



# 环氧树脂浇注干式变压器

## DRY transformer

110kV, 220kV EHV transformer

Amorphous metal transformer

Oil-immersion transformer

Resin insulation transformer

Environmental protection transformer

Reactors



# YIFA 中国·伊发

## 环氧树脂浇注干式变压器

Dry transformer



### 铁心 Iron core

铁心采用优质冷轧硅钢片制造，45°全斜接缝结构，心柱采用绝缘带绑扎，铁心表面采用绝缘树脂漆密封以防潮防锈，夹件及紧固件经表面处理以防止锈蚀。

此外，沪光海开发了多阶步叠铁心工艺，铁心由剪切线自动堆栈，铁心成型采用不叠上铁轭方案，有效地降低了空载损耗、空电流和铁心噪音。

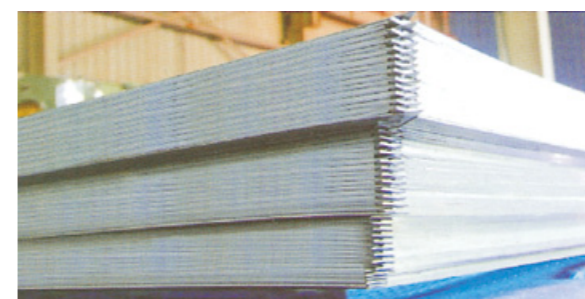
The iron core is made of high quality cold silicon steel with 45° sloping seam, its barrel is strapped with insulated, and it is sealed resin to be safeguarded against corrosion and moisture, the clamping parts and fastener are corrosion-proof followed by superficial treatment.

In addition, HUGUANG have exploited multi-stepping laminated core technology, the core is self-stacked by shearing line, the iron molding adopts non-laminated upper yoke to reduce the no-load loss, no-load current and iron noise.

### 产品特点 Characteristics

安全，难燃防火，无污染，可直接安装在负荷中心。免维护、安装简便，综合运行成本低、损耗低、防潮性能好，可在 100% 湿度下正常运行，停运后不经预干燥即可投入运行。局部放电率低、噪音小，散热能力强，强迫风冷条件下可以 150% 额定负载运行。配备有完善的温度保护控制系统，为变压器安全运行提供可靠保障，可靠性高。据对已经投入运行的 10000 多台产品的运行研究，产品的可靠性指标达到国际先进水平。

It is safe, non-pollute, and flame proof. which can be installed directly on the load center with merits of free maintenanc, easy installation, low combined operationcost, low loss and excellent humidity resistance. The transformer can be operated normally under 100% humidity and put into motion without dry in advance when out of use it shares the properties of low partial electricity local discharge, low noise and large heat dispel capability, it can be operated with the rated load of 150% under the forced air cooling conditions. With perfect temperature protect control system to mnsure safty operation of the transformer Referring to the operation research of 10 thousand transformers have been put to use, their reliability norm have reached advanced international standard.



阶梯接缝铁心片 Step-lap iron core lamination



阶梯全斜接缝 Stepping sloping seam

# 环氧树脂浇注干式变压器

Dry transformer



## 高压浇注线圈 HV Casted winding

主要材料和特性: 线圈采用 F 级绝缘的铜导线作导体, 玻璃纤维与环氧树脂复合材料作绝缘, 其膨胀系数与铜导体相近, 具有良好的抗冲击、抗温度变化、抗裂性能。玻璃纤维和环氧树脂所有组成成份都具有自燃性, 不会持续燃烧, 也不会产生有毒气体和污染环境。环氧树脂具有良好的绝缘特性, 特别适合制造高压等级的线圈。

Main material and Characteristics: Huguang adopt class F copper wire as the winding's conductor, glass fibre and epoxy resin composite as insulation, whose coefficient of expansion is close to the copper conductor with the merits of excellent shock resistance, high temperature adaptive faculty and nice shattering resistance. The compositions of glass fibre and epoxy resin have the best properties of high fire resistance, which will never outcome poisonous pollution.



真空浇注设备 Vacuum casting equipment



高压线圈浇注体 HV winding casted part

## 制造工艺 Manufacturing process

线圈在高度精密绕线机上绕制。绕制时在线圈内外层铺敷玻璃纤维, 变压器容量较大时设计有通风道。线圈绕制完毕后进行真空干燥。整个浇注及固化过程按照工艺部门通过计算机网络传输至浇注控制终端的工艺曲线完成。所有过程可在计算机终端随时监视并由计算机根据情况自动调整。精密的制造过程是线圈无气泡、空穴。

The windings wound on the high-accuracy winding machine. When winding pave cast grass fibre around the external and internal of the windings, there be armed air passage for transformer of large capacity. Then dry it in vacuum. The whole casting and olidifying process is performed according to the process curve of casting control terminal, which transferred through computer network by process department, every process can be monitored momentarily and adjusted for the various surroundings. The precise process ensures free bubble and free hole of winding.



