TMC
TRANSFORMERS
ESTABLISHED 1936

UPDATED FOR
NEW REGULATIONS
EU 548/2014
EN 50588-1

CAST RESIN TRANSFORMERS

Certified System
Quality
ISO 9001
SAI GLOBAL

SYSTEM CERTIFICATION
ISO 9001:2008
SGS

Temperature monitoring
detectors in the LV winding.

LV terminals
with variable arrangements on request.

Three-limb core
of cold-rolled, grain-oriented ferro-silicon steel sheets with protective varnish coating.

Resilient supports
to provide insulation for core and windings against mechanical vibrations.

HV terminals
with variable arrangement to permit optimum installation.

HV tapping
for off-circuit adaptation to the supply network

LV winding (inside)
of epoxy prepreg-insulated aluminium or copper strip.

HV winding
consisting of vacuum cast, fibreglass reinforced aluminium or copper strip.

Epoxy resin insulation
makes the transformer maintenance-free, moisture-free, tropicalised, flame-resistant and self-extinguishing.

Accessories
The following accessories may also be requested:

- Temperature measurement devices
- Cooling Fans
- Medium Voltage plug-in connectors
- Vibration Dampeners
- On-load Tapchanger

GENERAL INFORMATION

1000kVA IP21
(Indoor Duty)

1000kVA IP23
(Indoor Duty)

2000kVA IP43
(Outdoor Duty)

The European Commission issued Regulation 548/2014 on 21 May 2014 as a means of implementing Directive 2009/125/EC of the European Parliament with regard to small, medium and large power transformers. This Regulation becomes mandatory by European law on 1 July 2015.

Regulation 548/2014 covers a very wide range of power and distribution transformers, both oil cooled and dry type, including the largest power ratings available.

TMC has released this publication which relates to the design, manufacture, testing and marketing of its range of vacuum cast resin, dry type distribution transformers.

The units described herein are in full compliance with EU Regulation 548/2014 and the ensuing European Standard EN50588-1.

This range of cast resin distribution transformers is generally specified as below.

Rated Power:	50kVA to 3150kVA
High Voltage:	up to 36kV class
Low Voltage:	400V to 433V
Frequency:	50 hertz

Losses shown as Tier 1 must not be exceeded for transformers supplied or installed from 1 July 2015.

On 1 July 2021, losses shown as Tier 2 will take effect and supercede Tier 1, which will become obsolete.

In both cases the losses measured on test must have a zero positive tolerance.

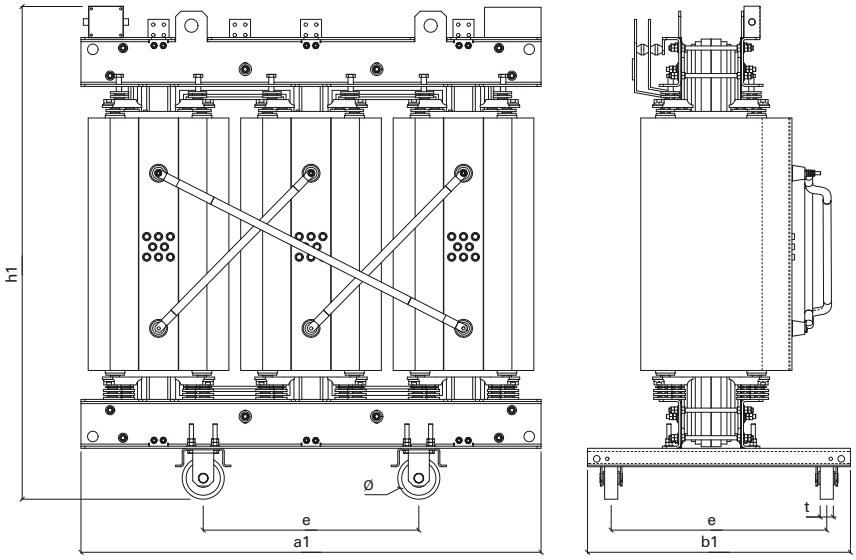
1500kVA IP43 Stainless Steel
(Outdoor Duty)

