	181	417
225	E2HF225S	WS-11	46 (1168)	36 (914)	24 (610)	1393 (632)	1	5	271	625
300	E2HF300S	WS-11	46 (1168)	36 (914)	24 (610)	1519 (689)	1	5	361	834

Group B: 480 Volt Δ Primary, 240 Volt Δ Secondary with 120 V reduced capacity center tap ⁴, 60 Hz, 115°C Rise

kVA	Catalog Number	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	EE5HF15S	WS-02	23 (584)	18 (457)	17 (432)	223 (102)	2	6	18.1	36.1
30	EE5HF30S	WS-14	28 (711)	23 (584)	19 (483)	358 (162)	2	6	36.1	72.3
45	EE5HF45S	WS-14	28 (711)	23 (584)	19 (483)	438 (198)	2	6	54.2	108
75	EE5HF75S	WS-30	34 (864)	28 (711)	26 (660)	660 (299)	2	6	90.3	181
112.5	EE5HF112S	WS-30	34 (864)	28 (711)	26 (660)	835 (378)	2	6	135	271
150	E5HF150S	WS-10	44 (1118)	33 (838)	21 (533)	1002 (454)	1	6	181	361
225	E5HF225S	WS-11	46 (1168)	36 (914)	24 (610)	1393 (632)	1	6	271	542
300	E5HF300S	WS-11	46 (1168)	36 (914)	24 (610)	1519 (689)	1	6	361	723

Notes:

1. Weather shields (set of two) must be ordered separately.
2. Design Styles and Electrical Connections can be found at the end of the Ventilated Distribution Transformers section.

Dry Type Distribution Transformers

Electrical Connections (Single Phase)

240 x 480 Volt Primary,
120/240 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN

1

Primary Voltage	Interconnect	Connect Lines To
504	1 to 2	H1 & H2
492	2 to 3	H1 & H2
480	3 to 4	H1 & H2
468	4 to 5	H1 & H2
456	5 to 6	H1 & H2
444	6 to 7	H1 & H2
432	7 to 8	H1 & H2
252	H1 to 2 H2 to 1	H1 & H2
240	H1 to 4 H2 to 3	H1 & H2
228	H1 to 6 H2 to 5	H1 & H2
216	H1 to 8 H2 to 7	H1 & H2
Secondary Voltage	Interconnect	Connect Lines To
240	X2 to X3	X1 & X4
120-0-120	X2 to X3 X2 to $\perp$	X1-X2-X4
120	X1 to X3 X2 to X4	X1 & X4

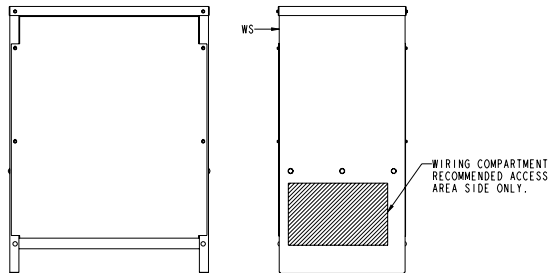
ES5 Series

120/208/240/277 Volt Primary,
120/240 Volt Secondary
Taps: None

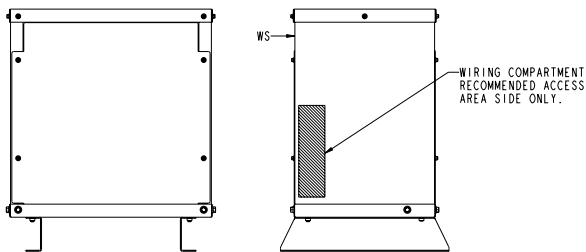
2

Primary Voltage	Interconnect	Connect Lines To
277	1 to 2	H1 & H2
240	3 to 4	H1 & H2
208	5 to 6	H1 & H2
120	H1 to 4 H2 to 3	H1 & H2
Secondary Voltage	Interconnect	Connect Lines To
240	X2 to X3	X1 & X4
120-0-120	X2 to X3 X2 to $\perp$	X1-X2-X4
120	X1 to X3 X2 to X4	X1 & X4