(带外壳) 干式变压器  
(Protective case) Dry-type transformer



专为 KYN(中置柜) 设计的 SC9、SC10 型树脂绝缘干式配电变压器  
SC9, SC10 type resin dry-type distribution transformer special designed for KYN (Centered type switch cabinet)



35kV 干式变压器  
35kV Dry-type transformer

# 环氧树脂浇注干式变压器

Dry transformer



## 低压箔式线圈 LV Foiled winding

对于低压电、大电流线圈, 其短路时的短路应力较大, 同时低压匝数较小, 低压电流越大采用绕线型式其匝不平问题越突出, 散热问题也需要着重考虑, 此时低压采用箔式绕制可较好解决上述问题, 首先箔式产品不存在轴向匝数和轴向绕制螺旋角, 高低压绕组匝数平衡, 短路时变压器轴向应力小, 其次由于其绝缘较薄, 工艺上又容易设置多层风道, 散热问题也较好解决。我厂箔式线圈在法国 STOLLBERG 公司生产的自动箔式绕线机上自动绕制。内部焊接在绕线机上采用氩气保护焊接, 绕制完毕后用树脂密封固化。

For LV and heavy current winding, its short-current stress is very large and low voltage turn is small at the same time, the heavier the low voltage current is, the more prominent the problem of non-stability on ampere-turn which adopting wire-wound will be, and moreover, the heat dispersion should be considered, but the adbove problem can be better solved by adopting foil winding, at first, there has been no axial turns and axial winding helix angle for foil products, the ampere-turn of high/low voltage winding is equal and the axial shortcurrent stress multi-level air passage as per its technology, so is the problem of heat diversion. Oil foil winding auto would on the auto foil winding machine, which supplied by France STOLLBERG Corporation, adopts protective internal with argon, with the excellent properties of high accuracy, low welding resistance and non-external welding process. The interlayer of winding insulate DMD, the extreme end is sealed and aolidified by resin.



箔式绕线机 Foil winding machine

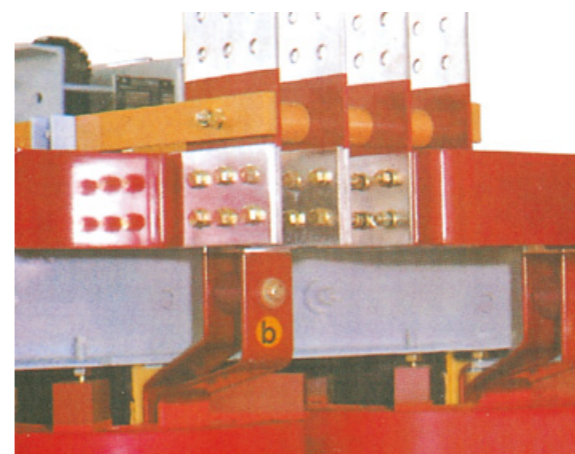


低压箔式线圈 LV foil winding

## 变压器出线方式 Lending-out way

配电变压器可根据不同的接口形式制造常规出线、标准封闭母线出线和标准侧出线, 也可根据用户要求设计特殊出线方式。

Routine lead, standard closed busbar lead type and standard side lead for the distribution transformer, with special lead way produced to meet the customer's demand.



标准封闭母线 Standard closed busbar



常规出线 Routine leading-out

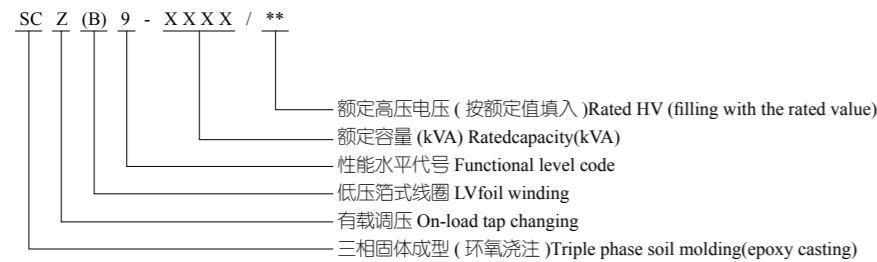
# 环氧树脂浇注干式变压器

Dry transformer

## SC(ZB)9 系列 10kV 级环氧树脂浇注干式变压器

SC(ZB)9 series 10kV Dry transformer

### 型号标志 Model description



### 产品标准 Product standards

GB/T 10228 GB 1094.11-2007

额定高压 Rated HV: 10(10.5, 11, 6, 6.3, 6.6)kV

额定低压 Rated LV: 0.4kV

分接范围 Tap connection range: 无励磁调压 Non-exciting regulation ( $\pm 5\%$ ,  $\pm 2 \times 2.5\%$ )  
有载调压 On-load regulation ( $\pm 4 \times 2.5\%$ )

联结组别 Vector group: Dyn 11 or Yyn0

绝缘水平 Insulation level: LI175AC35/AC5

额定容量 Rated capacity (kVA)	空载损耗 No-load loss (W)	负载损耗 Load loss (W)	声级 LPA(dB) Sound's level	重量 Weight (kg)	尺寸 (mm) Dimension				低压端子 LV Terminal	空载电流 No-load current (%)	阻抗电压 Impedance voltage (%)
					a	b	c	d			
30	220	660	40	280	600	400	650	350	25×3	2.0	4.0
50	310	930	42	340	600	400	705	350	25×3	1.5	
80	420	1280	44	565	730	500	740	450	25×3	1.1	
100	450	1460	46	610	760	500	775	450	30×3	1.1	
125	530	1710	48	640	760	500	840	450	30×3	1.0	
160	610	1970	50	830	1060	600	1000	550	40×3	0.9	
200	700	2340	50	990	1070	600	1050	550	40×3	0.9	
250	810	2550	50	1160	1120	750	1080	550	40×4	0.9	
315	990	3210	51	1340	1120	750	1135	660	50×4	0.8	
400	1100	3690	51	1600	1210	750	1225	660	50×5	0.8	
500	1310	4520	53	1830	1260	750	1185	660	60×5	0.7	
630	1460	5510	53	1870	1440	750	1180	660	60×6	0.6	
800	1710	6430	53	2140	1470	750	1285	660	80×6	0.5	
1000	1990	7520	55	2500	1520	900	1325	820	80×8	0.5	
1250	2350	8960	55	2980	1640	900	1355	820	100×8	0.4	
1600	2760	10830	55	3530	1710	900	1510	820	100×10	0.4	
2000	3400	13360	55	4450	1820	1200	1565	1070	100×12	0.3	
2500	4000	15880	55	5230	1920	1200	1680	1070	120×12	0.3	
1600	2760	11970	55	3630	1800	900	1480	820	100×10	0.4	
2000	3400	14760	55	4550	1900	1200	1540	1070	100×12	0.3	
2500	4000	17470	55	5330	2010	1200	1650	1070	120×12	0.3	

