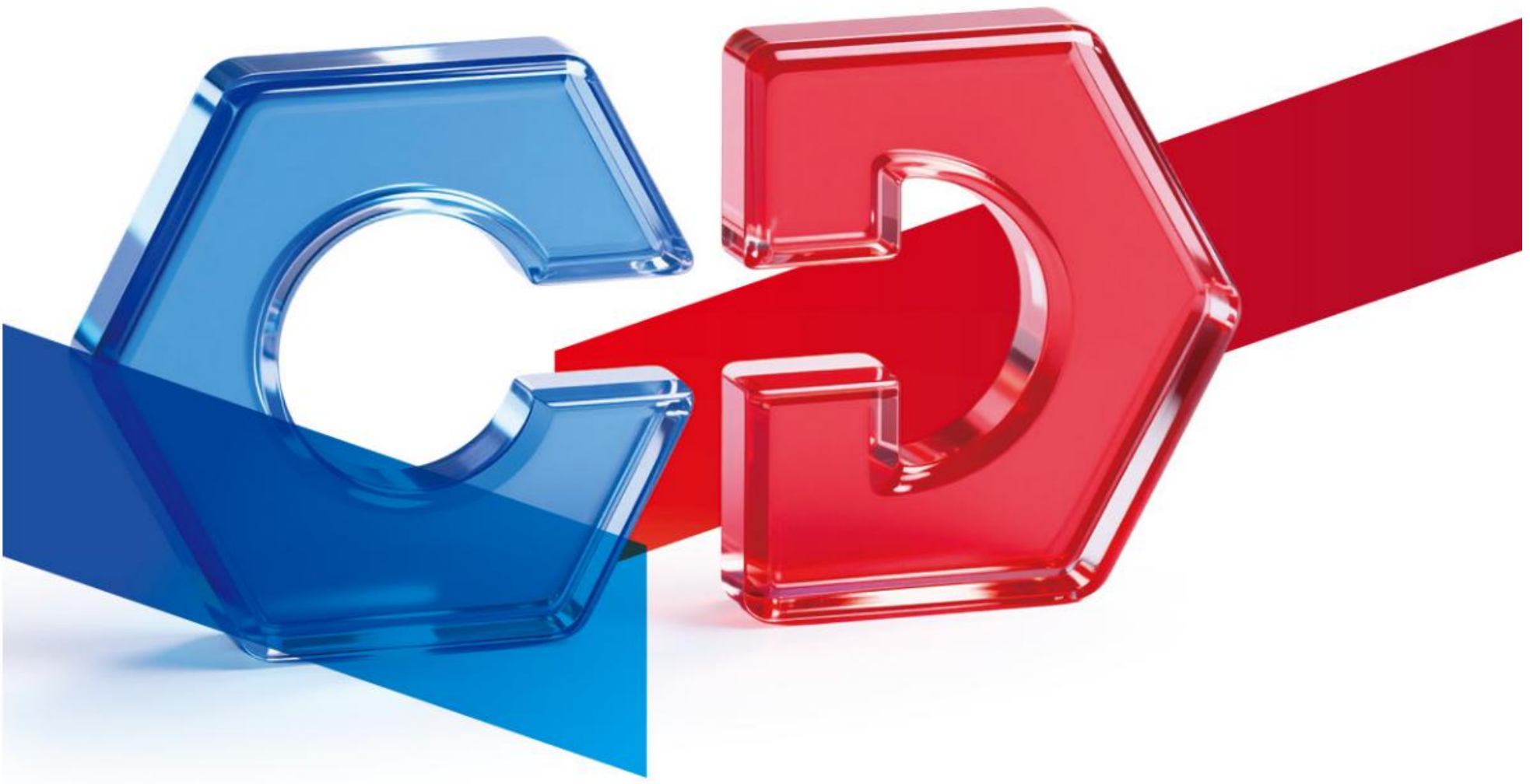
昌达电气
CHANGDA ELECTRICAL

Low Losses | Short Lead Time
High Reliability | Custom Design

Your Trusted Partner for Customized Power Solutions



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OF SMART ELECTRICITY

安徽昌达电气设备有限公司
Anhui Changda Electrical Equipment Co., Ltd.

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Low Losses | Short Lead Time
High Reliability | Custom Design

