



35kV Oil-immersed Station Service Transformer

(1) 35kV Class 630kVA~31500KVA Three-phase Double-winding Power Transformer with Off-circuit Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)
	HV (kV)	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	
630	35	$\pm 2\times 2.5\pm 5$	3.15 6.3 10.5	Yd11	0.51	6.19	0.6	6.19	0.72	6.55	6.5
800					0.61	7.41	0.72	7.41	0.86	7.83	
1000					0.72	8.75	0.85	8.75	1.02	9.26	
1250					0.85	10.35	1	10.35	1.2	10.95	
1600					1.02	12.45	1.2	12.4-5	1.44	13.18	
2000					1.21	14.72	1.42	14.72	1.71	15.58	
2500					1.43	17.41	1.68	17.41	2.02	18.41	
3150	35 ~ 38.5	$\pm 2\times 2.5\pm 5$	3.15 6.3 10.5		1.7	20.7	2.0	20.7	2.4	21.9	7.0
4000					2.0	24.6	2.3	24.6	2.9	25.9	
5000					2.4	28.2	2.8	28.2	3.5	29.7	
6300					2.9	31.5	3.4	31.5	4.2	33.3	
8000	35 ~ 38.5	$\pm 2\times 2.5$	3.15 3.3 6.3 6.6 10.5	YNd11	4.0	34.6	4.7	34.6	5.8	36.5	8.0
10000					4.8	40.8	5.7	40.8	7.0	43.0	
12500					5.5	48.4	6.5	48.4	8.0	51.1	
16000					6.7	59.2	7.9	59.2	9.7	62.5	
20000					7.9	71.6	9.4	71.6	11.5	75.5	
25000					9.4	84.6	11.1	84.6	13.6	89.3	10.0
31500					11.1	100.8	13.1	100.8	16.2	106.4	

Note: 1. For transformers with low voltage of 10.5kv, products with vector group Dyn11 can also be provided
2. Transformers with various special parameters and performance can be manufactured according to customer requirements.

(2) 35kV Class 2000kVA~31500KVA Three-phase Double-winding Power Transformer with On-load Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)
	HV (kV)	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	
2000	35	±3×2.5	6.3 10.5	Yd11	1.28	15.79	1.49	15.79	1.85	16.72	6.5
2500					1.51	18.67	1.77	18.67	2.19	19.76	
3150	35 ~ 38.5	±3×2.5	6.3 10.5		1.8	22.2	2.1	22.2	2.6	23.5	7.0
4000					2.1	26.2	2.5	26.2	3.1	27.6	
5000					2.6	30.8	3.0	30.8	3.7	32.5	
6300					3.1	33.0	3.7	33.0	4.5	34.9	
8000	35 ~ 38.5	±3×2.5	6.3 6.6 10.5	YNd11	4.3	36.5	5.1	36.5	6.3	38.6	8.0
10000					5.1	43.2	6.0	43.2	7.4	45.6	
12500					6.0	51.1	7.1	51.1	8.7	54.0	
16000					7.2	63.3	8.5	63.3	10.5	66.8	
20000					8.5	74.4	10.1	74.4	12.4	78.6	
25000					10.1	88.0	11.9	88.0	14.6	92.9	10.0
31500					12.0	104.4	14.2	104.4	17.4	110.2	

Note: 1. For transformers with low voltage of 10.5kV, products with vector group Dyn11 can also be provided
2. Transformers with various special parameters and performance can be manufactured according to customer requirements.

66kV Oil-immersed Station Service Transformer

(1) 66kV Class 630kVA~63000KVA Three-phase Double-Winding Power Transformer with Off-circuit Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range		Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)
	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	
630	63±5% 66±5% 69±5%	6.3 6.6 10.5	Yd11	0.66	6.19	0.78	6.19	0.96	6.55	8
800				0.79	7.41	0.93	7.41	1.14	7.83	
1000				0.93	8.75	1.1	8.75	1.35	9.26	
1250				1.1	10.35	1.3	10.35	1.6	10.95	
1600				1.32	12.45	1.56	12.45	1.93	13.18	
2000				1.56	14.72	1.85	14.72	2.28	15.58	
2500				1.85	17.41	2.19	17.41	2.69	18.41	
3150				2.2	20.7	2.6	20.7	3.2	21.9	
4000			2.6	24.6	3.1	24.6	3.8	25.9		
5000			3.1	27.6	3.7	27.6	4.6	29.2	9	
6300	4.0	30.8	4.7	30.8	5.8	32.5				
8000	4.9	36.5	5.8	36.5	7.1	38.5				
10000	5.8	43.0	6.8	43.0	8.4	45.4				
12500	6.8	51.1	8.1	51.1	9.9	54.0				
16000	8.3	62.8	9.8	62.8	12.0	66.3				
20000	9.7	76.1	11.4	76.1	14.1	80.4				
25000	11.4	90.0	13.5	90.0	16.1	95.0				
31500	13.5	108.0	16.0	108.0	19.7	114.0				
40000	16.2	126.9	19.1	126.9	23.5	134.0				
50000	19.4	150.3	22.9	150.3	28.2	158.7				
63000	22.9	178.2	27.0	178.2	33.3	188.1				

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.

(2) 66kV Class 6300kVA~63000KVA Three-phase Double-winding Power Transformer with On-load Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range		Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)
	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	
6300	63±8×1.25% 66±8×1.25% 69±8×1.25%	6.3 6.6 10.5	YNd11	4.4	30.8	5.2	30.8	6.4	32.5	9
8000				5.3	36.5	6.2	36.5	7.7	38.5	
10000				6.2	43.0	7.3	43	9	45.4	
12500				7.4	51.1	8.7	51.1	10.7	54	
16000				8.9	62.8	10.5	62.8	12.9	66.3	
20000				10.6	76.1	12.5	76.1	15.4	80.4	
25000				12.5	90	14.8	90	18.2	95	
31500				14.8	108	17.5	108	21.5	114	
40000				17.7	126.9	20.9	126.9	25.8	134	
50000				20.9	150.3	24.7	150.3	30.4	158.7	
63000				24.7	178.2	29.2	178.2	35.9	188.1	

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.