注: 有载调压系列变压器仅对以下两项数据作调整: 1、重量增加 100kg; 2、有载开关布置在变压器的侧面 a 增加 650mm 或正面 b 增加 750mm;

Note: On-load regulation series transformer regulates the two data items as follows: 1. Weight increase 100kg; 2. Transformer flank a increase 650mm or face b increase 750mm assigned by on-load switch;

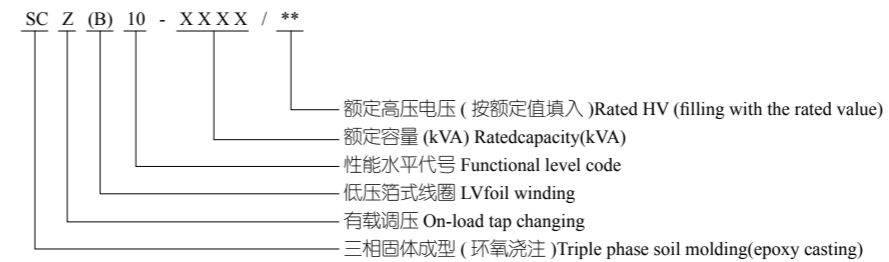
# 环氧树脂浇注干式变压器

Dry transformer

## SC(ZB)10 系列 10kV 级环氧树脂浇注干式变压器

SC(ZB)10 series 10kV Dry transformer

### 型号标志 Model description



### 产品标准 Product standards

GB/T 10228 GB 1094.11-2007

额定高压 Rated HV: 10(10.5, 11, 6, 6.3, 6.6)kV

额定低压 Rated LV: 0.4kV

分接范围 Tap connection range: 无励磁调压 Non-exciting regulation ( $\pm 5\%$ ,  $\pm 2 \times 2.5\%$ )  
有载调压 On-load regulation ( $\pm 4 \times 2.5\%$ )

联结组别 Vector group: Dyn 11 or Yyn0

绝缘水平 Insulation level: LI175AC35/AC5

额定容量 Rated capacity (kVA)	空载损耗 No-load loss (W)	负载损耗 Load loss (W)	声级 LPA(dB) Sound's level	重量 Weight (kg)	尺寸 (mm) Dimension				低压端子 LV Terminal	空载电流 No-load current (%)	阻抗电压 Impedance voltage (%)
					a	b	c	d			
30	200	620	38	290	600	400	650	350	25×3	1.9	4.0
50	280	880	40	360	600	400	705	350	25×3	1.4	
80	380	1210	42	590	730	500	740	450	25×3	1.0	
100	400	1390	44	640	760	500	775	450	30×3	1.0	
125	480	1630	44	670	760	500	840	450	30×3	0.9	
160	550	1870	46	870	1060	600	1000	550	40×3	0.8	
200	630	2220	46	1040	1070	600	1050	550	40×3	0.8	
250	730	2420	46	1220	1120	750	1080	550	40×4	0.8	
315	890	3050	47	1470	1120	750	1135	660	50×4	0.7	
400	990	3500	47	1760	1210	750	1225	660	50×5	0.7	
500	1180	4290	49	2050	1260	750	1185	660	60×5	0.6	
630	1310	5240	49	2450	1440	750	1180	660	60×6	0.5	
800	1540	6110	49	2360	1470	750	1285	660	80×6	0.4	
1000	1790	7140	51	2730	1520	900	1325	820	80×8	0.4	
1250	2110	8510	51	3270	1640	900	1355	820	100×8	0.3	
1600	2480	10290	51	3840	1710	900	1510	820	100×10	0.3	
2000	3060	12690	51	4920	1820	1200	1565	1070	100×12	0.25	
2500	3600	15080	51	5780	1920	1200	1680	1070	120×12	0.25	
1600	2480	11370	51	3950	1800	900	1480	820	100×10	0.3	
2000	3060	14020	53	5080	1900	1200	1540	1070	100×12	0.25	
2500	3600	16590	53	5850	2010	1200	1650	1070	120×12	0.25	

注: 有载调压系列变压器仅对以下两项数据作调整: 1、重量增加 100kg; 2、有载开关布置在变压器的侧面 a 增加 650mm 或正面 b 增加 750mm;

Note: On-load regulation series transformer regulates the two data items as follows: 1. Weight increase 100kg; 2. Transformer flank a increase 650mm or face b increase 750mm assigned by on-load switch;