Transformer Series

01 Oil-immersed transformer

02 Dry-type transformer

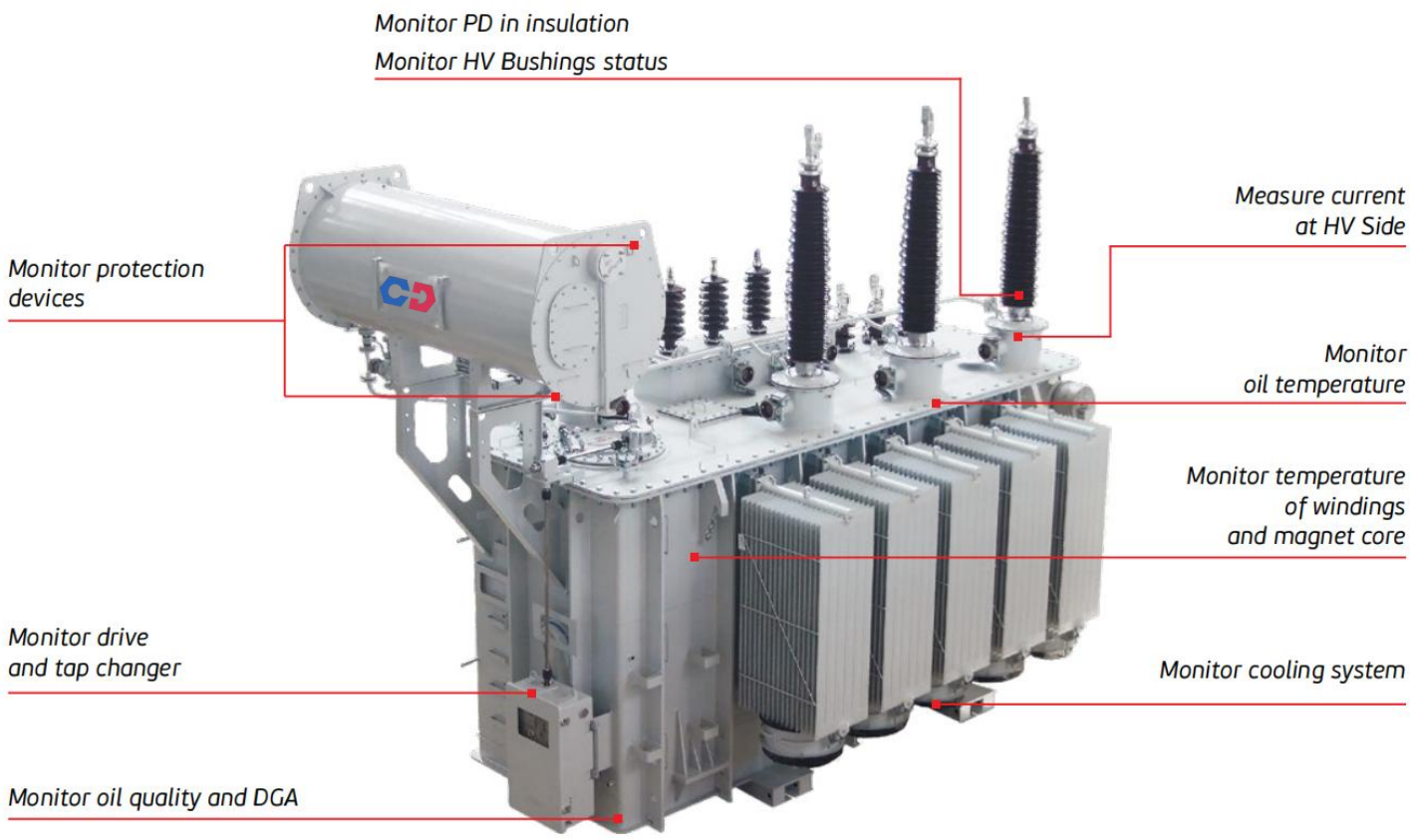
03 Pad-mounted / Compact Substations

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Oil-immersed transformer

Introduction

Our oil-immersed transformers, rated up to 110kV, are power transformers where the core and windings are fully submerged in insulating oil, which provides excellent dielectric insulation and efficient heat dissipation for stable and reliable operation. Manufactured with advanced technology and strict quality control, our transformers offer high efficiency through optimized core design and low-loss materials, superior cooling performance with multiple methods (ONAN/ONAF/OF/AF), enhanced reliability with robust construction and high-grade oil, customizable configurations to meet project-specific needs, and eco-friendly leak-proof tanks complying with international standards such as IEC and IEEE, making them ideal for substations, industrial plants, renewable energy projects, and infrastructure applications.



Model Explanation

SFSZ 11 - M - 6300 / 110 □

- Special environment code
- Rated voltage (kV)
- Rated capacity(kVA)
- Special purpose or special structure code:
  M - sealed; T - capacity adjustable;R - common roll core structure;
  RL - three-dimensional roll core structure
- Loss level code: 11/13 (of which '13' represents lower loss)
- Product model code:
  1st S - three phases, F - air cooling, 2nd S - three-winding;
  Z - on-load voltage regulation, H - amorphous alloy core material.

Normal Service Condition

Ambient air temperature
Maximum temperature: +40℃
Minimum temperature: -45℃
Average temperature of the warmest month: +30℃
The hottest annual average temperature: +20℃
Altitude: ≤ 1000m
Contamination class: III;
Seismic intensity: VIII
Power supply voltage waveform: approximately sinusoidal;
Note: If the above conditions are exceeded, please specify when ordering, for special consideration.



S13-M-630 10/0.4kv Oil-immersed transformer

Product Standards

GB1094.1 «Power transformers Part 1: General»
GB1094.2 «Power transformers Part 2: Temperature rise»
GB1094.3 «Power transformers Part 3: Insulation levels, dielectric tests and external clearances in air»
GB1094.5 «Power transformers Part 5: Ability to withstand short circuit»
GB1094.10 «Power transformers Part 10: Determination of sound levels»
GB/T6451 «Specification and technical requirements for oil-immersed power transformers»
GB/T15164 «Loading guide for oil-immersed power transformers»
GB311.1 «Insulation co-ordination-Part 1: Definitions, principles and rules»
GB1208 «Current transformers»
GB/T7595 «Quality of transformer oils in service»
GB/T10230 «Tap changer»
GB/T17468 «The guide for choice power transformers»
GB2536 «Fluids for electrictechnical applications - Unused mineral insulating oils for transformers and switchgear»
GB/T13499 «Power transformers - Application guide»
JB/T10088 «Sound level for 6kV ~ 500kV power transformers»
GB50150 «Standard for hand-over test of electric equipment electric equipment installation engineering»
GB191 «Packaging - Pictorial marking for handling of goods»
GB5582 «External insulation pollution of high-voltage electric power equipments»
GB/T7449 «Guide to the lightning impulse and switching impulse testing of power transformers and reactors»
GB/T4109 «Insulated bushings for alternating voltages above 1000 V»
GB/T5273 «Terminals for transformers, high-voltage apparatus and bushings»

Core

Our cores are crafted from high-permeability, low-loss grain-oriented silicon steel, ensuring exceptional electromagnetic performance and compliance with GB 20052-2024 and IEC 60076 standards.

