



IEC 60076-11
50Hz

CAST RESIN
DISTRIBUTION
TRANSFORMERS

2017 EDITION



TMC TRANSFORMERS - GLOBAL NETWORK



EXPERIENCED

TMC Transformers – the ORIGINAL TMC – was established in Melbourne, Australia in 1936.

For more than 80 years TMC has been providing precision quality induction equipment to the electrical power industry.



GLOBAL

TMC Transformers owns and manages engineering and manufacturing facilities in Spain and Australia, selling directly into these markets.

TMC has strong global distribution alliances covering markets in Europe, North America, Canada, Central and South America, the Middle East and South Africa as well as emerging markets in South East Asia.



CUSTOMISED

TMC Transformers has developed proprietary, customised tools for optimised electromagnetic design.

Together with 'state of the art' production machinery and equipment, these enable TMC to consistently meet its customers' exacting specifications with economical solutions.

DESIGN AND CONSTRUCTION FEATURES

Foil Windings

TMC Cast Resin Transformers are wound with either aluminium or copper foil.

One advantage of foil construction is that short circuit axial forces are eliminated, due to the matched electrical lengths of the low (LV) and high (HV) voltage coils.

State-of-the-art winding machines enable insulation and conductor materials to be simultaneously wound, resulting in a very compact winding, capable of resisting both radial and axial short circuit forces.

A major electrical advantage over conventional wire or strip windings is that the interlayer voltage never exceeds the individual voltage of each turn.

The LV foil conductor edges are conditioned prior to winding and each turn is insulated with three-ply, resin impregnated high temperature film laminate.

After winding, vacuum pressure impregnation and final oven hardening fully protect the coil from infiltration of moisture.

The HV conductor foil is also edge conditioned and wound in continuous discs onto a precision former. This system of winding guarantees the accuracy required for close tolerance mould casting.

The winding is reinforced with fibreglass mesh and vacuum cast in high temperature epoxy resin.

Different epoxy formulations are used for aluminium and copper winding material to allow for the varying coefficients of thermal expansion of these materials.

Lightning Impulse Withstand Voltage (BIL)

TMC Cast Resin Transformers are designed to withstand lightning impulse voltages without the aid of surge protection devices.

Terminations

Terminations are fabricated from generously sized solid copper or aluminium busbar.

Free of Partial Discharge

Internal Partial Discharge, which is a major cause of erosion and failure in transformer insulation systems at voltages greater than 12kV, is effectively eliminated in TMC Cast Resin Transformers.

Core

The core used in TMC Cast Resin Transformers is manufactured from prime quality, low loss, grain oriented ferro-silicon steel laminations, individually coated with high temperature, inorganic insulation. The structure consists of vertical columns interconnected with fully mitred joints at the yokes.

Resin impregnated glass bandages strap the core and ensure low noise levels. The completed core is treated with a high temperature, electrically stable coating, to prevent corrosion in service.

Environmentally Safe

TMC Cast Resin Transformers contain no liquid to pollute ground or water supplies, and no special measures are required to guard against spillage.

International Accreditation

TMC is accredited and audited for compliance to International Standards:

ISO 9001 (Quality Assurance)
ISO 14001 (Environmental Management)
OHSAS 18001 (Occupational Health and Safety)

The rigorous requirements of these International Standards, together with customers' own technical specifications ensure that TMC manufactures products that are safe, reliable and of the highest quality.