# 环氧树脂浇注干式变压器

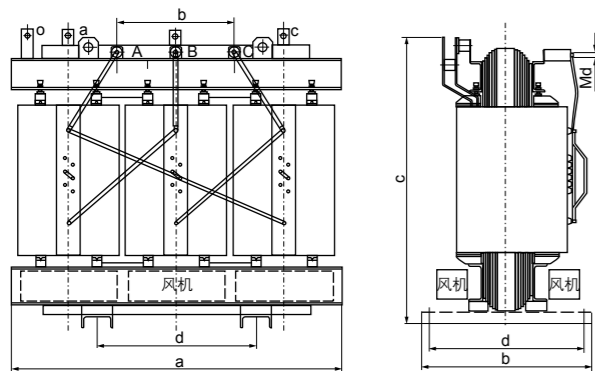
Dry transformer



10kV 级干式变压器

10kV Dry transformer

外型尺寸图 Outline dimension drawing

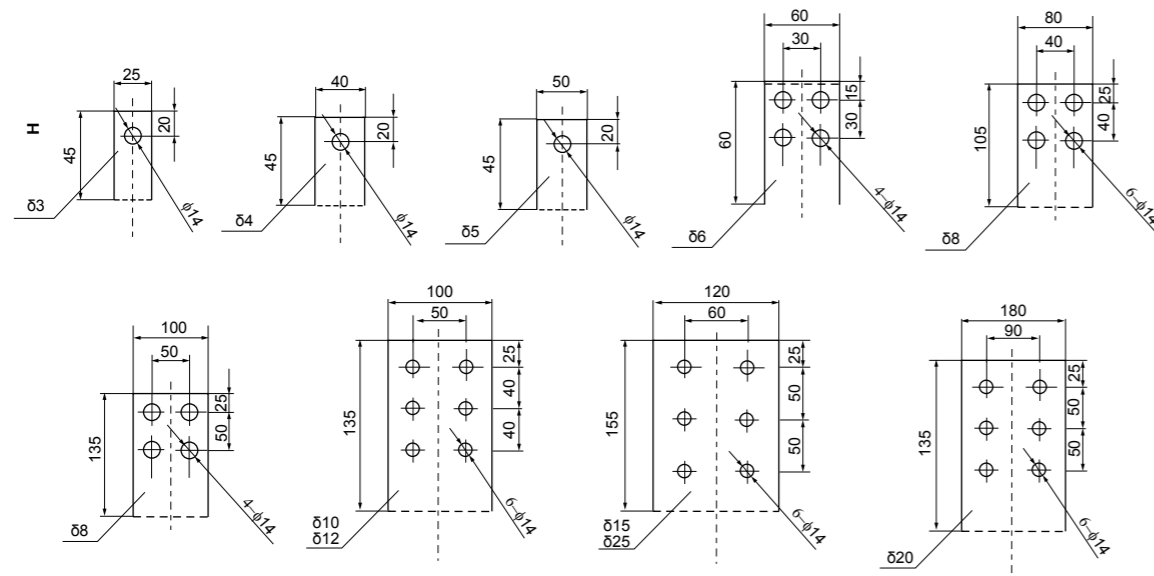


- 注：1、高压出线端子 Md、当容量 SN<2000kVA 时，Md=M12；  
当 SN ≥ 2000kVA 时，Md=M16。  
2、低压端子为不对称结构，图中含有 k1、k2 参数。  
3、变压器为不带小车结构，如需要小车时则高度相应增加 100mm。  
4、强迫风冷系统（风机）尺寸不超过本体尺寸（a × b）范围。

Note:

1. For HV lead terminal Md, while capacity SN<2000kVA, Md=M12; while SN ≥ 2000kVA, Md=M16.
2. LV terminal is unsymmetrical structure, parameters k1,k2 showed in the drawing.
3. The transformer has no trolley, if needed, the height should be raised 100mm.
4. The size of forced air cooling system (blower) should not exceed machine (a × b).

低压接线端子图 LV Lead terminal drawing



# 环氧树脂浇注干式变压器

Dry transformer



10kV 级干式变压器

10kV Dry transformer

防护外壳 Protective Shell

美观耐用的不锈钢外壳，对变压器作进一步的安全保护，防护等级达 IP20 及 IP23。

IP20 外壳可防止直径大于 12mm 的固体导体进入，为带电部分提供安全屏障。

IP23 外壳更兼具防止与垂直线成 60° 角以内的水滴流入，可适用于户外运行。

注：IP23 外壳会使变压器冷却能力下降，容量较小的下降约 5%，容量较大的下降约 10%。

配备高压及低压电缆进（出）线支撑架接线更方便。

愿为阁下设计其他防护等级或材料的保护外壳。

The attractive and durable stainless shell is to protect the transformer, the protective level reaches IP20 and IP23.

IP20 case prevents transformer form xenembole whose diameter larger than 12mm, offering the safety guarantee for the live parts.

IP23 case prevents the dripping from inflowing whose vertical line formed an angle within 60° , which make sure be operated outdoors.

Note: IP23 casing will enable the cooling capacity of transformer degressive, the low transformer will descend 5% and large one 10%.

Equipped HV LV cable inlet/outlet bracket, give convenience to wiring.

We can supply protective case of other protection level or material.

额定高压 Rated HV: 10(10.5, 11, 6, 6.3, 6.6)kV

联结组别 Vector group: Dyn 11 or Yyn 0

额定低压 Rated LV: 0.4kV

绝缘水平 Insulation level: L175AC35/AC5

额定容量 Rated capacity (kVA)	阻抗电压 Impedance voltage(%)	尺寸 (mm) Dimension				重量 Weight (kg)
		a	b	c	d	
30	4	1000	900	1300	350	380
50		1000	900	1300	350	440
80		1050	950	1500	450	670
100		1050	950	1500	450	730
125		1050	950	1500	450	780
160		1400	1150	1400	550	1030
200		1400	1150	1400	550	1210
250		1400	1200	1500	550	1430
315		1400	1200	1500	660	1700
400		1500	1250	1600	660	2000
500		1550	1250	1600	660	2300
630		1750	1300	1600	660	2630
800	6	1800	1350	1700	660	3000
1000		1800	1350	1800	820	3520
1250		1950	1400	1800	820	4130
1600		2000	1450	2000	820	4990
2000		2150	1550	2100	1070	5880
2500		2250	1550	2100	1070	6680
1600	8	2100	1500	2000	820	5090
2000		2250	1600	2100	1070	5980
2500		2350	1600	2100	1070	6800

