



Medium Voltage Transformers

Section

2



2.5 and 5 kV Single and Three Phase

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Medium Voltage Transformers, 2.5–5kV Class

Medium voltage dry-type transformers are used to step down incoming high voltage power to utilization voltages for residential, commercial, institutional and industrial applications. Offering many advantages over liquid-filled transformers, they are ideally suited for indoor application close to the load for more efficient distribution of power at lower operating costs.

Acme Electric medium voltage dry-type transformers are air-cooled by natural convection, eliminating the principal hazards associated with liquid-filled transformers as well as the need for expensive fireproof vaults and venting systems for toxic gas. They are generally smaller, lighter, and easier to maintain than liquid-filled transformers, requiring only occasional cleaning and inspection. They are encased in a ventilated steel enclosure with no exposed live parts, making them ideal for installation in buildings such as hospitals, theaters, schools, office buildings, and factories.

Because Acme Electric gives close attention to detail and workmanship throughout design, production, and inspection, our medium voltage dry-type transformers are designed for economical, trouble-free service for a life expectancy of 25 years or more. In particular, we optimize the design for BIL levels, short circuit strength, losses, temperature rise, corona-free operation, and low sound levels so that there is no need to over-specify to ensure quality and long, economical performance.

DOE 2016 and CSA C802.2

Our new line of medium voltage transformers not only meets but exceeds the new, more stringent DOE 2016 Energy Efficiency Standards U.S. DOE 10 CFR Part 431 Subpart K, and Canadian Energy Efficiency Regulations SOR/94-651.

- UL Listed
- All units are cUL Listed per UL-1562 and CSA C22.2 No. 47.



Basic Impulse Level

One of the most important considerations in the specification and design of medium voltage dry type transformers is the basic impulse level (BIL). This is the ability of the transformer to withstand impulse voltages impressed upon it by switching surges or lightning. BIL ratings are per IEEE Std C57.12.01.

Corona

Corona is the ionization of air surrounding a high voltage electrode. Corona discharge can reduce transformer life by

1. Gradually breaking down the chemistry of insulation system
2. Forming streamers or eroding tracks on the insulation or insulators, causing subsequent flashover
3. Reducing the transformer BIL level

Corona-free operation is a priority in all Acme Electric transformer designs. Through a combination of air spacing, insulating materials, and semiconducting tape, all of our medium voltage dry-type transformers have corona extinction levels that exceed their operating voltage level.



Coil Construction

Coils are wound with aluminum conductor and insulated with UL recognized Class 220° C materials such as DuPont Nomex®.

Continuous Wound Coil

The continuous layer wound coil consists of columns of rectangular magnet wire layers separated by axial cooling ducts inserted between various layers. This gives the coil a single column mass and maximum mechanical axial strength. Coils are also kept as round and tight as possible in order to provide maximum strength against radial short circuit forces.

The air ducts provide adequate air space between layers and coils, eliminating the need for flash barriers, which can restrict cooling air flow, increasing hot spot temperatures. During assembly, high voltage windings are positioned over low voltage windings to minimize axial stresses under short-circuit conditions.

All coils are preheated to drive out moisture, and then impregnated with high quality polyester resin to eliminate air-filled voids that can promote corona. This also reduces effective spacing necessary to maintain a high BIL.

Cores

Transformer cores are manufactured with grain oriented cold rolled high purity silicon steel having the highest possible silicon content compatible with magnetic steel production methods. All core steel has been annealed to relieve stresses and to assure flatness and optimum magnetic properties after slitting and processing.

Coil Taps

Coil taps are furnished in the high voltage winding to compensate for variations in the incoming supply voltage to the transformer. All Acme Electric medium voltage transformers are equipped with 2–2½% ANFC (Above Normal Full Capacity) and 2–2½% BNFC (Below Normal Full Capacity) high voltage taps that are easily accessible through removable panels on the front of the transformer.

Further, we are structured to provide custom specifications. If you need a medium voltage dry-type transformer with specifications different from those in our existing line, our engineers can design one for you. For assistance, contact your Acme representative or call 1-800-334-5214 for assistance in developing a solution to your needs.

Features

- Completely encased in a ventilated steel enclosure with no exposed live parts
- Air-cooled by natural convection
- Smaller, easier to maintain than liquid-filled transformers
- No additional fireproofing or venting needed
- Long life expectancy
- Covered under ACME's 3 year warranty
- Available with 3R Weathershield

Applications

- Residential applications
- Hospitals, clinics and other health care operations
- Educational facilities
- Office buildings
- Theaters, stadiums and other entertainment venues