Precision Joint Design: 45° mitre cut joints ensure seamless magnetic flux connectivity, effectively minimizing stray-flux losses and eliminating joint vibrations that can lead to premature core fatigue.

Advanced Step-Lap Stacking: This technique optimizes the magnetic circuit by reducing no-load losses by up to 20% compared to conventional butt-lap designs, delivering superior energy efficiency.

Enhanced Mechanical Strength: Overlapping single laminations significantly improve core rigidity, reducing operational noise levels by 5–8 dB – ideal for residential areas and noise-sensitive installations.

Superior Corrosion Protection: Each core receives a full coating of bi-component epoxy resin, providing excellent resistance to moisture, salt spray, and corrosive environments – a critical advantage for outdoor oil-immersed transformers.

Reliable performance. Lower losses. Longer service life.



Winding

Windings for Oil-Immersed Transformers

Conductor: QZY/180 copper wire, thermal class 180°C (H-Class)

High heat resistance, anti-aging, compatible with mineral oil & natural ester fluids

Low partial discharge (<10pC) & high mechanical strength

Voltage: up to 35 kV (LV) / 245 kV (HV)

Winding types: layer / helical / continuous disk / interleaved disk

Applications: Distribution transformers, pad-mounted units, high-temperature regions, ester-filled transformers.



Oil tank

High-Quality Oil Tank Construction
The oil tank is manufactured from high-grade steel plates and is available in various shapes, including elliptical and rectangular types, to meet different transformer installation requirements.

Multiple Radiator Types
Various radiator options are available, such as corrugated sheet type, expansion type, and corrugated tank type, ensuring efficient heat dissipation and operational reliability.

Rigorous Sealing Performance Test
Each oil tank undergoes a strict sealing performance test to eliminate leakage risks and ensure long-term stable operation.

Superior Surface Treatment
The internal and external surfaces are treated with pickling and phosphating processes, followed by three coats of primer and one topcoat. This provides outstanding corrosion resistance, suitable for demanding environments.



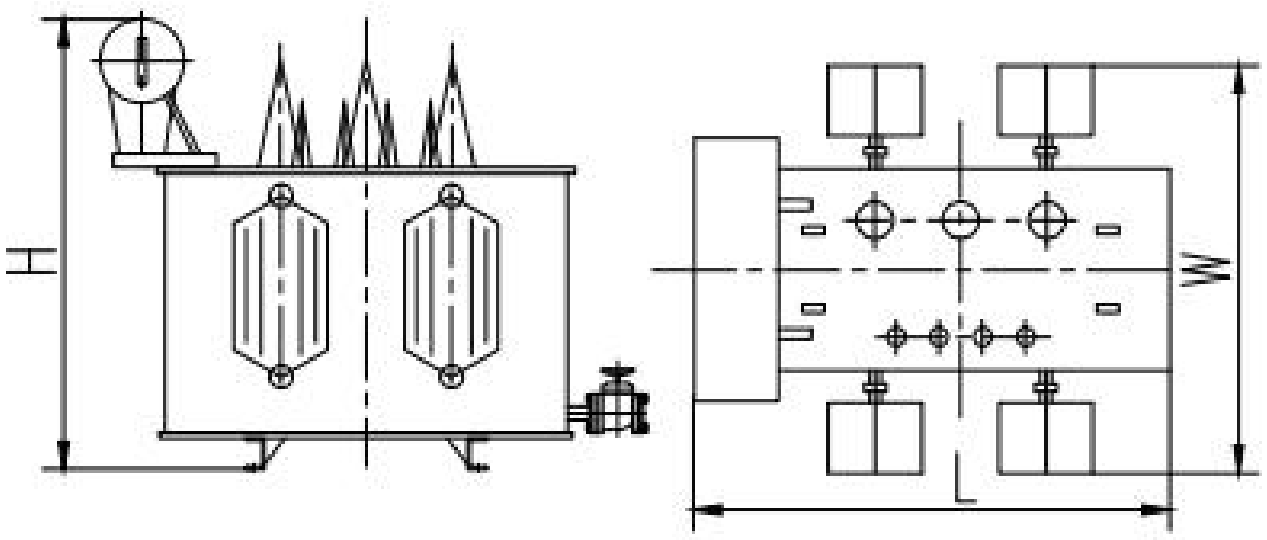




Product Parameter

For 10kV Series:

Examples : S11 10kV Three Phase Oil Immersed Natural Air Cooling Double Winding Off Circuit Tap Changing Distribution Transformer