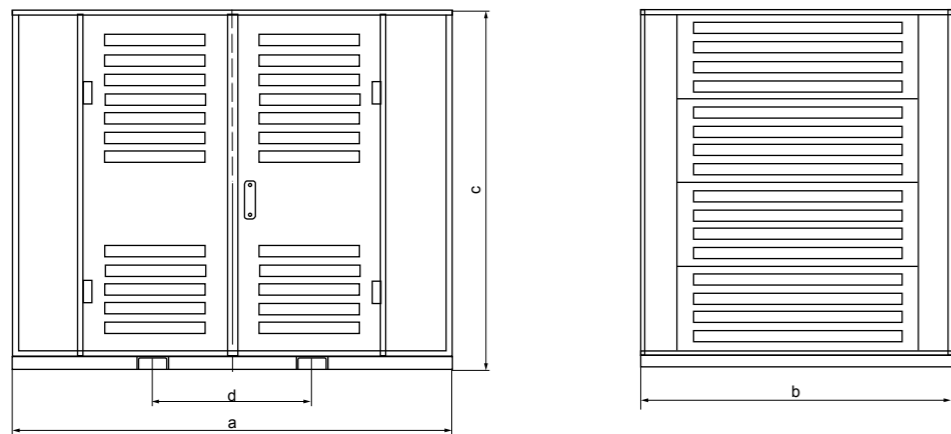
# 环氧树脂浇注干式变压器

Dry transformer

## 10kV 级干式变压器

10kV Dry transformer

### 10kV 级配电变压器 IP20 外壳尺寸图 10kV dry transformer IP20 shell dimension drawing



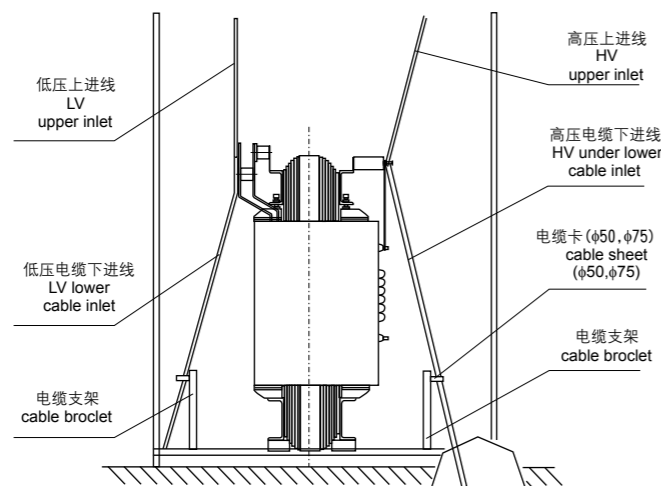
注: 1、高压出线端子 Md、当容量 SN<2000kVA 时, Md=M12; 当 SN ≥ 2000kVA 时, Md=M16。

2、低压端子为不对称结构, 图中含有 k1、k2 参数。

Note: 1. For HV lead terminal Md, while its capacity SN<2000kVA, Md=M12; while SN ≥ 2000kVA, Md=M16.

2. LV is an unsymmetrical structure, parameters k1, k2 showed in the drawing.

### 进线方式示意图 Leading in drawing



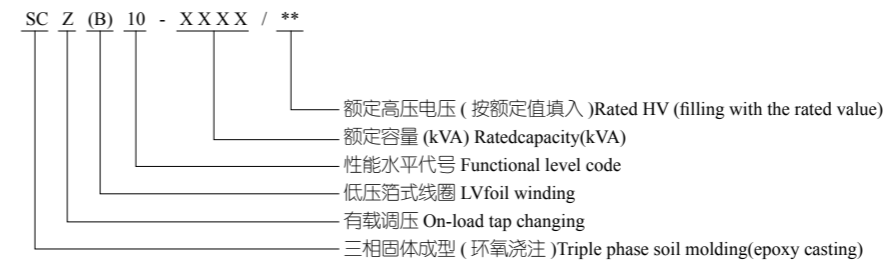
# 环氧树脂浇注干式变压器

Dry transformer

## SC(ZB)10 系列 20kV 级环氧树脂浇注干式变压器

SC(ZB)10 series 20kV Dry transformer

### 型号标志 Model description



### 产品标准 Product standards

GB/T 10228 GB 1094.11-2007

额定高压 Rated HV: 20(22、24)kV

额定低压 Rated LV: 0.4kV

分接范围 Tap connection range: 无励磁调压 Non-exciting regulation (±5%, ±2×2.5%)

有载调压 On-load regulation (±4×2.5%)

联结组别 Vector group: Dyn 11 or Yyn0

绝缘水平 Insulation level: LI125AC50/AC5

额定容量 Rated capacity (kVA)	电压组合及分接范围 Voltage combination and Tap range			联结组别号 Vector group Symbol	空载损耗 No-load Loss (kW)	负载损耗 No-load Loss (kW)	空载电流 (%) No-load current	短路阻抗 Short-circuit Impedance voltage (%)
	高压 HV(kV)	高压分接范围 % HV tap Change	低压 HV(kV)					
50	20	±5 ±2×2.5	0.4	Dyn 11 Yyn0	340	1140	2.2	6.0
100					540	1830	2.0	
160					680	2270	1.6	
200					740	2710	1.6	
250					850	3140	1.4	
315					970	3760	1.4	
400					1150	4450	1.3	
500					1350	5330	1.3	
630					1530	6290	1.1	
800					1760	7600	1.1	
1000					2070	9000	0.9	
1250					2390	10610	0.9	
1600					2790	12750	0.9	
2000					3240	15070	0.7	
2500					3870	17820	0.7	
2000					3240	16420	0.7	
2500	3870	19560	0.7					