Standard IEC 60076-11 U _{cc} 6%										Insulation Class 12kV							
Power kVA	LOSS CATEGORY	P _o W	P _k 120° W	I _o %	L _p A dB(A)	L _w A dB(A)	a1 mm	b1 mm	b2 mm	h1 mm	e mm	Ø mm	t mm	Mass kg	Term Type	Encl Type	
100	Standard	440	2000	1.8	46	59	1050	600	700	1150	520	125	40	750	A	1B / 1C	
	Low	330	2000	1.6	45	58	1100	600	700	1200	520	125	40	800	A	1B / 1C	
	Very Low	260	1800	1.5	43	56	1200	600	700	1200	520	125	40	850	A	1B / 1C	
150	Standard	580	2600	1.6	49	62	1100	600	700	1150	520	125	40	800	A	1B / 1C	
	Low	430	2600	1.5	47	60	1150	600	700	1200	520	125	40	850	A	1B / 1C	
	Very Low	340	2500	1.3	46	59	1250	600	700	1200	520	125	40	900	A	1B / 1C	
160	Standard	610	2700	1.6	49	62	1100	600	700	1150	520	125	40	800	A	1B / 1C	
	Low	450	2700	1.4	47	60	1150	600	700	1200	520	125	40	850	A	1B / 1C	
	Very Low	350	2600	1.3	46	59	1250	600	700	1200	520	125	40	900	A	1B / 1C	
200	Standard	700	3100	1.5	50	63	1150	750	750	1200	670	125	40	900	B	1B / 1C	
	Low	520	3100	1.3	49	62	1200	750	750	1300	670	125	40	950	B	1B / 1C	
	Very Low	420	3000	1.2	47	60	1300	750	750	1400	670	125	40	1150	B	1B / 1C	
250	Standard	820	3500	1.4	52	65	1200	750	750	1250	670	125	40	950	B	1B / 1C	
	Low	610	3500	1.3	50	63	1200	750	750	1400	670	125	40	1000	B	1B / 1C	
	Very Low	500	3400	1.1	49	62	1300	750	750	1450	670	125	40	1250	B	1B / 1C	
315	Standard	960	4100	1.3	53	66	1200	750	750	1400	670	125	40	1150	B	1B / 1C	
	Low	730	4100	1.2	52	65	1200	750	750	1450	670	125	40	1200	B	1B / 1C	
	Very Low	590	3900	1.0	50	63	1350	750	750	1500	670	125	40	1350	B	1B / 1C	
400	Standard	1150	4900	1.2	55	68	1250	750	750	1450	670	125	40	1300	B	2B / 2C	
	Low	880	4900	1.1	53	66	1250	750	750	1450	670	125	40	1350	B	2B / 2C	
	Very Low	700	4500	1.0	51	65	1400	750	750	1550	670	125	40	1500	B	2B / 2C	
500	Standard	1300	5900	1.1	56	69	1300	750	750	1500	670	125	40	1500	C	2B / 2C	
	Low	1000	5900	1.0	55	68	1300	750	750	1500	670	125	40	1550	C	2B / 2C	
	Very Low	830	5600	0.9	52	66	1500	750	750	1600	670	125	40	1700	C	2B / 2C	
630	Standard	1500	7300	1.1	57	71	1400	850	850	1600	670	125	40	1700	D	2B / 2C	
	Low	1150	7300	1.0	55	69	1400	850	850	1700	670	125	40	1800	D	2B / 2C	
	Very Low	1000	7100	0.9	53	67	1500	850	850	1700	670	125	40	1900	D	2B / 2C	
750	Standard	1710	8500	1.0	58	72	1400	850	850	1600	670	125	40	1900	E	3B / 3C	
	Low	1260	8500	0.9	56	70	1450	850	850	1750	670	125	40	2050	E	3B / 3C	
	Very Low	1070	7700	0.8	55	69	1550	850	850	1850	670	125	40	2400	E	3B / 3C	
800	Standard	1800	9000	1.0	58	72	1400	850	850	1600	670	125	40	1950	E	3B / 3C	
	Low	1300	9000	0.9	57	71	1450	850	850	1750	670	125	40	2100	E	3B / 3C	
	Very Low	1100	8000	0.8	55	69	1550	850	850	1850	670	125	40	2450	E	3B / 3C	
1000	Standard	2100	10000	0.9	60	74	1450	1000	1000	1900	820	125	40	2250	F	3B / 3C	
	Low	1500	10000	0.8	58	72	1500	1000	1000	1900	820	125	40	2450	F	3B / 3C	
	Very Low	1300	9000	0.8	56	70	1600	1000	1000	1950	820	125	40	2850	F	3B / 3C	
1250	Standard	2500	12000	0.9	61	75	1550	1000	1000	1950	820	160	50	2700	G	4B / 4C	
	Low	1800	12000	0.8	59	73	1600	1000	1000	1950	820	160	50	2800	G	4B / 4C	
	Very Low	1500	11000	0.7	57	72	1650	1000	1000	2100	820	160	50	3300	G	4B / 4C	
1500	Standard	2710	13800	0.8	61	76	1700	1000	1000	2050	820	160	50	3400	H	4B / 4C	
	Low	2090	13800	0.8	60	75	1750	1000	1000	2050	820	160	50	3500	H	4B / 4C	
	Very Low	1710	12400	0.7	58	73	1850	1000	1000	2200	820	160	50	4400	H	4B / 4C	
1600	Standard	2800	14500	0.8	62	77	1700	1000	1000	2050	820	160	50	3400	H	4B / 4C	
	Low	2200	14500	0.7	60	75	1750	1000	1000	2050	820	160	50	3500	H	4B / 4C	
	Very Low	1800	13000	0.7	58	73	1850	1000	1000	2200	820	160	50	4400	H	4B / 4C	
2000	Standard	3600	18000	0.8	63	78	1800	1310	1310	2150	1070	200	70	4100	I	5B / 5C	
	Low	2600	18000	0.7	61	76	1850	1310	1310	2150	1070	200	70	4200	I	5B / 5C	
	Very Low	2200	15500	0.6	60	75	1900	1310	1310	2450	1070	200	70	5200	I	5B / 5C	
2500	Standard	4300	21000	0.7	65	80	2000	1310	1310	2350	1070	200	70	5400	J	5B / 5C	
	Low	3200	21000	0.7	62	78	2000	1310	1310	2450	1070	200	70	5400	J	5B / 5C	
	Very Low	2600	18500	0.6	60	76	2100	1310	1310	2500	1070	200	70	5800	J	5B / 5C	
3000	Standard	5070	24800	0.7	65	81	2100	1310	1310	2400	1070	200	70	6300	K	6B / 6C	
	Low	3660	24800	0.6	63	79	2150	1310	1310	2500	1070	200	70	6800	K	6B / 6C	
	Very Low	3020	21200	0.6	61	77	2200	1310	1310	2550	1070	200	70	7500	K	6B / 6C	
3150	Standard	5300	26000	0.7	65	81	2100	1310	1310	2400	1070	200	70	6300	K	6B / 6C	
	Low	3800	26000	0.6	63	79	2150	1310	1310	2500	1070	200	70	6800	K	6B / 6C	
	Very Low	3150	22000	0.5	61	77	2200	1310	1310	2550	1070	200	70	7500	K	6B / 6C	
3500	Standard	5880	28500	0.7	66	82	2200	1440	1440	2500	1200	200	70	7300	K	7B / 7C	
	Low	4170	28900	0.6	64	80	2250	1440	1440	2550	1200	200	70	7700	K	7B / 7C	
	Very Low	3220	24000	0.5	62	78	2300	1440	1440	2600	1200	200	70	8000	K	7B / 7C	
4000	Standard	6710	32100	0.6	67	83	2300	1440	1440	2550	1200	200	70	8300	K	7B / 7C	
	Low	4660	32600	0.6	65	81	2350	1440	1440	2600	1200	200	70	8500	K	7B / 7C	
	Very Low	3580	26600	0.5	63	79	2400	1440	1440	2700	1200	200	70	8700	K	7B / 7C	