110kV Oil-immersed Station Service Transformer

(1) 110kV Class 6300kVA~180000KVA Three-phase Double-winding Power Transformer with Off-circuit Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range		Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)
	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	
6300	110±2×2.5% 115±2×2.5% 121±2×2.5%	6.3 6.6 10.5	YNd11	4.1	32	4.8	32	5.9	33	10.5
8000				4.9	38	5.8	38	7.1	40	
10000				5.8	45	6.8	45	8.4	48	
12500				6.8	53	8.1	53	9.9	56	
16000				8.3	65.7	9.8	65.7	12	69	
20000				9.7	79	11.4	79	14.1	84	
25000				11.4	94	13.5	94	16.6	99	
31500				13.5	111	16	111	19.7	117	
40000				16.2	133	19.1	133	23.5	141	
50000				19.4	158	22.9	158	28.2	166	
63000				22.9	187	27	187	33.3	198	
75000	13.8 15.75 18 21			26	212	30.7	212	37.8	224	12 ~ 14
90000				29.9	245	35.4	245	43.5	258	
120000				37.3	303	44.1	303	54.2	320	
150000				44.1	359	52.1	359	64.1	379	
180000				49.5	411	58.5	411	72.0	434	

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.

(2) 110kV Class 6300kVA~63000KVA Three-phase Three-winding Power Transformer with Off-circuit Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance	
	HV tapping range(kV)	MV (kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	Boost	Decompression
6300	110±2×2.5% 115±2×2.5% 121±2×2.5%	36 37 38.5	6.3 6.6 10.5 21	YN yn0d11	4.9	40	5.8	40	7.1	42	HV-MV 17.5 ~ 18.5	HV-MV 10.5 HV-LV 17.5 ~ 18.5 MV-LV 6.5
8000					5.8	48	6.9	48	8.5	50		
10000					6.9	56	8.2	56	10.1	59		
12500					8.1	67	9.6	67	11.8	70		
16000					9.8	81	11.6	81	14.3	86	HV-LV 10.5	
20000					11.6	95	13.7	95	16.9	101		
25000					13.5	113	16	113	19.7	120		
31500					16.2	134	19.1	134	23.5	142	MV-LV 6.5	
40000					19.1	161	22.6	161	27.8	170		
50000					22.9	192	27	192	33.3	202		
63000					27.1	230	32	230	39.4	243		

Note: 1. The winding capacity of HV, MV and LV is (100/100/100) %.

2. Transformers with various special parameters and performance can be manufactured according to customer requirements.

(3) 110kV 6300kVA~63000kVA Three-phase Double-winding Power Transformer with On-load Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range		Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)
	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	
6300	110±8 ×1.25%	6.3 6.6 10.5 21	YNd11	4.4	32	5.2	32	6.4	33	10.5
8000				5.3	38	6.2	38	7.7	40	
10000				6.2	45	7.3	45	9	48	
12500				7.4	53	8.7	53	10.7	56	
16000				8.9	66	10.5	66	12.9	69	
20000				10.6	79	12.5	79	15.4	84	
25000				12.5	94	14.8	94	18.2	99	
31500				14.9	111	17.6	111	21.6	117	
40000				17.8	140	21	140	25.8	148	
50000				21	175	24.8	175	30.6	184	
63000				25	209	29.5	209	36.3	220	

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.

(4) 110kV 6300kVA~63000kVA Three-phase Three-winding Power Transformer with On-load Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance
	HV tapping range(kV)	MV (kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	
6300	110±8 ×1.25%	36 37 38.5	6.3 6.6 10.5 21	YNyn0d11	5.3	40	6.2	40	7.7	42	HV-MV 10.5 HV-LV 17.5 ~ 18.5 MV-LV 6.5
8000					6.3	48	7.5	48	9.2	50	
10000					7.5	56	8.8	56	10.9	59	
12500					8.9	67	10.5	67	12.9	70	
16000					10.6	81	12.5	81	15.4	86	
20000					12.5	95	14.8	95	18.2	101	
25000					14.9	113	17.6	113	21.6	120	
31500					17.7	134	20.9	134	25.7	142	
40000					21.2	161	25	161	30.8	170	
50000					25	192	29.6	192	36.4	202	
63000					29.8	230	35.2	230	43.3	243	

Note: 1. The winding capacity of HV, MV and LV is (100/100/100) %.

2. Transformers with various special parameters and performance can be manufactured according to customer requirements.

(5) 110kV 6300kVA~63000kVA Three-phase Double-winding Power Transformer with Off-circuit Tap-changer with 35kV LV voltage

Rated capacity (kVA)	Voltage combination and tapping range		Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)
	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	
6300	110±2×2.5% 115±2×2.5% 121±2×2.5%	36 37 38.5	YNd11	4.4	33	5.2	33	6.4	35	10.5
8000				5.3	40	6.2	40	7.7	42	
10000				6.2	47	7.3	47	9	49	
12500				7.2	56	8.5	56	10.5	59	
16000				8.6	68	10.1	68	12.5	72	
20000				10.2	85	12	85	14.8	89	
25000				12.1	99	14.2	99	17.5	105	
31500				14.3	120	16.8	120	20.7	126	
40000				16.9	140	20	140	24.6	147	
50000				20.3	174	24	174	29.5	183	
63000				24	209	28.3	209	34.9	220	

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.



220kV Oil-immersed Power Transformer

(1) 220kV 31500kVA~420000kVA Three-phase, Double-winding Power Transformer with Off-circuit Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range		Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)
	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	
31500	220±2×2.5% 242±2×2.5%	6.3 6.6 10.5	YNd11	15	115	18	115	22	122	12 ~ 14
40000				18	134	21	134	26	142	
50000				21	161	25	161	31	170	
63000				25	188	30	188	37	199	
75000		10.5 13.8		29	213	34	213	42	225	
90000				34	246	40	246	49	259	
120000				41	304	49	304	60	321	
150000				49	360	58	360	71	380	
160000		10.5 13.8 15.75 18 20		51	378	60	378	74	399	
180000				56	413	66	413	82	436	
240000				70	484	83	484	102	511	
300000				83	577	98	577	121	609	
360000		15.75 18 20		95	662	112	662	138	698	
370000				97	675	114	675	141	713	
400000				103	716	122	716	150	755	
420000				106	742	125	742	154	783	

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.

