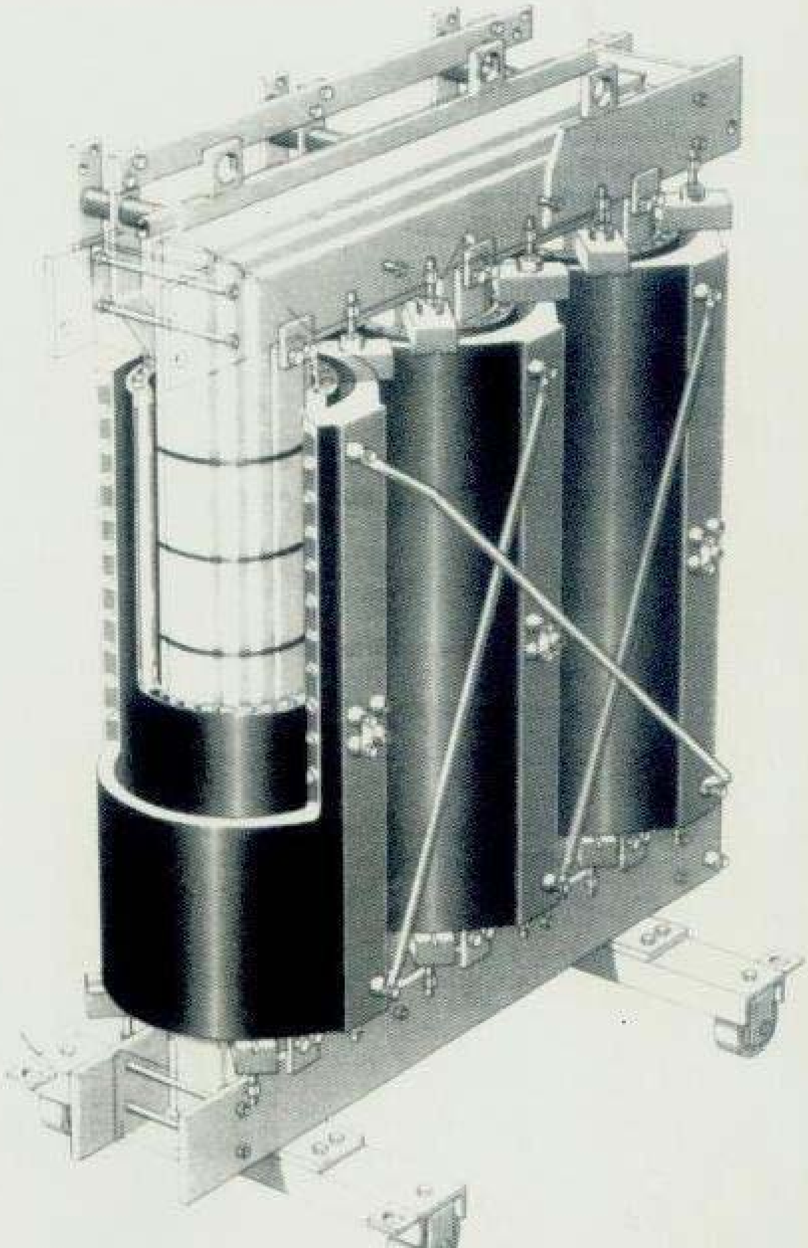
许继集团有限公司
XJ GROUP CORPORATION



SC（B）9 干式变压器技术手册

Technical Manual of SC(B)9 Dry-type Transformer

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SC(B)9 系列 10kV 级 30～2500kVA 电力变压器
SC(B)9 series 10kV 30～2500kVA power transformer

● 型号标志 Type symbol

SC Z (B) 9 - XXX / □

- □ — 额定高压电压 (kV) Rated Hv voltage
- XXX — 额定容量 (kVA) Rated capacity
- 9 — 性能水平代号(9为节能型) Ability level code(9 means energy-saving)
- (B) — 箔式线圈(线绕线圈无此字母) Foil coil(copper wire without the letter)
- Z — 有载调压(无励磁调压无此字母) On-Load tap-changer(Non-exciation without the letter)
- SC — 三相固体成型(环氧真空浇注) Three phese solid molding(epoxy vaccum casting)

● 产品标准(Standard)：GB/T10228, GB6450, IEC726, DIN42523

额定高压(Rated HV)：10(10.5, 11, 6, 6.3, 6.6)kV　　联结组别(Connection symbol)： Yyn0 or Dyn11

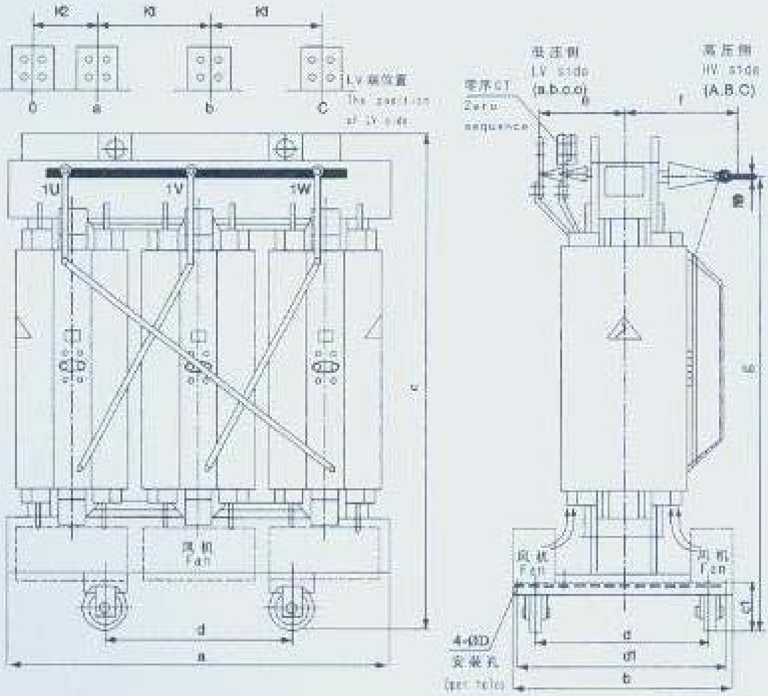
额定低压(Rated LV)： 0.4kV　　绝缘水平(Insulation level)： LI75AC35/LI0AC3

型号 Type	P0 (W)	PK (75℃)	UK %	I0 %	ILP dB(A)	GT kg	尺寸 Size (mm) a	b	c	d	d1	e	f	g	k1	k2	低压端子 LV terminal
SC9-30/10	200	560	4	2.8	40	320	750	520	750	420	420	190	240	700	250	65	(a)
SC9-50/10	260	850		2.4	40	370	800	520	1030	460	460	220	280	1000	270	65	(a)
SC9-80/10	320	1100		2.2	40	480	930	620	1060	520	520	230	290	1030	315	65	(a)
SC9-100/10	350	1450		2.2	41	580	930	620	1150	520	520	230	290	1100	315	65	(a)
SC9-125/10	430	1600		1.6	43	660	1020	620	1160	520	520	240	295	1110	340	65	(a)
SC9-160/10	480	1950		1.6	45	820	1080	620	1190	520	520	240	295	1150	360	80	(b)
SC9-200/10	550	2300		1.6	45	930	1080	620	1260	520	520	245	300	1190	360	80	(b)
SC9-250/10	650	2400		1.6	46	1120	1140	620	1300	520	520	245	300	1210	380	80	(b)
SC9-315/10	750	3100		1.4	47	1280	1200	850	1410	670	820	250	310	1310	400	100	(c)
SC9-400/10	790	3600		1.4	47	1500	1230	850	1490	670	820	260	320	1380	410	120	(d)
SC9-500/10	920	4250		1.4	47	1900	1290	850	1570	670	820	265	325	1460	430	120	(d)
SC9-630/10	1200	5400		1.2	47	2300	1350	850	1860	670	820	265	330	1730	450	140	(e)
SC9-630/10	1090	5400	6	1.2	47	2050	1420	850	1590	670	820	265	330	1480	470	120	(d)
SCB9-800/10	1240	6450		1.2	47	2520	1470	1050	1720	820	1010	270	330	1610	490	120	(d)
SCB9-1000/10	1440	7300		1	47	3190	1590	1050	1830	820	1010	280	340	1690	530	140	(e)
SCB9-1250/10	1600	8800		1	50	3800	1650	1050	1960	820	1010	285	340	1820	550	140	(e)
SCB9-1600/10	1900	10800		1	50	4300	1800	1050	2120	820	1010	300	350	1960	600	140	(f)
SCB9-2000/10	2600	13200		0.8	50	5600	1920	1190	2290	1070	1070	310	360	2170	640	160	(g)
SCB9-2500/10	3150	15800		0.8	50	6150	2070	1190	2330	1070	1070	330	370	2210	690	160	(h)

说明：凡是使用我公司变压器的变压器房应具有良好的通风条件。自然通风或强迫通风均要保证变压器的每1KW损耗，房间内至少具有4m³/min的通风量。

Note:Ventilation requirement: > 4m³/min/1kW loss.