Standard IEC 60076-11 U _{cc} 6%										Insulation Class								17.5kV	
Power kVA	LOSS CATEGORY	P _o W	P _k 120° W	I _o %	L _p A dB(A)	L _w A dB(A)	a1 mm	b1 mm	b2 mm	h1 mm	e mm	Ø mm	t mm	Mass kg	Term Type	Encl Type			
100	Standard	460	2050	1.9	47	60	1100	600	750	1250	520	125	40	700	A	1B / 1C			
	Low	340	2050	1.7	46	59	1200	600	750	1250	520	125	40	850	A	1B / 1C			
	Very Low	280	1800	1.6	44	57	1250	600	750	1300	520	125	40	900	A	1B / 1C			
150	Standard	620	2800	1.7	50	63	1150	600	750	1250	520	125	40	750	A	1B / 1C			
	Low	460	2800	1.6	48	61	1250	600	750	1250	520	125	40	900	A	1B / 1C			
	Very Low	380	2500	1.4	47	60	1300	600	750	1300	520	125	40	950	A	1B / 1C			
160	Standard	650	2900	1.7	50	63	1150	600	750	1250	520	125	40	750	A	1B / 1C			
	Low	480	2900	1.5	48	61	1250	600	750	1250	520	125	40	900	A	1B / 1C			
	Very Low	400	2600	1.4	47	60	1300	600	750	1300	520	125	40	950	A	1B / 1C			
200	Standard	750	3300	1.6	51	64	1150	750	800	1200	670	125	40	950	B	1B / 1C			
	Low	560	3300	1.4	50	63	1250	750	800	1300	670	125	40	1000	B	1B / 1C			
	Very Low	450	3000	1.3	48	61	1350	750	800	1400	670	125	40	1150	B	1B / 1C			
250	Standard	880	3800	1.5	53	66	1200	750	800	1350	670	125	40	950	B	1B / 1C			
	Low	650	3800	1.3	51	64	1250	750	800	1400	670	125	40	1000	B	1B / 1C			
	Very Low	520	3400	1.2	50	63	1350	750	800	1450	670	125	40	1150	B	1B / 1C			
315	Standard	1020	4500	1.4	54	67	1200	750	800	1400	670	125	40	1050	B	1B / 1C			
	Low	780	4500	1.3	53	66	1300	750	800	1400	670	125	40	1150	B	1B / 1C			
	Very Low	620	3900	1.1	51	64	1400	750	800	1500	670	125	40	1350	B	1B / 1C			
400	Standard	1200	5500	1.3	56	69	1300	750	850	1400	670	125	40	1200	B	2B / 2C			
	Low	940	5500	1.2	54	67	1350	750	850	1450	670	125	40	1300	B	2B / 2C			
	Very Low	750	4500	1.0	52	66	1500	750	850	1600	670	125	40	1700	B	2B / 2C			
500	Standard	1400	6400	1.2	57	70	1300	750	850	1500	670	125	40	1350	C	2B / 2C			
	Low	1070	6400	1.1	56	69	1400	750	850	1500	670	125	40	1500	C	2B / 2C			
	Very Low	900	5600	1.0	53	67	1500	750	850	1650	670	125	40	1900	C	2B / 2C			
630	Standard	1650	7600	1.1	58	72	1400	850	900	1600	670	125	40	1650	D	2B / 2C			
	Low	1250	7600	1.0	56	70	1450	850	900	1600	670	125	40	1750	D	2B / 2C			
	Very Low	1100	7100	0.9	54	68	1500	850	900	1750	670	125	40	2000	D	2B / 2C			
750	Standard	1900	8900	1.1	59	73	1400	850	900	1750	670	125	40	1850	E	3B / 3C			
	Low	1430	8900	1.0	57	71	1500	850	900	1750	670	125	40	2100	E	3B / 3C			
	Very Low	1240	7700	0.9	56	70	1550	850	900	1900	670	125	40	2400	E	3B / 3C			
800	Standard	2000	9400	1.1	59	73	1400	850	900	1750	670	125	40	1900	E	3B / 3C			
	Low	1500	9400	1.0	58	72	1500	850	900	1750	670	125	40	2150	E	3B / 3C			
	Very Low	1300	8000	0.9	56	70	1600	850	900	1900	670	125	40	2450	E	3B / 3C			
1000	Standard	2300	11000	1.0	61	75	1450	1000	1000	1800	820	125	40	2200	F	3B / 3C			
	Low	1800	11000	0.9	59	73	1550	1000	1000	1800	820	125	40	2400	F	3B / 3C			
	Very Low	1550	9000	0.8	56	71	1700	1000	1000	1950	820	125	40	2900	F	3B / 3C			
1250	Standard	2800	13000	0.9	62	76	1550	1000	1000	1950	820	160	50	2700	G	4B / 4C			
	Low	2100	13000	0.8	60	74	1650	1000	1000	1950	820	160	50	3000	G	4B / 4C			
	Very Low	1800	11000	0.8	58	73	1800	1000	1000	2100	820	160	50	3500	G	4B / 4C			
1500	Standard	3010	15100	0.9	62	77	1700	1000	1000	2050	820	160	50	3300	H	4B / 4C			
	Low	2310	15100	0.8	61	76	1700	1000	1000	2100	820	160	50	3500	H	4B / 4C			
	Very Low	2090	12400	0.7	59	74	1850	1000	1000	2200	820	160	50	4100	H	4B / 4C			
1600	Standard	3100	16000	0.9	63	78	1700	1000	1000	2050	820	160	50	3300	H	4B / 4C			
	Low	2400	16000	0.8	61	76	1700	1000	1000	2100	820	160	50	3500	H	4B / 4C			
	Very Low	2200	13000	0.7	59	74	1850	1000	1000	2200	820	160	50	4100	H	4B / 4C			
2000	Standard	4000	18000	0.8	64	79	1800	1310	1310	2200	1070	200	70	4100	I	5B / 5C			
	Low	3000	18000	0.7	62	77	1850	1310	1310	2200	1070	200	70	4300	I	5B / 5C			
	Very Low	2600	16000	0.7	60	76	1900	1310	1310	2500	1070	200	70	5000	I	5B / 5C			
2500	Standard	5000	23000	0.8	66	81	2000	1310	1310	2400	1070	200	70	5300	J	5B / 5C			
	Low	3600	23000	0.7	63	79	2050	1310	1310	2450	1070	200	70	5600	J	5B / 5C			
	Very Low	3100	19000	0.6	61	77	2050	1310	1310	2550	1070	200	70	6200	J	5B / 5C			
3000	Standard	5770	26800	0.7	66	82	2100	1310	1310	2400	1070	200	70	6300	K	5B / 5C			
	Low	4140	26800	0.7	64	80	2150	1310	1310	2450	1070	200	70	6900	K	5B / 5C			
	Very Low	3640	21300	0.6	62	78	2150	1310	1310	2600	1070	200	70	7500	K	6B / 6C			
3150	Standard	6000	28000	0.7	66	82	2100	1310	1310	2400	1070	200	70	6300	K	6B / 6C			
	Low	4300	28000	0.7	64	80	2150	1310	1310	2450	1070	200	70	6900	K	6B / 6C			
	Very Low	3800	22000	0.6	62	78	2250	1310	1310	2600	1070	200	70	7500	K	6B / 6C			
3500	Standard	6730	30700	0.7	67	83	2250	1440	1440	2500	1200	200	70	7300	K	7B / 7C			
	Low	4710	31300	0.6	65	81	2300	1440	1440	2550	1200	200	70	7700	K	7B / 7C			
	Very Low	4130	24000	0.6	63	79	2400	1440	1440	2650	1200	200	70	8200	K	7B / 7C			
4000	Standard	7710	34700	0.7	68	84	2300	1440	1440	2600	1200	200	70	8300	K	7B / 7C			
	Low	5260	35300	0.6	66	82	2400	1440	1440	2650	1200	200	70	8600	K	7B / 7C			
	Very Low	4610	26400	0.5	64	80	2450	1440	1440	2750	1200	200	70	8900	K	7B / 7C			