(2) 220kV 31500kVA~300000kVA Three-phase, Three-winding Power Transformer with Off-circuit Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance	
	HV tapping range(kV)	MV (kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	Boost	Decompression
31500	220±2×2.5% 230±2×2.5% 242±2×2.5%	69 115 121	6.3	YN yn0d11	18	138	21	138	26	145	HV~MV 22 ~ 24	HV~MV 12 ~ 14 HV~LV 22 ~ 24 MV~LV 7 ~ 9
40000			6.6		21	165	25	165	30	174		
50000			10.5		24	194	29	194	35	205		
63000			21		29	231	34	231	42	244		
90000			36		37	37	300	44	300	54		
120000			38.5		46	369	55	369	67	390	HV~LV 12 ~ 14	
150000			10.5		55	438	65	438	80	463	MV~LV 7 ~ 9	
180000			13.8		62	500	73	500	90	527		
240000			21		72	616	91	616	112	650		
300000			36		91	726	108	726	133	767		

Note: 1.The capacity load loss in the table is (100/100/100)%, for step-up type is (100/50/100)%; for step-down type can be (100/100/50)% or (100/50/100)%
2.Transformers with various special parameters and performance can be manufactured according to customer requirements.

(3) 220kV 31500kVA~240000kVA Three-phase Double-winding Power Transformer with Off-circuit Tap-changer(LV 66kV)

Rated capacity (kVA)	Voltage combination and tapping range		Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)
	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	
31500	220±2×2.5% 230±2×2.5%	63 66 69	YNd11	17	129	20	129	24	136	12 ~ 14
40000				20	150	23	150	29	159	
50000				23	180	27	180	34	190	
63000				28	211	33	211	40	222	
90000				36	275	43	275	53	291	
120000				45	330	53	330	65	349	
150000				53	387	63	387	78	409	
180000				61	438	72	438	88	463	
240000				75	543	88	543	109	573	

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.

(4) 220kV 31500kVA~240000kVA Three-phase Double-winding Power Transformer with On-load Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range		Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)	
	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)		
31500	220±8×1.25%	6.3	YNd11	17	115	20	115	24	122	12 ~ 14	
40000		6.6		20	134	23	134	29	142		
50000		10.5		24	161	28	161	34	170		
63000		21		28	188	33	188	40	199		
90000		36		35	246	42	246	51	259		
120000		37		43	304	51	304	63	321		
150000		38.5		51	360	60	360	74	380		
180000		230±8×1.25%		10.5	59	413	70	413	86		436
120000				21	45	303	53	303	65		320
150000				36	53	355	62	355	77		374
180000				37	62	406	73	406	90		428
240000				38.5	77	504	91	504	112		532
	66										
	69										

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.

(5) 220kV 31500kVA~240000kVA Three-phase Three-winding Power Transformer with On-load Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Capacity assignment (%)	Short-circuit impedance (%)
	HV tapping range(kV)	MV (kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)		
31500	220±8×1.25% 230±8×1.25%	69 115 121	6.3	YN yn0d11	19	138	23	138	28	145	100/100/100 100/50/100 100/100/50	HV-MV 12 ~ 14 HV-LV 22 ~ 24 MV-LV 7 ~ 9
40000			23		165	27	165	33	174			
50000			26		194	31	194	38	205			
63000			31		231	36	231	45	244			
90000			40		300	47	300	58	316			
120000			51		369	60	369	74	390			
150000			59		438	70	438	86	463			
180000			68		538	81	538	99	568			
240000			85		667	100	667	123	704			

Note: 1. The data in the above sheet applies to the step-down type transformer, and the step-up type transformer are also available as requested.
2.Transformers with various special parameters and performance can be manufactured according to customer requirements.



(6) 220kV 31500kVA~24000kVA Three-phase Three-winding Autotransformer with On-load Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Capacity assignment (%)	Short-circuit impedance (%)
	HV tapping range(kV)	MV (kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)		
31500	220±8 ×1.25%	115	6.3	YNa0d11	11	92	13	92	16	97	100/100/50	HV-MV 8 ~ 11 HV-LV 28 ~ 34 MV-LV 18 ~ 24
40000			6.6		13	113	16	113	19	119		
50000			10.5		15	134	18	134	22	142		
63000			21		18	161	21	161	26	170		
90000	230±8 ×1.25%	121	36		22	211	26	211	32	222		
120000			37		28	263	33	263	41	277		
150000			38.5		33	311	39	311	48	329		
180000			10.5		37	358	44	358	54	378		
240000			21		46	462	54	462	66	487		
			36									
			37									
			38.5									

Note: 1. The data in the above sheet applies to the step-down type autotransformer.
2. Transformers with various special parameters and performance can be manufactured according to customer requirements.

330kV Oil-immersed Power Transformer

(1) 330kV 90000kVA~720000kVA Three-phase Double-winding Power Transformer with Off-circuit Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range		Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)
	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	
90000	345 345±2×2.5% 363 363±2×2.5%	10.5 13.8 15.75 18 20	YNd11	37	247	44	247	54	260	14 ~ 15
120000				47	306	55	306	68	323	
150000				56	362	66	362	81	382	
180000				64	415	75	415	93	438	
240000				80	515	94	515	116	543	
360000				109	722	129	722	158	762	
370000				111	736	131	736	162	777	
400000				118	780	139	780	171	824	
720000				183	1212	216	1212	266	1280	

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.