外形尺寸图 Overall Dimensions



注:

1、变压器容量Sn ≤ 80kVA不带小车轮;100kVA ≤ Sn ≤ 630kVA时, c1 = 160;Sn ≥ 800kVA, c1 = 240。

2、变压器安装开孔位置尺寸为d(左图)× d1(右图), 孔径φ14(S ≤ 630kVA), φ18(S ≥ 800kVA)。

3、强迫风冷系统(风机)尺寸不超过本体尺寸(a × b)范围。

4、变压器在运输和运行时应将轮子去掉。

5、为了方便现场维护及安全运行, 变压器本体最大处距墙壁不得小于1米。

Note:

1. Transformer capacity Sn ≤ 80kVA(without wheel);100kVA≤Sn≤630kVA, c1=160;Sn≥800kVA, c1=240.

2. The mounting cut-out position is d(left figure)*d1(right figure), φ14(S≤630kVA), φ18(S≥800kVA).

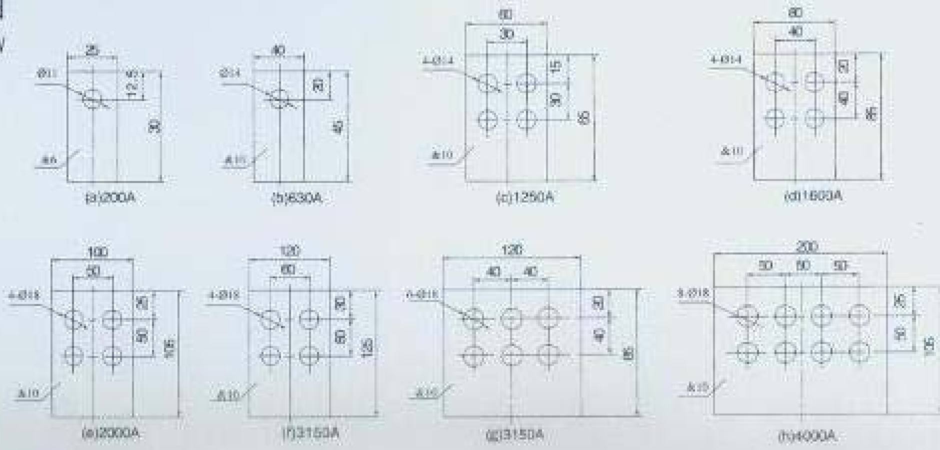
3. The size of AF cooling system (fan) will not exceed the size of transformer body(a×b).

4. The wheels shall be disassembled at transporting and running.

5. For field maintenance and safety, the distance from transformer body to wall shall not be less than 1M.

低压接线端子图

Terminal diagram of LV wiring



- 当电网电压波动时，为提供高质量的稳定电压，必须对变压器进行电压调整。
- 可靠的不间断电源对用户越显重要，有载调压变压器的应用更趋广泛。
- 一体化设计的有载调压变压器，结构紧凑、占地面积小、安装方便。
- 有载分接开关采用干式真空箱型结构，由电动机构、带过渡电阻的真空切换开关和分接选择器组成。
- 有载分接开关配备自动控制器，便于现场或远程控制，可按用户需要提供计算机接口。

- For providing high quality voltage, when power voltage fluctuates, we must regulate transformer voltage.
- Reliable UPS is more important to customers, the applications of on-load tap changing transformers are getting wider.
- Integrative on-load tap changing transformer, featuring compact structure, small space, and convenient installation.
- On-load tap changer adopts dry-type vaccum box structure, consists of motor device, vaccum switch with transition resistor, and tapping selector.
- Automatic controller is equipped in the on-load tap changer for site or remote control. Optional computer interface is available.

额定高压(Rated HV): 10(10.5, 11, 6, 6.3, 6.6)kV　额定低压(Rated LV): 0.4kV　绝缘水平(Insulation level): LI75AC35/LI0sAC3
联结组别(Connection symbol): Yyn0 or Dyn11　分接范围(Tapping range): ±4 ×2.5%(9分接)(9 tapping)

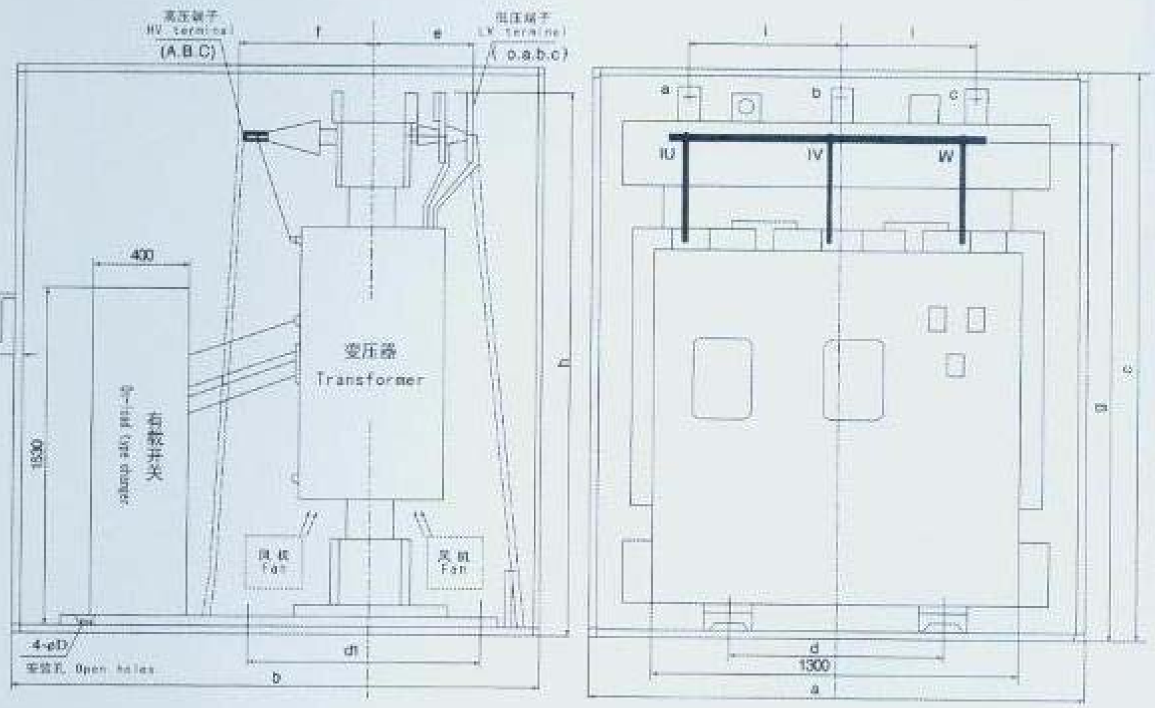
型号 Type	P0 (W)	PK (75℃)	UK %	尺寸 Size(mm)									重量 kg
				a	b	c	d	d1	e	f	g	h	
SCZ9-250/10	700	2600	4	1600	1720	1600	520	820	245	300	1110	1200	1765
SCZ9-315/10	850	3340		1600	1720	1600	670	820	250	310	1195	1310	2020
SCZ9-400/10	920	3900		1720	1800	1800	670	820	260	320	1220	1365	2220
SCZ9-500/10	1150	4700		1720	1800	1800	670	820	265	325	1300	1430	2555
SCZ9-630/10	1300	5670		1920	2000	2200	670	820	265	330	1565	1720	2880
SCZ9-630/10	1200	5790	6	1920	2000	2200	670	820	265	330	1315	1440	3000
SCBZ9-800/10	1450	6800		1920	2000	2200	820	990	270	330	1450	1570	3320
SCBZ9-1000/10	1650	8000		2000	2000	2200	820	990	280	340	1495	1620	3780
SCBZ9-1250/10	2050	9700		2120	2000	2200	820	990	285	340	1625	1840	4530
SCBZ9-1600/10	2450	11400		2200	2000	2200	820	990	300	400	1765	1980	5140
SCBZ9-2000/10	2900	14000		2300	2200	2400	820	1060	310	465	1925	2210	6200
SCBZ9-2500/10	3450	16700		2500	2200	2400	1070	1060	330	475	1975	2200	7410

说明:
1、有载调压变压器的低压端子、高压端子与同一容量无励磁调压变压器相同。
2、带外壳的有载产品，外壳在右侧面（面向开关）开单门。
3、有载调压变压器并联运行时，必须配置同步控制器，且并联运行台数不可超过4台。

Note:
1. LV&HV terminals of on-load tap changing transformer are the same with that of non-exciation transformer of same capacity.
2. Single door is located at the right side of the enclosure for on-load tap changing transformer.
3. When on-load tap changing transformers run in parallel, synchro controller shall be equipped and the runing transformers shall not be more than 4 units.

10kV 有载调压变压器控制原理图

Control principle diagram of 10kV on-load tap changing transformer



注:

1、变压器安装开孔位置为 d × d1，孔径 φ 14(S ≤ 630kVA)，φ 18(S ≥ 800kVA)。

2、低压端子 o, a, b, c 位置尺寸同第 1 页。

3、有载调压变压器出厂时不带小车轮。

4、有载调压变压器本体不带外壳尺寸与带外壳尺寸基本上一样，其高度同无磁调压变压器。

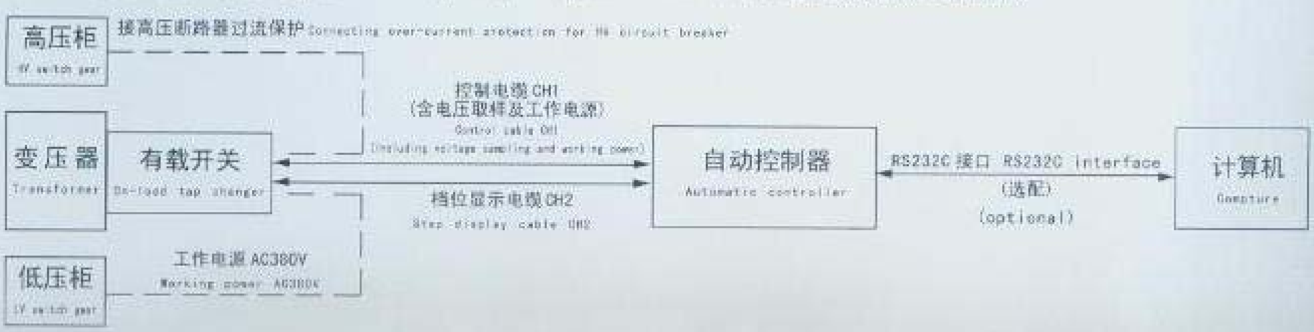
5、为了方便现场维护及安全运行，外壳距墙壁不得少于 1 米。

6、温控器安装在外壳低压侧。

Notes:

1. The cut-out position for transformer's installation is d×d1. The diameter of hole is φ14(S≤630kVA), φ18(S≥800kVA).
2. Dimension of LV terminal O, A, B, C is the same with that of Page One.
3. On-load tap changing transformer doesn't fix wheel for ex-factory.
4. The On-load tap changing transformer without protective casing has the same dimension with the transformer with casing. Its height is same with the non-exciting voltage regulating transformer.
5. For maintenance and safety, the distance from enclosure to wall is not less than 1 meter.
6. Temperature controller is installed in the LV side of protective casing.