3000kVA IP54
(Mining Shovel Duty)

2000kVA IP66 with Switchgear
(Underground Duty)

INSULATION CLASS 12kV - 17,5kV - 24kV

EU Regulation 548/2014 European Standard EN 50588-1 Ucc 6% Loss Tolerances +0%

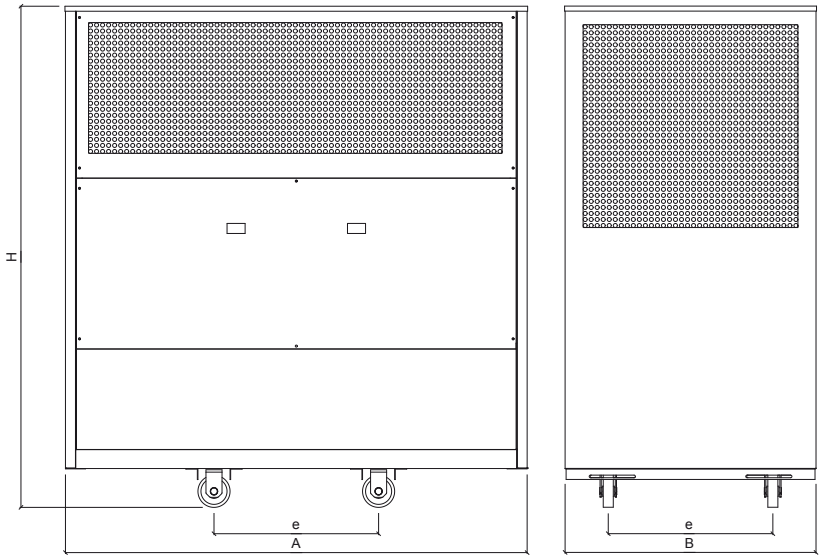


Rated	Performance Class		Losses												
Power	EU548	EN50588-1	Po	Pk	Io	LwA	a1	b1	h1	e	Ø	t	Mass	Term	Encl
kVA			W	W	%	dB(A)	mm	mm	mm	mm	mm	mm	Kg	Type	Type
50	Tier 1	Ao Bk	200	1700	2,4	49	1000	550	1100	520	125	40	550	A	1
	–	Ao Ak	200	1500	2,4	49	1000	550	1100	520	125	40	550	A	1
	Tier 2	AAoAk	180	1500	2,2	48	1000	550	1100	520	125	40	550	A	1
100	Tier 1	Ao Bk	280	2050	2,2	51	1200	600	1300	520	125	40	800	A	1
	–	Ao Ak	280	1800	2,2	51	1200	600	1300	520	125	40	800	A	1
	Tier 2	AAoAk	252	1800	2,0	50	1200	600	1300	520	125	40	800	A	1
150	Tier 1	Ao Bk	380	2750	1,9	54	1300	600	1400	520	125	40	950	A	1
	–	Ao Ak	380	2460	1,9	54	1300	600	1400	520	125	40	950	A	1
	Tier 2	AAoAk	340	2460	1,8	53	1300	600	1400	520	125	40	950	A	1
160	Tier 1	Ao Bk	400	2900	1,9	54	1300	600	1400	520	125	40	1000	A	1
	–	Ao Ak	400	2600	1,9	54	1300	600	1400	520	125	40	1000	A	1
	Tier 2	AAoAk	360	2600	1,8	53	1300	600	1400	520	125	40	1000	A	1
200	Tier 1	Ao Bk	450	3300	1,7	55	1350	600	1400	520	125	40	1200	B	1
	–	Ao Ak	450	2950	1,7	55	1350	600	1400	520	125	40	1200	B	1
	Tier 2	AAoAk	400	2950	1,6	54	1350	600	1400	520	125	40	1200	B	1
250	Tier 1	Ao Bk	520	3800	1,5	57	1350	600	1450	520	125	40	1300	B	1
	–	Ao Ak	520	3400	1,5	57	1350	600	1450	520	125	40	1300	B	1
	Tier 2	AAoAk	468	3400	1,4	56	1350	600	1450	520	125	40	1300	B	1
315	Tier 1	Ao Bk	610	4530	1,4	58	1400	750	1500	670	125	40	1500	B	1
	–	Ao Ak	610	3870	1,4	58	1400	750	1500	670	125	40	1500	B	1
	Tier 2	AAoAk	550	3870	1,3	57	1400	750	1500	670	125	40	1500	B	1
400	Tier 1	Ao Bk	750	5500	1,3	60	1450	750	1600	670	125	40	1800	B	2
	–	Ao Ak	750	4500	1,3	60	1450	750	1600	670	125	40	1800	B	2
	Tier 2	AAoAk	675	4500	1,2	59	1450	750	1600	670	125	40	1800	B	2
500	Tier 1	Ao Bk	900	6410	1,2	61	1500	750	1650	670	125	40	2000	C	2
	–	Ao Ak	900	5630	1,2	61	1500	750	1650	670	125	40	2000	C	2
	Tier 2	AAoAk	810	5630	1,1	60	1500	750	1650	670	125	40	2000	C	2
630	Tier 1	Ao Bk	1100	7600	1,2	62	1550	850	1800	670	125	40	2200	D	3
	–	Ao Ak	1100	7100	1,2	62	1550	850	1800	670	125	40	2200	D	3
	Tier 2	AAoAk	990	7100	1,1	61	1550	850	1800	670	125	40	2200	D	3