(2) 330kV 90000kVA~240000kVA Three-phase Three-winding Power Transformer with Off-circuit Tap-changer

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Capacity assignment (%)	Short-circuit impedance (%)
	HV tapping range(kV)	MV (kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)		
90000	330±2×2.5% 345±2×2.5%	121	10.5 13.8 15.75	YN yn0d11	42	302	50	302	62	318	HV-MV 24 ~ 26 HV-LV 14 ~ 15 MV-LV 8 ~ 9	100/100/100
120000					53	374	62	374	77	394		
150000					63	442	74	442	91	466		
180000					72	507	85	507	104	535		
240000					89	629	105	629	130	664		

Note: 1. The data in the above sheet are applicable to step-up transformer.
2. The capacity allocation of the step-up type can also be (100/50/100)%.
3. Step-down type transformer can be provided as required, its short circuit impedance: HV-LV 24%~26%, HV-MV14%~15%, MV-LV 8%~9%, and its capacity can be (100/100/50)% or (100/50/100)%.
4. Short circuit impedance in the sheet is based on 100% rated capacity.
5. Transformers with various special parameters and performance can be manufactured according to customer requirements.

(3) 330kV 90000kVA~360000kVA Three-phase Three-winding Autotransformer with Off-circuit Tap-changer (Regulating in Series Winding)

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)	Capacity assignment (%)
	HV tapping range(kV)	MV (kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)		
90000	330±2×2.5%	121	10.5 11 35 38.5	YN a0d11	25	237	29	237	36	250	HV-MV 10 ~ 11 HV-LV 24 ~ 26 MV-LV 12 ~ 14	100/100/30
120000					31	292	36	292	45	308		
150000					37	347	44	347	54	366		
180000					42	396	50	396	62	418		
240000					53	492	62	492	77	520		
360000					72	668	85	668	104	705		

Note: 1. The data in the above sheet are applicable to step-down type transformer.
2. The step-up type transformer can be provided as required, and its short circuit impedance: HV-LV 10%~11%, HV-MV 24%~26%, MV-LV 12%~14%.
3. Short circuit impedance in the sheet is based on 100% rated capacity.
4. Transformers with various special parameters and performance can be manufactured according to customer requirements.

(4) 330kV 90000kVA~360000kVA Three-phase Three-winding Autotransformer with On-load Tap-changer (Regulating at the End of Series Winding)

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)	Capacity assignment (%)
	HV tapping range(kV)	MV (kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)		
90000	330±8×1.25% 345±8×1.25%	121	10.5 11 35 38.5	YN a0d11	26	235	31	235	38	248	HV-MV 10 ~ 11 HV-LV 24 ~ 26 MV-LV 12 ~ 14	100/100/30
120000					32	292	38	292	47	308		
150000					38	345	45	345	55	364		
180000					43	396	51	396	63	418		
240000					54	492	64	492	79	520		
360000					74	668	87	668	107	705		

Note: 1. The data in the above sheet are applicable to step-down type transformer. Step-up type transformer can be provided as required.
2. Short circuit impedance in the sheet is the value based on 100% rated capacity.
3. Transformers with various special parameters and performance can be manufactured according to customer requirements.

(5) 330kV 90000kVA~360000kVA Three-phase Three-winding Autotransformer with On-load Tap-changer (Regulating at MV 110kV Line End Side)

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)	Capacity assignment (%)
	HV (kV)	MV tapping range(kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)		
90000	330 345	121±8×1.25%	10.5 11 35 38.5	YNa0d11	27	251	32	251	39	265	HV-MV 10 ~ 11 HV-LV 26 ~ 28 MV-LV 16 ~ 17	100/100/30
120000					34	311	40	311	49	329		
150000					40	369	47	369	58	390		
180000					46	423	54	423	66	447		
240000					56	526	66	526	82	555		
360000					76	713	90	713	111	752		

Note: 1. The data in the above sheet are applicable to step-down type transformer. Step-up type transformer can be provided as required.
2. Short circuit impedance in the sheet is the value based on 100% rated capacity.
3. Transformers with various special parameters and performance can be manufactured according to customer requirements.



(6) 330kV 90000kVA~360000kVA Three-phase Three-winding Autotransformer with Off-circuit Tap-changer (Regulating at MV 220kV line end side)

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)	Capacity assignment (%)
	HV (kV)	MV tapping range(kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)		
90000	330 345	230±2×2.5% 230±3×2.5% 242±2×2.5% 242±3×2.5%	10.5 11 35 38.5	YNa0d11	13	264	15	264	18	278	HV-MV 10 ~ 11	100/100/30
120000					16	327	19	327	23	345		
150000					19	388	22	388	27	409		
180000					21	445	25	445	31	469		
240000					27	552	32	552	39	582		
360000					37	752	44	752	54	794		

Note: 1. The data in the sheet above are applicable to step-down type transformer. Step-up type transformer can be provided as required.
2.Short circuit impedance in the sheet is the value based on 100% rated capacity.
3.Short circuit impedance for HV-MV and MV-LV shall be agreed by the manufacturer and the user.
4.Transformers with various special parameters and performance can be manufactured according to customer requirements.

(7) 330kV 90000kVA~360000kVA, Three-phase, Three-winding Autotransformer with On-load Tap-changer (Regulating at MV 220kV line end side)

Rated capacity (kVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)	Capacity assignment (%)
	HV (kV)	MV tapping range(kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)		
90000	330 345 363	230±4×1.25% 230±8×1.25% 242±4×1.25% 242±8×1.25%	10.5 11 35 38.5	YNa0d11	14	264	16	264	20	278	HV-MV 10 ~ 11	100/100/30
120000					17	327	20	327	25	345		
150000					20	388	24	388	30	409		
180000					23	445	27	445	34	469		
240000					29	552	34	552	42	582		
360000					40	753	47	753	58	795		

Note: 1. The data in the sheet above are applicable to step-down type transformer. Step-up type transformer can be provided as required.
2.Short circuit impedance in the sheet is the value based on 100% rated capacity.
3.Short circuit impedance for HV-MV and MV-LV shall be agreed by the manufacturer and the user.
4.Transformers with various special parameters and performance can be manufactured according to customer requirements.