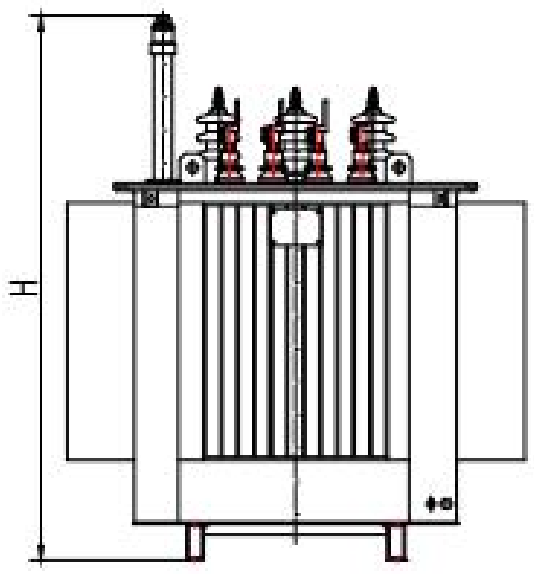


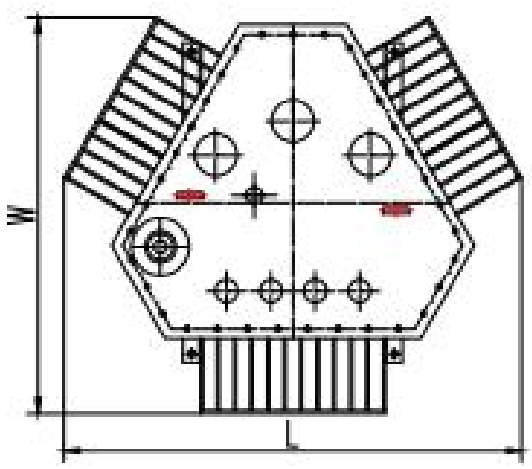
Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage (%)	Total Weight (t)	Reference Dimension(mm)	No Load Loss (W)	Load Loss (W)
S13-30/10	30	H.V. 6.6,3.10,10.5 ±2 × 2.5% ± 5% L.V. 0.4	Dyn11 Yyn0	4	0.35	720*480*850	80	630/600
S13-50/10	50				0.4	750*500*900	100	910/870
S13-63/10	63				0.5	800*600*950	110	1090/1040
S13-80/10	80				0.55	1000*720*980	130	1310/1250
S13-100/10	100				0.6	1050*750*1000	150	1580/1500
S13-125/10	125				0.7	1100*760*1050	170	1890/1800
S13-160/10	160				0.75	1120*770*1070	200	2310/2200
S13-200/10	200				0.8	1150*800*1100	240	2730/2600
S13-250/10	250				1	1300*950*1100	290	3200/3050
S13-315/10	315				1.2	1400*1000*1100	340	3830/3650
S13-400/10	400				1.4	1400*1000*1200	410	4520/4300
S13-500/10	500				2	1700*1200*1400	480	5410/5150
S13-630/10	630			4.5	2.5	1800*1300*1500	570	6200
S13-800/10	800				2.8	2150*1950*2000	700	7500
S13-1000/10	1000				3.2	2200*2000*2050	830	10300
S13-1250/10	1250				3.7	2300*2100*2100	970	12000
S13-1600/10	1600				4.5	2400*2200*2200	1170	14500
S13-2000/10	2000			5	5.5	2500*2400*2300	1390	18300
S13-2500/10	2500				6.4	2700*2600*2500	1650	21200

Customize the parameters based on the experimental data.

Product Parameter

Examples : S13-M.RL 10kV Three Phase Oil Immersed Wound Core Natural Air Cooling Double Winding Off Circuit Tap Changing Distribution Transformer