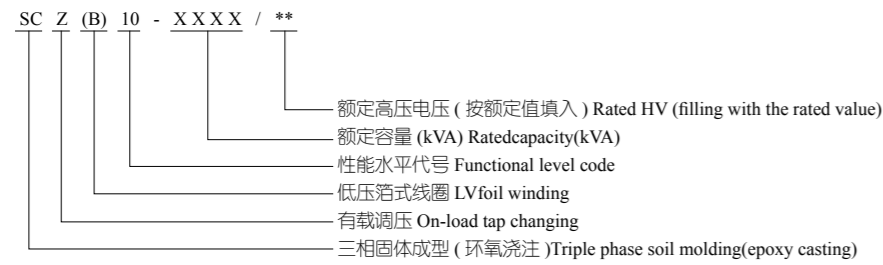
# 环氧树脂浇注干式变压器

Dry transformer

## SC(ZB)9/10 系列 35kV 级环氧树脂浇注干式变压器

SC(ZB)9/10 series 35kV Dry transformer

### 型号标志 Model description



### 产品标准 Product standards

GB/T 10228 GB 1094.11-2007

额定高压 Rated HV: (35~38.5)kV

额定低压 Rated LV: 0.4kV

分接范围 Tap connection range: 无励磁调压 Non-exciting regulation ( $\pm 5\%$ ,  $\pm 2 \times 2.5\%$ )

有载调压 On-load regulation ( $\pm 4 \times 2.5\%$ )

联结组别 Vector group: Dyn 11 or Yyn0

绝缘水平 Insulation level: LI170AC70/AC5

### 35kV 级无励磁调压配电变压器 35kV Non-excited tap-changing transformer

额定容量 Rated capacity (kVA)	电压组合及分接范围 Voltage combination and Tap range			联结组别号 Vector group Symbol	SC(ZB)9 系列		SC(ZB)10 系列		空载电流 (%) No-load current	短路阻抗 Short-circuit Impedance voltage(%)
	高压 HV(kV)	高压分接范围 % HV tap Change	低压 HV(kV)		空载损耗 No-load Loss(kW)	负载损耗 No-load Loss(kW)	空载损耗 No-load Loss(kW)	负载损耗 No-load Loss(kW)		
50	35~38.5	$\pm 5$ $\pm 2 \times 2.5$	0.4	Dyn 11 Yyn0	500	1310	450	1250	2.5	6.0
100					700	1920	630	1830	2.2	
160					880	2560	790	2460	1.6	
200					980	3060	880	2900	1.6	
250					1100	3490	990	3320	1.4	
315					1310	4150	1180	3940	1.4	
400					1530	4980	1380	4730	1.3	
500					1800	6110	1620	5810	1.3	
630					2070	7070	1860	6720	1.1	
800					2400	8380	2160	7970	1.1	
1000					2700	9610	2430	9130	0.9	
1250					3150	11700	2830	11120	0.8	
1600					3600	14240	3240	13520	0.8	
2000					4250	16770	3820	15930	0.8	
2500					4950	20090	4450	19080	0.8	

# 环氧树脂浇注干式变压器

Dry transformer

## SC(ZB)9/10 系列 35kV 级环氧树脂浇注干式变压器

SC(ZB)9/10 series 35kV Dry transformer

### 35kV 级无励磁调压配电变压器 35kV Non-excited tap-changing transformer

额定容量 Rated capacity (kVA)	电压组合及分接范围 Voltage combination and Tap range			联结组别号 Vector group Symbol	SC(ZB)9 系列		SC(ZB)10 系列		空载电流 (%) No-load current	短路阻抗 Short-circuit Impedance voltage(%)
	高压 HV(kV)	高压分接范围 % HV tap Change	低压 HV(kV)		空载损耗 No-load Loss(kW)	负载损耗 No-load Loss(kW)	空载损耗 No-load Loss(kW)	负载损耗 No-load Loss(kW)		
800	35~38.5	$\pm 5$ $\pm 2 \times 2.5$	3.15	Dyn 11 Yd11 Yyn0	2500	8650	2250	8210	1.0	6.0
1000					2970	10040	2670	9540	1.0	
1250					3480	11880	3130	11280	0.9	
1600					4100	14240	3690	13520	0.9	
2000					4700	16770	4230	15930	0.8	
2500					5400	20090	4860	19080	0.8	
3150					6700	22530	6030	21410	0.7	
4000					7800	27070	7020	25720	0.7	
5000					9300	32140	8370	30530	0.6	
6300					11000	37550	9900	35680	0.6	
8000					12600	42360	11340	40240	0.5	
10000					14400	51090	12960	48540	0.5	
12500					17500	59390	15750	56420	0.5	
16000					21500	69870	19350	66380	0.5	
20000					25500	78600	22950	74670	0.4	

### 35kV 级无励磁调压配电变压器 35kV Non-excited tap-changing transformer

额定容量 Rated capacity (kVA)	电压组合及分接范围 Voltage combination and Tap range			联结组别号 Vector group Symbol	SC(ZB)9 系列		SC(ZB)10 系列		空载电流 (%) No-load current	短路阻抗 Short-circuit Impedance voltage(%)	
	高压 HV(kV)	高压分接范围 % HV tap Change	低压 HV(kV)		空载损耗 No-load Loss(kW)	负载损耗 No-load Loss(kW)	空载损耗 No-load Loss(kW)	负载损耗 No-load Loss(kW)			
2000	35~38.5	$\pm 4 \times 2.5$	6	Dyn 11 Yd11	5000	17470	4500	16590	0.8	7.0	
2500					5800	20790	5220	19750	0.8		
3150					7000	23410	6300	22240	0.7		
4000					8200	28030	7380	26630	0.7		
5000					9700	33190	8730	31530	0.6		
6300					11500	38430	10350	36510	0.6		
8000					13200	43670	11880	41480	0.5		
10000					15100	52580	13590	49950	0.5		
12500					19300	61130	16470	58080	0.5		
16000					22500	71960	20250	68370	0.5		
20000					26500	80960	23850	76910	0.4		10.0