500kV Oil-immersed Power Transformer

(1) 500kV 100MVA~484MVA Single-phase, Double-winding Power Transformer with Off-circuit Tap-changer

Rated capacity (MVA)	Voltage combination and tapping range		Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)	
	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)		
100	500/ $\sqrt{3}$ 525/ $\sqrt{3}$ 535/ $\sqrt{3}$ 550/ $\sqrt{3}$	13.8;15.75	Ii0	34	203	40	203	49	214	14	
120		15.75;18;20		39	234	46	234	56	247		
200		15.75;18;20;24		63	342	74	342	91	361		
223		18		68	371	81	371	99	391		
240		18;20;24		72	392	85	392	105	413		
260		18;20		77	414	91	414	112	437		
380		24;27			102	549	121	549	149	580	16 or 18
400					106	570	125	570	154	601	
410					108	581	128	581	158	613	
484					123	657	145	657	178	694	

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.

(2) 500kV 120MVA~1170MVA Three-phase, Double-winding Power Transformer with Off-circuit Tap-changer

Rated capacity (MVA)	Voltage combination and tapping range		Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)
	HV tapping range(%)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	
120	500 525 550	13.8; 15.75	YNd11	41	356	49	356	60	375	14
160				50	441	59	441	72	466	
240				69	599	81	599	100	632	
300		13.8; 15.75; 18		80	707	94	707	116	746	
370		15.75; 18; 20		94	810	111	810	136	855	
400		18; 20; 24		96	855	114	855	140	903	
420		15.75; 18; 20		102	860	120	860	148	907	14 or 16
480		525 15.75; 18; 20		110	954	130	954	160	1007	
600		550 15.75; 18; 20; 24		143	1202	169	1202	208	1268	
720		18; 20; 24		168	1382	198	1382	244	1458	
750		20; 22		173	1422	205	1422	252	1501	16 or 18
780		22		176	1467	208	1467	256	1549	
860				190	1575	224	1575	276	1663	
1140		27		237	1949	280	1949	344	2057	
1170				242	1980	286	1980	352	2090	

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.



(3) 500kV 120MVA~1170MVA Three-phase, Double-winding Power Transformer with Off-circuit Tap-changer

Rated capacity (MVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)	Capacity assignment (MVA)
	HV (kV)	MV tapping range(kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)		
120	500/ $\sqrt{3}$ 525/ $\sqrt{3}$ 550/ $\sqrt{3}$	230/ $\sqrt{3}$ $\pm 2 \times 2.5\%$ 242/ $\sqrt{3}$ $\pm 2 \times 2.5\%$	35 36 37 38.5 63 66	Ia0i0	28	207	33	207	40	219	HV-MV 12	120/120/40
167					33	248	39	248	48	261		167/167/40 167/167/60
250					47	333	55	333	68	352	HV-LV 34 ~ 38	250/250/60 250/250/80
334					58	428	68	428	84	451		334/334/100
400					66	491	78	491	96	518	MV-LV 20 ~ 22	400/400/120
120					28	221	33	221	40	233	HV-MV 12	120/120/40
167					33	261	39	261	48	276		167/167/60
250					47	356	55	356	68	375	HV-LV 42 ~ 46	250/250/60 250/250/80
334					58	459	68	459	84	485		334/334/80 334/334/100
400					66	522	78	522	96	551	MV-LV 28 ~ 30	400/400/120
120					28	221	33	221	40	233	HV-MV 14 ~ 15	120/120/40
167					33	261	39	261	48	276		167/167/60
250					47	356	55	356	68	375	HV-LV 42 ~ 46	250/250/80
334					58	459	68	459	84	485	MV-LV 28 ~ 30	334/334/80 334/334/100
400					66	522	78	522	96	551		400/400/120

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.

(4) 500kV 120MVA~400MVA Single-phase, Three-winding Autotransformer with On-load Tap-changer (Regulating at MV line end side)

Rated capacity (MVA)	Voltage combination and tapping range			Vector group	Energy consumption class I		Energy consumption class II		Energy consumption class III		Short-circuit impedance (%)	Capacity assignment (MVA)
	HV (kV)	MV tapping range(kV)	LV (kV)		No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)	No-load loss(kW)	On-load loss(kW)		
120	500/ $\sqrt{3}$ 525/ $\sqrt{3}$ 550/ $\sqrt{3}$	230 $\sqrt{3}$ $\pm 8 \times 1.25\%$	35 36 37 38.5 63 66	Ia0i0	28	212	33	212	40	223	HV-MV 12	120/120/40
167					33	257	39	257	48	271		167/167/40 167/167/60
250					47	342	55	342	68	361	HV-LV 34 ~ 38	250/250/40 250/250/80
334					61	441	72	441	88	466		334/334/100
400					72	504	85	504	104	532	MV-LV 20 ~ 22	400/400/120
120					28	225	33	225	40	238	HV-MV 12	120/120/40
167					33	270	39	270	48	285		167/167/60
250					47	365	55	365	68	385	HV-LV 42 ~ 46	250/250/60 250/250/80
334					61	477	72	477	88	504		334/334/80 334/334/100
400					72	549	85	549	104	580	MV-LV 28 ~ 30	400/400/120
120					28	225	33	225	40	238	HV-MV 14 ~ 15	120/120/40
167					33	270	39	270	48	285		167/167/60
250					47	365	55	365	68	385	HV-LV 42 ~ 48	250/250/80
334					61	477	72	477	88	504	MV-LV 28 ~ 30	334/334/80 334/334/100
400					72	549	85	549	104	580		400/400/120

Note: 1. Short circuit impedance is the value based on 100% rated capacity.

2.Transformers with various special parameters and performance can be manufactured according to customer requirements.

750kV Oil-immersed power transformer

Rated capacity (MVA)	Voltage combination and tapping range			Vector group	No-load loss(kW)	On-load loss(kW)	No-load current (%)	Short-circuit impedance (%)	Capacity assignment (MVA)
	HV (kV)	MV tapping range(kV)	LV (kV)						
334	765/ $\sqrt{3}$	230/ $\sqrt{3}$ $\pm 2 \times 2.5\%$	63	Ia0I0	95	570	0.15	HV-MV14 HV-LV50 MV-LV33	334/334/100
500					110	860	0.15	HV-MV 19 ~ 22 HV-LV46 MV-LV 23 ~ 24	500/500/150
500		345/ $\sqrt{3}$ $\pm 2 \times 2.5\%$			125	860	0.15	HV-MV14 HV-LV50 MV-LV33	500/500/150
700					130	1225	0.15	HV-MV18 HV-LV58 MV-LV36	700/700/233

Note: Transformers with various special parameters and performance can be manufactured according to customer requirements.

