

Hevi-Duty Family of Transformers

Sola/Hevi-Duty offers a broad range of transformers to meet many applications. These dry-type transformers are offered encapsulated, ventilated or non-ventilated, 600 Volt Class, isolation type, single and three phase, through 500 kVA. Indoor and outdoor models are available.

Applications

Transformers are useful where the available voltage must be changed to accommodate the voltage required by the load. For many electrical circuits, the National Electrical Code (NEC) requires a separately derived neutral secondary connection provided by Delta-Wye connected transformers. Typical applications include:

- Hospitals
- Industrial Plants
- Commercial Buildings
- Apartment Buildings
- Institutional Buildings
- Office Buildings
- Schools
- Shopping Centers
- High Rise Buildings

General purpose transformers can be located close to the load. No vaults are required for installation and no long, expensive feeder lines are needed. Common applications include inductive and resistive loads such as motors, lighting and heating.

Hevi-Duty general purpose transformers are manufactured to meet applicable industry standards, are listed in accordance with UL 506 and UL 1561 specifications and are classified as isolation transformers. The family of transformers includes:

Distribution Transformers - Ventilated 15 kVA to 500 kVA

General Purpose

These industry workhorses feature dry type construction and are classified as isolation transformers.

Low Temperature Rise

Lower thermal stress on transformer insulation increases useful life.

K-Factor

Designed to reduce the heating effects of harmonic currents created by solid state loads.

Copper Wound

Hevi-Duty general purpose transformers have standard aluminum coil windings. As an option, we offer a selection with copper windings.



Automation Transformers – Non-Ventilated 50 VA to 45 kVA, Drive Isolation 7.5 kVA to 440 kVA and Industrial Control 50 VA to 10 kVA

General Purpose

Dry-type transformers, 600 Volt Class, isolation type, single and three phase. Indoor and outdoor models available.

Hazardous Location (Encapsulated)

Comply with Article 500 of the NEC for Class I, Division 2, Group A-D locations.

Buck-Boost

Used for outdoor or designer low voltage lighting. When connected properly, these transformers can be used to raise or lower the supply voltage to match the needs of the load.

Drive Isolation

Designed to handle the mechanical stresses, voltage demands and harmonics associated with SCR applications.

Industrial Control

The units supply inrush current demands of electromagnetic loads and are designed to keep the secondary voltage from dropping below 85% of nominal.

Automation Transformers – Non-Ventilated 50 VA to 45 kVA

Hevi-Duty encapsulated transformers are rated for Hazardous Locations (Class 1, Division 2, Group A-D) as well as harsh industrial environments. Encapsulation and rugged NEMA 3R enclosures protect the transformer from dust, moisture, and provide extra shock and vibration resistance. Hevi-Duty UL listed transformers fully comply with the latest addition of the National Electrical Code for Class 1, Division 2, Group A-D locations when installed in compliance with NEC 501-2(b).

Features

Single Phase: .05 – .250 kVA

- UL-3R non encapsulated enclosure for indoor and outdoor service
- Low temperature rise, UL Class 130°C or 180°C insulation system, 80°C temperature rise under full load
- Conduit knockouts for side entry into wiring compartment
- Copper lead wire terminations
- Class 1, Division 2

Single Phase: 0.500 – 25 kVA

Three Phase: 3 – 45 kVA

- UL-3R non encapsulated enclosure for indoor and outdoor service
- Electrostatically shielded for quality power on sizes 1 kVA and larger
- UL Class 180°C or 200°C insulation system, 115°C temperature rise under full load
- Conduit knockouts for side entry into wiring compartment
- Copper lead wire terminations
- .500 - 10 kVA units are encapsulated with electrical grade silica and epoxy for industrial applications



Related Products

- Some Sola DC power supplies are available with Class 1, Division 2 ratings or encapsulation.
- Surge Suppression products (Chapter 1)

Accessories and Optional Design Styles*

- Wall mounting brackets (500 lbs maximum)
- Weather Shields
- Stainless Steel Enclosures
- Totally enclosed non-ventilated designs (TENV)
- Open core and coil designs
- Copper Wound designs
- NEMA 4/12 or 4X Encapsulated Enclosures
- Low temperature designs (see page 160)

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

Note: Weights and dimensions may change and should not be used for construction purposes.

