

SOLAHD Non-Ventilated Automation Transformers

50 VA to 45 kVA

Applications

- SolaHD encapsulated transformers are rated for Hazardous Locations (Class 1, Division 2, Group A-D) as well as harsh industrial environments.
- Encapsulation and rugged UL Listed/NEMA Type 3R enclosures protect the transformer from dust, moisture, and provide extra shock and vibration resistance.
- SolaHD transformers fully comply with the latest addition of the National Electrical Code for Class I, Division 2, Group A, B, C and D locations when installed in compliance with NEC 501.100 (B).

Features

- Single Phase: .05 - .250 kVA
 - UL Listed/NEMA Type 3R non encapsulated enclosure for indoor and outdoor service.
 - Low temperature rise, UL Class +130 °C (+266 °F) insulation system, +80 °C (+176 °F) temperature rise under full load.
 - Conduit knockouts for side entry into wiring compartment.
 - Copper lead wire terminations.
- Single Phase: 0.500 - 25 kVA and Three Phase: 3 - 45 kVA
 - UL Listed/NEMA Type 3R encapsulated enclosure for indoor and outdoor service
 - Electrostatically shielded for quality power on sizes 1 kVA and larger
 - UL Class +200 °C (+392 °F) insulation system, +115 °C (+239 °F) temperature rise under full load
 - Conduit knockouts for side entry into wiring compartment.
 - Copper lead wire terminations.
 - .500 - 45 kVA units are encapsulated with electrical grade silica and epoxy for industrial applications.



Accessories and Optional Design Styles ①

- Stainless steel enclosures.
- Copper wound designs.
- UL Listed/NEMA Type 4, 4X or 12 encapsulated enclosures.
- Low temperature designs available.

NEC/CEC Certifications and Compliances

- UL Standard: UL 1561 or UL 506
- CSA Standard: CSA C22.2 No. 47 or No. 66
- cULus Listed: E25872, E77014

Related Products

- Some SolaHD DC power supplies are available with Class I, Division 2 ratings or encapsulation.
- Surge Protective Devices.

Distribution Equipment

NEC/CEC TRANSFORMERS

+220 °C (+428 °F)	Temperature Rise Under Full Load +150 °C (+302 °F)	Thermal Reserve +35 °C (+95 °F)	Thermal Reserve +70 °C (+158 °F)
+185 °C (+365 °F)		Temperature Rise Under Full Load +115 °C (+239 °F)	Temperature Rise Under Full Load +80 °C (+176 °F)
+150 °C (+302 °F)	Coil Hot Spot Allowance +30 °C (+86 °F)		Coil Hot Spot Allowance +30 °C (+86 °F)
+70 °C (+158 °F)	Ambient Temperature Allowance +40 °C (+104 °F)	Ambient Temperature Allowance +40 °C (+104 °F)	Ambient Temperature Allowance +40 °C (+104 °F)
+40 °C (+104 °F)			
0 °C (+32 °F)			
	+150 °C (+302 °F) Rise Unit	Rise Unit +115 °C (+239 °F)	Rise Unit +80 °C (+176 °F)

① Not all optional designs are UL listed. Contact Technical Services.

