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.

E25872

Accessories and Optional Design Styles

- Wall mounting brackets (500 lbs maximum) (Item WB1C)
- Weather Shields (UL Listed/NEMA Type 3R)
- Stainless Steel Enclosures
- Totally enclosed non-ventilated designs (TENV) (Non UL) *
- Open core and coil designs (UL Recognized)
- Copper Wound designs
- Compliant to NEMA TP-1 standards

Certifications and Compliances

- UL Listed: E25872
  - UL 1561

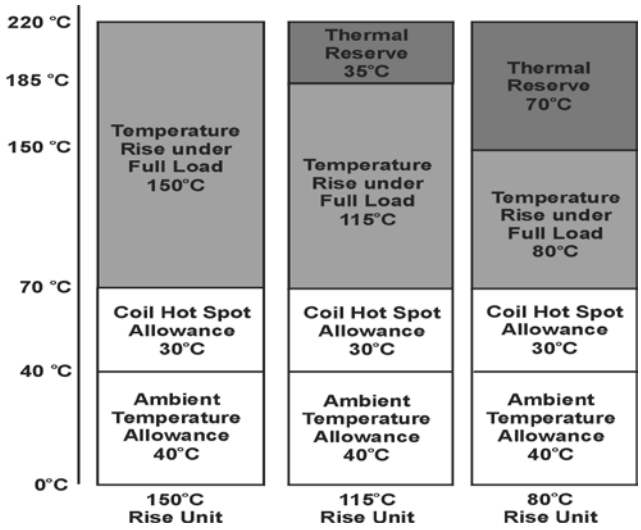


Figure 2

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 [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	**ES5HB15S**	**WS–15**	28.00 (711.2)	16.00 (406.4)	16.00 (406.4)	265.0 (120.20)	1	1	62.5/31.3	125/62.5
25	**ES5HB25S**	**WS–17**	31.00 (787.4)	18.00 (457.2)	18.00 (457.2)	340.0 (154.22)	1	1	104/52.1	208/104
37.5	**ES5HB37S**	**WS–17**	31.00 (787.4)	18.00 (457.2)	18.00 (457.2)	425.0 (192.78)	1	1	156/78	313/156
50	**ES5HB50S**	**WS–09**	44.00 (1117.6)	23.00 (584.2)	21.00 (533.4)	655.0 (297.10)	1	1	208/104	416/208
75	**ES5HB75S**	**WS–09**	44.00 (1117.6)	23.00 (584.2)	21.00 (533.4)	750.0 (340.19)	1	1	313/156	625/313
100	**ES5HB100S**	**WS–16**	46.00 (1168.4)	26.00 (660.4)	24.00 (609.6)	980.0 (444.52)	1	1	417/208	833/417

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.

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

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	**ET2HB15S**	**WS–14**	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	292.0 (132.45)	1	5	18.1	41.7
30	**ET2HB30S**	**WS–14**	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	376.0 (170.55)	1	5	36.1	83.4
45	**ET2HB45S**	**WS–30**	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	569.0 (258.09)	1	5	54.2	125.0
75	**ET2HB75S**	**WS–30**	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	768.0 (348.36)	1	5	90.3	208.0
112.5	**ET2HB112S**	**WS–10**	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	933.0 (423.20)	1	5	135.0	313.0
150	**ET2HB150S**	**WS–11**	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1342.0 (608.72)	1	5	181.0	417.0
225	**ET2HB225S**	**WS–11**	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1525.0 (691.73)	1	5	271.0	625.0
300	**ET2HB300S**	**WS–12**	65.00 (1651.0)	45.00 (1143.0)	35.00 (889.0)	2460.0 (1115.84)	1	5	361.0	834.0

Group B: 480 Δ Primary, 240 Δ Secondary with 120V 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	**ET5HB15S**	**WS–14**	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	292.0 132.45)	1	6	18.1	36.1
30	**ET5HB30S**	**WS–14**	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	381.0 (172.82)	1	6	36.1	72.3
45	**ET5HB45S**	**WS–30**	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	580.0 (263.08)	1	6	54.2	108.0
75	**ET5HB75S**	**WS–30**	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	760.0 (344.73)	1	6	90.3	181.0
112.5	**ET5HB112S**	**WS–10**	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	940.0 (426.38)	1	6	135.0	271.0
150	**ET5HB150S**	**WS–11**	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1342.0 (608.72)	1	6	181.0	361.0
225	**ET5HB225S**	**WS–11**	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1525.0 (691.73)	1	6	271.0	542.0
300	**ET5HB300S**	**WS–12**	65.00 (1651.0)	45.00 (1143.0)	35.00 (889.0)	2460.0 (1115.84)	1	6	361.0	723.0

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.