6 Non-Ventilated Automation Transformers

Selection Table: Single Phase, Encapsulated



Group 1: 240 x 480 Primary, 120/240 Secondary, 60 Hz

kVA	Catalog Number Group I Rolled Steel	Catalog Number Group II Stainless Steel	Height (inch)	Width (inch)	Depth (inch)	Approx. Ship Weight (lbs)	Design Style	Elec Conn	Primary Amps	Secondary Amps
Non-Encapsulated										
.050	HS1B50		6	4	3	3	2	12	.208/1.04	4.16/2.08
.075	HS1B75		6	4	3	3	2	12	.312/.156	6.25/3.12
.100	HS1B100		6	4	3	4	2	12	.417/.208	8.33/4.17
.150	HS1B150		8	4	4	5	2	12	.625/.313	1.25/.625
.250	HS1B250		8	4	4	8	2	12	1.04/.512	2.08/1.04
Encapsulated										
0.5	HS1F500B	HSS1F500B	10	6	5	22	3	12	2.08/1.04	4.16/2.08
0.75	HS1F750B	HSS1F750B	10	6	5	27	3	12	3.13/1.56	6.25/3.13
1	HS1F1BS	HSS1F1BS	10	6	5	28	3	13	4.17/2.08	8.33/4.17
1.5	HS1F1.5AS	HSS1F1.5AS	12	10	7	38	4	13	6.25/3.13	12.5/6.25
2	HS1F2AS	HSS1F2AS	12	10	7	45	4	13	8.33/4.17	16.7/8.33
3	HS5F3AS	HSS5F3AS	12	10	7	55	4	14	12.5/6.25	25.0/12.5
5	HS5F5AS	HSS5F5AS	17	14	9	131	4	14	20.8/10.4	41.6/20.8
7.5	HS5F7.5AS	HSS5F7.5AS	17	14	9	156	4	15	31.3/15.6	62.5/31.3
10	HS5F10AS	HSS5F10AS	17	14	9	156	4	15	41.7/20.8	83.3/41.7
15*	HS5F15AS	HSS5F15AS	30	29	12	549	4	15	62.5/31.2	125.0/62.5
25*	HS5F25AS	HSS5F25AS	30	29	12	637	4	15	104.0/52.0	208.0/104.0

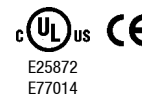
* cUL Underwriters tested to CSA standards.

Group 2: 600 Volt Primary, 120/240 Secondary, 60 Hz

kVA	Catalog Number Group 1 Rolled Steel	Catalog Number Group 2 Stainless Steel	Height (inch)	Width (inch)	Depth (inch)	Ship Weight Approx. (lbs)	Design Style	Elec Conn	Primary Amps	Secondary Amps
Non-Encapsulated										
.100	HS10B100		6	4	3	4	2	18	0.167	.833/4.17
.150	HS10B150		8	4	4	5	2	18	0.25	1.25/6.25
.250	HS10B250		8	4	4	8	2	18	0.417	2.08/1.04
Encapsulated										
.500	HS10F500B	HSS10F500B	10	6	5	22	3	18	0.833	4.16/2.08
.750	HS10F750B	HSS10F750B	10	6	5	23	3	18	1.25	6.25/3.13
1	HS10F1BS	HSS10F1BS	10	6	5	28	3	18	1.67	8.33/4.17
1.5	HS10F1.5AS	HSS10F1.5AS	12	10	7	38	4	18	2.5	12.5/6.25
2	HS10F2AS	HSS10F2AS	12	10	7	60	4	18	3.33	16.7/8.33
3	HS10F3AS	HSS10F3AS	12	10	7	66	4	19	5.0	25.0/12.5
5	HS10F5AS	HSS10F5AS	17	14	9	100	4	19	8.3	41.6/20.8
7.5	HS10F7.5AS	HSS10F7.5AS	17	14	9	135	4	19	12.5	62.5/31.3
10	HS10F10AS	HSS10F10AS	17	14	9	150	4	19	16.7	83.3/41.7