Standard IEC 60076-11 Ucc 6%										Insulation Class 24kV							
Power kVA	LOSS CATEGORY	Po W	Pk 120° W	Io %	LpA dB(A)	LwA dB(A)	a1 mm	b1 mm	b2 mm	h1 mm	e mm	Ø mm	t mm	Mass kg	Term Type	Encl Type	
100	Standard	460	2050	1.9	47	60	1200	600	750	1250	520	125	40	750	A	1B / 1C	
	Low	340	2050	1.7	46	59	1250	600	750	1250	520	125	40	850	A	1B / 1C	
	Very Low	280	1800	1.6	44	57	1250	600	750	1300	520	125	40	900	A	1B / 1C	
150	Standard	620	2800	1.7	50	63	1250	600	750	1250	520	125	40	800	A	1B / 1C	
	Low	460	2800	1.6	48	61	1300	600	750	1250	520	125	40	900	A	1B / 1C	
	Very Low	380	2500	1.4	47	60	1300	600	750	1300	520	125	40	950	A	1B / 1C	
160	Standard	650	2900	1.7	50	63	1250	600	750	1250	520	125	40	800	A	1B / 1C	
	Low	480	2900	1.5	48	61	1300	600	750	1250	520	125	40	900	A	1B / 1C	
	Very Low	400	2600	1.4	47	60	1300	600	750	1300	520	125	40	950	A	1B / 1C	
200	Standard	750	3300	1.6	51	64	1250	750	800	1350	670	125	40	900	B	1B / 1C	
	Low	560	3300	1.4	50	63	1300	750	800	1400	670	125	40	1000	B	1B / 1C	
	Very Low	450	3000	1.3	48	61	1300	750	800	1450	670	125	40	1100	B	1B / 1C	
250	Standard	880	3800	1.5	53	66	1300	750	800	1350	670	125	40	1000	B	1B / 1C	
	Low	650	3800	1.3	51	64	1300	750	800	1400	670	125	40	1050	B	1B / 1C	
	Very Low	520	3400	1.2	50	63	1350	750	800	1450	670	125	40	1200	B	1B / 1C	
315	Standard	1020	4500	1.4	54	67	1300	750	800	1400	670	125	40	1100	B	1B / 1C	
	Low	780	4500	1.3	53	66	1300	750	800	1450	670	125	40	1200	B	1B / 1C	
	Very Low	620	3900	1.1	51	64	1400	750	800	1500	670	125	40	1450	B	1B / 2C	
400	Standard	1200	5500	1.3	56	69	1350	750	850	1450	670	125	40	1200	B	2B / 2C	
	Low	940	5500	1.2	54	67	1350	750	850	1450	670	125	40	1300	B	2B / 2C	
	Very Low	750	4500	1.0	52	66	1500	750	850	1600	670	125	40	1650	B	2B / 2C	
500	Standard	1400	6400	1.2	57	70	1400	750	850	1500	670	125	40	1450	C	2B / 2C	
	Low	1070	6400	1.1	56	69	1400	750	850	1500	670	125	40	1500	C	2B / 2C	
	Very Low	900	5600	1.0	53	67	1500	750	850	1650	670	125	40	1900	C	2B / 2C	
630	Standard	1650	7600	1.1	58	72	1450	850	900	1600	670	125	40	1600	D	2B / 2C	
	Low	1250	7600	1.0	56	70	1450	850	900	1600	670	125	40	1750	D	2B / 2C	
	Very Low	1100	7100	0.9	54	68	1550	850	900	1750	670	125	40	2100	D	2B / 3C	
750	Standard	1900	8900	1.1	59	73	1450	850	900	1750	670	125	40	2000	E	3B / 3C	
	Low	1430	8900	1.0	57	71	1500	850	900	1750	670	125	40	2200	E	3B / 3C	
	Very Low	1240	7700	0.9	56	70	1600	850	900	1900	670	125	40	2500	E	3B / 3C	
800	Standard	2000	9400	1.1	59	73	1450	850	900	1750	670	125	40	2000	E	3B / 3C	
	Low	1500	9400	1.0	58	72	1500	850	900	1750	670	125	40	2200	E	3B / 3C	
	Very Low	1300	8000	0.9	56	70	1600	850	900	1900	670	125	40	2500	E	3B / 3C	
1000	Standard	2300	11000	1.0	61	75	1550	1000	1000	1800	820	125	40	2400	F	3B / 3C	
	Low	1800	11000	0.9	59	73	1550	1000	1000	1800	820	125	40	2500	F	3B / 3C	
	Very Low	1550	9000	0.8	56	71	1700	1000	1000	1950	820	125	40	2900	F	3B / 4C	
1250	Standard	2800	13000	0.9	62	76	1650	1000	1000	1950	820	160	50	2900	G	4B / 4C	
	Low	2100	13000	0.8	59	74	1700	1000	1000	1950	820	160	50	3000	G	4B / 4C	
	Very Low	1800	11000	0.8	58	73	1800	1000	1000	2100	820	160	50	3500	G	4B / 4C	
1500	Standard	3010	15100	0.9	62	77	1700	1000	1000	2050	820	160	50	3400	H	4B / 4C	
	Low	2310	15100	0.8	61	76	1700	1000	1000	2050	820	160	50	3500	H	4B / 4C	
	Very Low	2090	12400	0.7	59	74	1850	1000	1000	2200	820	160	50	4200	H	4B / 5C	
1600	Standard	3100	16000	0.9	63	78	1700	1000	1000	2050	820	160	50	3400	H	4B / 4C	
	Low	2400	16000	0.8	61	76	1700	1000	1000	2050	820	160	50	3500	H	4B / 4C	
	Very Low	2200	13000	0.7	59	74	1850	1000	1000	2200	820	160	50	4200	H	4B / 5C	
2000	Standard	4000	18000	0.8	64	79	1850	1310	1310	2200	1070	200	70	4100	I	5B / 5C	
	Low	3000	18000	0.7	62	77	1850	1310	1310	2200	1070	200	70	4200	I	5B / 5C	
	Very Low	2600	16000	0.7	60	76	1900	1310	1310	2500	1070	200	70	4900	I	5B / 5C	
2500	Standard	5000	23000	0.8	65	81	2050	1310	1310	2450	1070	200	70	5500	J	5B / 5C	
	Low	3600	23000	0.7	63	79	2050	1310	1310	2450	1070	200	70	5700	J	5B / 5C	
	Very Low	3100	19000	0.6	61	77	2100	1310	1310	2550	1070	200	70	6200	J	5B / 6C	
3000	Standard	5770	26800	0.7	66	82	2200	1310	1310	2550	1070	200	70	6800	K	6B / 6C	
	Low	4140	26800	0.7	64	80	2250	1310	1310	2550	1070	200	70	7000	K	6B / 6C	
	Very Low	3640	21300	0.6	62	78	2300	1310	1310	2600	1070	200	70	7200	K	6B / 6C	
3150	Standard	6000	28000	0.7	66	82	2200	1310	1310	2550	1070	200	70	6800	K	6B / 6C	
	Low	4300	28000	0.7	64	80	2250	1310	1310	2550	1070	200	70	7000	K	6B / 6C	
	Very Low	3800	22000	0.6	62	78	2300	1310	1310	2600	1070	200	70	7200	K	6B / 7C	
3500	Standard	6730	30700	0.7	67	83	2250	1440	1440	2500	1200	200	70	7400	K	7B / 7C	
	Low	4710	31300	0.6	65	81	2300	1440	1440	2550	1200	200	70	7800	K	7B / 7C	
	Very Low	4130	24000	0.6	63	79	2400	1440	1440	2650	1200	200	70	8400	K	7B / 7C	
4000	Standard	7710	34700	0.7	68	84	2300	1440	1440	2600	1200	200	70	8400	K	7B / 7C	
	Low	5260	35300	0.6	66	82	2400	1440	1440	2650	1200	200	70	8800	K	7B / 7C	
	Very Low	4610	26400	0.5	64	80	2450	1440	1440	2750	1200	200	70	9300	K	7B / 7C	