INSULATION CLASS 12kV - 17,5kV - 24kV

EU Regulation 548/2014 European Standard EN 50588-1 Ucc 6% Loss Tolerances +0%

ENCLOSURES IP 21 – IP23 – IP31

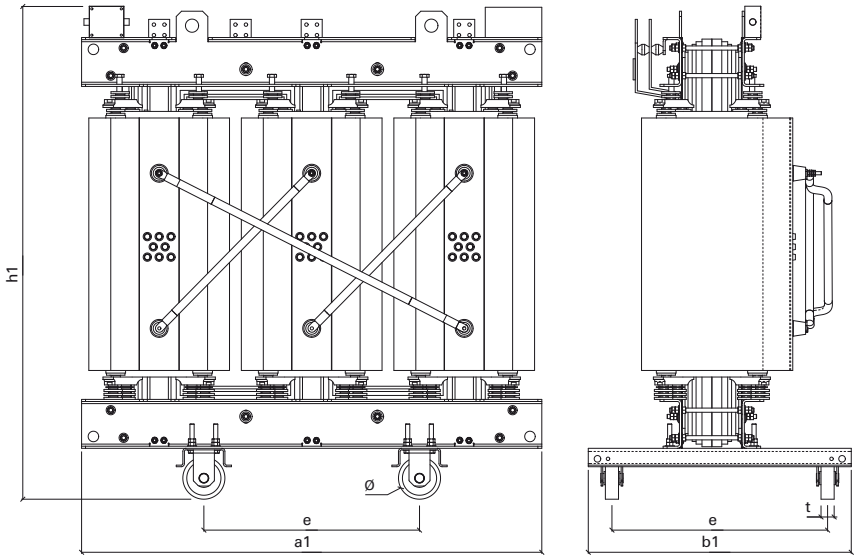


Enclosure Type	A mm	B mm	H mm	e mm	Mass Kg
	Insulation Class 12 - 17,5 - 24 kV				
1	1850	1100	1560	See transformer tables	150
2	1900	1100	1760		160
3	2050	1150	1960		180
4	2300	1250	2500		230
5	2500	1310	2650		250
6	2750	1400	2850		320
	Insulation Class 36 kV				
7	2400	1400	1960	See transformer tables	260
8	2600	1500	2500		300
9	2800	1500	2650		340
10	3000	1600	3000		400
11	3300	1700	3300		460