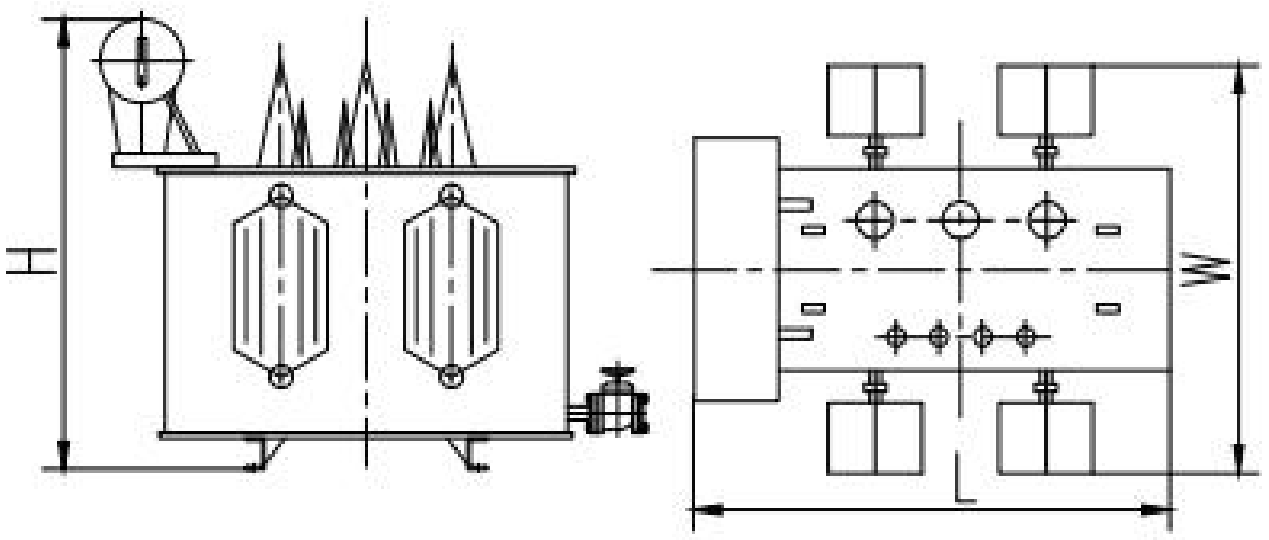


Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage (%)	Total Weight (t)	Reference Dimension(mm)	No Load Loss (W)	Load Loss (W)
S13-M.RL-30/10	30	H.V. 6.6,3.10,10.5 ±2 × 2.5% ± 5% L.V. 0.4	Dyn11 Yyn0	4	0.35	800*700*800	80	630/600
S13-M.RL -50/10	50				0.45	1000*850*950	100	910/870
S13-M.RL -63/10	63				0.5	1100*800*1200	110	1090/1040
S13-M.RL -80/10	80				0.58	1100*800*1.35	130	1310/1250
S13-M.RL -100/10	100				0.65	1100*800*1.35	150	1580/1500
S13-M.RL -125/10	125				0.7	1100*8500*1.4	170	1890/1800
S13-M.RL -160/10	160				0.8	1100*950*1.42	200	2310/2200
S13-M.RL -200/10	200				0.95	1150*1000*1500	240	2730/2600
S13-M.RL -250/10	250				1.1	1200*1100*1500	290	3200/3050
S13-M.RL -315/10	315				1.3	1300*1120*1500	340	3830/3650
S13-M.RL -400/10	400				1.45	13500*1200*1550	410	4520/4300
S13-M.RL -500/10	500				1.9	1500*1300*1600	480	5410/5150
S13-M.RL -630/10	630			4.5	2.1	1500*1300*1700	570	6200
S13-M.RL -800/10	800				2.5	1550*1350*1750	700	7500
S13-M.RL -1000/10	1000				3	1750*1500*1750	830	10300
S13-M.RL -1250/10	1250				3.5	1800*1500*1900	970	12000
S13-M.RL -1600/10	1600				4.5	1900*1700*2000	1170	14500

Customize the parameters based on the experimental data.

Product Parameter

Examples : SH15 10kV Three Phase Oil Immersed Natural Air Cooling Double Winding Off Circuit Tap Changing Distribution Transformer With Amorphous Alloy Core



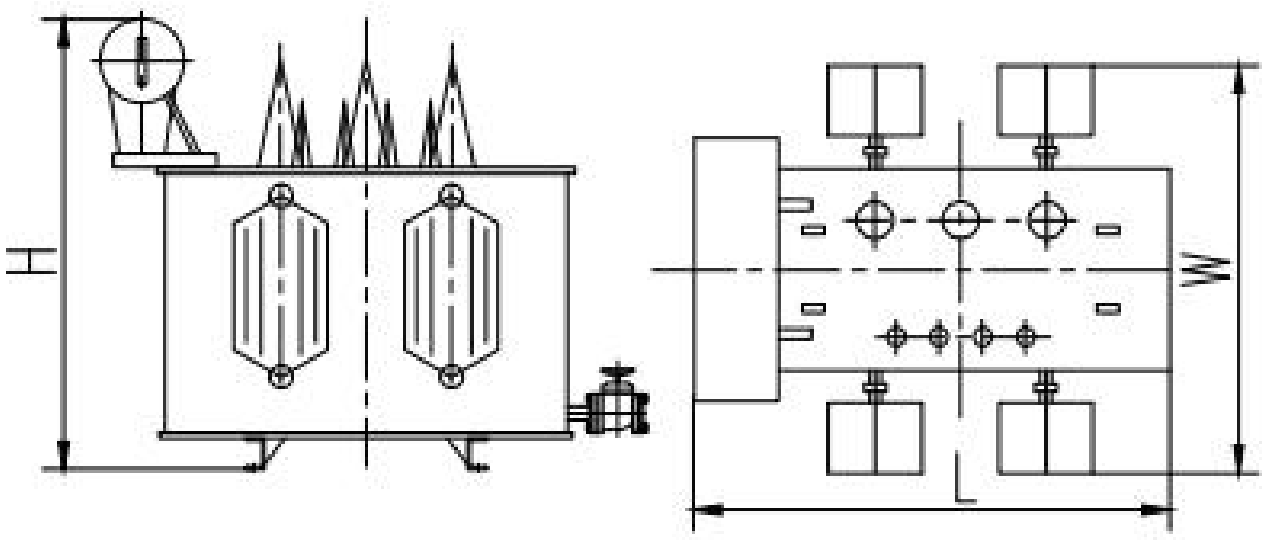
Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage (%)	Total Weight (t)	Reference Dimension(mm)	No Load Loss (W)	Load Loss (W)
SH15-30/10	30	H.V. 6.6,3.10,10.5 ±2 × 2.5% ± 5% L.V. 0.4	Dyn11 Yyn0	4	0.4	1000*550*700	33	630/600
SH15-50/10	50				0.6	1100*600*700	43	910/870
SH15-63/10	63				0.65	1100*650*900	50	1090/1040
SH15-80/10	80				0.7	1150*650*900	60	1310/1250
SH15-100/10	100				0.65	1200*700*900	75	1580/1500
SH15-125/10	125				0.83	1250*950*900	85	1890/1800
SH15-160/10	160				0.9	1300*1100*900	100	2310/2200
SH15-200/10	200				1	1400*1000*900	120	2730/2600
SH15-250/10	250				1.4	1600*1100*950	140	3200/3050
SH15-315/10	315				1.6	1700*1100*970	170	3830/3650
SH15-400/10	400				1.7	1750*1100*1000	200	4520/4300
SH15-500/10	500				2.3	1800*1100*1100	240	5410/5150
SH15-630/10	630			4.5	2.6	1900*1100*1100	320	6200
SH15-800/10	800				2.9	2000*1500*1200	380	7500
SH15-1000/10	1000				3.5	2100*1600*1350	450	10300
SH15-1250/10	1250				4.5	2200*1700*1350	530	12000
SH15-1600/10	1600				6	2300*1900*1400	630	14500
SH15-2000/10	2000				7	2400*2000*1700	750	18300
SH15-2500/10	2500				9	2550*2500*1700	900	21200

Customize the parameters based on the experimental data.