# 环氧树脂浇注干式变压器

Dry transformer



## SC(B)11/13 系列 10KV 级 三相树脂浇注干式变压器

SC(B)11/13 series 10kV Cast resin dry-type distribution transformers

### 产品特点 Characteristics

SC(B)11 系列空载损耗比 GB/T10228-2008 表 1 组 A 降低 20% 以上, SC(B)13 系列空载损耗比 GB/T10228-2008 表 1 组 A 降低 45% 以上, 负载损耗比 GB/T10228-2008 表 1 组 A 降低 5%

铁心采用先进的全斜四阶梯步进叠积结构, 大大地改善了接缝处的磁通分布, 有效地降低了空载损耗、空载电流及噪声。铁心为矩形结构, 极大地减小了三相铁心柱的中心距尺寸, 在降低变压器空载损耗和噪声的同时还减小了变压器的外形尺寸。

高低压线圈采用矩形绕组结构, 内外层均用进口玻璃丝网格和玻璃丝带填充缠绕, 与树脂渗透固化为一体, 具有极强的抗开裂和抗突发短路的能力。绕组采用先进的“气道棒”技术, 按设计需要在绕组的发热中心设置一层或多层轴向气道, 使整机的散热达到最佳效果, 并在气道中生成多根支撑筋, 有效的增强了绕组的机械强度。

变压器绕组为薄绝缘、少填料全浇注型, 防御能力极强, 为立即上电型变压器。产品浇注采用最新一代德国 HEDRICH 真空浇注设备。具有真空薄膜脱气、计量泵、静态混料等先进技术, 保证环氧混合料的配比精度和浇注质量。绕组的局部放电量小于 5pC。

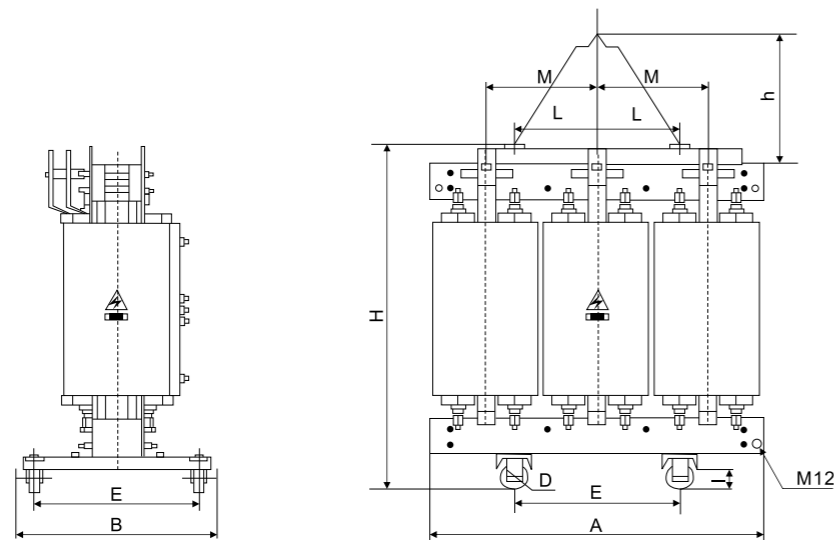
The no-load loss of SC(B)11 series is reduced more than 20% and SC(B)13 reduced more than 45% compared with transformer of same capacity in group A of table 1 of GB/T10228-2008. The on-load loss of both SC(B)11 and SC(B)13 is reduced 5%

With the oblique four-ladder stepping structure, the iron core improves efficiently the flux distribution at the seam and reduces the no-load loss and noise. Rectangular core, which greatly reduces the core size, decreases the no-load loss and noise of the transformer as well the dimensions of the unit.

Rectangular winding structure is adopted. The inner and outer surfaces of the windings are wound with glass fiber grid and glass braid which are integrated closely with resin to prevent crack and withstand sudden short circuit.

According to the design requirement, one layer or multilayer of gas channels are required to be installed in the heating center, so that heat dissipation can be optimized, in the meantime, the brace rods formed in the gas channel effectively reinforces the mechanical strength of the winding.

Both high and low voltage windings are resin cast. Adopting new technique of thin coating and low filler, windings are cast with resin in the latest HEDRICH vacuum casting equipment of which vacuum film degassing device, dosing pump and static mixer ensure the best molding quality and the partial discharge less than 5pC.