Standard IEC 60076-11 U _{cc} 6%										Insulation Class								36kV	
Power kVA	LOSS CATEGORY	P ₀ W	P _k 120° W	I ₀ %	L _p A dB(A)	L _w A dB(A)	a1 mm	b1 mm	b2 mm	h1 mm	e mm	Ø mm	t mm	Mass kg	Term Type	Encl Type			
100	Standard	890	2000	2.1	48	62	1700	600	850	1450	520	125	40	1200	A	11B / 11C			
	Low	800	2000	1.8	46	60	1700	600	850	1450	520	125	40	1250	A	11B / 11C			
	Very Low	750	1800	1.6	45	59	1750	600	850	1600	520	125	40	1300	A	11B / 11C			
150	Standard	950	2600	1.9	51	65	1700	600	850	1500	520	125	40	1250	A	11B / 11C			
	Low	880	2600	1.6	49	63	1700	600	850	1500	520	125	40	1300	A	11B / 11C			
	Very Low	830	2400	1.4	48	62	1750	600	850	1700	520	125	40	1350	A	11B / 11C			
160	Standard	960	2700	1.8	51	65	1750	600	850	1500	520	125	40	1250	A	11B / 11C			
	Low	900	2700	1.6	49	63	1750	600	850	1500	520	125	40	1300	A	11B / 11C			
	Very Low	850	2500	1.4	48	62	1750	600	850	1700	520	125	40	1350	A	11B / 11C			
200	Standard	1100	3200	1.7	52	66	1750	750	850	1550	670	125	40	1400	B	11B / 11C			
	Low	990	3200	1.5	51	65	1750	750	850	1550	670	125	40	1450	B	11B / 11C			
	Very Low	920	2900	1.3	49	63	1750	750	850	1700	670	125	40	1500	B	11B / 11C			
250	Standard	1280	3800	1.6	54	68	1750	750	850	1550	670	125	40	1500	B	11B / 11C			
	Low	1100	3800	1.4	52	66	1750	750	850	1600	670	125	40	1550	B	11B / 11C			
	Very Low	1000	3500	1.2	51	65	1750	750	850	1700	670	125	40	1600	B	11B / 11C			
315	Standard	1440	4500	1.5	55	69	1750	750	900	1650	670	125	40	1750	B	11B / 11C			
	Low	1190	4500	1.3	54	68	1750	750	900	1700	670	125	40	1800	B	11B / 11C			
	Very Low	1090	4200	1.2	52	66	1750	750	900	1750	670	125	40	1950	B	11B / 11C			
400	Standard	1650	5400	1.4	57	71	1750	750	900	1800	670	125	40	2000	B	12B / 12C			
	Low	1300	5400	1.2	55	69	1750	750	900	1800	670	125	40	2100	B	12B / 12C			
	Very Low	1200	5000	1.1	54	68	1750	750	900	1850	670	125	40	2150	B	12B / 12C			
500	Standard	1890	6300	1.3	59	73	1750	850	1000	1850	670	125	40	2300	C	12B / 12C			
	Low	1430	6300	1.1	57	71	1750	850	1000	1850	670	125	40	2450	C	12B / 12C			
	Very Low	1290	5900	1.0	55	69	1800	850	1000	1850	670	125	40	2550	C	12B / 12C			
630	Standard	2200	7500	1.2	60	74	1750	850	1000	1950	670	125	40	2500	D	12B / 12C			
	Low	1600	7500	1.1	57	72	1800	850	1000	1950	670	125	40	2700	D	12B / 12C			
	Very Low	1400	7000	0.9	56	71	1800	850	1000	2000	670	125	40	2850	D	12B / 12C			
750	Standard	2550	8600	1.2	60	75	1850	850	1000	2000	670	125	40	2800	E	13B / 13C			
	Low	1810	8600	1.0	59	74	1900	850	1000	2050	670	125	40	3000	E	13B / 13C			
	Very Low	1580	8000	0.9	57	72	1900	850	1000	2050	670	125	40	3100	E	13B / 13C			
800	Standard	2700	9000	1.2	61	76	1850	850	1000	2000	670	125	40	2900	E	13B / 13C			