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Selection Table: Single Phase, Encapsulated



Group 3: 120/208/240/277 Volt Primary, 120/240 Secondary, 60 Hz

kVA	Catalog Number Group 1 Rolled Steel	Catalog Number Group 2 Stainless Steel	Height (inch)	Width (inch)	Depth (inch)	Ship Weight Approx. (lbs)	Design Style	Elec Conn	Primary Amps*	Secondary Amps
Encapsulated										
1	HS12F1BS	HSS12F1BS	10	6	5	29	3	16	3.6	8.33/4.17
1.5	HS12F1.5BS	HSS12F1.5BS	12	10	7	40	4	17	5.4	12.5/6.25
2	HS12F2BS	HSS12F2BS	12	10	7	60	4	17	7.2	16.7/8.33
3	HS12F3BS	HSS12F3BS	12	10	7	66	4	17	10.8	25.0/12.5
5	HS12F5BS	HSS12F5BS	17	14	9	104	4	17	18.0	41.6/20.8
7.5	HS12F7.5BS	HSS12F7.5BS	17	14	9	135	4	17	27.1	62.5/31.3
10	HS12F10BS	HSS12F10BS	17	14	9	156	4	17	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

kVA	Catalog Number Group 1 Rolled Steel	Catalog Number Group 2 Stainless Steel	Height (inch)	Width (inch)	Depth (inch)	Ship Weight Approx. (lbs)	Design Style	Elec Conn	Primary Amps*	Secondary Amps
Encapsulated, Copper Wound										
1	HS14F1BS	HSS14F1BS	10	6	5	34	3	20	4.5/2.3	9.1/4.5
1.5	HS14F1.5BS	HSS14F1.5BS	12	10	7	40	4	21	6.8/3.4	13.6/6.8
2	HS14F2BS	HSS14F2BS	12	10	7	60	4	21	9.1/4.5	18.2/9.1
3	HS14F3BS	HSS14F3BS	12	10	7	73	4	21	13.6/6.8	27.3/13.6
5	HS14F5BS	HSS14F5BS	17	14	9	100	4	21	22.7/11.4	45.5/22.7
7.5	HS14F7.5BS	HSS14F7.5BS	17	14	9	140	4	21	34.1/17.0	68.2/34.1
10	HS14F10BS	HSS14F10BS	17	14	9	175	4	21	45.5/22.7	90.9/45.5

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

6 Non-Ventilated Automation Transformers

Selection Tables: Three Phase, Encapsulated



Group A: 480 Volt Δ Primary, 208Y/120 Secondary, 60 Hz

kVA	Catalog Number Group I Rolled Steel	Catalog Number Group II Stainless Steel	Height (inch)	Width (inch)	Depth (inch)	Approx. Ship Weight (lbs)	Design Style	Elec Conn	Primary Amps	Secondary Amps
3	HT1F3AS	HTS1F3AS	13	16	9	105	4	23	3.6	8.3
6	HT1F6AS	HTS1F6AS	13	16	9	110	4	23	7.2	16.6
9	HT1F9AS	HTS1F9AS	17	20	11	250	4	23	10.8	25.0
15	HT1F15AS	HTS1F15AS	17	20	11	261	4	23	18.1	41.7
30*	HT1F30AS	HTS1F30AS	30	29	12	696	4	23	36.1	83.4
45*	HT1F45AS	HTS1F45AS	30	29	12	844	4	23	54.2	125.0