10kV 有载调压变压器控制原理图 Control principle diagram of 10KV on-load tap changing transformer



SC(B)9 系列带保护外壳变压器

SC(B)9 Series Transformers With Protective Casing

- 变压器保护外壳的防护等级为 IP20 和 IP23 两种.
- IP20 外壳可防止直径大于 12mm 的固体异物进入，为带电部分提供安全屏障。
  IP23 外壳更兼具备防止与垂直线成 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(S ≤ 630kVA)的下降约 5%，容量较大(S ≥ 800kVA)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。

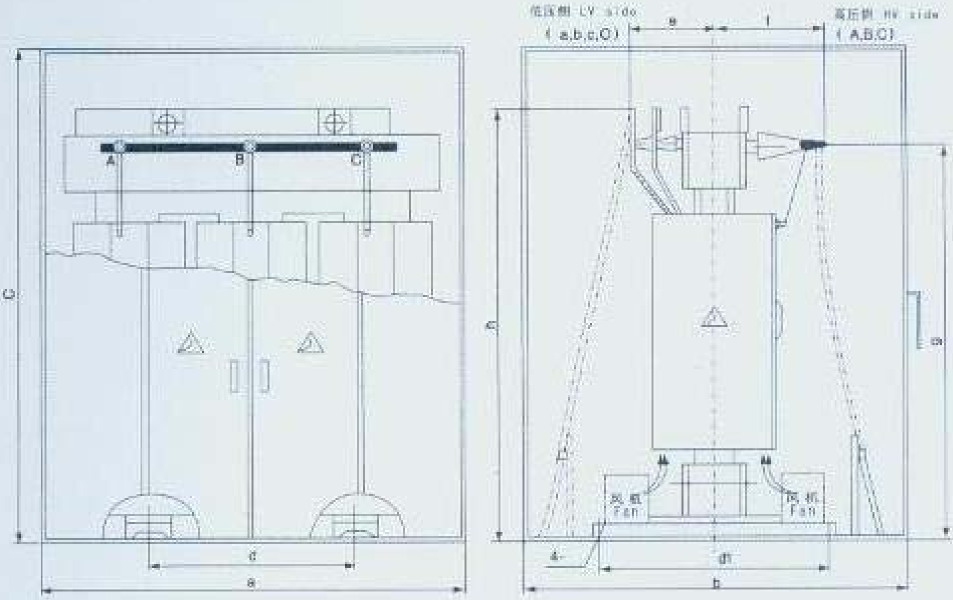
- The protection class of transformer's protective casing has two kinds: IP20 and IP23.
- IP20 casing can prevent solid substance whose diameter exceeds 12mm. It provides safe shield for live parts. ALso IP23 can prevent water drip which is 60 degree against vertical plane. It is applied outdoors.
  Note: IP23 casing will decrease the cooling ability, small power transformer (S≤630kVA) will decrease by 5% or so; large power transformer (S≥800KVA) will decrease by 10% or so.
- It is convenient to equip support connection for HV&LV cable incoming(outgoing) wire.

额定高压(Rated HV):10(10.5, 11, 6, 6.3, 6.6)kV　　联结组别(Connection symbol): Yyn0 or Dyn11
额定低压(Rated LV): 0.4kV　　绝缘水平(Insulation level): LI75AC35/LI0AC3

型号 Type	UK %	尺寸 Size (mm)									重量 (Weight)kg
		a	b	c	d	d1	e	f	g	h	
SC9-30/10	4	1320	1120	1320	420	420	190	240	640	710	415
SC9-50/10		1320	1120	1320	460	460	220	280	755	830	620
SC9-80/10		1320	1120	1320	520	520	230	290	870	940	650
SC9-100/10		1320	1120	1320	520	520	230	290	950	955	740
SC9-125/10		1320	1120	1320	520	520	240	295	1000	1030	890
SC9-160/10		1520	1120	1520	520	520	240	295	1050	1050	1005
SC9-200/10		1520	1120	1520	520	520	245	300	1060	1100	1125
SC9-250/10		1600	1120	1600	520	520	245	300	1110	1200	1300
SC9-315/10		1600	1100	1600	670	820	250	310	1195	1310	1515
SC9-400/10		1720	1200	1800	670	820	260	320	1220	1340	1890
SC9-500/10		1720	1200	1800	670	820	265	325	1300	1420	2170
SC9-630/10		1920	1320	2200	670	820	265	330	1565	1710	2470
SC9-630/10	6	1920	1320	2200	670	820	265	330	1315	1430	2530
SCB9-800/10		1920	1320	2200	820	1010	270	330	1450	1570	2980
SCB9-1000/10		2000	1320	2200	820	1010	280	340	1495	1640	3495
SCB9-1250/10		2120	1400	2200	820	1010	285	340	1625	1770	4295
SCB9-1600/10		2200	1400	2200	820	1010	300	350	1765	1930	5065
SCB9-2000/10		2300	1600	2400	1070	1070	310	360	1925	2050	6050
SCB9-2500/10		2500	1600	2400	1070	1070	330	370	1975	2100	6790

10KV 电力变压器 IP20 外壳尺寸图

The dimension diagram of 10kV power transformer with IP20 protective casing



注:

1、变压器安装开孔位置为 d × d1，孔径 φ 14(S ≤ 630kVA)，φ 18(S ≥ 800kVA)。

2、低压端子 o, a, b, c 位置尺寸同第 1 页。

3、变压器在出厂时不带小车轮。

4、为了方便现场维护及安全运行，外壳距墙壁不得少于 1 米。

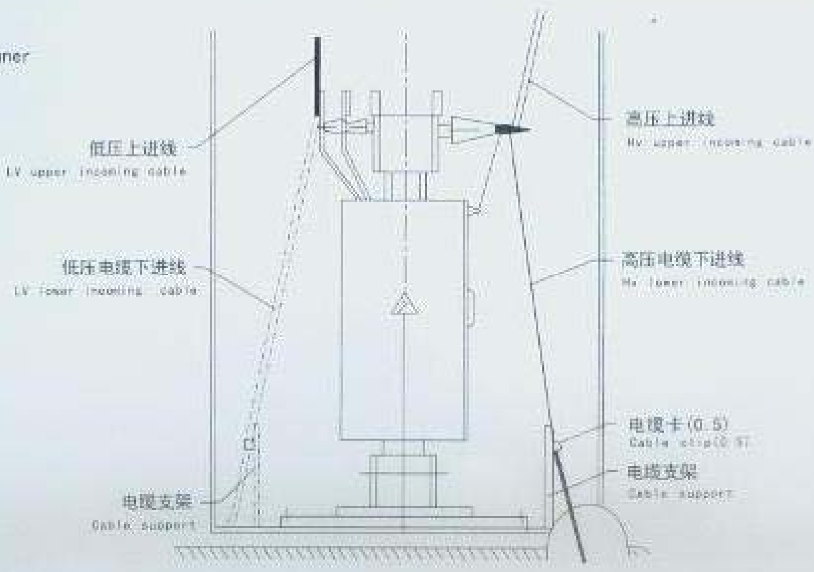
5、温控器安装在外壳低压侧。

Notes:

1. The cut-out position for transformer's installation is d×d1. The diameter of hole is φ14(S≤630kVA), φ18(S≥800kVA).
2. Dimension of LV terminal O, A, B, C is the same with that of Page One.
3. Transformer doesn't fix wheel for ex-factory.
4. For maintenance and safety, the distance from enclosure to wall is not less than 1 meter.
5. Temperature controller is installed in the LV side of protective casing.