	Low	1900	9000	1.0	59	74	1900	850	1000	2050	670	125	40	3100	E	13B / 13C			
	Very Low	1650	8400	0.9	57	72	1900	850	1000	2050	670	125	40	3200	E	13B / 13C			
1000	Standard	3100	11000	1.1	62	77	1950	1000	1100	2100	820	125	40	3300	F	13B / 13C			
	Low	2250	11000	0.9	60	75	1950	1000	1100	2100	820	125	40	3500	F	13B / 13C			
	Very Low	1900	10000	0.8	59	74	2000	1000	1100	2200	820	125	40	3800	F	13B / 13C			
1250	Standard	3600	13000	1.0	64	79	2000	1000	1100	2200	820	160	50	3900	G	14B / 14C			
	Low	2600	13000	0.9	62	77	2000	1000	1100	2250	820	160	50	4100	G	14B / 14C			
	Very Low	2200	12000	0.8	60	75	2050	1000	1100	2250	820	160	50	4550	G	14B / 14C			
1500	Standard	4030	15100	1.0	65	80	2050	1000	1100	2350	820	160	50	4800	H	14B / 14C			
	Low	2890	15100	0.8	63	78	2150	1000	1100	2400	820	160	50	5300	H	14B / 14C			
	Very Low	2450	13400	0.7	61	76	2150	1000	1100	2400	820	160	50	5800	H	14B / 14C			
1600	Standard	4200	16000	1.0	65	80	2050	1000	1100	2350	820	160	50	4800	H	14B / 14C			
	Low	3000	16000	0.8	63	78	2150	1000	1100	2400	820	160	50	5300	H	14B / 14C			
	Very Low	2550	14000	0.7	62	77	2150	1000	1100	2400	820	160	50	5800	H	14B / 14C			
2000	Standard	5000	18500	0.9	66	82	2200	1310	1310	2500	1070	200	70	5600	I	15B / 15C			
	Low	3500	18500	0.8	64	80	2200	1310	1310	2500	1070	200	70	6000	I	15B / 15C			
	Very Low	3000	17000	0.7	62	78	2250	1310	1310	2550	1070	200	70	7100	I	15B / 15C			
2500	Standard	5800	22500	0.8	67	83	2300	1310	1310	2650	1070	200	70	7000	J	15B / 15C			
	Low	4200	22500	0.7	65	81	2300	1310	1310	2600	1070	200	70	7400	J	15B / 15C			
	Very Low	3500	20000	0.6	64	80	2350	1310	1310	2750	1070	200	70	8000	J	15B / 15C			
3000	Standard	6490	26300	0.8	68	84	2350	1310	1310	2700	1070	200	70	8000	K	16B / 16C			
	Low	4820	26300	0.7	67	83	2400	1310	1310	2750	1070	200	70	8400	K	16B / 16C			
	Very Low	3960	23800	0.6	65	81	2450	1310	1310	2800	1070	200	70	8800	K	16B / 16C			
3150	Standard	6700	27500	0.8	69	85	2350	1310	1310	2700	1070	200	70	8000	K	16B / 16C			
	Low	5000	27500	0.7	67	83	2400	1310	1310	2750	1070	200	70	8400	K	16B / 16C			
	Very Low	4100	25000	0.6	65	81	2450	1310	1310	2800	1070	200	70	8800	K	16B / 16C			
3500	Standard	7130	29700	0.8	69	85	2400	1440	1440	2750	1200	200	70	8500	K	17B / 17C			
	Low	5390	29700	0.7	68	84	2450	1440	1440	2850	1200	200	70	9000	K	17B / 17C			
	Very Low	4390	27200	0.6	66	82	2550	1440	1440	2900	1200	200	70	9500	K	17B / 17C			
4000	Standard	7660	33000	0.7	70	86	2500	1440	1440	2850	1200	200	70	9500	K	17B / 17C			
	Low	5950	33000	0.6	68	84	2600	1440	1440	2950	1200	200	70	10000	K	17B / 17C			
	Very Low	4770	30500	0.6	66	83	2650	1440	1440	3150	1200	200	70	10500	K	17B / 17C			