SOLA^{HD} Single Phase, Encapsulated, Non-Ventilated Automation Transformers

50 VA to 45 kVA

kVA	Catalog Number		In Millimeters (Inches)			Approx. Ship Weight kg (lbs)	Design Style ①	Elec Conn ①	Primary Amps	Secondary Amps
	Group 1 Rolled Steel	Group 2 Stainless Steel	Height	Width	Depth					
Group 1: 240 x 480 Primary, 120/240 Secondary, 60 Hz										
Non-Encapsulated										
.050	HS1B50		152.4 (6)	101.6 (4)	76.2 (3)	1.36 (3)	2	15	.208/.104	0.416/0.208
.075	HS1B75		152.4 (6)	101.6 (4)	76.2 (3)	1.36 (3)	2	15	.312/.156	0.625/0.312
.100	HS1B100	Not Available	152.4 (6)	101.6 (4)	76.2 (3)	1.81 (4)	2	15	.417/.208	0.833/0.417
.150	HS1B150		203.2 (8)	101.6 (4)	101.6 (4)	2.27 (5)	2	15	.625/.313	1.25/.625
.250	HS1B250		203.2 (8)	101.6 (4)	101.6 (4)	3.63 (8)	2	15	1.04/.512	2.08/1.04
Encapsulated										
0.5	HS1F500B	HSS1F500B	254.0 (10)	152.4 (6)	127.0 (5)	9.98 (22)	3	15	2.08/1.04	4.16/2.08
0.75	HS1F750B	HSS1F750B	254.0 (10)	152.4 (6)	127.0 (5)	12.25 (27)	3	15	3.13/1.56	6.25/3.13
1	HS1F1BS	HSS1F1BS	254.0 (10)	152.4 (6)	127.0 (5)	12.70 (28)	3	16	4.17/2.08	8.33/4.17
1.5	HS1F1.5AS	HSS1F1.5AS	304.8 (12)	254.0 (10)	177.8 (7)	17.34 (38)	4	16	6.25/3.13	12.5/6.25
2	HS1F2AS	HSS1F2AS	304.8 (12)	254.0 (10)	177.8 (7)	20.14 (45)	4	16	8.33/4.17	16.7/8.33
3	HS5F3AS	HSS5F3AS	304.8 (12)	254.0 (10)	177.8 (7)	24.95 (55)	4	17	12.5/6.25	25.0/12.5
5	HS5F5AS	HSS5F5AS	431.8 (17)	355.6 (14)	228.6 (9)	59.42 (131)	4	17	20.8/10.4	41.6/20.8
7.5	HS5F7.5AS	HSS5F7.5AS	431.8 (17)	355.6 (14)	228.6 (9)	74.84 (156)	4	18	31.3/15.6	62.5/31.3
10	HS5F10AS	HSS5F10AS	431.8 (17)	355.6 (14)	228.6 (9)	74.84 (156)	4	18	41.7/20.8	83.3/41.7
15	HS5F15AS	HSS5F15AS	762.0 (30)	736.6 (29)	304.8 (12)	249.02 (549)	4	18	62.5/31.2	125.0/62.5
25	HS5F25AS	HSS5F25AS	762.0 (30)	736.6 (29)	304.8 (12)	288.93 (637)	4	18	104.0/52.0	208.0/104.0
Group 2: 600 Primary, 120/240 Secondary, 60 Hz										
Non-Encapsulated										
.100	HS10B100	Not Available	152.4 (6)	101.6 (4)	76.2 (3)	1.81 (4)	2	21	0.167	.833/.417
.150	HS10B150		203.2 (8)	101.6 (4)	101.6 (4)	2.27 (5)	2	21	0.25	1.25/.625
.250	HS10B250		203.2 (8)	101.6 (4)	101.6 (4)	3.63 (8)	2	21	0.417	2.08/1.04
Encapsulated										
.500	HS10F500B	HSS10F500B	254.0 (10)	152.4 (6)	127.0 (5)	9.98 (22)	3	21	0.833	4.16/2.08
.750	HS10F750B	HSS10F750B	254.0 (10)	152.4 (6)	127.0 (5)	10.43 (23)	3	21	1.25	6.25/3.13
1	HS10F1BS	HSS10F1BS	254.0 (10)	152.4 (6)	127.0 (5)	12.70 (28)	3	21	1.67	8.33/4.17
1.5	HS10F1.5AS	HSS10F1.5AS	304.8 (12)	254.0 (10)	177.8 (7)	17.34 (38)	4	21	2.5	12.5/6.25
2	HS10F2AS	HSS10F2AS	304.8 (12)	254.0 (10)	177.8 (7)	27.21 (60)	4	21	3.33	16.7/8.33
3	HS10F3AS	HSS10F3AS	304.8 (12)	254.0 (10)	177.8 (7)	29.94 (66)	4	22	5.0	25.0/12.5
5	HS10F5AS	HSS10F5AS	431.8 (17)	355.6 (14)	228.6 (9)	45.36 (100)	4	22	8.3	41.6/20.8
7.5	HS10F7.5AS	HSS10F7.5AS	431.8 (17)	355.6 (14)	228.6 (9)	61.23 (135)	4	22	12.5	62.5/31.3
10	HS10F10AS	HSS10F10AS	431.8 (17)	355.6 (14)	228.6 (9)	68.04 (150)	4	22	16.7	83.3/41.7

① Design Styles and Electrical Connections can be found at the end of the Non-Ventilated Distribution Transformers section.

SOLA^{HD} Single Phase, Non-Ventilated Automation Transformers

50 VA to 45 kVA

kVA	Catalog Number		In Millimeters (Inches)			Approx. Ship Weight kg (lbs)	Design Style ①	Elec Conn ①	Primary Amps	Secondary Amps
	Group 1 Rolled Steel	Group 2 Stainless Steel	Height	Width	Depth					
Group 3: 120/208/240/277 Volt Primary, 120/240 Secondary, 60 Hz										
Encapsulated										
1	HS12F1BS	HSS12F1BS	254.0 (10)	152.4 (6)	127.0 (5)	13.15 (29)	3	19	3.6	8.33/4.17
1.5	HS12F1.5AS	HSS12F1.5AS	304.8 (12)	254.0 (10)	177.8 (7)	18.14 (40)	4	20	5.4	12.5/6.25
2	HS12F2AS	HSS12F2AS	304.8 (12)	254.0 (10)	177.8 (7)	27.21 (60)	4	20	7.2	16.7/8.33
3	HS12F3AS	HSS12F3AS	304.8 (12)	254.0 (10)	177.8 (7)	29.94 (66)	4	20	10.8	25.0/12.5
5	HS12F5AS	HSS12F5AS	431.8 (17)	355.6 (14)	228.6 (9)	47.17 (104)	4	20	18.0	41.6/20.8
7.5	HS12F7.5AS	HSS12F7.5AS	431.8 (17)	355.6 (14)	228.6 (9)	69.40 (135)	4	20	27.1	62.5/31.3
10	HS12F10AS	HSS12F10AS	431.8 (17)	355.6 (14)	228.6 (9)	74.84 (156)	4	20	36.1	83.3/41.7
Group 4: Export 190/200/208/220/380/400/415/440 Volt Primary, 110/220 Secondary, 50/60 Hz Copper wound										
Export 200/208/230/400/415/460 Volt Primary, 115/230 Secondary, 50/60 Hz Copper wound										
Export 208/240/415/480 Volt Primary, 120/240 Secondary, 60 Hz only Copper wound										
Encapsulated, Copper Wound										
1	HS14F1BS	HSS14F1BS	254.0 (10)	152.4 (6)	127.0 (5)	15.42 (34)	3	23	4.5/2.3 ②	9.1/4.5
1.5	HS14F1.5BS	HSS14F1.5BS	304.8 (12)	254.0 (10)	177.8 (7)	18.13 (40)	4	24	6.8/3.4 ②	13.6/6.8
2	HS14F2BS	HSS14F2BS	304.8 (12)	254.0 (10)	177.8 (7)	27.21 (60)	4	24	9.1/4.5 ②	18.2/9.1
3	HS14F3BS	HSS14F3BS	304.8 (12)	254.0 (10)	177.8 (7)	33.11 (73)	4	24	13.6/6.8 ②	27.3/13.6
5	HS14F5BS	HSS14F5BS	431.8 (17)	355.6 (14)	228.6 (9)	45.36 (100)	4	24	22.7/11.4 ②	45.5/22.7
7.5	HS14F7.5BS	HSS14F7.5BS	431.8 (17)	355.6 (14)	228.6 (9)	63.50 (140)	4	24	34.1/17.0 ②	68.2/34.1
10	HS14F10BS	HSS14F10BS	431.8 (17)	355.6 (14)	228.6 (9)	79.38 (175)	4	24	45.5/22.7 ②	90.9/45.5

Distribution Equipment

NEC/CEC TRANSFORMERS

① Design Styles and Electrical Connections can be found at the end of the Non-Ventilated Distribution Transformers section.