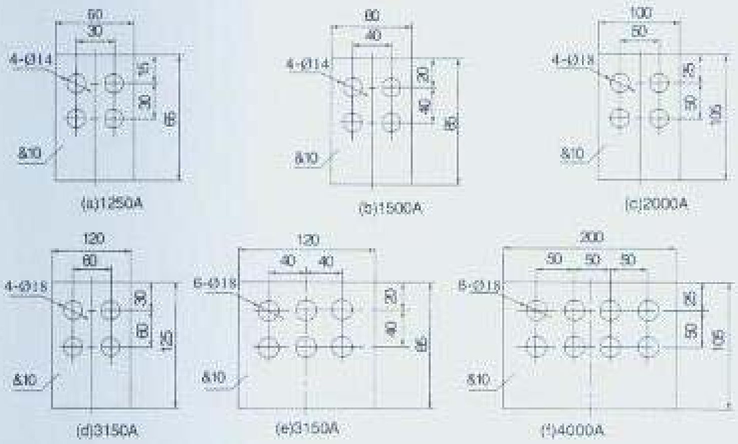
进线方式示意图

Sketch map of incoming manner



SC(B)9 系列标准封闭母线
SC(B)9 series standard enclosed bus

封闭母线端子 Enclosed bus terminal



10KV 级电力变压器封闭母线外形尺寸
Outline dimension of 10kv power transformer enclosed bus

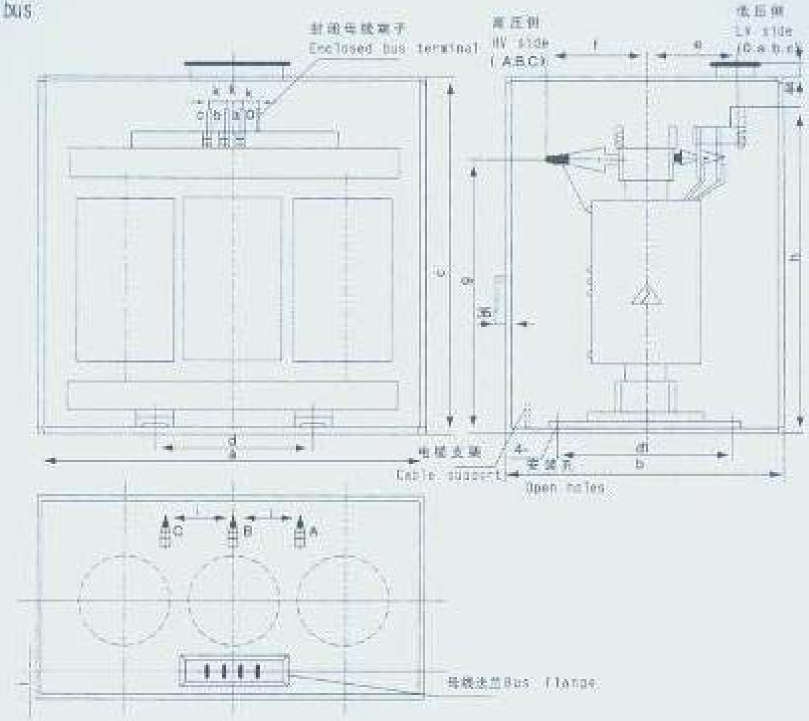
型号 Type	UK %	尺寸 size(mm)												低压端子 Lv terminal
		a	b	c	d	d1	e	f	g	h	I	j	k	
SC9-250/10	4	1600	1120	1600	520	520	245	300	1110	1500	350	210	100	(a)
SC9-315/10		1600	1120	1600	670	820	250	310	1195	1560	350	210	100	(a)
SC9-400/10		1720	1200	1800	670	820	260	320	1220	1760	350	210	100	(a)
SC9-500/10		1720	1200	1800	670	820	265	325	1300	1760	350	210	100	(b)
SC9-630/10		1920	1320	2200	670	820	265	330	1565	1860	350	240	100	(b)
SC9-630/10	6	1920	1320	2200	670	820	265	330	1315	1860	350	240	100	(b)
SCB9-800/10		1920	1320	2200	820	1010	270	330	1450	1860	350	240	100	(c)
SCB9-1000/10		2000	1320	2200	820	1010	280	340	1495	1860	350	240	100	(d)
SCB9-1250/10		2100	1400	2200	820	1010	285	340	1625	2060	350	290	150	(e)
SCB9-1600/10		2200	1400	2200	820	1010	300	350	1765	2240	350	290	150	(f)
SCB9-2000/10		2300	1600	2400	1070	1070	310	360	1925	2460	350	290	150	(f)
SCB9-2500/10		2500	1600	2400	1070	1070	330	370	1975	2460	350	290	150	(f)

法兰尺寸 Flange size

容量 Capacity(KVA)	X1	X2	X3	Y1	Y2	Y3
≤500	500	400	112.5	260	160	210
630～1000	500	400	112.5	320	220	270
1000	500	400	112.5	320	220	270
1250	500	400	112.5	355	255	305
1250～2500	650	550	150	410	310	360

封闭母线产品外形图

Overall diagram of enclosed bus



注:

1、变压器安装开孔位置为 d × d1，孔径 ф 14 (S ≤ 630kVA)，ф 18 (S ≥ 800kVA)。

2、变压器在出厂时不带小车轮。

3、为了方便现场维护及安全运行，外壳距墙壁不得少于 1 米。

4、温控器安装在外壳低压侧。

Notes:

1. The cut-out position for transformer's installation is d×d1. The diameter of hole is ф14 (S≤630kVA), ф18 (S≥800kVA).

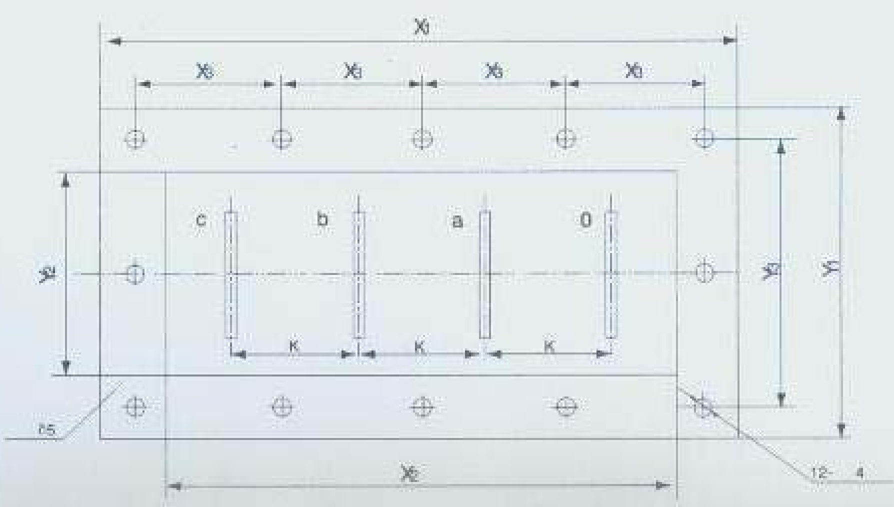
2. Transformer doesn't fix wheel for ex-factory.

3. For maintenance and safety, the distance from enclosure to wall is not less than 1 meter.

4. Temperature controller is installed in the LV side of protective casing.

法兰外形图

Flange outline drawing



SC(B)9 系列低压标准横排侧出线
SC(B)9 series LV standard horizontal bar side outlet

● 为方便变压器与低压开关柜并排放置时端子间的联接，缩短交货周期，请您选用下列标准横排侧出线产品。

● For the convenience to link the terminals when transformer and switch cabinet are placed abreast and to shorten the delivery period, please choose the following products about standard horizontal bar side outlet.

标准横排出线外形尺寸
The overall size of standard horizontal bar size outlet

型号 Type	UK %	尺寸 Size(mm)										封母端子 Enclosed bus terminal
		a	b	c	d	d1	f	g	h	l	k	
SC9-250/10	4	1600	1120	2200	520	520	300	1110	2040	350	100	(a)
SC9-315/10		1600	1120	2200	670	820	310	1195	2040	350	100	(b)
SC9-400/10		1720	1200	2200	670	820	320	1220	2040	350	100	(c)
SC9-500/10		1720	1200	2200	670	820	325	1300	2040	350	100	(c)
SC9-630/10		1920	1320	2200	670	820	330	1565	2040	350	100	(d)
SC9-630/10	6	1920	1320	2200	670	820	330	1315	2040	350	100	(c)
SCB9-800/10		1920	1320	2200	820	1010	330	1450	2040	350	100	(c)
SCB9-1000/10		2000	1320	2200	820	1010	340	1495	2040	350	100	(d)
SCB9-1250/10		2120	1400	2200	820	1010	340	1625	2140	350	100	(d)
SCB9-1600/10		2200	1400	2200	820	1010	350	1765	2040	350	100	(e)
SCB9-2000/10		2300	1600	2400	1070	1070	360	1925	2240	350	120	双并(e)
SCB9-2500/10		2500	1600	2400	1070	1070	370	1975	2240	350	120	双并(e)

说明:

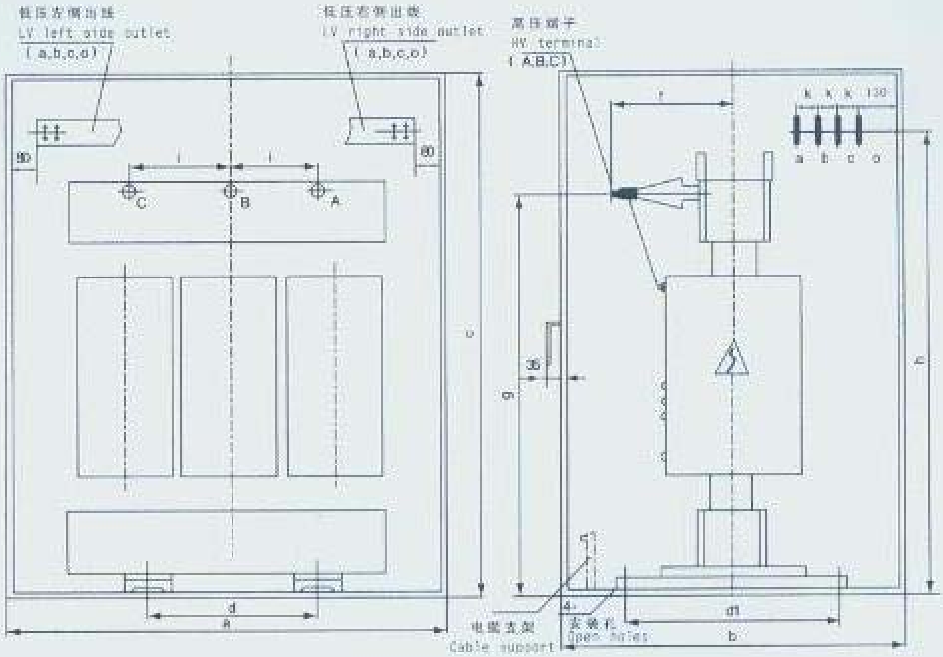
1、对于额定容量≤200kVA的变压器，仍按常规出线，其侧出线由用户用软电缆联接。
2、额定容量≥2000kVA时，a, b, c三相低压采用双铜排出线，两铜排间距为10mm。
3、因变压器侧出零线位于上方，对零线从底部引出的开关柜，建议变压器零线仍由上部进入开关柜。
4.建议变压器低压端子与开关柜铜排用软排连接。
5.外壳高压侧开有换调压分接的门。

Notes:

1.For the transformer with the rated capacity not more than 200kVA, the outlet is made according to normal practice. The user connects its side outlet by soft cables.
2.For the transformer with the rated capacity more than 2000kVA, a, b, c phase LV shall adopt double copper bar outlet and the distance between two copper bars is 10mm.
3.If the transformer outgoing neutral line is located on the top of transformer, and the neutral line is drawn into switch cabinet from the bottom. We suggest the neutral line of transformer is drawn into switch cabinet from the top.
4.We suggest that LV terminal of the transformer shall be connected with the copper bar of switch cabinet by soft bars.
5.The door for exchenging voltage-regulating tapping is mounted on the HV side of the enclosure.