ES12 Series



Design Style 1

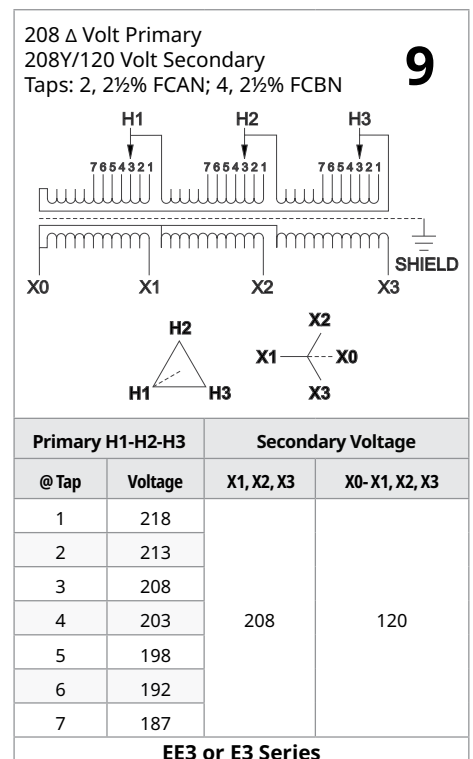
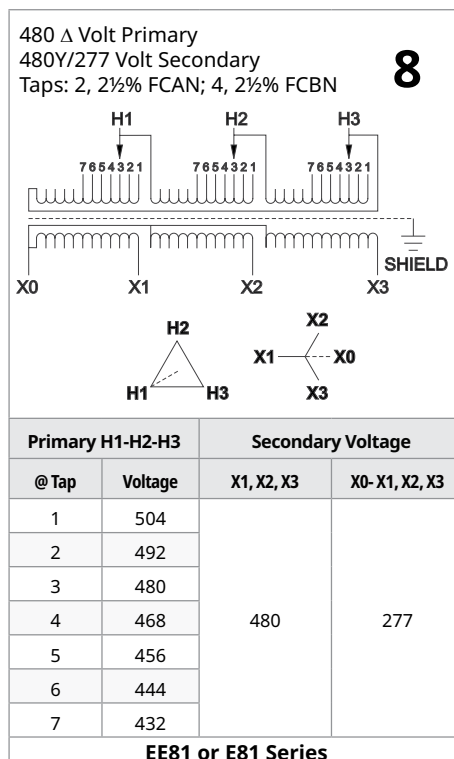
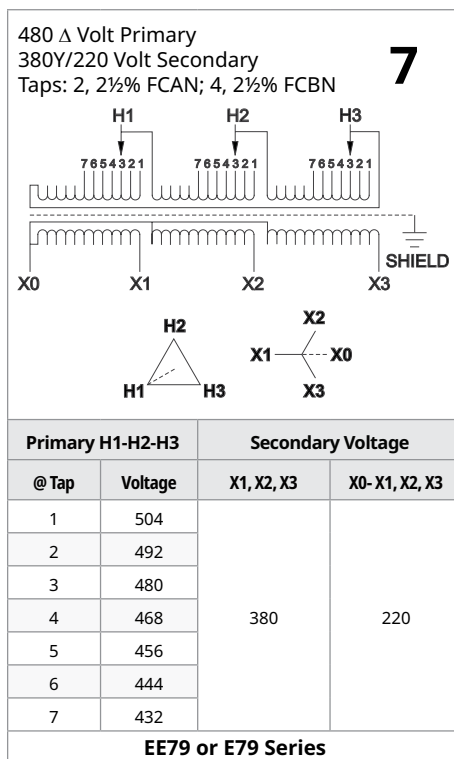
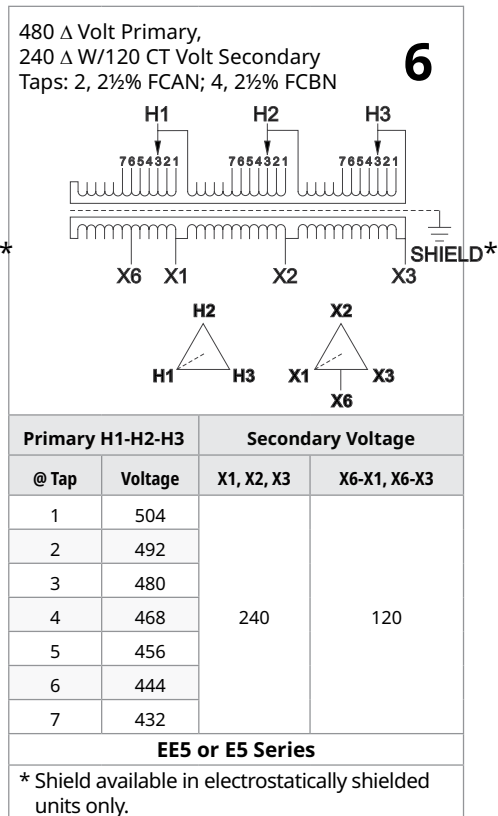
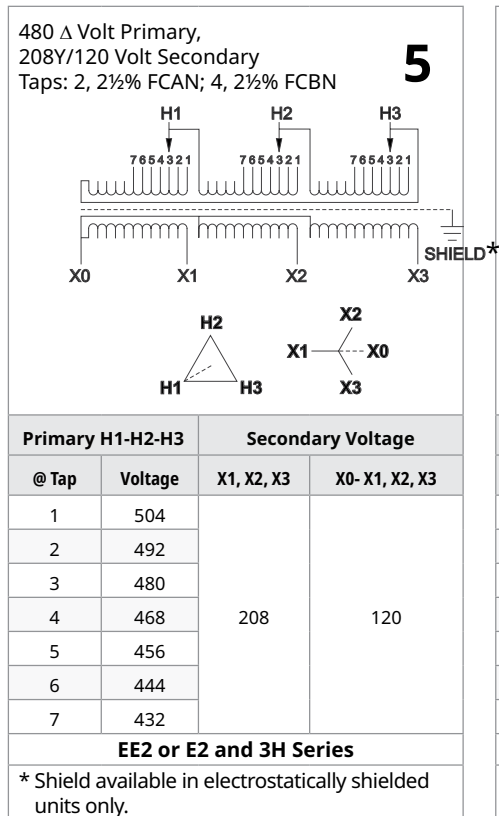