② Amperage calculated at 220/440 Volts on primary. UL Listed and CSA Certified. 240 & 480 V not available at 50 Hz.

SOLAR^{HD} Three Phase, Non-Ventilated Automation Transformers

50 VA to 45 kVA

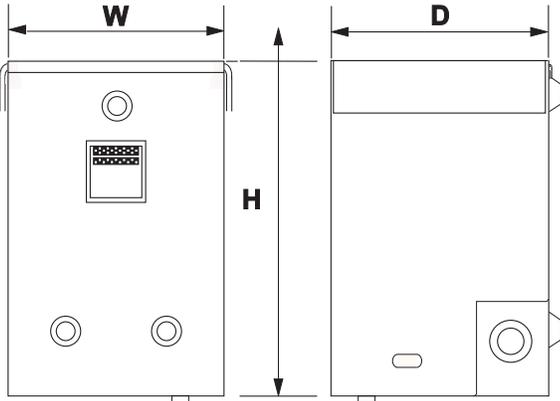
kVA	Catalog Number		In Millimeters (Inches)			Approx. Ship Weight kg (lbs)	Design Style ①	Elec Conn ①	Primary Amps	Secondary Amps
	Group 1 Rolled Steel	Group 2 Stainless Steel	Height	Width	Depth					
Group A: 480 Volt Δ Primary, 208Y/120 Secondary, 60 Hz										
3	HT1F3AS	HTS1F3AS	330.2 (13)	406.4 (16)	228.6 (9)	47.62 (105)	4	27	3.6	8.3
6	HT1F6AS	HTS1F6AS	330.2 (13)	406.4 (16)	228.6 (9)	49.90 (110)	4	27	7.2	16.6
9	HT1F9AS	HTS1F9AS	431.8 (17)	508.0 (20)	279.4 (11)	113.40 (250)	4	27	10.8	25.0
15	HT1F15AS	HTS1F15AS	431.8 (17)	508.0 (20)	279.4 (11)	118.39 (261)	4	27	18.1	41.7
30 ②	HT1F30AS	HTS1F30AS	762.0 (30)	736.6 (29)	304.8 (12)	315.70 (696)	4	27	36.1	83.4
45 ②	HT1F45AS	HTS1F45AS	762.0 (30)	736.6 (29)	304.8 (12)	382.83 (844)	4	27	54.2	125.0
Group B: 208 Volt Δ Primary, 208Y/120 Secondary, 60 Hz										
3	HT3F3AS	HTS3F3AS	330.2 (13)	406.4 (16)	228.6 (9)	44.00 (97)	4	26	7.2	8.3
6	HT3F6AS	HTS3F6AS	330.2 (13)	406.4 (16)	228.6 (9)	63.96 (141)	4	26	14.4	16.6
9	HT3F9AS	HTS3F9AS	431.8 (17)	508.0 (20)	279.4 (11)	116.12 (256)	4	26	21.7	25.0
Group C: 480 Volt Δ Primary, 240 Volt Δ 120 Secondary with reduced capacity center tap, 60 Hz ②										
3	HT5F3AS	HTS5F3AS	330.2 (13)	406.4 (16)	228.6 (9)	47.63 (105)	4	28	3.6	7.2
6	HT5F6AS	HTS5F6AS	330.2 (13)	406.4 (16)	228.6 (9)	49.90 (110)	4	28	7.2	14.4
9	HT5F9AS	HTS5F9AS	431.8 (17)	508.0 (20)	279.4 (11)	113.40 (250)	4	28	10.8	21.7
15	HT5F15AS	HTS5F15AS	431.8 (17)	508.0 (20)	279.4 (11)	138.35 (305)	4	28	18.1	36.1
30 ②	HT5F30AS	HTS5F30AS	736.6 (29)	635.0 (25)	304.8 (12)	316.60 (698)	4	28	36.1	72.2
45 ②	HT5F45AS	HTS5F45AS	736.6 (29)	635.0 (25)	304.8 (12)	397.35 (876)	4	28	54.2	108.3
Group D: 240 Volt Δ Primary, 208Y/120 Secondary, 60 Hz										
3	HT6F3AS	HTS6F3AS	330.2 (13)	406.4 (16)	228.6 (9)	44.00 (97)	4	25	7.2	8.3
6	HT6F6AS	HTS6F6AS	330.2 (13)	406.4 (16)	228.6 (9)	63.96 (141)	4	25	14.4	16.6
9	HT6F9AS	HTS6F9AS	431.8 (17)	508.0 (20)	279.4 (11)	116.12 (256)	4	25	21.7	25.0
Group E: 480 Volt Δ Primary, 380Y/220 Secondary, 60 Hz										
3	HT79F3AS	HTS79F3AS	330.2 (13)	406.4 (16)	228.6 (9)	54.88 (121)	4	29	3.6	4.6
6	HT79F6AS	HTS79F6AS	330.2 (13)	406.4 (16)	228.6 (9)	63.96 (141)	4	29	7.2	9.1
9	HT79F9AS	HTS79F9AS	431.8 (17)	508.0 (20)	279.4 (11)	115.67 (255)	4	29	10.8	13.6
Group F: 600 Volt Δ Primary, 208Y/120 Secondary, 60 Hz										
3	HT7F3AS	HTS7F3AS	330.2 (13)	406.4 (16)	228.6 (9)	52.62 (116)	4	30	2.9	8.3
6	HT7F6AS	HTS7F6AS	330.2 (13)	406.4 (16)	228.6 (9)	65.77 (145)	4	30	5.8	16.6
9	HT7F9AS	HTS7F9AS	431.8 (17)	508.0 (20)	279.4 (11)	102.06 (225)	4	30	8.7	25.0
Group G: 208 Volt Δ Primary, 480Y/277 Secondary, 60 Hz										
3	HT84F3AS	HTS84F3AS	330.2 (13)	406.4 (16)	228.6 (9)	44.00 (97)	4	31	8.3	3.6
6	HT84F6AS	HTS84F6AS	330.2 (13)	406.4 (16)	228.6 (9)	63.96 (141)	4	31	16.6	7.2
9	HT84F9AS	HTS84F9AS	431.8 (17)	508.0 (20)	279.4 (11)	116.12 (256)	4	31	25.0	10.8
Group H: 240 Volt Δ Primary, 480Y/277 Secondary, 60 Hz										
3	HT85F3AS	HTS85F3AS	330.2 (13)	406.4 (16)	228.6 (9)	44.00 (97)	4	32	7.2	3.6
6	HT85F6AS	HTS85F6AS	330.2 (13)	406.4 (16)	228.6 (9)	63.96 (141)	4	32	14.4	7.2
9	HT85F9AS	HTS85F9AS	431.8 (17)	508.0 (20)	279.4 (11)	116.12 (256)	4	32	21.6	10.8