标准横排侧出线外形图

The overall diagram of standard horizontal bar side outlet



注：

1、变压器安装开孔位置为 d × d1，孔径 ϕ 14(S ≤ 630kVA)，ϕ 18(S ≥ 800kVA)。

2、变压器在出厂时不带小车轮。

3、为了方便现场维护及安全运行，外壳距墙壁不得少于 1 米。

4、温控器安装在外壳低压侧。

Notes:

1. The cut-out position for transformer's installation is d×d1, The diameter of hole is ϕ14(S≤630kVA), ϕ18(S≥800kVA).

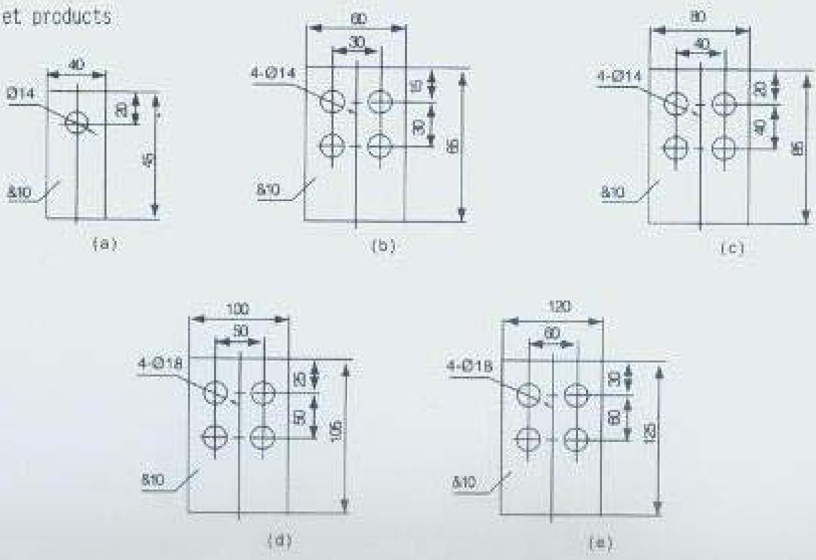
2. Transformer doesn't fix wheel for ex-factory.

3. For maintenance and safety, the distance from enclosure to wall is not less than 1 meter.

4. Temperature controller is installed in the LV side of protective casing.

侧出线产品端子图

The terminal drawing of side outlet products



SC(B)9 系列低压标准立排侧出线
SC(B)9 series LV standard stand copper bar side outlet

● 为简化变压器与低压开关柜并排放置时端子接口工作，缩短交货周期，请您选用下列标准立排侧出线产品。

● For the convenience to link the terminals when transformer and switch cabinet are placed areast and to shorten delivery period, please choose the following products about standard stand copper bar side outlet.

标准立排出线外形尺寸
The overall size of standard stand copper bar side outlet

型号 Type	UK %	尺寸 Size(mm)									封母端子 Enclosed bus terminal
		a	b	c	d	d1	f	g	h	k	
SC9-250/10	4	1800	1200	2200	520	520	300	1110	750	120	(a)
SC9-315/10		1800	1400	2200	670	820	310	1195	750	140	(b)
SC9-400/10		1800	1400	2200	670	820	320	1220	750	160	(c)
SC9-500/10		1800	1400	2200	670	820	325	1300	750	160	(c)
SC9-630/10		2000	1400	2200	670	820	330	1565	750	180	(d)
SC9-630/10	6	2000	1400	2200	670	820	330	1315	750	160	(c)
SCB9-800/10		2120	1600	2200	820	1010	330	1450	1500	160	(c)
SCB9-1000/10		2120	1600	2200	820	1010	340	1495	1500	180	(d)
SCB9-1250/10		2200	1600	2200	820	1010	340	1625	1500	180	(d)
SCB9-1600/10		2400	1600	2300	820	1010	350	1765	1500	200	(e)
SCB9-2000/10		2500	1700	2500	1070	1070	360	1925	1500	200	双并(e)
SCB9-2500/10		2500	1700	2500	1070	1070	370	1975	1500	200	双并(e)

说明：

1、对于额定容量≤200kVA的变压器，仍按常规出线，其侧出线由用户用软电缆自行联接。

2、额定容量≥2000kVA时，a, b, c 三相低压采用双铜排出线，两铜排间距为10mm。

3、外壳高压侧开有换调压分接的门。

4、建议变压器低压端子与开关柜铜排用软排连接。

5、低压端子图见前页低压标准横排侧出线。

Notes:

1. For the transformer with the rated capacity not more than 200kVA, the outlet is made according to normal practice. The user connects its side outlet by soft cables.

2. For the transformer with the rated capacity more than 2000kVA, a, b, c phase LV shall adopt double copper bar outlet and the distance between two copper bars is 10mm.

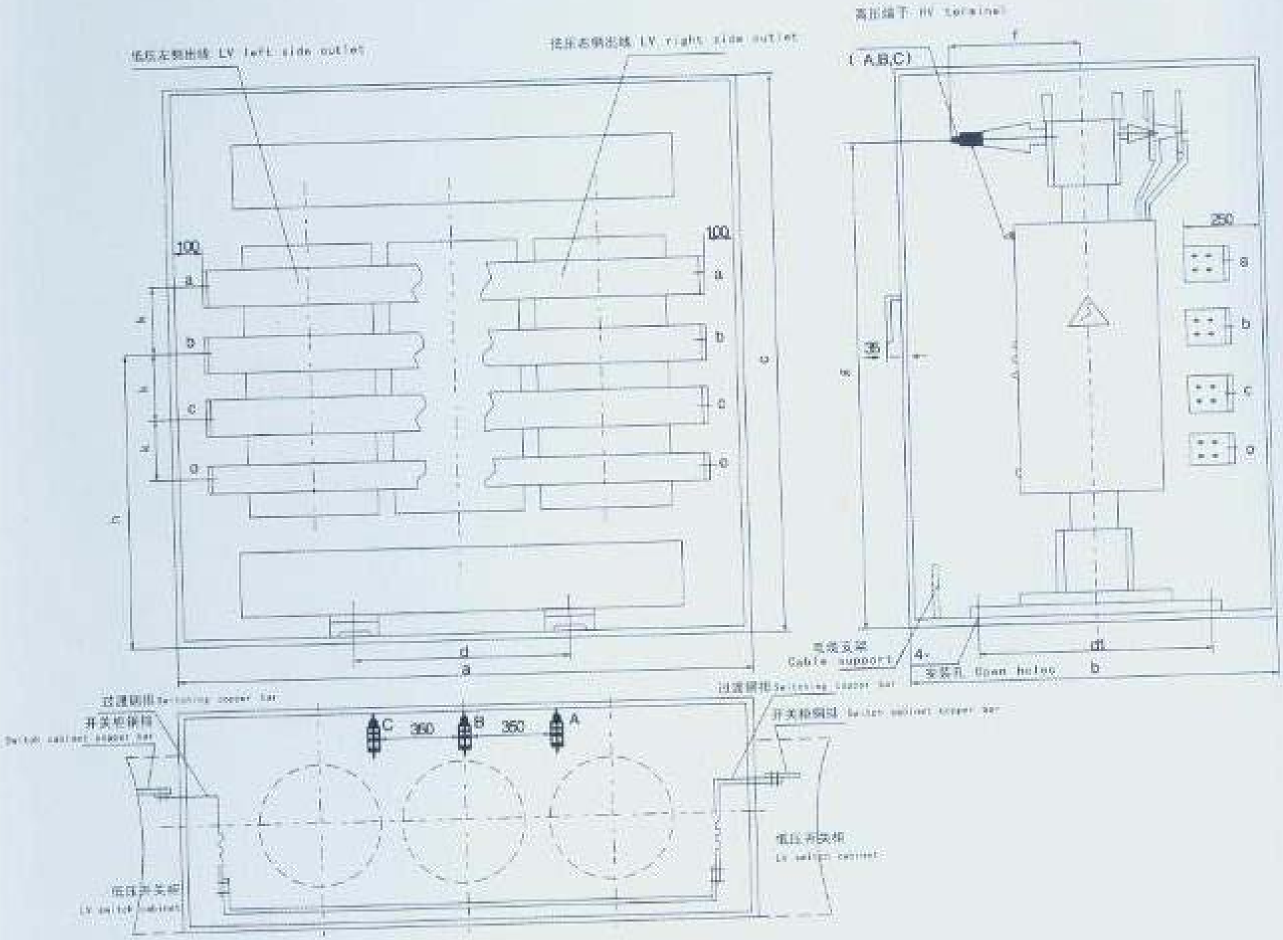
3. The door for exchanging voltage-regulating tapping is mounted on the HV side of the enclosure.

4. We suggest that LV terminal of the transformer shall be connected with the copper bar of switch cabinet by soft bars.

5. For LV terminal diagram, refer to LV standard horizontal bar side outlet.

标准立排侧出线外形图

The overall diagram of standard stand copper bar side outlet



注：

1、变压器安装开孔位置为 d × d1，孔径 φ 14(S ≤ 630kVA)，φ 18(S ≥ 800KVA)。

2、变压器在出厂时不带小车轮。

3、为了方便现场维护及安全运行，外壳距墙壁不得少于 1 米。

4、温控器安装在外壳低压侧。

Notes:

1. The cut-out position for transformer's installation is d×d1. The diameter of hole is φ14(S≤630kVA), φ18(S≥800kVA).

2. Transformer doesn't fix wheel for ex-factory.

3. For maintenance and safety, the distance from enclosure to wall is not less than 1 meter.

4. Temperature controller is installed in the LV side of protective casing.

SC(B)9 系列低压标准立排侧出线
SC(B)9 series LV standard stand copper bar side outlet

● 为简化变压器与低压开关柜并排放置时端子接口工作，缩短交货周期，请您选用下列标准立排侧出线产品。

● For the convenience to link the terminals when transformer and switch cabinet are placed yeast and to shorten delivery period,please choose the following products about standard stand copper bar side outlet.

