

## K-Factor Transformers

K-Factor transformers are designed to reduce the heating effects of harmonic currents created by loads like those shown in Chart A. The K-Factor rating is an index of the transformer's ability to withstand harmonic content while operating within the temperature limits of its insulating system. SolaHD K-Factor transformers have UL ratings of K-4, K-13, and K-20.

The SolaHD K-Factor design is a specialized transformer that offers these benefits:

- Conductors capable of carrying the harmonic currents of non-linear loads without exceeding the temperature rating of the insulation system.
- A transformer design that takes into account the increase in naturally occurring “stray” losses caused by non-linear loads. These losses cause standard transformers to dramatically overheat and substantially shorten design life.
- A core and coil design that manages the DC flux caused by triplen harmonics. As these harmonics increase, they cause additional current to circulate in the delta winding. This produces a DC flux in the core which leads to core saturation, voltage instability and overheating.

### Features

- Conductors to carry harmonics of a K-rated load without exceeding insulation temperature ratings
- UL 1561 listed up to K-20 rated protection
- Rated temperature rise of 150°C, 220°C insulation
- Shielded for quality power
- Basic design takes “stray losses” into account and functions within safe operating temperatures
- Core and coil design engineered to manage the zero sequence flux caused by triplen harmonics
- Provides 100% rated current without overheating the windings or saturating the core



 **Listed**  
E25872

### Accessories and Optional Design Styles\*

- Wall mounting brackets (500 lbs maximum) (Item WB1C)
- Weather Shields (UL-3R)
- Totally enclosed non-ventilated designs (TENV) (Non UL)
- Low temperature rise units available
- Open core and coil designs (UL Recognized)
- Copper Wound designs
- Alternate voltages
- Compliant to NEMA TP-1 Standards

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

### Chart A: Typical Load K-Factors

Load	K-Factor
Electric discharge lighting .....	K-4
UPS with optional input filter .....	K-4
Welders .....	K-4
Induction heating equipment .....	K-4
PLCs and solid state controls .....	K-4
Telecommunications equipment (e.g., PBX) .....	K-13
UPS without input filtering.....	K-13
Multiwire receptacle circuits in general care areas of health care facilities and classrooms of schools, etc. ....	K-13
Multi-wire receptacle circuits supplying inspection or testing equipment on an assembly or production line.....	K-13
Mainframe computer loads .....	K-20
Solid state motor drives (variable speed drives).....	K-20

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Selection Tables: Three Phase

Group A: K-4 Rated 480 Δ Primary, 208Y/120 Secondary, 60 Hz



kVA	Catalog Number	NEMA 3R Weather Shield*	Height (inch)	Width (inch)	Depth (inch)	Approx. Ship Weight (lbs)	Design Style**	Elec Conn**	Primary Amps	Secondary Amps
15	3H4T2H15S	WS-02	23	18	14	187	1	5	18.1	41.7
30	3H4T2H30S	WS-14	28	23	16	292	1	5	36.1	83.4
45	3H4T2H45S	WS-14	28	23	16	376	1	5	54.2	125.0
75	3H4T2H75S	WS-30	34	28	22	569	1	5	90.3	208.0
112.5	3H4T2H112S	WS-30	34	28	22	768	1	5	135.0	313.0
150	3H4T2H150S	WS-10	44	33	21	933	1	5	181.0	417.0
225	3H4T2H225S	WS-11	46	36	24	1342	1	5	271.0	625.0
300	3H4T2H300S	WS-11	46	36	24	1525	1	5	361.0	834.0
500	3H4T2H500S	WS-12	65	45	35	2460	1	5	602.0	1390.0

Group B: K-13 Rated 480 Δ Primary, 208Y/120 Secondary, 60 Hz



kVA	Catalog Number	NEMA 3R Weather Shield*	Height (inch)	Width (inch)	Depth (inch)	Approx. Ship Weight (lbs)	Design Style**	Elec Conn**	Primary Amps	Secondary Amps
15	3H13T2H15S	WS-14	28	23	16	305	1	5	18.1	41.7
30	3H13T2H30S	WS-14	28	23	16	405	1	5	36.1	83.4
45	3H13T2H45S	WS-30	34	28	22	590	1	5	54.2	125.0
75	3H13T2H75S	WS-30	34	28	22	805	1	5	90.3	208.0
112.5	3H13T2H112S	WS-10	44	33	21	972	1	5	135.0	313.0
150	3H13T2H150S	WS-11	46	36	24	1325	1	5	181.0	417.0
225	3H13T2H225S	WS-11	46	36	24	1515	1	5	271.0	625.0
300	3H13T2H300S	WS-12	65	45	35	2460	1	5	361.0	834.0

Group C: K-20 Rated 480 Δ Primary, 208Y/120 Secondary, 60 Hz



kVA	Catalog Number	NEMA 3R Weather Shield*	Height (inch)	Width (inch)	Depth (inch)	Approx. Ship Weight (lbs)	Design Style**	Elec Conn**	Primary Amps	Secondary Amps
15	3H20T2H15S	WS-14	28	23	16	305	1	5	18.1	41.7
30	3H20T2H30S	WS-14	28	23	16	405	1	5	36.1	83.4
45	3H20T2H45S	WS-30	34	28	22	590	1	5	54.2	125.0
75	3H20T2H75S	WS-30	34	28	22	805	1	5	90.3	208.0
112.5	3H20T2H112S	WS-10	44	33	21	972	1	5	135.0	313.0
150	3H20T2H150S	WS-11	46	36	24	1325	1	5	181.0	417.0
225	3H20T2H225S	WS-11	46	36	24	1515	1	5	271.0	625.0
300	3H20T2H300S	WS-12	65	45	35	2460	1	5	361.0	834.0

Notes:

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

\*\*Design Style and Electrical Connections can be found on pages 204-205.