① Design Styles and Electrical Connections can be found at the end of the Non-Ventilated Distribution Transformers section.
 ② Refer to Capacity of Center Tap in Center Tap Delta Transformers at the beginning of this section.

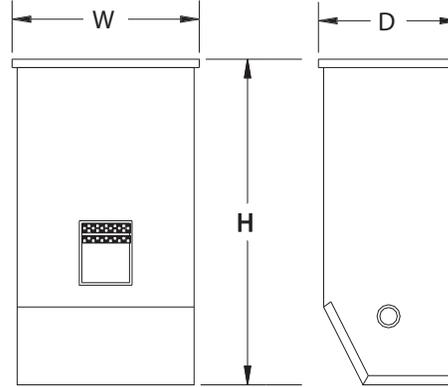
SOLA^{HD} Non-Ventilated Automation Transformer Design Styles

50 VA to 45 kVA

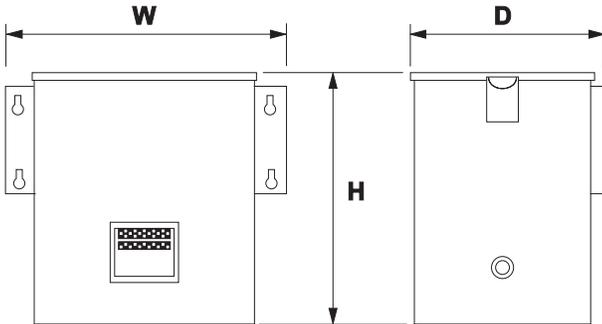
Style 2 — Non-Encapsulated



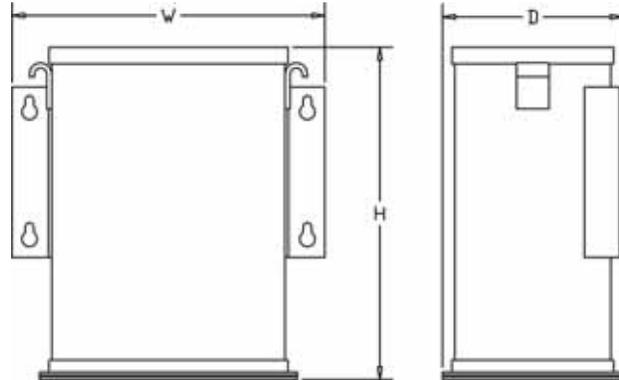
Style 3 — Encapsulated



Style 4 — Encapsulated



Customized Enclosures — Contact Technical Services
Style 5 — Encapsulated Available for all encapsulated kVA sizes
(For Type 4, 12 and 4X)



Distribution Equipment

NEC/CEC TRANSFORMERS

SOLA HD Single Phase Non-Ventilated Automation Transformer Electrical Connections

50 VA to 45 kVA

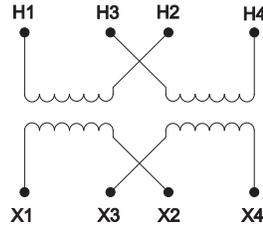
Connect the electrostatic shield to the equipment ground (green) or to both the equipment ground & the system ground (white). Specifications are subject to change without notice.



HS1 Series

15

240 X 480 Volt Primary
120/240 Volt Secondary
Taps: None

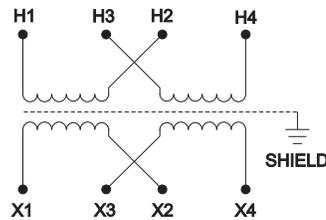


Primary Voltage	Interconnect	Connect Lines to
480	H2 to H3	H1 & H4
240	H1 to H3 H2 to H4	H1 & H4
Secondary Voltage	Interconnect	Connect Lines to
240	X2 to X3	X1 & X4
120-0-120	X2 to X3 X2 to	X1-X2-X4
120	X1 to X3 X2 to X4	X1 & X4

HS1 Series

16

240 X 480 Volt Primary
120/240 Volt Secondary
Taps: None

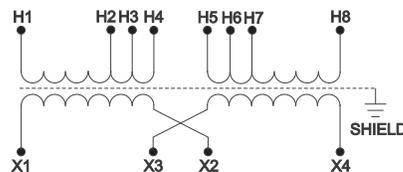


Primary Voltage	Interconnect	Connect Lines to
480	H2 to H3	H1 & H4
240	H1 to H3 H2 to H4	H1 & H4
Secondary Voltage	Interconnect	Connect Lines to
240	X2 to X3	X1 & X4
120-0-120	X2 to X3 X2 to	X1-X2-X4
120	X1 to X3 X2 to X4	X1 & X4