标准立排出线外形尺寸
The overall size of standard stand copper bar side outlet

型号 Type	UK %	尺寸 Size(mm)									封母端子 Enclosed bus terminal
		a	b	c	d	d1	f	g	h	k	
SC9-250/10	4	1800	1200	2200	520	520	300	1110	750	120	(a)
SC9-315/10		1800	1400	2200	670	820	310	1195	750	140	(b)
SC9-400/10		1800	1400	2200	670	820	320	1220	750	160	(c)
SC9-500/10		1800	1400	2200	670	820	325	1300	750	160	(c)
SC9-630/10		2000	1400	2200	670	820	330	1565	750	180	(d)
SC9-630/10	6	2000	1400	2200	670	820	330	1315	750	160	(c)
SCB9-800/10		2120	1600	2200	820	1010	330	1450	1500	160	(c)
SCB9-1000/10		2120	1600	2200	820	1010	340	1495	1500	180	(d)
SCB9-1250/10		2200	1600	2200	820	1010	340	1625	1500	180	(d)
SCB9-1600/10		2400	1600	2300	820	1010	350	1765	1500	200	(e)
SCB9-2000/10		2500	1700	2500	1070	1070	360	1925	1500	200	双井(e)
SCB9-2500/10		2500	1700	2500	1070	1070	370	1975	1500	200	双井(e)

说明:

1、对于额定容量≤200kVA的变压器，仍按常规出线，其侧出线由用户用软电缆自行联接。

2、额定容量≥2000kVA时，a, b, c 三相低压采用双铜排出线，两铜排间距为 10mm。

3、外壳高压侧开有换调压分接的门。

4、建议变压器低压端子与开关柜铜排用软排连接。

5、低压端子图见前页低压标准横排侧出线。

Notes:

1.For the transformer with the rated capacity not more than 200kVA, the outlet is made according to normal practice. The user connects its side outlet by soft cables.

2.For the transformer with the rated capacity more than 2000kVA, a, b, c phase LV shall adopt double copper bar outlet and the distance between two copper bars is 10mm.

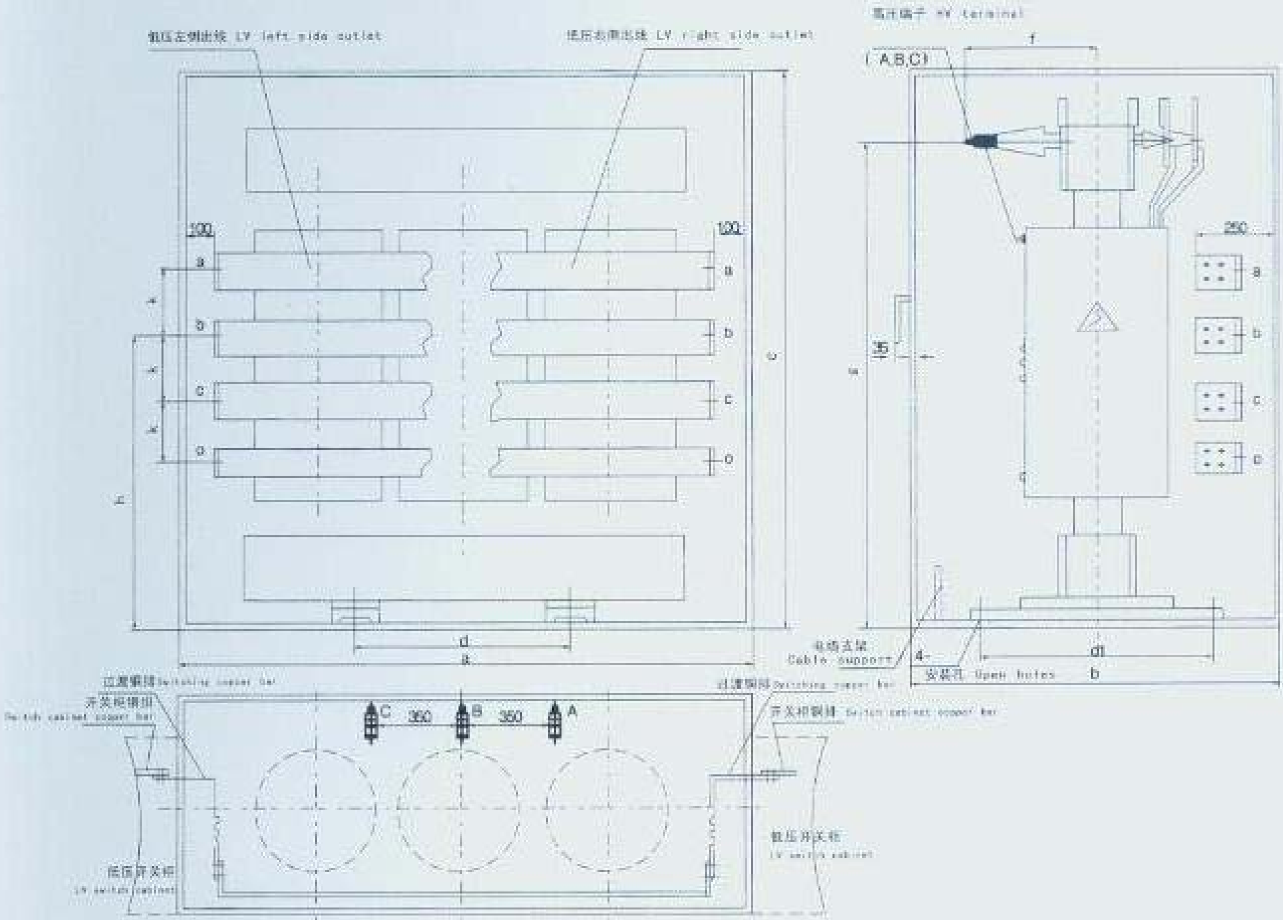
3.The door for exchanging voltage-regulating tapping is mounted on the HV side of the enclosure.

4.We suggest that LV terminal of the transformer shall be connected with the copper bar of switch cabinet by soft bars.

5.For LV terminal diagram, refer to LV standard horizontal bar side outlet.

标准立排侧出线外形图

The overall diagram of standard stand copper bar side outlet



注：

1、变压器安装开孔位置为 d × d1，孔径 φ 14(S ≤ 630kVA)，φ 18(S ≥ 800kVA)。

2、变压器在出厂时不带小车轮。

3、为了方便现场维护及安全运行，外壳距墙壁不得少于 1 米。

4、温控器安装在外壳低压侧。

Notes:

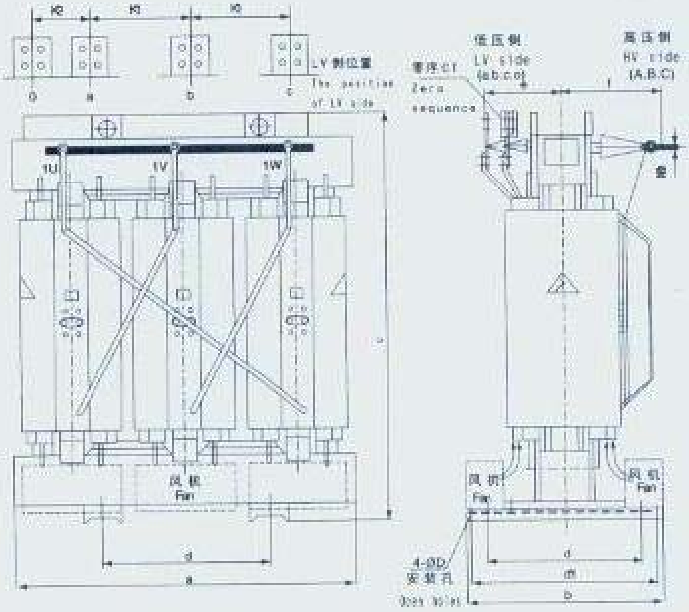
1. The cut-out position for transformer's installation is d×d1. The diameter of hole is φ14(S≤630kVA), φ18(S≥800kVA).

2. Transformer doesn't fix wheel for ex-factory.

3. For maintenance and safety, the distance from enclosure to wall is not less than 1 meter.

4. Temperature controller is installed in the LV side of protective casing.

外形尺寸图
Overall dimensions



注:

1、变压器安装开孔位置尺寸为 d(左图) × d1(右图), 孔径 ф 14(S ≤ 630kVA), ф 18(S ≥ 800kVA) ф 28(S ≥ 5000kVA)。

2、强迫风冷系统(风机)尺寸不超过本体尺寸(a × b)范围。

3、为了方便现场维护及安全运行, 变压器本体最大处距墙壁不小于1.5米。

Notes:

1.The cut-out position is d(left figure)*d1(right figure), ф14(S≤630kVA), ф18(S≥800kVA), ф28(S≥5000kVA).

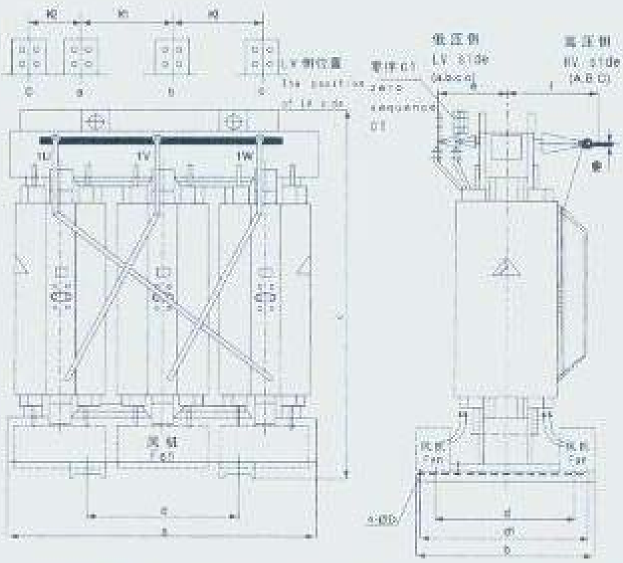
2.The size of AF cooling system (fan) will not exceed the dimension of the transformer body(a×b).