STANDARD CHARACTERISTICS

International Standards	:	IEC 60076-11 ANSI C57.12.01
High Voltage Tappings	:	$\pm 2,5 \pm 5 \%$
Low Voltage	:	380V to 480V
Frequency	:	50Hz
Vector Group	:	Dyn or Yyn
Insulation Temperature Class	:	F (155°C) or H(180°C)
Winding Material	:	Aluminium
Installation Altitude	:	≤ 1000 mamsl
Maximum Ambient Temperature	:	40°C
Type of Cooling	:	AN

HIGH VOLTAGE COMPONENTS



Three-limbed Core

Cold-rolled grain-oriented ferro-silicon steel sheets with protective varnish coating

HV Terminals

With variable arrangements to permit optimum installation

HV Tappings

For off-circuit adaptation to the supply network

HV Windings

Consisting of vacuum cast, fibreglass reinforced aluminium or copper strip

Epoxy Resin Insulation

Makes the transformer maintenance-free, moisture-free, tropicalized, flame-resistant and self-extinguishing

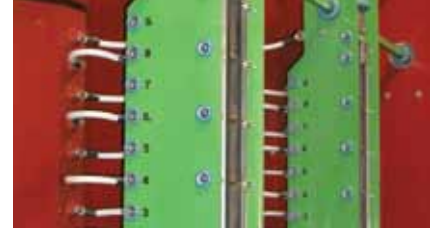
OPTIONAL ACCESSORIES



Temperature Measurement Devices



Switches



On-load Tapchangers



Vibration Dampeners



High Voltage Separable Connectors



Cooling Fans

LOW VOLTAGE COMPONENTS



Temperature Monitoring
Detectors in LV windings

LV Terminals
Variable arrangements on request

Resilient Supports
Provide insulation for core and windings against mechanical vibrations

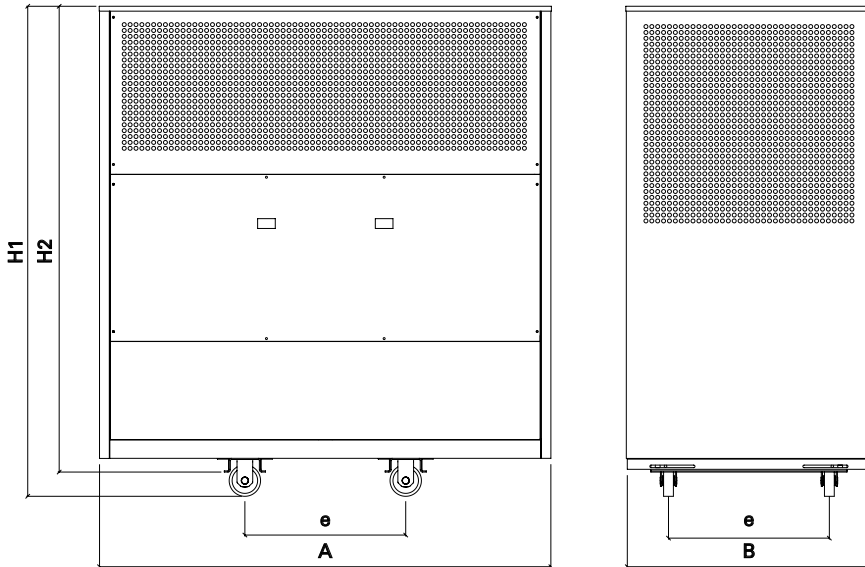
LV Windings
Epoxy prepreg-insulated aluminium or copper strip

INDOOR ENCLOSURES

ANSI/IEC IP21 TO IP33 NEMA TYPE 1 & TYPE 2

TMC enclosures for use indoors are ventilated and conform to ANSI/IEC Standard 60529:2004 (Degree of Protection IP21 up to IP33) as well as NEMA Standard 250:2014 (Type1 or Type 2). TMC transformers installed in TMC enclosures are rated in accordance with Annex DD of IEC

Standard 62271-202:2014 "HV/LV Prefabricated Substation". The core and coil assembly and removable enclosure panels are mounted on a hot dip galvanised base frame fitted with bi-directional rollers. All panels are electro-zinc coated, hot galvanized or stainless steel and epoxy powder coated.