HS5 Series

17

240 X 480 Volt Primary
120/240 Volt Secondary
Taps: 2, 2½% FCAN & FCBN



Primary Voltage	Interconnect	Connect Lines to
504	H4 to H5	H1 & H8
492	H3 to H5	H1 & H8
480	H3 to H6	H1 & H8
468	H2 to H6	H1 & H8
456	H2 to H7	H1 & H8
252	H1 to H5 H4 to H8	H1 & H8
240	H1 to H6 H3 to H8	H1 & H8
228	H1 to H7 H2 to H8	H1 & H8
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

SOLA HD Single Phase Non-Ventilated Automation Transformer Electrical Connections

50 VA to 45 kVA

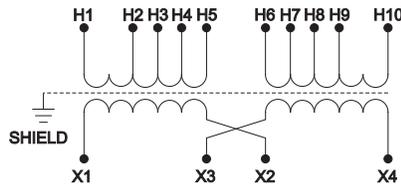
Connect the electrostatic shield to the equipment ground (green) or to both the equipment ground & the system ground (white). Specifications are subject to change without notice.



HS5 Series

18

240 X 480 Volt Primary,
120/240 Volt Secondary
Taps: 2, 2-1/2% FCAN;
4, 2-1/2% FCBN

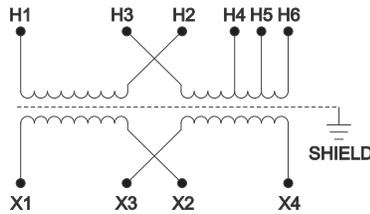


Primary Voltage	Interconnect	Connect Lines to
504	H5 to H6	H1 & H10
492	H4 to H6	H1 & H10
480	H4 to H7	H1 & H10
468	H3 to H7	H1 & H10
456	H3 to H8	H1 & H10
444	H2 to H8	H1 & H10
432	H2 to H9	H1 & H10
252	H1 to H6 H5 to H10	H1 & H10
240	H1 to H7 H4 to H10	H1 & H10
228	H1 to H8 H3 to H10	H1 & H10
216	H1 to H9 H2 to H10	H1 & H10
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

HS12 Series — 1 kVA Only

19

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

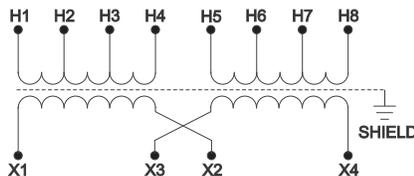


Primary Voltage	Interconnect	Connect Lines to
277	H2 to H3	H1 & H6
240	H2 to H3	H1 & H5
208	H2 to H3	H1 & H4
120	H1 to H3 H2 to H5	H1 & H5
Secondary Voltage	Interconnect	Connect Lines to
240	X2 to X3	X1 & X4
120-0-120	X2 to X3 X2 to \perp	X1-X2-X4
120	X1 to X3 X2 to X4	X1 & X4

HS12 Series

20

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



Primary Voltage	Interconnect	Connect Lines to
277	H4 to H5	H1 & H8
240	H3 to H6	H1 & H8
208	H2 to H7	H1 & H8
120	H1 to H6 H3 to H8	H1 & H8
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

SOLA HD Single Phase Non-Ventilated Automation Transformer Electrical Connections

50 VA to 45 kVA

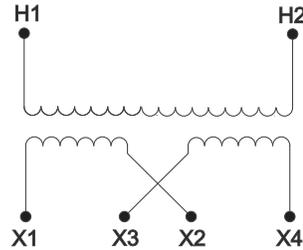
Connect the electrostatic shield to the equipment ground (green) or to both the equipment ground & the system ground (white). Specifications are subject to change without notice.



HS10 Series

21

600 Volt Primary,
120/240 Volt Secondary
Taps: None



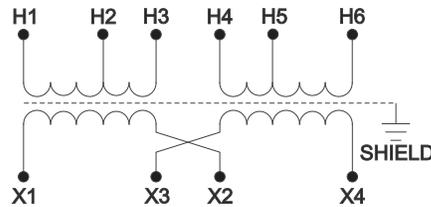
Primary Voltage	Interconnect	Connect Lines to
600		H1 & H2
Secondary Voltage	Interconnect	Connect Lines to
240	X2 to X3	X1 & X4
120-0-120	X2 to X3 X2 to \perp	X1, X2-X4
120	X1 to X3 X2 to X4	X1 & X4

1 through 2 kVA units have electrostatic shielding.

HS10 Series

22

600 Volt Primary
120/240 Volt Secondary
Taps: 2, 5% FCBN

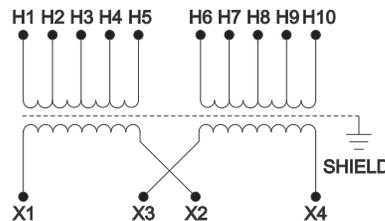


Primary Voltage	Interconnect	Connect Lines to
600	H3 to H4	H1 & H6
570	H2 to H4	H1 & H6
540	H2 to H5	H1 & H6
Secondary Voltage	Interconnect	Connect Lines to
240	X2 to X3	X1 & X4
120-0-120	X2 to X3 X2 to \perp	X1-X2-X4
120	X1 to X3 X2 to X4	X1 & X4