3.For maintenance and safety, the distance from enclosure to wall is not less than 1.5 meter.

主要技术参数 Main technical parameters
Voltage level:20/0.4(10.5,6.3,6)kV 50Hz,Ac:50KV

Type	Po	Pk(75℃)	Uk(75℃)	Io	Lpa	Dimensions							GT
	W	W	%	%	dB(A)	a	b	c	d	d1	e	f	kg
SC9-100/20	390	1900	6	2.2	45	1100	720	1100	520	520	245	450	560
SC9-125/20	400	2300	6	2.2	45	1120	720	1150	520	520	255	460	620
SC9-160/20	500	2400	6	2.2	46	1250	720	1150	520	520	260	480	510
SC9-200/20	580	2600	6	2.2	46	1250	720	1250	520	520	275	455	990
SC9-250/20	650	3000	6	1.8	46	1440	720	1350	670	820	280	465	1050
SC9-315/20	780	3450	6	1.8	49	1440	820	1380	670	820	280	465	1500
SC9-400/20	900	3900	6	1.8	49	1440	820	1380	670	820	290	470	1500
SC9-500/20	1000	5000	6	1.8	51	1560	1050	1600	1050	1050	350	475	1520
SC9-630/20	1300	6200	6	1.8	51	1560	1050	1680	1050	1050	375	500	2100
SCB9-800/20	1520	8000	6	1.3	52	1650	1050	1700	1050	1050	380	510	2510
SCB9-1000/20	1800	10100	6	1.3	52	1700	1050	1800	1050	1050	390	515	3500
SCB9-1250/20	2100	12100	6	1.3	52	1800	1050	1920	1050	1050	395	530	4350
SCB9-1600/20	2500	14400	6	1.3	55	1830	1050	2200	1050	1050	400	540	5400
SCB9-2000/20	3000	16500	7	1.3	55	1950	1190	2150	1070	1190	420	560	6250
SCB9-2500/20	3500	18900	7	1.3	57	2100	1190	2150	1070	1190	430	570	7100
SCB9-3150/20	4650	23000	8	1.1	58	2280	1350	2270	1070	1190	435	575	8500
SCB9-4000/20	5500	26500	8	1.1	59	2500	1350	2500	1070	1070	420	600	10000
SCB9-5000/20	6500	30400	8	1.1	63	2740	1350	2550	1070	1070	460	610	11850
SCB9-6300/20	8000	35700	9	1.1	63	2950	1850	2800	1475	1475	480	625	14800
SCB9-8000/20	9650	40000	9	1.0	63	2980	1850	2900	1505	1505	500	630	18900
SCB9-10000/20	11000	45000	9	0.9	63	3400	1850	2950	1505	1505	540	650	24500

外形尺寸图
Overall dimensions



注：
1、变压器安装开孔位置尺寸为 d(左图)× d1(右图)，孔径 ф 14(S ≤ 630kVA)，ф 18(S ≥ 800kVA)，ф 28(S ≥ 5000kVA)。
2、强迫风冷系统(风机)尺寸不超过本体尺寸(a × b)范围。
3、为了方便现场维护及安全运行，变压器本体最大处距墙壁不小于1.5米。

Notes:
1.The mounting cut-out position is d(left figure)*d1(right figure), ф14(S≤630kVA), ф18(S≥800kVA), ф28(S≥5000kVA)
2.The size of AF cooling system (fan) will not exceed the dimension of the transformer body(a×b).
3.For maintenace and safety,the distance from wall enclosure to is not less than 1.5 meter.

主要技术参数 Main technical parameter

Voltage level:35/0.4(11,10.5,6.6,6.3,3.3)kV 50Hz.Ac:70KV

Type	Po	Pk(75℃)	Uk(75℃)	Io	Lpa	Dimensions							GT
	W	W	%	%	dB(A)	a	b	c	d	d1	e	f	kg
SC9-100/35	570	1800	6	2.6	45	1420	720	1250	520	520	236	480	830
SC9-125/35	650	2000	6	2.5	45	1420	720	1250	520	520	240	505	950
SC9-160/35	710	2500	6	2.4	46	1440	720	1350	520	520	265	520	1100
SC9-200/35	800	3200	6	2.2	46	1440	720	1400	520	520	275	530	1250
SC9-250/35	870	3700	6	2.0	49	1460	720	1610	520	520	285	570	1450
SC9-315/35	1020	4250	6	2.0	50	1540	820	1650	670	820	300	575	1550
SC9-400/35	1300	4300	6	1.9	51	1670	820	1690	670	820	310	590	1610
SC9-500/35	1500	4700	6	1.9	51	1700	1050	1720	820	1050	350	595	2100
SC9-630/35	1650	7900	6	1.8	52	1790	1050	1780	820	1050	370	595	2300
SCB9-800/35	2100	8540	6	1.5	52	1850	1050	1900	820	1050	385	610	2950
SCB9-1000/35	2600	9900	6	1.4	55	1920	1050	1950	820	1050	395	620	3600
SCB9-1250/35	3100	12000	6	1.3	55	2080	1050	2100	820	1050	400	630	4250
SCB9-1600/35	3650	15000	6	1.2	55	2200	1050	2150	820	1050	400	650	5400
SCB9-2000/35	4000	16500	7	1.1	55	2350	1190	2220	1190	1190	430	650	5950
SCB9-2500/35	4750	19200	7	1.1	57	3400	2100	2900	1190	1190	435	650	6500
SCB9-3150/35	5800	24000	8	1.0	57	2790	1340	2350	1190	1190	460	670	9500
SCB9-4000/35	6800	27400	8	1.0	60	2790	1340	2400	1190	1190	470	680	11600
SCB9-5000/35	8050	32000	8	0.9	60	4200	2500	3300	1190	1190	485	710	13800
SCB9-6300/35	9600	37000	8	0.8	64	5000	3200	3600	1475	1475	500	720	16500
SCB9-8000/35	10800	41000	9	0.8	64	3400	1840	2750	1475	1475	545	730	22000
SCB9-10000/35	12500	46000	9	0.6	64	4000	1840	2850	2300	2300	640	750	27000
SCB9-12500/35	16000	48500	9	0.6	64	4100	1880	3200	2300	2300	650	770	35400
SCB9-16000/35	19500	54000	9	0.5	65	4300	1880	3400	2580	2580	800	850	41000
SCB9-20000/35	22500	63000	9	0.5	65	4500	1880	3600	2580	2580	810	900	43500

● Dyn联结组别，三相三柱铁心。

高压D接(三角接)绕组内可通过零序循环电流(感应产生)，因而可与低压绕组零序电流互相平衡、去磁;因此，低压侧零序阻抗很小，约为(0.9～1)短路阻抗，如下式:

$$Z_0 = KU_k\frac{U_N}{I_N}\ (\Omega\ 相)$$

● Dyn connection symbol, three-phase three-column core.

HV D-connection(delta connection)winding permits zero sequence cycling current to pass, so it may balance and take the excitation away with LV winding zero sequence current, thus the zero sequence impedance at LV side is about 0.9～1 short circuit impedance, as the following formula:

式中:

$$Z_0 = KU_k\ U_N/I_N\ (\Omega\ phase)$$

U_k- 短路阻抗(%)

U_N- 低压相电压(V)

I_N- 低压相电流(A)

K- 系数(0.9～1)，容量较小(50kVA)时取小值，容量较大(2500kVA)时取大值

以1000kVA，U_k=6%产品为例，Z_0 =9.125 × 10^{-3}(Ω相)

Where: U_k-short circuit impedance(%)　　U_N-LV phase voltage(V)　　I_N-LV phase current(A)

K-coefficient(0.9～1), When capacity is small(50kVA), K shall adopt the smaller value and when capacity is bigger(2500kVA), K shall adopt the bigger value.

For example: 1000kVA, U_k=6%, Z_0=9.125×10^{-3}(Ω phase).

● Yyn联结组别，三相三柱铁心。

高压Y接(星接)绕组不能流过零序电流，低压侧(yn)激磁时，由零序电流产生的零序磁通的一部分回路是空气，磁阻较大，零序磁通较小，所以零序阻抗仍较小，且有一定的分散性，其范围如下:

$$Z_0 = (0.2\sim 0.9)\frac{U_N}{I_N}\ (\Omega\ 相)$$

● Yyn connection symbol, three-phase three-column core.

HV Y-connection winding doesn't permit zero sequence current to pass. When excitation happens at the LV side, one part of circuit of zero sequence flux arising fron zero sequence current belongs to air with larger excitation resistance and less zero sequence flux, so zero sequence impedance is smaller and has defined dispersiveness, whose range is as follows:

$$Z_0 = (0.2\sim 0.9)U_N/I_N\ (\Omega\ phase)$$

典型产品(Yyn)零序阻抗实测值列于下表:

The measured value for topical product (Yyn) zero sequence impedance is listed as follows

S_N(kVA)	50	80	100	125	160	200	250
Z_0(Ω phase)	0.9143	0.7600	0.6022	0.4759	0.4067	0.3617	0.3056

S_N(kVA)	315	400	500	630(U_k=4%)	630(U_k=6%)	800	1000
Z_0(Ω phase)	0.2325	0.2155	0.1782	0.1505	0.1981	0.1489	0.1094

S_N(kVA)	1250	1600	2000	2500
Z_0(Ω phase)	0.0794	0.0581	0.0464	0.0368

- 控温、测温功能一体化设计。
- 超温报警、跳闸均可由传感Pt100信号动作，进一步提高系统可靠性。
- 抗干扰性能完全满足JB/T7631-94<<变压器用电阻温度计>>要求。
- 可按用户需要提供变压器绕组最高温度4～20mA模拟量输出或RS232计算机接口，适应现代自动化监控。
- 简洁实用的外观及性能设计，充分考虑用户的多种需要，安装方式灵活快捷：