Product Parameter

For 20kV Series:

Examples : S11 20kV Three Phase Oil Immersed Natural Air Cooling Double Winding Off Circuit Tap Changing Distribution Transformer

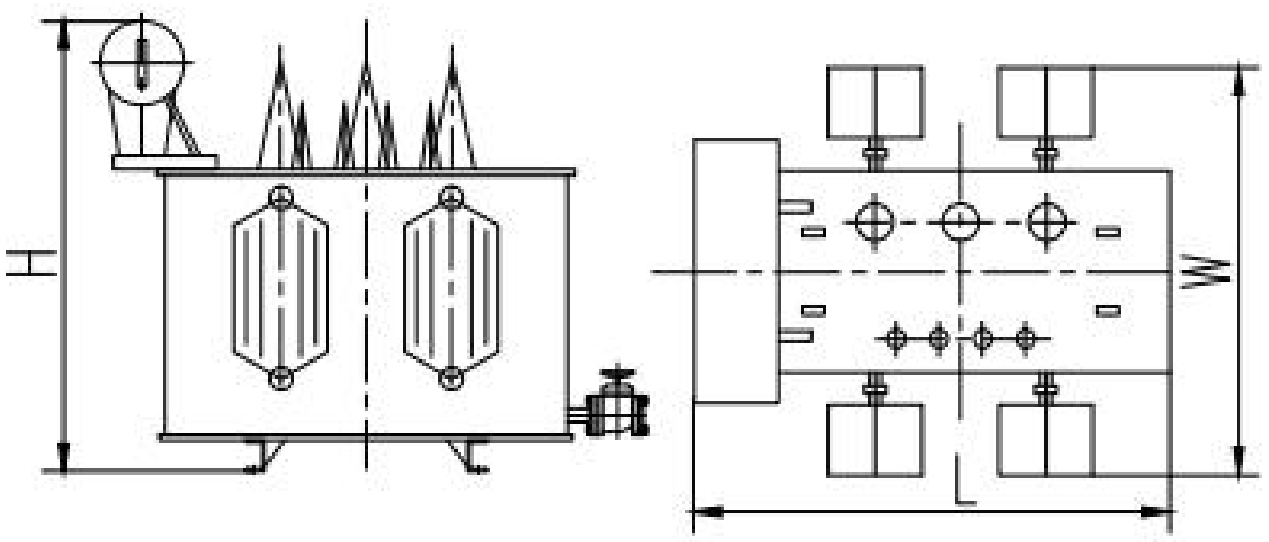


Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage (%)	Total Weight (t)	Reference Dimension(mm)	No Load Loss (W)	Load Loss (W)
S11-30/20	30	H.V. 20 ±2 × 2.5% ± 5% L.V. 0.4	Dyn11 Yyn0	4	0.9	1200*950*1400	100	690/660
S11-50/20	50				1	1200*950*1500	130	1010/960
S11-63/20	63				1.1	1200*950*1500	150	1200/1150
S11-80/20	80				1.2	1200*950*1600	180	1440/1370
S11-100/20	100				1.4	1300*1000*1750	200	1730/1650
S11-125/20	125				1.6	1400*1100*1800	240	2080/1980
S11-160/20	160				1.7	1450*1200*1850	290	2540/2420
S11-200/20	200				1.8	1500*1300*1900	340	3000/2860
S11-250/20	250				2	1600*1500*2000	400	3520/3350
S11-315/20	315				2.2	1800*1600*2100	480	4210/4010
S11-400/20	400				2.4	1900*1700*2200	570	4970/4730
S11-500/20	500				2.7	2000*1800*2300	680	5940/5660
S11-630/20	630			4.5	3	2150*2000*2350	810	6820
S11-800/20	800				3.4	2250*2050*2400	980	8250
S11-1000/20	1000				4	2400*2200*2450	1150	11330
S11-1250/20	1250				4.5	2500*2300*2500	1380	13200
S11-1600/20	1600				5	2600*2400*2600	1660	15950
S11-2000/20	2000				5.6	2700*2450*2700	1950	19140
S11-2500/20	2500				7.1	2850*2650*2800	2340	22220

Customize the parameters based on the experimental data.

Product Parameter

Examples : SH15 20kV Three Phase Oil Immersed Natural Air Cooling Double Winding Off Circuit Tap Changing Distribution Transformer With Amorphous Alloy Core