HS14 Series — 1 kVA Only

23

190/200/208/220/380/
400/415/440 Volt Primary
110/220 Volt Secondary
Taps: None



Primary Voltage	Interconnect	Connect Lines to
440	H5 to H6	H1 & H10
415	H4 to H6	H1 & H9
400	H3 to H6	H1 & H8
380	H2 to H6	H1 & H7
220	H1 to H6 H5 to H10	H1 & H10
208	H1 to H6 H4 to H9	H1 & H9
200	H1 to H6 H3 to H8	H1 & H8
190	H1 to H6 H2 to H7	H1 & H7
Secondary Voltage	Interconnect	Connect Lines to
220	X2 to X3	X1 & X4
110-0-110	X2 to X3 X2 to \perp	X1, X2-X4
110	X1 to X3 X2 to X4	X1 & X4

SOLA^{HD} Single Phase Non-Ventilated Automation Transformer Electrical Connections

50 VA to 45 kVA

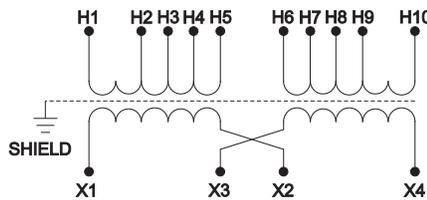
Connect the electrostatic shield to the equipment ground (green) or to both the equipment ground & the system ground (white). Specifications are subject to change without notice.



HS14 Series

24

190/200/208/220/380/
400/415/440 Volt Primary
110/220 Volt Secondary
Taps: None

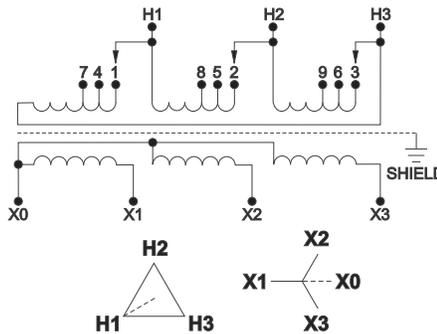


Primary Voltage	Interconnect	Connect Lines to
440	H5 to H6	H1 & H10
415	H4 to H7	H1 & H10
400	H3 to H8	H1 & H10
380	H2 to H9	H1 & H10
220	H1 to H6, H5 to H10	H1 & H10
208	H1 to H7, H4 to H10	H1 & H10
200	H1 to H8, H3 to H10	H1 & H10
190	H1 to H9 H2 to H10	H1 & H10
Secondary Voltage	Interconnect	Connect Lines to
220	X2 to X3	X1 & X4
110-0-110	X2 to X3 X2 to \perp	X1, X2-X4
110	X1 to X3 X2 to X4	X1 & X4

HT6 Series

25

240 Δ Volt Primary
208Y/120 Volt Secondary
Taps: 2, 5% FCBN

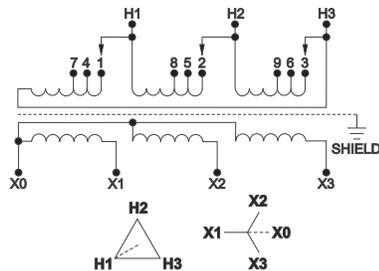


Primary Voltage	Interconnect	Connect Lines to
240	1-H1 & 2-H2 & 3-H3	H1, H2, H3
228	4-H1 & 5-H2 & 6-H3	H1, H2, H3
216	7-H1 & 8-H2 & 9-H3	H1, H2, H3
Secondary Voltage	Interconnect	Connect Lines to
208		X1, X2, & X3
120		X0, X1, X2, X3

HT3 Series

26

208 Δ Volt Primary
208Y/120 Volt Secondary
Taps: 2, 5% FCBN



Primary Voltage	Interconnect	Connect Lines to
208	1-H1 & 2-H2 & 3-H3	H1, H2, H3
198	4-H1 & 5-H2 & 6-H3	H1, H2, H3
187	7-H1 & 8-H2 & 9-H3	H1, H2, H3
Secondary Voltage	Interconnect	Connect Lines to
208		X1, X2, & X3
120		X0, X1, X2, X3

SOLAHD Three Phase Non-Ventilated Automation Transformer Electrical Connections

50 VA to 45 kVA

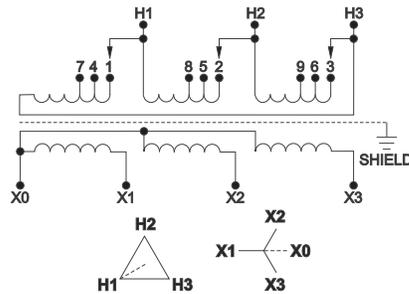
Connect the electrostatic shield to the equipment ground (green) or to both the equipment ground & the system ground (white). Specifications are subject to change without notice.



HT1 Series

27

480 Δ Volt Primary
208Y/120 Volt Secondary
Taps: 2, 5% FCBN

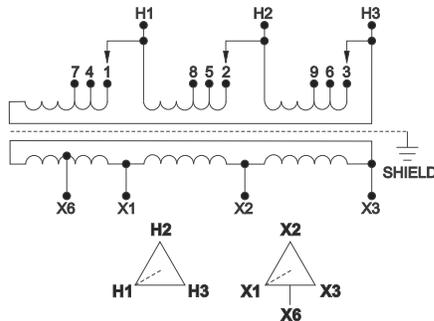


Primary Voltage	Interconnect	Connect Lines to
480	1-H1 & 2-H2 & 3- H3	H1, H2, H3
456	4-H1 & 5-H2 & 6- H3	H1, H2, H3
432	7-H1 & 8-H2 & 9- H3	H1, H2, H3
Secondary Voltage	Interconnect	Connect Lines to
208		X1, X2, & X3
120		X0, X1, X2, X3