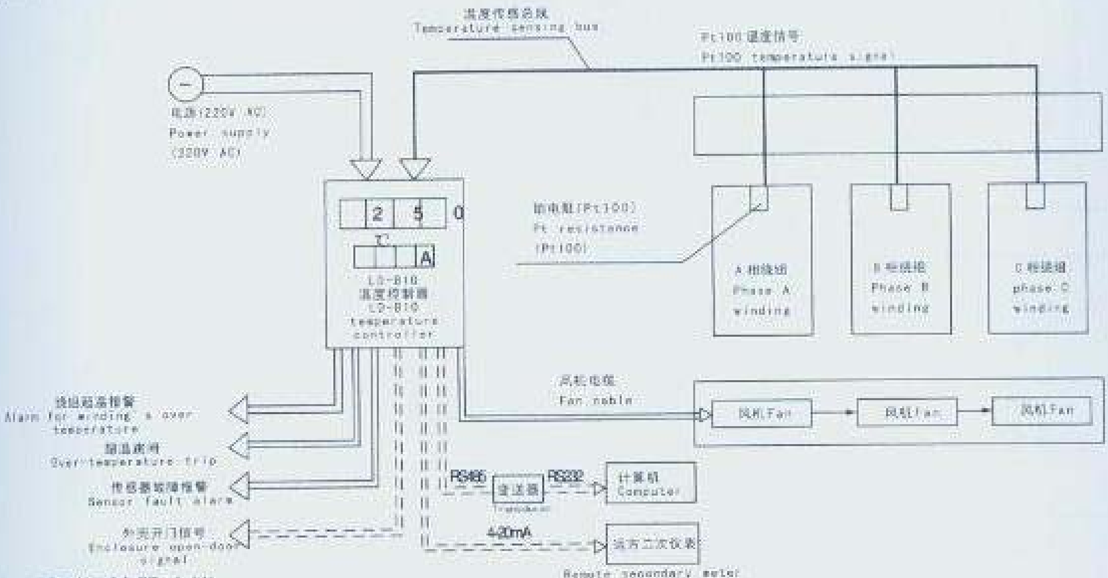
带外壳(IP20)产品：温控器装于外壳低压侧。系统电气原理图见附图2。

不带外壳产品：温控器变压器本体支架，方便实现系统的不停电检修。系统电气原理图见附图1。

- Controlling temperature and measuring temperature altogether.
- Over-temperature alarm and trip may be realized by the sensing Pt100 signal, so it enhances the system's reliability by further.
- Anti-disturbance performance meets completely the erquirement in JB/T7631-94 Resistance thermometer for transformer.
- We may supply the transformer winding 4～20mA analog output at the highest temperature or RS232 computer interface according to the user's requirement to adapt the requirement of contemporary automation monitoring.
- Compact and applicable appearance and performance design meets the user's various needs. The erection mode is flexible and simple:

The product with casing(IP20):The temperature-controller is mounted at the LV side on the enclosure. See the Attachment 2 for the electrical principle diagram.

The product without casing:The temperature-controller is mounted on the transformer frame supporter to realize power-on maintenance of the system. See the Attachment 1 for the electrical principle diagram.



LD-B10系列温控器功能：

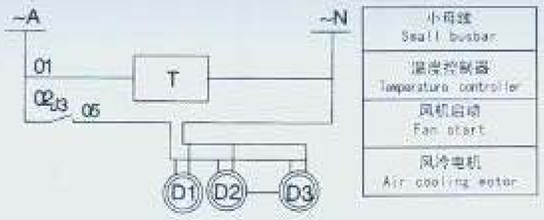
- 三相绕组温度巡检和最大值，历史最高温度记录。
- 风机启停自动控制／手动控制显示并输出。(触点容量5A/250V AC)
- 超温报警，超温跳闸触点输出。(触点容量3A/250V AC或10A/24 DC)
- 仪表故障自检，传感器故障报警。
- 绕组最高温度4～20mA模拟量输出。
- RS232C计算机接口输出，传输距离可达1200m(含计算机温度监控软件)。

注：带"●"号功能为可选项：LD-B10温控器详细资料可索阅使用说明书。

LD-B10 series temperature-controller functions:

- Three-phase winding temperature cycle-check and the max. value, the highest temperature record.
- Fan starting/stopping auto control/manual control display and output. (The contact capacity is 5A/250V AC).
- Over-temperature alarm, over-temperature trip contact output. (The contact capacity is 3A/250V AC or 10A/24 DC).
- The meter fault auto-check, sensor fault alarm.
- The winding analog output at the highest temperature 4～20mA.
- RS232C computer interface output, The transmission distance may reach 1200m(including computer temperature monitoring software).

Note:The function with "●" mark is optional;

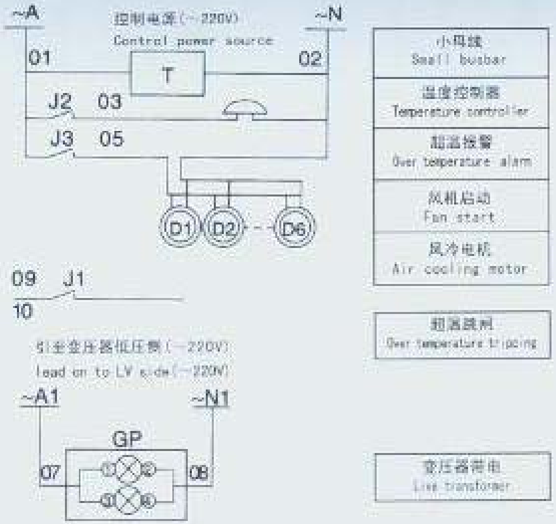


注: J3 为温度控制 T 的输出触点
Note:J3 is output contact of temperature controller T

设备表Equipment list

序号 Serial No.	型号 Type	名称 Name	总数量 Total quantity	技术参数 Technical data	备注 Remark
1	JF5-25/3	端子排 Terminal block	4 个		
2	LD-B10-10B/10D	温度控制器 Temperature controller	1 个	~220V	T
3	SCGF 系列 SCGF series	单向轴流风机 Oneway axial flow fan	6 个	~220V	D1~D6

附图 1 干式变压器温控系统电气原理图(不带外壳)
Attached diagram 1 The electric principle diagram of the temperature control unit of dry-type transformer(without enclosure).



注: J1~J3 为温度控制 T 的输出触点
Note:J1~J3 is output contact of temperature controller T

设备表Equipment list

序号 Serial No.	型号 Type	名称 Name	总数量 Total quantity	技术参数 Technical data	备注 Remark
1	JF5-25/3	端子排 Terminal block	8 个		
2	AD11-77X31/24	光示牌 Indicator	1 个	~220V	GP
3	UC4-75	电铃 Electric bell	1 个	~220V	JL
4	LD-B10-10B/10D	温度控制器 Temperature controller	1 个	~220V	T
5	SCGF 系列 SCGF series	单向轴流风机 Oneway axial flow fan	6 个	~220V	D1~D6

附图 2 干式变压器温控系统电气原理图(带外壳)
Attached diagram 1 The electric principle diagram of the temperature control unit of dry-type transformer(with enclosure).

选用我厂产品时，请提供下列数据，以便更好为您提供服务：

When you choose our products, please provide the following data so that we can offer you better service:

变压器型号: ______________________

Transformer Type

额定容量: ______________________

Rated capacity

相数 / Number of phase
○ 三相 3 Phase
○ 单相 1 Phase

频率 / Frequency:
○ 50Hz
○ 60Hz

额定电压(高压/低压)

Rated voltage (HV/LV)

分接范围: ±______ x ______ %

Tapping voltage range

绝缘水平: LI___ AC___ /LI___ AC ___

Insulation level

联结组别: / Connection symbol
○ Dyn11
○ Yyn0
○ 其它 Miscellancous

阻抗电压

Impedance voltage

使用条件 / Service environment

海拔 Altitude______ m

环境温度 ______ ℃

Ambient temperature

冷却方式 / Cooling method
○ AN
○ AF

外壳防护等级 / Protection class of enclosure
○ IP00
○ IP20
○ 其它 Miscellancous

低压出线方式 / LV outlet manner
○ 常规出线 Normal outlet
○ 标准封闭母线 Standard enclosed bus
○ 标准横排出线 Standard horizontal bar outlet
○ 标准立排出线 Standard stand outlet
○ 配零序 CT With zero sequence CT
○ 其它 Miscellancous

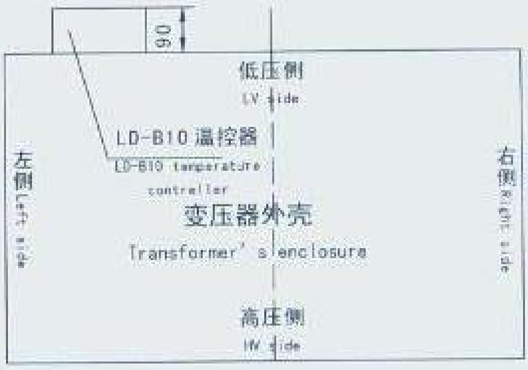
对LD-B10温控器的要求：

Requeirements for LD-B10 temperature controller

1、功能配置 Function configuration:
○ 常规功能 normal function
○ 带 4～20mA 输出 With 4～20mA output
○ RS232 接口 RS232 interface

2、在外壳的安装位置(面向高压侧为基准)

Mounting position on the enclosure (facing HV side)



注:带外壳产品温控器装于外壳低压侧。

Note: The temperature controller for the product with enclosure should be mounted at the LV side of the enclosure.

3. 温控器相关控制线长：

The length of control line of the temperature controller.

a. 温度传感总线实须长度(IP00产品填此项):

The actual required length of temperature sensing bus (for IP00 product)

○ 5m(标准配置 Standard configuration) ○ 30m
○ 50m ○ 100m ○其它长度 Other length ______ m

b. RS232C信号线实须长度(最长1200m) The actual required length of RS232C signal line (The longest is 1200m)

○ 20m(标准配置 Standard configuration)
○其它长度 Other length ______ m

对我们产品的其它要求:

Other requirements for our product

____

____

____

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