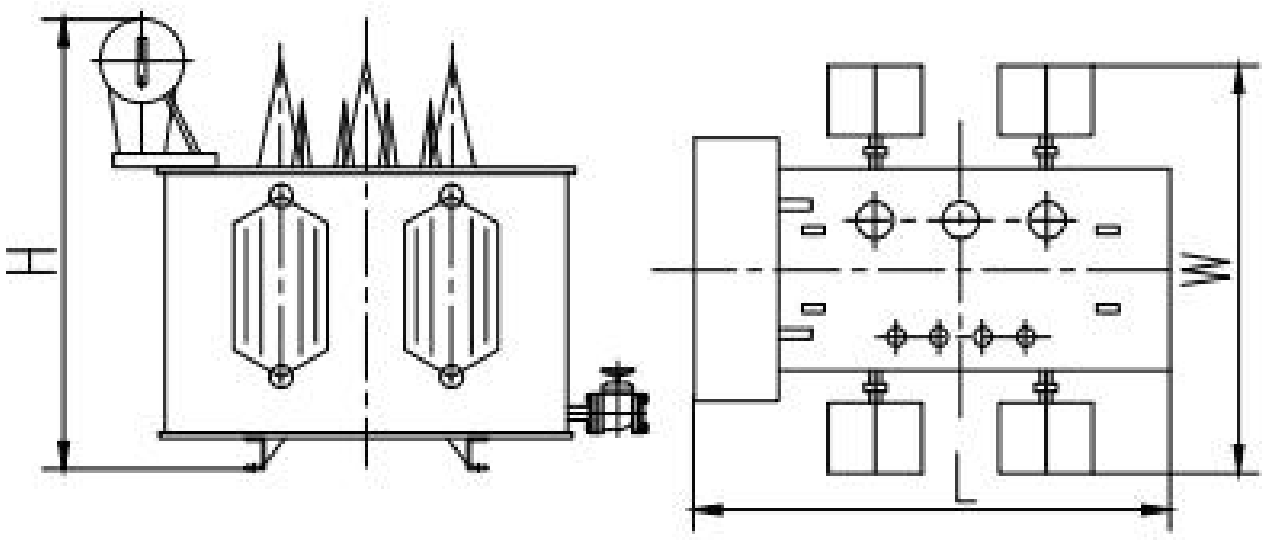
Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage (%)	Total Weight (t)	Reference Dimension(mm)	No Load Loss (W)	Load Loss (W)
SH15-30/20	30	H.V. 20 ±2 × 2.5% ± 5% L.V. 0.4	Dyn11 Yyn0	5.5	0.7	1100*1100*850	40	690/660
SH15-50/20	50				0.8	1200*1100*850	55	1010/660
SH15-63/20	63				0.95	1300*1250*850	65	1200/1150
SH15-80/20	80				1	1400*1300*700	75	1440/1370
SH15-100/20	100				1.25	1450*1300*850	90	1730/1650
SH15-125/20	125				1.3	1450*1300*950	100	2080/1980
SH15-160/20	160				1.4	1450*1300*1000	120	2540/2420
SH15-200/20	200				1.5	1500*1300*1100	145	3000/2860
SH15-250/20	250				1.7	1600*1350*1150	165	3520/3350
SH15-315/20	315				1.9	1700*1350*1200	200	4210/4010
SH15-400/20	400				2.2	1800*1400*1200	240	4970/4730
SH15-500/20	500				2.5	1900*1500*1200	290	5940/5660
SH15-630/20	630			6	3	2000*1600*1300	370	6620
SH15-800/20	800				3.5	2100*1700*1400	450	8250
SH15-1000/20	1000				4	2200*1800*1500	530	11330
SH15-1250/20	1250				5	2300*1900*1600	620	13200
SH15-1600/20	1600				6	2600*2000*1700	750	16950
SH15-2000/20	2000				7.5	2900*2200*1900	900	19140
SH15-2500/20	2500				9.5	3000*2500*2000	1080	22220

Customize the parameters based on the experimental data.

Product Parameter

For 35kV Series:

Examples :S11 35kV Three Phase Oil Immersed Natural Air Cooling Double Winding Off Circuit Tap Changing Distribution Transformer

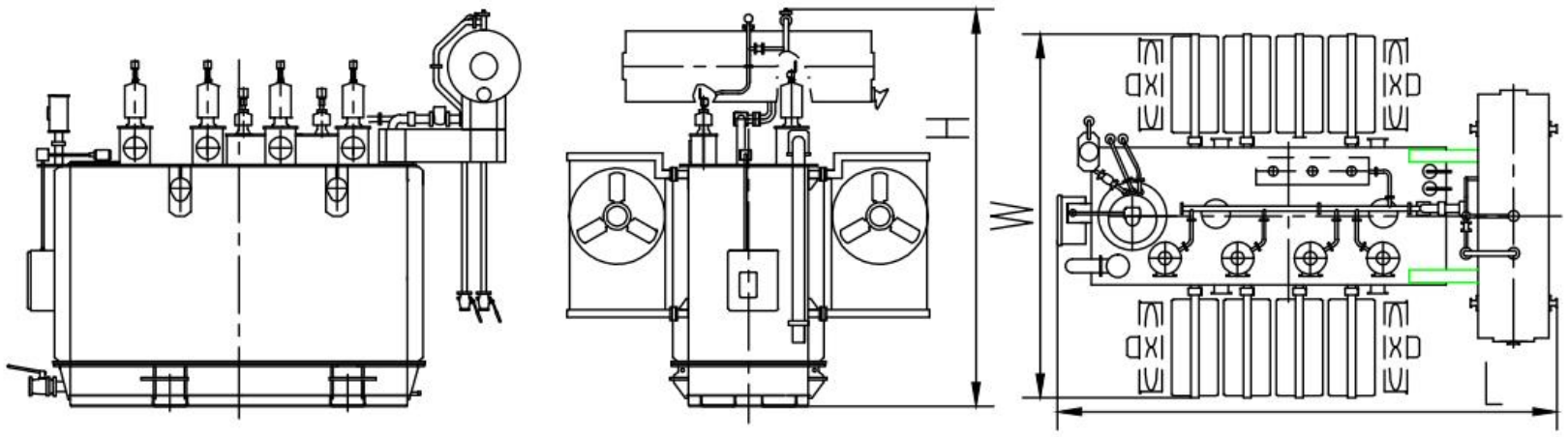


Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage (%)	Total Weight (t)	Reference Dimension(mm)	No Load Loss (W)	Load Loss (W)
S11-50/35	50	H.V. 35,38.5 ±2 × 2.5% ± 5% L.V. 0.4	Dyn11 Yyn0	6.5	1.28	1400*1000*1800	160	1200/1140
S11-100/35	100				1.67	1450*1050*1900	230	2000/1910
S11-125/35	125				1.9	1500*1100*1900	270	2370/2260
S11-160/35	160				2.2	1550*1150*1950	280	2800/2680
S11-200/35	200				2.4	1600*1200*2000	340	3300/2160
S11-250/35	250				2.5	1700*1600*2100	400	3950/3760
S11-315/35	315				2.6	1900*1700*2200	480	4750/4530
S11-400/35	400				2.8	2000*1800*2300	580	5740/5470
S11-500/35	500				3	2100*1900*2400	680	6910/6580
S11-630/35	630				3.3	2310*2200*2500	830	7860
S11-800/35	800				3.8	2500*2250*2550	980	9400
S11-1000/35	1000				4.2	2550*2300*2600	1150	11500
S11-1250/35	1250				4.8	2680*2400*2700	1400	13900
S11-1600/35	1600				5.7	2700*2450*2750	1690	16600
S11-2000/35	2000				6.2	2800*2500*2900	1990	19700
S11-2500/35	2500				7.8	2850*2650*2950	2360	23200

Customize the parameters based on the experimental data.