HT5 Series

28

480 Δ Volt Primary
240 Δ w/120 CT Volt Secondary
Taps: 2, 5% FCBN

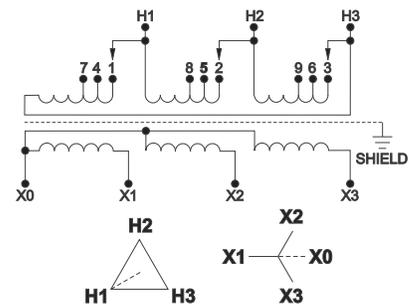


Primary Voltage	Interconnect	Connect Lines to
480	1-H1 & 2-H2 & 3- H3	H1, H2, H3
456	4-H1 & 5-H2 & 6- H3	H1, H2, H3
432	7-H1 & 8-H2 & 9- H3	H1, H2, H3
Secondary Voltage	Interconnect	Connect Lines to
240		X1, X2, X3
120-0-120	X6 to \perp	X1-X6-X3

HT79 Series

29

480 Δ Volt Primary
380Y/220 Volt Secondary
Taps: 2, 5% FCBN



Primary Voltage	Interconnect	Connect Lines to
480	1-H1 & 2-H2 & 3- H3	H1, H2 & H3
456	4-H1 & 5-H2 & 6- H3	H1, H2 & H3
432	7-H1 & 8-H2 & 9- H3	H1, H2 & H3
Secondary Voltage	Interconnect	Connect Lines to
380		X1, X2, X3
220		X0, X1, X2, X3

Distribution Equipment

NEC/CEC TRANSFORMERS

SOLAHD Three Phase Non-Ventilated Automation Transformer Electrical Connections

50 VA to 45 kVA

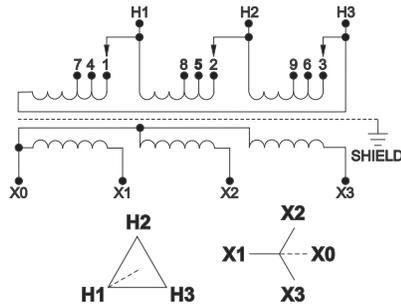
Connect the electrostatic shield to the equipment ground (green) or to both the equipment ground & the system ground (white). Specifications are subject to change without notice.



HT7 Series

30

600 Δ Volt Primary
208Y/120 Volt Secondary
Taps: 2, 5% FCBN

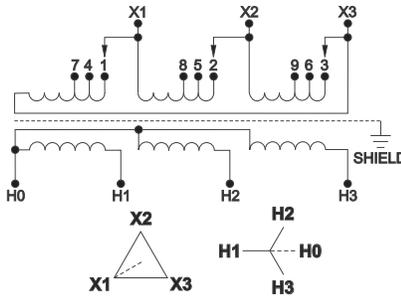


Primary Voltage	Interconnect	Connect Lines to
600	1-H1 & 2-H2 & 3- H3	H1, H2, H3
570	4-H1 & 5-H2 & 6- H3	H1, H2, H3
540	7-H1 & 8-H2 & 9- H3	H1, H2, H3
Secondary Voltage	Interconnect	Connect Lines to
208		X1, X2, X3
120		X0, X1, X2, X3

HT84 Series

31

208 Δ Volt Primary
480Y/277 Volt Secondary
Taps: 2, 5% FCBN

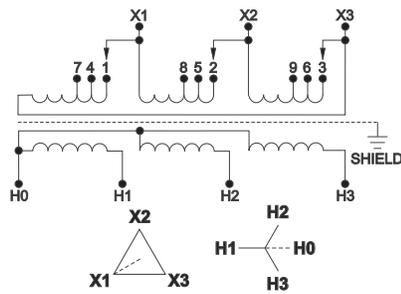


Primary Voltage	Interconnect	Connect Lines to
208	1-X1 & 2-X2 & 3- X3	X1, X2, X3
198	4-X1 & 5-X2 & 6- X3	X1, X2, X3
187	7-X1 & 8-X2 & 9- X3	X1, X2, X3
Secondary Voltage	Interconnect	Connect Lines to
480		H1, H2, H3
277		H0, H1, H2, H3

HT85 Series

32

240 Δ Volt Primary
480Y/277 Volt Secondary
Taps: 2, 5% FCBN



Primary Voltage	Interconnect	Connect Lines to
240	1-X1 & 2-X2 & 3- X3	X1, X2, X3
228	4-X1 & 5-X2 & 6- X3	X1, X2, X3
216	7-X1 & 8-X2 & 9- X3	X1, X2, X3
Secondary Voltage	Interconnect	Connect Lines to
480		H1, H2, H3
277		H0, H1, H2, H3

SOLAHD Custom Transformers

If you can not find what you are looking for here, please fill out the information below and submit to our Technical Services Group (solahd.technicalservices@emerson.com). We are happy to provide a quote on a custom transformer if available. SolaHD is pleased to offer the broadest range of transformers on the market including many custom designs.

Date: _____

Customer Information				
Contact:		Phone/Fax:		
Address:		Email:		
City/State:				

Specifications *				
* Size (Required)	* Quantity	Temperature Rise (Check One)		
<input type="checkbox"/> kVA		<input type="checkbox"/> One Time Buy	<input type="checkbox"/> +80 °C (+176 °F)	<input type="checkbox"/> +115 °C (+ 239 °F)
<input type="checkbox"/> VA		<input type="checkbox"/> Annual Usage	<input type="checkbox"/> +150 °C (+302 °F)	
Check all that apply:		Enclosure Type (Check One)		
Three Phase	Single Phase	VENTILATED	ENCAPSULATED	ENCLOSED (NON-UL)
<input type="checkbox"/> 50 Hz	<input type="checkbox"/> 60 Hz (Standard)	<input type="checkbox"/> Open Coil **	<input type="checkbox"/> NEMA 3R	<input type="checkbox"/> TENV
<input type="checkbox"/> Copper Windings	<input type="checkbox"/> Aluminum Windings (Standard)	<input type="checkbox"/> NEMA 1	<input type="checkbox"/> NEMA 3R (SS)	<input type="checkbox"/> TENV (SS)
No Electrostatic Shield		<input type="checkbox"/> NEMA 1 (SS)	<input type="checkbox"/> NEMA 4/12 (SS)	
<input type="checkbox"/> LVGP	<input type="checkbox"/> SCR Drive Isolation	<input type="checkbox"/> NEMA 3R (WSXX)	<input type="checkbox"/> NEMA 4X (SS)	
<input type="checkbox"/> Energy Star	<input type="checkbox"/> K-Factor 13	<input type="checkbox"/> NEMA 3R (SS)		
<input type="checkbox"/> K-Factor 4	<input type="checkbox"/> K-Factor 20	(SS) STAINLESS STEEL GRADE: <input type="checkbox"/> Standard (304) <input type="checkbox"/> Optional (316)		
<input type="checkbox"/> Other:		(SS) STAINLESS STEEL GRADE: <input type="checkbox"/> Standard (304) <input type="checkbox"/> Optional (316)		
		Hazardous Location: <input type="checkbox"/> Class I, Division 2 Notes: _____		