SINGLE PHASE, 60Hz, 2.5kV & 5kV CLASS, NEMA 1 ENCLOSED, DOE 2016

kVA	Catalog Number	Height (Inches)(Cm.)	Width (Inches)(Cm.)	Depth (Inches)(Cm.)	Weight (Lbs.)(Kg.)	Mounting Type (Wall)(Floor)	Knockouts (Inches)(Cm.)	Optional Electrostatic Shield	Design Figures
15	WB015KXX ①	28.3 (71.8)	20.3 (51.5)	16.3 (41.4)	255 (115.6)	F	NA	NA	E
25	WC025KXX ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	320 (145.1)	F	NA	NA	E
37.5	WC037KXX ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	400 (181.4)	F	NA	NA	E
50	WC050KXX ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	530 (240.4)	F	NA	NA	E
75	WC075KXX ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	690 (312.9)	F	NA	NA	E
100	WC100KXX ①	40.8 (103.6)	32.3 (82.0)	28.3 (71.8)	800 (362.8)	F	NA	NA	E
167	WC167KXX ①	40.8 (103.6)	32.3 (82.0)	28.3 (71.8)	1100 (498.9)	F	NA	NA	E
250	WC250KXX ①	40.8 (103.6)	32.3 (82.0)	28.3 (71.8)	1500 (680.3)	F	NA	NA	E
333	WC333KXX ①	48.0 (121.9)	48.0 (121.9)	32.0 (81.2)	2000 (907.1)	F	NA	NA	E
500	WC500KXX ①	54.0 (137.1)	60.0 (152.4)	40.0 (101.6)	3200 (1451.4)	F	NA	NA	G

① Add appropriate voltage number code to catalog number

Available with 3R Weathershield

SINGLE PHASE VOLTAGE SELECTION

XX	Primary Volts	Secondary Volts	Wiring Diagrams
01	2400	120/240	1
02	2400	240/480	1
03	2400	600	2
04	4160	120/240	1
05	4160	240/480	1
06	4160	600	2
07	4800	120/240	1
08	4800	240/480	1
09	4800	600	2

SCH 1

LINE CONNECTION	VOLTAGE	JUMPER CONNECTION	LOAD CONNECTION	VOLTAGE	JUMPER CONNECTION
H1 - H2	105 %	1 - 2	X1 - X4	120	X1 - X3, X2 - X4
	102.5 %	2 - 3		240	X2 - X3
	100 %	3 - 4	X1 - X4	240	X1 - X3, X2 - X4
	97.5 %	4 - 5		480	X2 - X3
	95 %	5 - 6			

SCH 2

LINE CONNECTION	VOLTAGE	JUMPER CONNECTION	LOAD CONNECTION	VOLTAGE
H1 - H2	105 %	1 - 2	X1 - X2	600
	102.5 %	2 - 3		
	100 %	3 - 4		
	97.5 %	4 - 5		
	95 %	5 - 6		



THREE PHASE, 60Hz, 2.5kV & 5kV CLASS, NEMA 1 ENCLOSED, DOE 2016

kVA	Catalog Number	Height (Inches)(Cm.)	Width (Inches)(Cm.)	N-1 Depth (Inches)(Cm.)	Weight (Lbs.)(Kg.)	Mounting Type (Wall)(Floor)	Knockouts (Inches)(Cm.)	Optional Electrostatic Shield	Design Figures
15	WH015KYY ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	340 (154.2)	F	NA	NA	E
30	WI030KYY ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	450 (204.1)	F	NA	NA	E
45	WI045KYY ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	500 (226.7)	F	NA	NA	E
75	WI075KYY ①	40.8 (103.6)	32.3 (82.0)	28.3 (71.8)	810 (367.4)	F	NA	NA	E
112.5	WI112KYY ①	40.8 (103.6)	32.3 (82.0)	28.3 (71.8)	950 (430.9)	F	NA	NA	E
150	WI150KYY ①	48.0 (121.9)	48.0 (121.9)	32.0 (81.2)	1260 (571.5)	F	NA	NA	E
225	WI225KYY ①	48.0 (121.9)	48.0 (121.9)	32.0 (81.2)	1630 (739.3)	F	NA	NA	E
300	WI300KYY ①	48.0 (121.9)	48.0 (121.9)	32.0 (81.2)	2180 (988.8)	F	NA	NA	E
500	WI500KYY ①	54.0 (137.1)	60.0 (152.4)	40.0 (101.6)	2940 (907.1)	F	NA	NA	G
750	WI750KYY ①	54.0 (137.1)	60.0 (152.4)	40.0 (101.6)	4400 (1995.8)	F	NA	NA	G
1000	WI001MYY ①	72.0 (182.8)	68.0 (172.7)	48.0 (121.9)	6100 (2766.9)	F	NA	NA	G
1500	WI015MYY ①	84.0 (213.3)	84.0 (213.3)	48.0 (121.9)	8100 (3674.0)	F	NA	NA	G
2000	WI002MYY ①	84.0 (213.3)	84.0 (213.3)	48.0 (121.9)	9500 (4309.1)	F	NA	NA	G

① Add appropriate voltage number code to catalog number

Available with 3R Weathershield

THREE PHASE VOLTAGE SELECTION

YY	Primary Volts	Secondary Volts	Wiring Diagrams
10	2400Δ	208Y120	3
11	2400Δ	240Δ	4
12	2400Δ	480Δ	4
13	2400Δ	480Y277	3
14	2400Δ	600Δ	4
15	2400Δ	600Y347	3
16	4160Δ	208Y120	3
17	4160Δ	240Δ	4
18	4160Δ	480Δ	4
19	4160Δ	480Y277	3
20	4160Δ	600Δ	4
21	4160Δ	600Y347	3
22	4800Δ	208Y120	3
23	4800Δ	240Δ	4
24	4800Δ	480Δ	4
25	4800Δ	480Y277	3
26	4800Δ	600Δ	4
27	4800Δ	600Y347	3