1000kV Oil-immersed power transformer

Rated capacity (MVA)	Voltage combination and tapping range			Vector group	No-load loss(kW)	On-load loss(kW)	No-load current (%)	Short-circuit impedance (%)	Capacity assignment (MVA)
	HV (kV)	MV tapping range(kV)	LV (kV)						
1000	1050/ $\sqrt{3}$	525/ $\sqrt{3}$ $\pm 4 \times 1.25\%$	110	Ia0i0	180	1500	0.15	HV-MV18 HV-LV62 MV-LV40	1000/1000/334





Special transformer

◆ Model definition

1. Rectifier transformer model is ZHSSPT-24000/110
ZH-Electrochemical application S-three-phase S-water-cooled P-forced oil circulation T-voltage regulating transformer 24000-capacity, kVA 110-system nominal voltage at HV side, kV
2. Furnace transformer, model is HCDSPZ-22000/35
HC-Calcium carbide furnace transformer D-single phase (S for three phase) S-water cooled P-forced oil circulation Z-with on-load tap changer 22000-capacity (kVA) 35-System nominal voltage at HV side (kV)
3. Railway traction transformer, model is QYS- (16000 + 20000) / 110
QY-traction transformer S-three-phase (D for single phase) (16000 + 20000) -Capacity (kVA)
110-Nominal system voltage at HV side(kV)
4. Reactor, model is: BKD-50000 / 500
B-Shunt type K-reactor D-single phase (S for three-phase) 50000-Capacity (kvar)
500-System nominal voltage at HV side(kV)

◆ Normal service conditions

- (1) Altitude above sea level: $\leq 1000\text{m}$;
 - (2) Ambient temperature
Maximum temperature: $+40^{\circ}\text{C}$;
Maximum monthly average temperature: $+30^{\circ}\text{C}$;
Maximum yearly average temperature $+20^{\circ}\text{C}$;
Minimum temperature: -25°C
 - (3) Power supply: Approximate sine wave, three-phase roughly symmetrical
 - (4) Installation: Indoor or outdoor, without the obvious contamination.
- Note: Special conditions should be noted before order.

Rectifier transformer

(1) 10kV Rectifier transformer

Capacity(kVA)	Model	AC Network side voltage(V)	DC Network side voltage(V)	Connection displacement	Number of pulse wave(single set)
2720	ZS-2720/6	6000	575(DC)	$\Delta / Y - \Delta$	12
4000	ZS-4000/10	10000	575(DC)	$\Delta / Y - \Delta$	12
5000	ZS-5000/10	10000	575(DC)	$\Delta / Y - \Delta$	12
5300	ZS-5300/10	10000	3550(DC)	$\Delta / Y - \Delta$	6
7200	ZSF-7200/10	10000	575(DC)	$\Delta / Y - \Delta$	12
9000	ZSF-9000/10	10000	600(DC)	$\Delta / Y - \Delta$	12
10000	ZSF-10000/10	10000	600(DC)	$\Delta / Y - \Delta$	12
11250	ZPS-11250/10	10000	2300(communication)	$\Delta / Y - \Delta$	12

Note:

1. The above DC voltage is the reference value, which can be designed according to the user requirements;
2. Rectifier transformers can be manufactured according to user requirements.

(1) 35kV,110kV,220kV Rectifier transformer

Capacity (kVA)	Model	AC Network side voltage(V)		DC Network side voltage(V)	Connection displacement	Number of pulse wave(single set)
		The primary side	Secondary side			
6000	ZHSZ-6000/35	35000	/	240-130	$\Delta / Y - \Delta$	12
8000	ZHSZ-8000/35	36000	/	380-170	$\Delta / Y - \Delta$	12
10500	ZHSZ-10500/35	33000	/	440-150	$\Delta / Y - \Delta$	12
12500	ZHSSPT-12500/35	35000	33410-1590	366-17	YNao or YNd11	12
18000	ZHSSPT-18000/35	36500	37220-25390	417-282		12
21000	ZHSSPT-21000/35	35000	36210-24400	440-300		12
24000	ZHSSPT-24000/35	33000	36890-34740	770-520		12
38800	ZHSSPT-38800/35	36400	36220-5880	480-80		12
24000	ZHSSPT-24000/110	110000	116400-98560	1480-300		12
38000	ZHSSPT-38000/110	115000	120800-95680	72-460		12
120000	ZHSSPT-120000/220	Design as the user requirements				

Note: 1. The above AC voltage and DC voltage is the reference value, which can be designed according to the user requirements;

2. The pulse wave number is for one set, which can be designed with different pulse waves (such as 12 / 24 / 36 / 48 / 72) according to user requirements.

3. Rectifier transformers can be manufactured according to user requirements.



Furnace transformer

(1) Mine submerged arc furnace transformer with On-load Tap-changer

Application industries	Rated capacity kVA	Primary voltage kV	Secondary voltage V	No. of taps	Regulating type	Vector group	Short-circuit impedance (%)
Ferroalloy: ferrosilicon, ferrochromium, ferrotungsten, ferrovanadium, etc Silicon compounds: industrial silicon, silicon calcium, silicon manganese, silicon chromium, silicon aluminum, etc Others: calcium carbide, magnesium oxide	5000	10 35 66 110	70 ~ 210 110 ~ 330 400 ~ 850 Select different voltage ranges for users according to different smelting types and capacities	From 11 to 47 taps, also determined according to customer requirements	with single-phase Tap changer (maximum allowable tap difference of each phase is 3)	single-phase I ₀ (Yd11, YNd11, Dd0) Connected in Three phases Yd11, YNd11, Dd0), three-phase Yd11, YNd11, Dd0	4 ~ 8 (35 kV) 5 ~ 9 (≥ 66 kV)
	6300						
	8000						
	10000						
	12500						
	16000						
	10000						
	12500						
	16000						
	20000						
	25000						
	31500						
	40000						
	50000						