Industrial Control Transformers				
<input type="checkbox"/> ICE <input type="checkbox"/> HSZ Series <input type="checkbox"/> Other: _____				
* Primary Voltage			* Secondary Voltage	
<input type="checkbox"/> 120	Taps:	<input type="checkbox"/> Standard	<input type="checkbox"/> 120	
<input type="checkbox"/> 208		<input type="checkbox"/> Other	<input type="checkbox"/> 208	
<input type="checkbox"/> 240			<input type="checkbox"/> 240	
<input type="checkbox"/> 480	If 3 Phase:	<input type="checkbox"/> Delta (Standard)	<input type="checkbox"/> 480	<input type="checkbox"/> Delta (Standard)
<input type="checkbox"/> 600		<input type="checkbox"/> Wye	<input type="checkbox"/> 600	<input type="checkbox"/> Wye
<input type="checkbox"/> Other Voltage: _____			<input type="checkbox"/> Other Voltage: _____	

Agency Certifications				
Check all that apply: <input type="checkbox"/> UL <input type="checkbox"/> CSA or cUL <input type="checkbox"/> CE <input type="checkbox"/> Other: _____				

Additional Information				
Please quote a Catalog or Design Number <input type="checkbox"/> Similar to :				
(if "similar to" note changes above) <input type="checkbox"/> Exactly Like:				
* Does this request pertain to a bid specification? <input type="checkbox"/> Yes <input type="checkbox"/> No				

Distribution Equipment

NEC/CEC TRANSFORMERS

SOLA^{HD} Specification Guide

For Low Voltage, General Purpose, Dry Type Transformers (600 Volt Class) — .05 kVA to 500 kVA

General

- Single and three phase distribution transformers (600 Volt and below)
 - Provide and install, as referenced on the electrical plans, enclosed dry type transformers as manufactured by SolaHD.

Standards

- Transformers must be listed by Underwriters Laboratories, evaluated to CSA standards and designed, constructed and rated in accordance with NEMA ST 20 and applicable IEEE & OSHA specifications.

Construction

- Cores
 - All transformer cores shall be constructed of low loss, high quality, electrical grade laminate steel. By design, the flux density is to be kept well below the saturation level to reduce audible sound level and minimize core losses. The core volume shall allow operation at 10% above rated primary voltage at no load without exceeding the temperature rise of the unit.
- Coils
 - Coil conductors shall be either aluminum or copper and must be continuous. The entire core and coil assembly shall be impregnated with a thermal setting varnish and cured to reduce hot spots in the coils and seal out moisture. Coils with exposed magnet wire will not be acceptable. Transformers shall have common core construction.
 - All transformers 1 kVA or larger shall incorporate a faraday (electrostatic) shield between primary and secondary windings for the attenuation of voltage spikes, line noise and voltage transients.
 - General purpose transformers are classified as isolation transformers.
- Electrostatic Shield
 - For power conditioning purposes, it is recommended that isolation transformers be equipped with electrostatic shielding between the primary and secondary windings. An electrostatic shield provides a conducting path to ground that reduces the effect of coupling between primary and secondary windings and improves the isolation transformer's ability to isolate its' load from the common-mode noise present on the input power source. Electrostatic shields significantly reduce or eliminate electrical disturbances on the line from being transmitted to the sensitive load.
- Enclosures
 - Transformer enclosures shall be constructed of heavy gauge sheet steel and coated with a grey powder paint finish (ANSI 61). Enclosures shall be UL Listed/NEMA Type 1 and 3R rated for outdoor use. This information must be listed on the transformer nameplate.
 - Maximum transformer enclosure temperature will not exceed +65 °C (+149 °F) rise above a +40 °C (+104 °F) ambient under full load.
 - The transformer enclosure must be grounded by the installer in accordance with the latest edition of the National Electric Code and any local codes or ordinances.

Performance

- Audible sound levels will not exceed limits established in NEMA ST20:

Less than 10 kVA	40 db
10 to 50 kVA	45 db
51 to 150 kVA	50 db
151 to 300 kVA	55 db
301 to 500 kVA	60 db
- Transformers shall incorporate a UL Recognized insulation system.

Limited Warranty

- Transformers are warranted against material, performance and workmanship defects for a period of ten (10) years from date of manufacture with the provision for an additional two (2) years. Custom transformers come with a 1-year warranty.

Approval

- Typical performance and dimensional data on similar units must be submitted on all transformers for approval. Factory testing must have been conducted in accordance with NEMA ST20. Submitted performance and dimensional data must include, but is not limited to the following:
 - A. Height, width, depth, mounting dimensions, conduit entry locations and lifting provisions
 - B. Weight
 - C. Transformer losses
 - D. Potential tests both applied and induced
 - E. Temperature - ambient and rise under full load
 - F. Insulation class
 - G. % excitation current
 - H. Electrical schematic including taps
 - I. Polarity and phase rotation
 - J. kVA, frequency and voltage rating
 - K. IR, IX, and IZ percentages at reference temperature
 - L. Audible sound level