高压 (kV) : 11,10.5,10,6.6,6.3,6  
HV (kV) : 11,10.5, 10,6.6,6.3,6

低压 (kV) : 0.4  
LV (kV) : 0.4

联结组标号: Dyn11 或 Yyn0  
Connection Symbol: Dyn11 or Yyn0

绝缘水平: L175AC35/L10AC3  
Insulation level: L175AC35/L10AC3

# 环氧树脂浇注干式变压器

Dry transformer



## SC(B)11/13 系列 10KV 级 三相树脂浇注干式变压器

SC(B)11/13 series 10kV Cast resin dry-type distribution transformers

### 10KV 级 三相树脂浇注干式变压器 10kV Cast resin dry-type distribution transformers

容量 Rated power	Po(W)		PQ (75℃) W	I <sub>0</sub> %	U <sub>k</sub> %	L <sub>pa</sub> dB	外型尺寸 (mm) Overall Dimension								重量 Weight (kg)		
	11 型	13 型					A	B	H	E	M	D	I	L		H	
30	170	120	620	1.6			38	735	525	880	400	245	125	100	185	390	370
50	240	170	870	1.4			38	765	675	980	550	255	125	100	195	420	470
80	320	230	1200	1.3			40	825	675	1000	550	275	125	100	210	430	600
100	350	250	1370	1.2			40	825	675	1050	550	275	125	100	210	440	640
125	415	295	1610	1.1			40	855	675	1110	550	285	125	100	215	440	710
160	480	340	1860				42	900	675	1140	550	300	125	100	225	470	880
200	550	390	2200	1.0	4		42	945	675	1200	550	315	125	100	240	490	1020
250	630	450	2410				42	960	675	1220	550	320	125	100	240	510	1130
315	770	550	3030	0.8			44	1080	785	1290	660	360	125	100	270	560	1460
400	855	610	3480				44	1110	785	1360	660	370	125	95	280	580	1760
500	1015	725	4260				44	1140	785	1400	660	380	125	95	285	600	1960
630	1180	840	5130	0.7			44	1170	785	1490	660	390	125	95	295	620	2260
630	1135	810	5200				44	1200	785	1400	660	400	125	95	300	640	2120
800	1330	950	6070				46	1250	980	1550	820	415	160	130	315	650	2550
1000	1550	1110	7100	0.6	6		46	1320	980	1650	820	440	160	120	330	690	3160
1250	1830	1310	8460				46	1400	980	1780	820	455	160	120	345	740	3800
1600	2140	1530	10250				48	1530	980	1900	820	520	160	120	385	780	4420
2000	2650	1890	12620	0.5			48	1650	1270	1990	1070	550	200	150	415	820	5580
2500	3110	2220	15000				48	1830	1270	2080	1070	610	200	150	460	900	6850

引用标准: GB/T 1094.11-2007: GB/T10228-2008: IEC60076-11: 2004: DIN42523-1992.

表中所示负载损耗为 75℃ 参考温度时的值, 120℃ 参考温度时的值比表中数据增加 14.5%。

根据客户需要在高压侧夹件上安装三相 10KV 等级绝缘柱。

集中所提尺寸仅供参考, 实际安装尺寸按订货时提供的总装外形图。

Application standards: GB/T 1094.11-2007: GB/T10228-2008: IEC60076-11: 2004: DIN42523-1992.

The values of load losses in the table are tested at 75℃ and the values at 120℃ should be increased by 14.5%.

10KV insulators for three phases will be installed on the HV side of the top yoke clamp according to the customer's request. Dimensions above are for reference and the installation should be in accordance with the final assembling drawings provided when ordering.

## 环氧树脂浇注干式变压器

Dry transformer



SC(B)11/13 系列 10KV 级 三相树脂浇注干式变压器

SC(B)11/13 series 10kV Cast resin dry-type distribution transformers

10KV 级 三相树脂浇注干式变压器 10kV Cast resin dry-type distribution transformers

项目 Item	具体内容 Description
额定容量 Rated Power	kVA
高压额定电压 Rated H.V. voltare	kV <input type="checkbox"/> 10 <input type="checkbox"/> 35 <input type="checkbox"/> 其他 Qther
高压分接范围 Tapping voltare	% <input type="checkbox"/> ±2×2.5 <input type="checkbox"/> 其他 Qther
低压额定电压 Rated L.V. voltare	kV <input type="checkbox"/> 0.4 <input type="checkbox"/> 其他 Qther
相数 NO.of phases	<input type="checkbox"/> 单相 Single-Phase <input type="checkbox"/> 三相 Three-Phase
频率 Frequency	Hz <input type="checkbox"/> 50 <input type="checkbox"/> 60
联接组标号 Connection symbol	<input type="checkbox"/> Yyn0 <input type="checkbox"/> Dyn11 <input type="checkbox"/> 其他 Qther
阻抗百分值 Impedance	% <input type="checkbox"/> 4 <input type="checkbox"/> 6 <input type="checkbox"/> 8 <input type="checkbox"/> 其他 Qther
绝缘等级 Insulation level	<input type="checkbox"/> F <input type="checkbox"/> 其他 Qther
冷却方式 Cooling method	<input type="checkbox"/> AN <input type="checkbox"/> AN/AF <input type="checkbox"/> 其他 Qther
防护等级 Protection level	<input type="checkbox"/> IP00 <input type="checkbox"/> IP20 <input type="checkbox"/> IP25 <input type="checkbox"/> 其他 Qther
罩壳进出线方式 Input & output of cable	<input type="checkbox"/> 上进上出 (HS1) <input type="checkbox"/> 下进上出 (HS2) <input type="checkbox"/> 下进下出 (HS3) <input type="checkbox"/> 侧出 top in-top out bottom in-top out bottom in-bottom out side out
使用环境 Service condition	<input type="checkbox"/> 海拔 Height ≤ 1000mv <input type="checkbox"/> 气温 Ambient temperature °C
安装温度控制系统 Install temperature controller system	
订货数量 Order quantity	
交货日期 Date of delivery	
其他要求 Other requirements	

### 出厂试验主要项目 Routine tests

- |                     |   |
|---------------------|---|
| (1) 电压比试验及电压矢量关系的校定 | 1.Measurement of voltage ratio and check of voltage vector relationship |
| (2) 绕组电阻的测定         | 2.Measurement of winding resistance                                     |
| (3) 绝缘电阻的测定         | 3.Measurement of insulation resistance                                  |
| (4) 外施耐压试验          | 4.Separate source voltage withstand test                                |
| (5) 感应耐压试验          | 5.Induced over voltage withstand test                                   |
| (6) 空载损耗及空载电流测量     | 6.Measurement of no-load loss and current                               |
| (7) 短路阻抗及负载损耗测量     | 7.Measurement of impedance voltage and load loss                        |
| (8) 局部放电测量          | 8.Measurement of partial discharge                                      |



## 非晶合金 干式变压器

## Amorphous alloy dry transformer

110kV, 220kV EHV transformer

Amorphous metal transformer

Oil-immersion transformer

Resin insulation transformer

Environmental protection transformer

Reactors