Design Style 2

Wall mounting brackets are available for ventilated transformers up to 75 kVA:
WMB1151 has a maximum weight capacity of 500 lb. (227 kg.)
WMB6375 has a maximum weight capacity of 780 lb. (354 kg)

Dry Type Distribution Transformers

Electrical Connections (Three Phase)

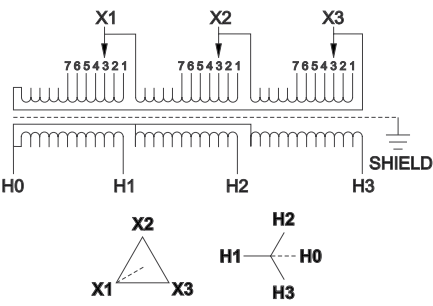


Dry Type Distribution Transformers

Electrical Connections (Three Phase) cont.

208 Δ Volt Primary
480Y/277 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN

10

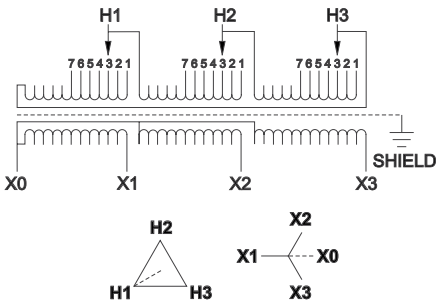


Primary X1-X2-X3		Secondary Voltage	
@ Tap	Voltage	H1-H2-H3	H0-H1, H2, H3
1	218	480	277
2	213		
3	208		
4	203		
5	198		
6	192		
7	187		

EE84 or E84 Series

240 Δ Volt Primary
208Y/120 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN

11

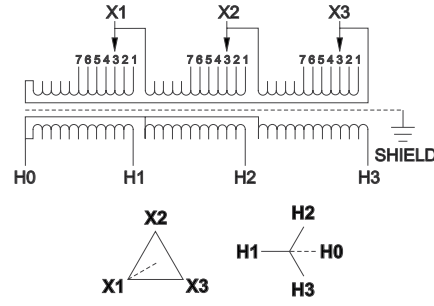


Primary H1-H2-H3		Secondary Voltage	
@ Tap	Voltage	X1, X2, X3	X0- X1, X2, X3
1	252	208	120
2	246		
3	240		
4	234		
5	228		
6	222		
7	216		

EE6 or E6 Series

240 Δ Volt Primary
480Y/277 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN

12



Primary X1-X2-X3		Secondary Voltage	
@ Tap	Voltage	H1, H2, H3	H0- H1, H2, H3
1	252	480	277
2	246		
3	240		
4	234		
5	228		
6	222		
7	216		

EE85 or E85 Series