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**	28.00 (711.2)	16.00 (406.4)	16.00 (406.4)	210.0 (95.25)	1	1	62.5/31.3	125/62.5
25	**ES5HF25S**	**WS–15**	28.00 (711.2)	16.00 (406.4)	16.00 (406.4)	245.0 (111.13)	1	1	104/52.1	208/104
37.5	**ES5HF37S**	**WS–17**	31.00 (787.4)	18.00 (457.2)	18.00 (457.2)	340.0 (154.22)	1	1	156/78	313/156
50	**ES5HF50S**	**WS–17**	31.00 (787.4)	18.00(457.2)	18.00 (457.2)	425.0 (192.78)	1	1	208/104	416/208
75	**ES5HF75S**	**WS–09**	44.00 (1117.6)	23.00 (584.2)	21.00 (533.4)	610.0 (276.69)	1	1	313/156	625/313
100	**ES5HF100S**	**WS–09**	44.00 (1117.6)	23.00 (584.2)	21.00 (533.4)	750.0 (340.19)	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	**ET2HF15S**	**WS–02**	23.00 (584.2)	18.00 (457.2)	14.00 (355.6)	187.0 (84.82)	1	5	18.1	41.7
30	**ET2HF30S**	**WS–14**	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	292.0 (132.45)	1	5	36.1	83.4
45	**ET2HF45S**	**WS–14**	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	378.0 (171.46)	1	5	54.2	125.0
75	**ET2HF75S**	**WS–30**	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	569.0 (258.09)	1	5	90.3	208.0
112.5	**ET2HF112S**	**WS–30**	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	768.0 (348.36)	1	5	135.0	313.0
150	**ET2HF150S**	**WS–10**	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	933.0 (423.20)	1	5	181.0	417.0
225	**ET2HF225S**	**WS–11**	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1342.0 (608.72)	1	5	271.0	625.0
300	**ET2HF300S**	**WS–11**	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1525.0 (691.73)	1	5	361.0	834.0

Group B: 480 Volt Δ Primary, 240 Volt Δ, Secondary with reduced capacity center tap, 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	**ET5HF15S**	**WS–02**	23.00 (584.2)	19.00 (482.6)	14.00 (355.6)	189.0 (85.73)	1	6	18.1	36.1
30	**ET5HF30S**	**WS–14**	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	292.0 (132.45)	1	6	36.1	72.3
45	**ET5HF45S**	**WS–14**	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	381.0 (172.82)	1	6	54.2	108.0
75	**ET5HF75S**	**WS–30**	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	560.0 (254.01)	1	6	90.3	181.0
112.5	**ET5HF112S**	**WS–30**	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	760.0 (344.73)	1	6	135.0	271.0
150	**ET5HF150S**	**WS–10**	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	940.0 (426.38)	1	6	181.0	361.0
225	**ET5HF225S**	**WS–11**	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1342.0 (608.72)	1	6	271.0	542.0
300	**ET5HF300S**	**WS–11**	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1525.0 (691.73)	1	6	361.0	723.0

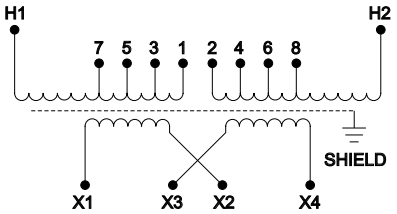
Notes:

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.

Electrical Connections (Single Phase)

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

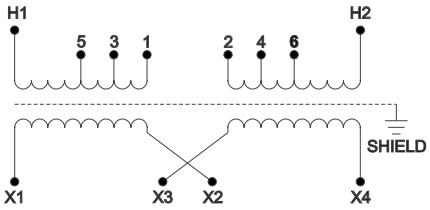
1



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 ⏚	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

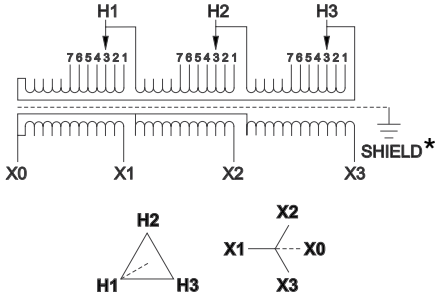


Primary Voltage	Interconnect	Connect Lines To
277	1 to 2	H1 & H2
240	3 to 4	H1 & H2
208	5 to 6	H1 & H2
120	H1 to 4 H2 to 3	H1 & H2
Secondary Voltage	**Interconnect**	**Connect Lines To**
240	X2 to X3	X1 & X4
120-0-120	X2 to X3 X2 to ⏚	X1-X2-X4
120	X1 to X3 X2 to X4	X1 & X4
ES12 Series		

Electrical Connections (Three Phase)

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

5

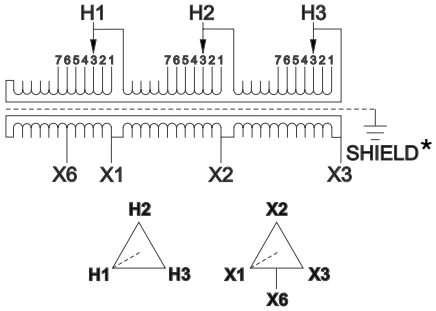


Primary H1-H2-H3		Secondary Voltage	
@ Tap	Voltage	X1, X2, X3	X0- X1, X2, X3
1	504	208	120
2	492		
3	480		
4	468		
5	456		
6	444		
7	432		
ET2 and 3H Series			

** Shield available in electrostatically shielded units only.*

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

6



Primary H1-H2-H3		Secondary Voltage	
@ Tap	Voltage	X1, X2, X3	X6-X1, X6-X3
1	504	240	120
2	492		
3	480		
4	468		
5	456		
6	444		
7	432		
ET5 Series			

** Shield available in electrostatically shielded units only.*