Group B: 480 Volt Δ Primary, 240 Volt Δ , 120 Secondary with reduced capacity center tap, 60 Hz**

kVA	Catalog Number Group I Rolled Steel	Catalog Number Group II Stainless Steel	Height (inch)	Width (inch)	Depth (inch)	Approx. Ship Weight (lbs)	Design Style	Elec Conn	Primary Amps	Secondary Amps
3	HT5F3AS	HTS5F3AS	13	16	9	105	4	24	3.6	7.2
6	HT5F6AS	HTS5F6AS	13	16	9	110	4	24	7.2	14.4
9	HT5F9AS	HTS5F9AS	17	20	11	250	4	24	10.8	21.7
15	HT5F15AS	HTS5F15AS	17	20	11	305	4	24	18.1	36.1
30*	HT5F30AS	HTS5F30AS	29	25	12	698	4	24	36.1	72.2
45*	HT5F45AS	HTS5F45AS	29	25	12	876	4	24	54.2	108.3

Group C: 240 Volt Δ Primary, 208Y/120 Secondary, 60 Hz

kVA	Catalog Number Group I Rolled Steel	Catalog Number Group II Stainless Steel	Height (inch)	Width (inch)	Depth (inch)	Ship Weight Approx. (lbs)	Design Style	Elec Conn	Primary Amps	Secondary Amps
3	HT6F3AS	HTS6F3AS	13	16	9	97	4	22	7.2	8.3
6	HT6F6AS	HTS6F6AS	13	16	9	141	4	22	14.4	16.6
9	HT6F9AS	HTS6F9AS	17	20	11	256	4	22	21.7	25.0

Group D: 480 Volt Δ Primary, 380Y/220 Secondary, 60 Hz

kVA	Catalog Number Group I Rolled Steel	Catalog Number Group II Stainless Steel	Height (inch)	Width (inch)	Depth (inch)	Ship Weight Approx. (lbs)	Design Style	Elec Conn	Primary Amps	Secondary Amps
3	HT79F3AS	HTS79F3AS	13	16	9	121	4	25	3.6	4.6
6	HT79F6AS	HTS79F6AS	13	16	9	141	4	25	7.2	9.1
9	HT79F9AS	HTS79F9AS	17	20	11	255	4	25	10.8	13.6

Group E: 600 Volt Δ Primary, 208Y/120 Secondary, 60 Hz

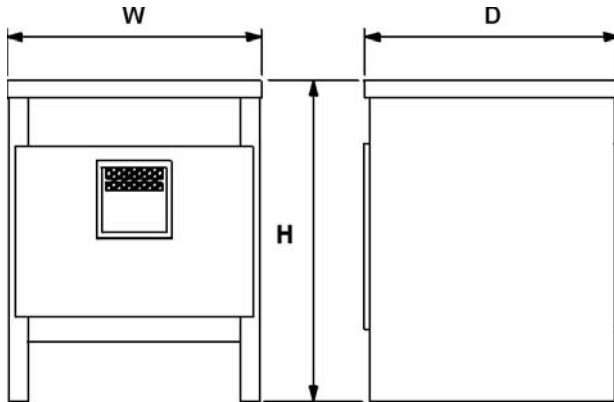
kVA	Catalog Number Group I Rolled Steel	Catalog Number Group II Stainless Steel	Height (inch)	Width (inch)	Depth (inch)	Ship Weight Approx. (lbs)	Design Style	Elec Conn	Primary Amps	Secondary Amps
3	HT7F3AS	HTS7F3AS	13	16	9	116	4	26	2.9	8.3
6	HT7F6AS	HTS7F6AS	13	16	9	145	4	26	5.8	16.6
9	HT7F9AS	HTS7F9AS	17	20	11	225	4	26	8.7	25.0

* cUL Underwriters tested to CSA standards.

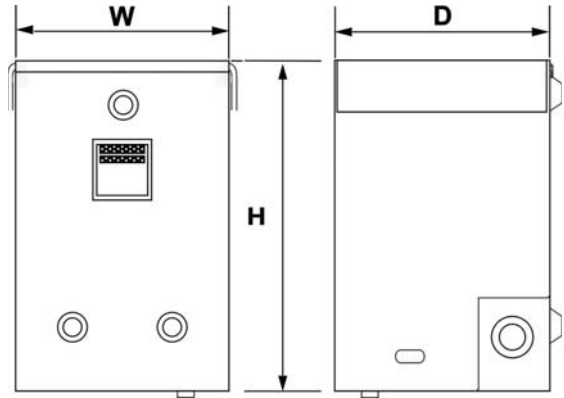
** See the Technical Notes section with respect to capacity of center tap.