(2) Electric arc furnace transformer with On-load Tap-changer for steel industry

Rated capacity kVA	Primary voltage kV	Secondary voltage V		Regulating type	No. of taps	Vector group	Short-circuit impedance (%)
		Constant power	Constant current				
10000	35 38.5	280 ~ 240	240 ~ 100	with single-phase Tap changer (maximum allowable tap difference of each phase is 3)	From 11 to 23 taps, also determined according to customer requirements	D d 0 ; Y d 11 ; Y N d 11	7 ~ 8
12500		314 ~ 270	270 ~ 116				
16000		353 ~ 305	305 ~ 137				
20000	35 38.5 66 110 121	392 ~ 340	340 ~ 158			35 kV D d 0 ; Y d 11 ; Y N d 11 110 kV Y N d 11	35 kV 6 ~ 7 110 kV 7.5 ~ 8.5
25000		436 ~ 380	380 ~ 184				
31500		489 ~ 425	425 ~ 201				
40000		547 ~ 475	475 ~ 223				
50000		610 ~ 530	530 ~ 250				
63000		673 ~ 585	585 ~ 277				
80000		760 ~ 660	660 ~ 310				
100000		1065 ~ 865	865 ~ 665				

Note: Transformer cooling method may be force oil water cooling (OFWF) or force oil air cooling (OFAF). The rated capacity, rated voltage, Vector group and performance parameters can also be designed according to user requirements.



Railway traction transformer

(1) 110kV “V,v” Railway traction transformer

Rated capacity (kVA) AB+BC	Rated voltage kV		Vector group	No-load loss kW	On-load loss kW	No-load current %	Short-circuit impedance (%)
	The primary side	Secondary side					
6300+10000	110kV ± 4 × 2.5%	27.5kV	Vv0 or Vv6	15	70	0.6	8.4 or 10.5
8000+10000				17	82	0.6	
10000+10000				19	90	0.5	
10000+12500				20	100	0.5	
12500+12500				23	105	0.5	
12500+16000				25	110	0.5	
16000+16000				27	115	0.5	
16000+20000				28	120	0.5	
20000+20000				29	128	0.5	
20000+25000				34	140	0.5	
25000+25000				37	145	0.5	
25000+31500				42	160	0.5	
31500+31500				47	175	0.5	

Note: Rated capacity, rated voltage, Vector group and performance parameters can also be designed according to user requirements.

(2) 110kV “V,x” Railway traction transformer

Rated capacity (kVA) AB+BC	Rated voltage kV		Vector group	No-load loss kW	On-load loss kW	No-load current %	Short-circuit impedance (%)
	The primary side	Secondary side					
6300+10000	110kV ± 4 × 2.5%	2 × 27.5kV	I, i0, i6+ I, i0, i6	19.5	88	0.6	8.4 or 10.5
8000+10000				22	102	0.6	
10000+10000				25	112	0.5	
10000+12500				26	125	0.5	
12500+12500				30	132	0.5	
12500+16000				32.5	137	0.5	
16000+16000				35	144	0.5	
16000+20000				36.5	150	0.5	
20000+20000				38	160	0.5	
20000+25000				44	170	0.5	
25000+25000				48	184	0.5	
25000+31500				55	200	0.5	
31500+31500				61	219	0.5	

Note: Rated capacity, rated voltage, Vector group and performance parameters can also be designed according to user requirements.





(3) 220kV “V,v” Railway traction transformer

Rated capacity (kVA) AB+BC	Rated voltage kV		Vector group	No-load loss kW	On-load loss kW	No-load current %	Short-circuit impedance (%)
	The primary side	Secondary side					
20000+20000	110kV $\pm 4 \times 2.5\%$	27.5kV	Vv0 or Vv6	42	140	0.60	10.5 or 12.0
20000+25000				46	153	0.60	
25000+25000				50	166	0.5	
25000+31500				54	182	0.5	
31500+31500				58	198	0.5	
31500+40000				64	217	0.5	
40000+40000				70	236	0.5	
40000+50000				76	253	0.5	
50000+50000				82	280	0.5	
50000+60000				88	305	0.5	
60000+60000				95	330	0.5	

Note: Rated capacity, rated voltage, Vector group and performance parameters can also be designed according to user requirements.

(4) 220kV “V,x” Railway traction transformer

Rated capacity (kVA) AB+BC	Rated voltage kV		Vector group	No-load loss kW	On-load loss kW	No-load current %	Short-circuit impedance (%)
	The primary side	Secondary side					
20000+20000	220kV $\pm 4 \times 2.5\%$	2 $\times$ 27.5kV	I, i0, i0+ I, i0, i0 or I, i0, i6+ I, i0, i6	42	154	0.60	10.5 or 12.0
20000+25000				46	168	0.60	
25000+25000				50	184	0.5	
25000+31500				54	200	0.5	
31500+31500				58	218	0.5	
31500+40000				64	239	0.5	
40000+40000				70	260	0.5	
40000+50000				76	278	0.5	
50000+50000				82	308	0.5	
50000+60000				88	336	0.5	
60000+60000				95	363	0.5	

Note: Rated capacity, rated voltage, Vector group and performance parameters can also be designed according to user requirements.