Rated Power kVA	Performance Class EU548	Performance Class EN50588-1	Losses Po W	Losses Pk W	Io %	LwA dB(A)	a1 mm	b1 mm	h1 mm	e mm	Ø mm	t mm	Mass Kg	Term Type	Encl Type
750	Tier 1	Ao Ak	1240	7730	1,1	63	1600	850	1850	670	125	40	2500	E	3
	Tier 2	AAoAk	1110	7730	1,0	62	1600	850	1850	670	125	40	2500	E	3
800	Tier 1	Ao Ak	1300	8000	1,1	64	1600	850	1900	670	125	40	2600	E	3
	Tier 2	AAoAk	1170	8000	1,0	63	1600	850	1900	670	125	40	2600	E	3
1000	Tier 1	Ao Ak	1550	9000	1,0	65	1750	1000	2000	820	125	40	3100	F	4
	Tier 2	AAoAk	1395	9000	0,9	64	1750	1000	2000	820	125	40	3100	F	4
1250	Tier 1	Ao Ak	1800	11000	1,0	67	1800	1000	2100	820	160	50	3700	G	4
	Tier 2	AAoAk	1620	11000	0,9	66	1800	1000	2100	820	160	50	3700	G	4
1500	Tier 1	Ao Ak	2080	12420	0,9	68	1850	1000	2250	820	160	50	4200	H	4
	Tier 2	AAoAk	1870	12420	0,8	67	1850	1000	2250	820	160	50	4200	H	4
1600	Tier 1	Ao Ak	2200	13000	0,9	68	1850	1000	2250	820	160	50	4400	H	4
	Tier 2	AAoAk	1980	13000	0,8	67	1850	1000	2250	820	160	50	4400	H	4
2000	Tier 1	Ao Ak	2600	16000	0,9	70	1900	1310	2450	1070	200	70	5200	I	5
	Tier 2	AAoAk	2340	16000	0,8	69	1900	1310	2450	1070	200	70	5200	I	5
2500	Tier 1	Ao Ak	3100	19000	0,8	71	2050	1310	2550	1070	200	70	6500	J	5
	Tier 2	AAoAk	2790	19000	0,7	70	2050	1310	2550	1070	200	70	6500	J	5
3000	Tier 1	Ao Ak	3630	21300	0,7	73	2350	1310	2600	1070	200	70	7400	K	6
	Tier 2	AAoAk	3270	21300	0,6	72	2350	1310	2600	1070	200	70	7400	K	6
3150	Tier 1	Ao Ak	3800	22000	0,7	74	2350	1310	2600	1070	200	70	7600	K	6
	Tier 2	AAoAk	3420	22000	0,6	73	2350	1310	2600	1070	200	70	7600	K	6