IP21



IP23



IP31

DIMENSIONS IP21 TO IP33

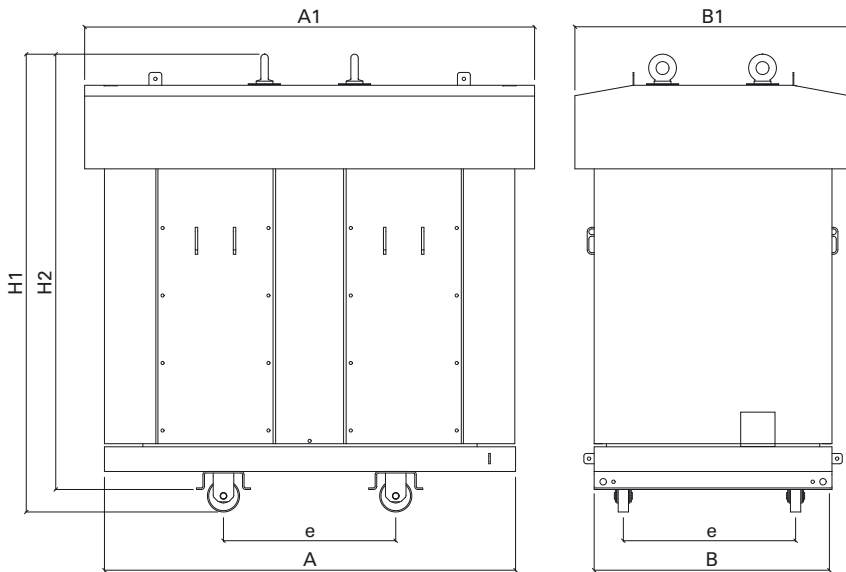
Encl. Type	A		B		H1		H2		e	Mass	
	mm	in	mm	in	mm	in	mm	in		kg	lbs
Nominal Voltage 12kV 17.5kV 24kV											
1B	1850	73	1250	50	1710	68	1610	64	See transformer tables	170	380
2B	1950	77	1300	52	2010	80	1910	76		210	470
3B	2050	81	1350	54	2260	89	2160	86		240	530
4B	2250	89	1400	56	2500	99	2360	93		310	690
5B	2500	99	1450	58	2850	113	2670	106		330	730
6B	2750	109	1550	62	3050	121	2870	113		390	860
7B	2900	115	1600	63	3150	125	3110	123		420	930
Nominal Voltage 36kV											
11B	2400	95	1550	62	1960	78	1860	74	See transformer tables	280	620
12B	2500	99	1600	63	2260	89	2120	84		300	670
13B	2600	103	1650	65	2460	97	2320	92		330	730
14B	2750	109	1700	67	2700	107	2520	100		370	820
15B	2950	117	1750	69	3050	121	2870	113		410	910
16B	3050	121	1800	71	3200	126	3160	125		450	1000
17B	3250	128	1850	73	3550	140	3510	139		490	1090

OUTDOOR ENCLOSURES

ANSI/IEC IP43 TO IP66 NEMA TYPE 3 & UP

TMC enclosures for outdoor use are supplied either ventilated or sealed and conform to ANSI/IEC Degree of Protection IP43 up to IP66 or NEMA Type 3 and up. TMC transformers installed in TMC enclosures are rated in accordance with Annex DD of IEC Standard 62271-202:2014 "HV/LV Prefabricated Substation".

These bespoke enclosures can be supplied in a variety of materials and finishes, with specific features as specified by the client. Substantial hot dip galvanised base structures support the enclosure. Panels are heavy gauge hot galvanised or stainless steel and powder coated with UV resistant epoxy or polyester.



IP43

DIMENSIONS IP43

Encl. Type	A		A1		B		B1		H1		H2		e	Mass		
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		kg	lbs	
Nominal Voltage 12kV 17.5kV 24kV																
1C	1850	73	2150	85	1450	58	1750	69	2010	80	1910	76	See transformer tables	570	1260	
2C	1950	77	2250	89	1500	60	1800	71	2210	88	2110	84		630	1390	
3C	2050	81	2350	93	1550	62	1850	73	2480	98	2380	94		680	1500	
4C	2250	89	2550	101	1600	63	1900	75	2700	107	2560	101		760	1680	
5C	2500	99	2800	111	1700	67	2000	79	3050	121	2870	113		860	1900	
6C	2750	109	3050	121	1800	71	2100	83	3250	128	3070	121		980	2170	
7C	2900	115	3200	126	1900	75	2200	87	3430	136	3390	134		1090	2410	
Nominal Voltage 36kV																
11C	2400	95	2700	107	1750	69	2050	81	2260	89	2160	86	See transformer tables	720	1590	
12C	2500	99	2800	111	1800	71	2100	83	2480	98	2340	93		790	1750	
13C	2600	103	2900	115	1850	73	2150	85	2680	106	2540	100		850	1880	
14C	2750	109	3050	121	1900	75	2200	87	2920	115	2740	108		940	2080	
15C	2950	117	3250	128	1950	77	2250	89	3250	128	3070	121		1030	2280	
16C	3050	121	3350	132	2000	79	2300	91	3400	134	3360	133		1130	2500	
17C	3250	128	3550	140	2050	81	2350	93	3750	148	3710	147		1250	2760	



IP54



IP66

TMC has a comprehensive library of previously conducted and independently audited special tests. Copies of the test certificates are available on request.



WIND



MEDICAL



MINING



SOLAR



INDUSTRY

RANGE OF PRODUCTS

- Vacuum Cast Resin Transformers
- Dry Type Transformers
- Rectifier Transformers
- Photovoltaic Transformers
- Marine Transformers
- Submersible Transformers
- Neutral Earthing Transformers
- Motorstarting Transformers
- Silicone Free Transformers
- Water Cooled Transformers
- Aircored and Ironcored Reactors
- Shunt Reactors
- Motorstarting Reactors



MARINE



TRACTION



INFRASTRUCTURE



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