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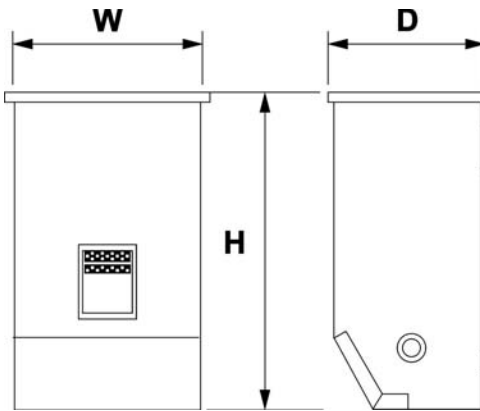
Design Styles



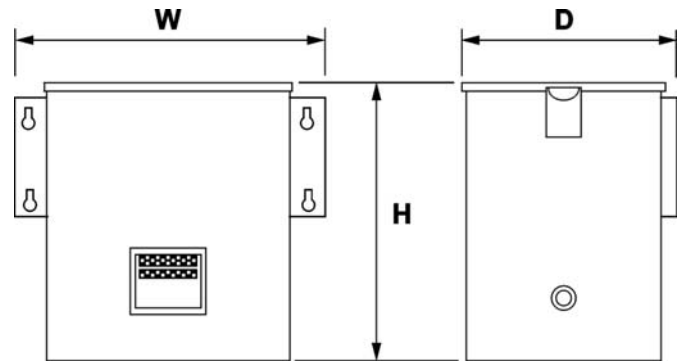
Style 1 – Ventilated



Style 2 – Non-Encapsulated

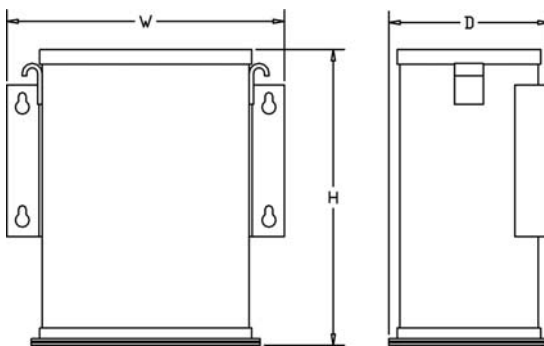


Style 3 – Encapsulated



Style 4 – Encapsulated

Customized Enclosures – Contact Technical Services



Style 5 – Encapsulated

Available for all encapsulated kVA sizes (For NEMA 4, 12 and 4X)

Electrical Connections (Single Phase)

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

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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 \perp	X1-X2-X4
120	X1 to X3 X2 to X4	X1 & X4

HS1 Series

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

13

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 \perp	X1-X2-X4
120	X1 to X3 X2 to X4	X1 & X4

HS1 Series

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

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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 \perp	X1-X2-X4
120	X1 to X3 X2 to X4	X1 & X4

HS5 Series

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

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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

HS5 Series

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

16

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

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

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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

HS12 Series

Note:

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

Electrical Connections (Single Phase)

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

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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

HS10 Series

Note: 1 through 2 kVA units have electrostatic shielding.

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

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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

HS10 Series

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

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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
110/220	X2 to X3	X1, X2 & X4
110	X1 to X3 X2 to X4	X1 & X4

HS14 Series

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

21

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

HS14 Series

Notes:

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

Electrical Connections (Three Phase)

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

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Primary Voltage	Connect Taps	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		Connect Lines To
208		X1, X2, & X3
120		X0, X1, X2, X3

HT6 Series

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

23

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		Connect Lines to
208		X1, X2, & X3
120		X0, X1, X2, X3

HT1 Series

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

24

Primary Voltage	Connect Taps	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

HT5 Series

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

25

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

HT9 Series

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

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Primary Voltage	Connect Taps	Line Leads
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		Line Leads
208		X1, X2, X3
120		X0, X1, X2, X3

HT7 Series

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