INSULATION CLASS 36kV

EU Regulation 548/2014 European Standard EN 50588-1 Ucc 6,5% Loss Tolerance +0%



Rated Power kVA	Performance Class EU548	EN50588-1	Losses Po W	Pk W	Io %	LwA dB(A)	a1 mm	b1 mm	h1 mm	e mm	Ø mm	t mm	Mass Kg	Term Type	Encl Type
50	Tier 1	Ao Bk	230	1870	2,5	49	1500	600	1600	520	125	40	1100	A	7
	–	Ao Ak	230	1650	2,5	49	1500	600	1600	520	125	40	1100	A	7
	Tier 2	AAoAk	200	1650	2,3	48	1500	600	1600	520	125	40	1100	A	7
100	Tier 1	Ao Bk	320	2250	2,3	51	1550	600	1600	520	125	40	1300	A	7
	–	Ao Ak	320	1980	2,3	51	1550	600	1600	520	125	40	1300	A	7
	Tier 2	AAoAk	280	1980	2,1	50	1500	600	1600	520	125	40	1300	A	7
150	Tier 1	Ao Bk	430	3020	2,0	54	1700	600	1600	520	125	40	1500	A	7
	–	Ao Ak	430	2700	2,0	54	1700	600	1600	520	125	40	1500	A	7
	Tier 2	AAoAk	390	2700	1,9	53	1700	600	1600	520	125	40	1500	A	7
160	Tier 1	Ao Bk	460	3190	2,0	54	1700	600	1600	520	125	40	1600	A	7
	–	Ao Ak	460	2860	2,0	54	1700	600	1600	520	125	40	1600	A	7
	Tier 2	AAoAk	410	2860	1,9	53	1700	600	1600	520	125	40	1600	A	7
200	Tier 1	Ao Bk	510	3630	1,8	55	1750	600	1700	520	125	40	1800	B	7
	–	Ao Ak	510	3240	1,8	55	1750	600	1700	520	125	40	1800	B	7
	Tier 2	AAoAk	460	3240	1,7	54	1750	600	1700	520	125	40	1800	B	7
250	Tier 1	Ao Bk	590	4180	1,6	57	1750	600	1800	520	125	40	2000	B	7
	–	Ao Ak	590	3740	1,6	57	1750	600	1800	520	125	40	2000	B	7
	Tier 2	AAoAk	530	3740	1,5	56	1750	600	1800	520	125	40	2000	B	7
315	Tier 1	Ao Bk	700	4980	1,5	58	1800	750	1900	670	125	40	2400	B	8
	–	Ao Ak	700	4250	1,5	58	1800	750	1900	670	125	40	2400	B	8
	Tier 2	AAoAk	630	4250	1,4	57	1800	750	1900	670	125	40	2400	B	8
400	Tier 1	Ao Bk	860	6050	1,4	60	1800	750	2000	670	125	40	2600	B	8
	–	Ao Ak	860	4950	1,4	60	1800	750	2000	670	125	40	2600	B	8
	Tier 2	AAoAk	770	4950	1,3	59	1800	750	2000	670	125	40	2600	B	8
500	Tier 1	Ao Bk	1030	7050	1,3	61	1850	750	2050	670	125	40	2900	C	8
	–	Ao Ak	1030	6190	1,3	61	1850	750	2050	670	125	40	2900	C	8
	Tier 2	AAoAk	930	6190	1,2	60	1850	750	2050	670	125	40	2900	C	8
630	Tier 1	Ao Bk	1260	8360	1,3	62	1900	850	2100	670	125	40	3200	D	8
	–	Ao Ak	1260	7810	1,3	62	1900	850	2100	670	125	40	3200	D	8
	Tier 2	AAoAk	1130	7810	1,2	61	1900	850	2100	670	125	40	3200	D	8

INSULATION CLASS 36kV

EU Regulation 548/2014 European Standard EN 50588-1 Ucc 6,5% Loss Tolerance +0%

TERMINALS

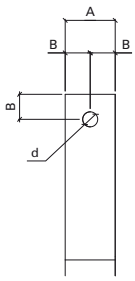


Fig.1

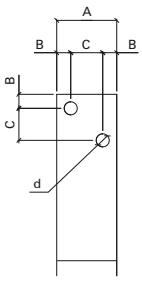


Fig.2

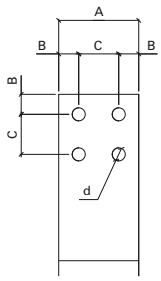


Fig.3

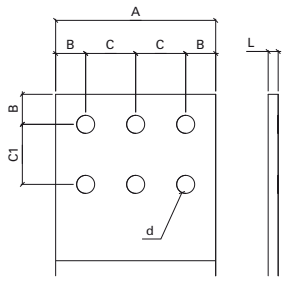


Fig.4

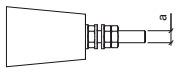


Fig.5

LV Terminal Dimension		A mm	L mm	B mm	C mm	C1 mm	d mm
Term Type	Figure	**LV TERMINALS**					
A	1	30	3	15	-	-	13
B	1	50	5	25	-	-	15
C	2	60	6	14	32	-	13
D	2	60	8	14	32	-	13
E	3	80	8	20	40	-	13
F	3	100	8	25	50	-	15
G	3	120	10	30	60	-	18
H	3	120	12	30	60	-	18
I	4	160	10	30	50	60	18
J	4	160	14	30	50	60	18
K	4	160	20	30	50	60	18