Reactor

(1) Basic parameters for 35kV and 66kV three-phase reactors

Rated capacity Mvar	Rated voltage kV	Permissible long-term overexcitation multiple	Connectionism	The rated reactive Ω	Loss kW
7.2	37	1.1	Three-phase Y connection, not grounded	190.2	30
10				136.9	40
20				68.5	80
45				45	120
60				22.8	140
60	66	1.1	Three-phase Y connection, not grounded	72.6	130

(2) Basic parameters of 110kV Single-phase, Three-phase reactors

Rated capacity Mvar	Rated voltage kV	Permissible long-term overexcitation multiple	Connectionism	The rated reactive Ω	Loss kW
10	115/ $\sqrt{3}$	1.05	Three sets of single-phase reactor are connected into Y group, grounded directly or through the neutral grounded reactor	440.8	40
	121/ $\sqrt{3}$			488	
20	115/ $\sqrt{3}$			220.4	75
	121/ $\sqrt{3}$			244	
30	115/ $\sqrt{3}$			146.9	105
	121/ $\sqrt{3}$			162.7	
40	115/ $\sqrt{3}$			110.2	130
	121/ $\sqrt{3}$			122	
60	115/ $\sqrt{3}$			73.5	180
	121/ $\sqrt{3}$			81.3	
80	115/ $\sqrt{3}$			55.1	210
	121/ $\sqrt{3}$			61	
30	115	1.05	Three phase, Y connection, grounded directly or through neutral grounded reactor	440.8	120
	121			488	
60	115			220.4	200
	121			244	
90	115			146.9	270
	121			162.7	
120	115			110.2	330
	121			122	

(3) Basic parameters for 220kV Single-phase or Three-phase reactors

Rated capacity Mvar	Rated voltage kV	Permissible long-term overexcitation multiple	Connectionism	The rated reactive Ω	Loss kW
10	230/ $\sqrt{3}$	1.05	Three sets of single-phase reactor are connected into Y group, grounded directly or through the neutral grounded reactor	1763.3	40
	242/ $\sqrt{3}$			1952.1	
15	230/ $\sqrt{3}$			1175.6	55
	242/ $\sqrt{3}$			1301.4	
20	230/ $\sqrt{3}$			881.7	65
	242/ $\sqrt{3}$			976.1	
25	230/ $\sqrt{3}$			705.3	80
	242/ $\sqrt{3}$			780.9	
30	230/ $\sqrt{3}$			587.8	90
	242/ $\sqrt{3}$			650.7	
40	230/ $\sqrt{3}$			440.8	110
	242/ $\sqrt{3}$			488	
30	230	1.05	Three phase, Y connection, grounded directly or through neutral grounded reactor	1763.3	120
	242			1952.1	
45	230			1175.6	160
	242			1301.4	
60	230			881.7	180
	242			976.1	
75	230			705.3	210
	242			780.9	
90	230			587.8	240
	242			650.7	
120	230			440.8	300
	242			488	

(4) Basic parameters for 330kV Single-phase or Three-phase reactors

Rated capacity Mvar	rated voltage kV	Permissible long-term overexcitation multiple	Connectionism	The rated reactive Ω	loss kW
10	345/ $\sqrt{3}$	1.05	Three sets of single-phase reactor are connected into Y group, grounded directly or through the neutral grounded reactor	3967	60
	363/ $\sqrt{3}$			4392	
20	345/ $\sqrt{3}$			1984	70
	363/ $\sqrt{3}$			2196	
30	345/ $\sqrt{3}$			1322	80
	363/ $\sqrt{3}$			1464	
40	345/ $\sqrt{3}$			992	90
	363/ $\sqrt{3}$			1098	
50	345/ $\sqrt{3}$			793	110
	363/ $\sqrt{3}$			878	
30	345	1.05	Three phase, Y connection, grounded directly or through neutral grounded reactor	3967	160
	363			4392	
60	345			1984	210
	363			2196	
90	345			1322	240
	363			1464	
120	345			992	270
	363			1098	
150	345			793	330
	363			878	

(5) Basic parameters for 500kV Single-phase or Three-phase reactors

Rated capacity Mvar	Rated voltage kV	Permissible long-term overexcitation multiple	Connectionism	The rated reactive Ω	Loss kW
30	525/ $\sqrt{3}$	1.05	Three phase, Y connection, grounded directly or through neutral grounded reactor	3062	80
	550/ $\sqrt{3}$			3361	
40	525/ $\sqrt{3}$			2297	90
	550/ $\sqrt{3}$			2521	
50	525/ $\sqrt{3}$			1838	110
	550/ $\sqrt{3}$			2017	
60	525/ $\sqrt{3}$			1532	135
	550/ $\sqrt{3}$			1681	
70	525/ $\sqrt{3}$			1312	160
	550/ $\sqrt{3}$			1440	
80	525/ $\sqrt{3}$			1148	180
	550/ $\sqrt{3}$			1260	





Product Standards

- IEC60076-1 Power transformers Part1:General
- IEC60076-2 Power transformers Part2: Temperature rise
- IEC60076-3 Power transformers Part3:Insulation level, dielectric tests and external clearances in air
- IEC60076-4 Power transformer Part4:Guide to the lightning impulse and switching impulse testing-
Power transformers and reactors
- IEC60076-5 Power transformers Part5: Ability to withstand short circuit
- IEC60076-6 Power transformers Part6:Reactors
- IEC60076-7 Power transformers Part7: Loading guide for oil-immersed power transformers
- IEC60076-8 Power transformers-Application guide
- IEC60076-10 Power transformers Part10: Determination of sound levels
- IEC60071-1 Insulation co-ordination Part1: Definitions, principles and rules
- IEC60296 Fluids for electrotechnical applications-Unused mineral insulating oils for transformers
and switchgears
- IEC60137 Insulated bushings for alternating voltages above 1000V
- IEC60214-1 Tap-changers Part1:Performance requirements and test methods
- IEC60270 High-voltage test techniques-Partial discharge measurements
- IEC60529 Degrees of protection provided by enclosures (IP code)



Unified Social Credit Code:
91370900760983900W

Business License (COPY) 8-1

Company name: Shandong Taikai Transformer Co., Ltd.

Registered Capital: 600 million RMB

Company property: Limited Company

Founding Date: April 14th, 2004

Name of legal representative: Zhao Xingying

Operation period: April 14th, 2004 to Now

Business scope: All kinds of electric transmission and transformation equipment, transformers, reactors and high voltage test equipment's design, development, manufacture, sales and technical and consulting services; the import business of mechanical equipment, spare parts and raw materials; export business of products made by ourselves.

Address: Southern Longtan Road, High-tech Development Zone, Tai'an City, Shandong Province, P. R. China.

Tai'an Administration for
Industry and Commerce

April 29, 2019