HV TERMINALS

All HV terminals per Fig. 5 with thread dimension M12

Rated Power kVA	Performance Class EU548	EN50588-1	Losses Po W	Pk W	Io %	LwA dB(A)	a1 mm	b1 mm	h1 mm	e mm	Ø mm	t mm	Mass Kg	Term Type	Encl Type
750	Tier 1	Ao Ak	1420	8500	1,2	63	1900	850	2200	670	125	40	3600	E	8
	Tier 2	AAoAk	1270	8500	1,1	62	1900	850	2200	670	125	40	3600	E	8
800	Tier 1	Ao Ak	1490	8800	1,2	64	1900	850	2250	670	125	40	3800	E	8
	Tier 2	AAoAk	1340	8800	1,1	63	1900	850	2250	670	125	40	3800	E	8
1000	Tier 1	Ao Ak	1780	9900	1,1	65	2000	1000	2300	820	125	40	4300	F	9
	Tier 2	AAoAk	1600	9900	1,0	64	2000	1000	2300	820	125	40	4300	F	9
1250	Tier 1	Ao Ak	2070	12100	1,1	67	2100	1000	2450	820	160	50	5000	G	9
	Tier 2	AAoAk	1860	12100	1,0	66	2100	1000	2450	820	160	50	5000	G	9
1500	Tier 1	Ao Ak	2390	13660	1,0	68	2250	1000	2500	820	160	50	6100	H	10
	Tier 2	AAoAk	2150	13660	0,9	67	2250	1000	2500	820	160	50	6100	H	10
1600	Tier 1	Ao Ak	2530	14300	1,0	68	2250	1000	2500	820	160	50	6400	H	10
	Tier 2	AAoAk	2270	14300	0,9	67	2250	1000	2500	820	160	50	6400	H	10
2000	Tier 1	Ao Ak	2990	17600	1,0	70	2300	1310	2700	1070	200	70	7700	I	10
	Tier 2	AAoAk	2690	17600	0,9	69	2300	1310	2700	1070	200	70	7700	I	10
2500	Tier 1	Ao Ak	3560	20900	0,9	71	2400	1310	2750	1070	200	70	8600	J	10
	Tier 2	AAoAk	3200	20900	0,8	70	2400	1310	2750	1070	200	70	8600	J	10
3000	Tier 1	Ao Ak	4170	23430	0,8	73	2500	1310	2800	1070	200	70	9200	K	11
	Tier 2	AAoAk	3760	23430	0,7	72	2500	1310	2800	1070	200	70	9200	K	11
3150	Tier 1	Ao Ak	4370	24200	0,8	74	2600	1310	2800	1070	200	70	9400	K	11
	Tier 2	AAoAk	3930	24200	0,7	73	2600	1310	2800	1070	200	70	9400	K	11

Transformers Manufacturing Company España S.A.U.

Poligono Bildosola, Parcela B1
48142 Artea (Bizkaia)
Spain

Telephone: +34 94 631 2280
Facsimile: +34 94 631 4524
e-mail: ventas@tmc.com.au

Transformers Manufacturing Company Pty Ltd

19 Ewing Street
Brunswick Victoria 3056
Australia

Telephone: +61 3 9356 8700
Facsimile: +61 3 9356 8701
e-mail: sales@tmc.com.au

TMC range of products

- Cast Resin Transformers
- Dry Type Transformers
- Oil Cooled Transformers
- Water Cooled Transformers
- Reactors

Typical field applications

- Power and Distribution
- Rectifier
- Furnace
- Industrial
- Mining

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