Product Parameter

Examples :S(F)11 35kV Three Phase Oil Immersed Natural (Forced) Air Cooling Double Winding Off Circuit Tap Changing Power Transformer



Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage (%)	Total Weight (t)	Shipping Weight (t)	Reference Dimension(mm)	No Load Loss (KW)	Load Loss (KW)
S(F)11-6300/35	6300	H.V. 35,38.5 ±2 × 2.5% ± 5% L.V. 3.15,3.3, 6.3,6.6,10.5	YNd11	8	15	11	3600*3200*3100	5.24	35
S(F)11-8000/35	8000				18	14	3800*3300*3300	7.2	38.4
S(F)11-10000/35	10000				20	15	3900*3300*3500	8.7	45.3
S(F)11-12500/35	12500				24	19	4000*3400*3700	10	53.8
S(F)11-16000/35	16000				28	21	4200*3600*3800	12.1	65.8
S(F)11-20000/35	20000				33	26	4500*3800*4000	14.4	79.5
S(F)11-25000/35	25000			10	37	29	4700*4000*4100	17	94
S(F)11-31500/35	31500				44	36	5000*4200*4300	20.2	112

Examples :35 kV Three Phase Oil Immersed Natural (Forced) Air Cooling Double Winding On Load Tap Changing Power Transformer

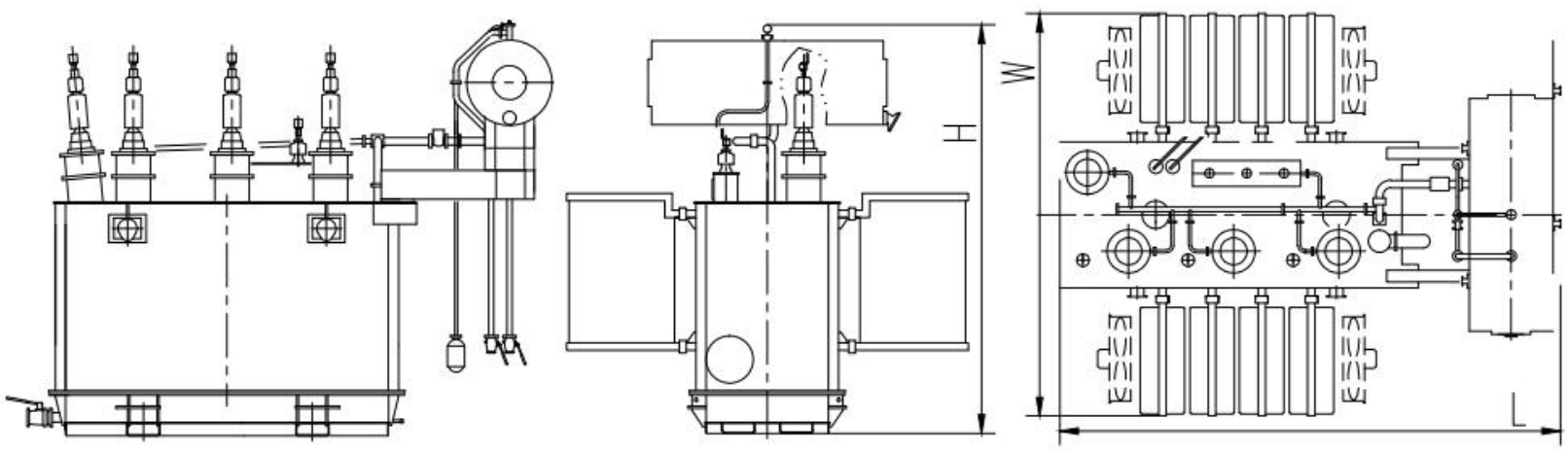
Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage (%)	Total Weight (t)	Shipping Weight (t)	Reference Dimension(mm)	No Load Loss (KW)	Load Loss (KW)
S(F)Z11-6300/35	6300	H.V. 35,38.5 ±2 × 2.5% ± 5% L.V. 3.15,3.3, 6.3,6.6,10.5	YNd11	8	18	13	4000*3300*3100	5.63	36.7
S(F)Z11-8000/35	8000				21	16	4200*3400*3300	7.87	40.6
S(F)Z11-10000/35	10000				23	17	4300*3500*3500	9.28	48
S(F)Z11-12500/35	12500				28	21	4800*3500*3700	10.71	56.8
S(F)Z11-16000/35	16000				33	24	5000*3800*3800	13.1	70.3
S(F)Z11-20000/35	20000				38	29	5300*4000*4000	15.5	82.7
S(F)Z11-25000/35	25000			10	43	33	5500*4200*4100	18.3	97.8
S(F)Z11-31500/35	31500				50	39	5800*4400*4300	21.8	116

Customize the parameters based on the experimental data.

Product Parameter

For 66kV Series:

Examples :S(F)11 66kV Three Phase Oil Immersed Natural (Forced) Air Cooling Double Winding Off Circuit Tap Changing Power Transformer



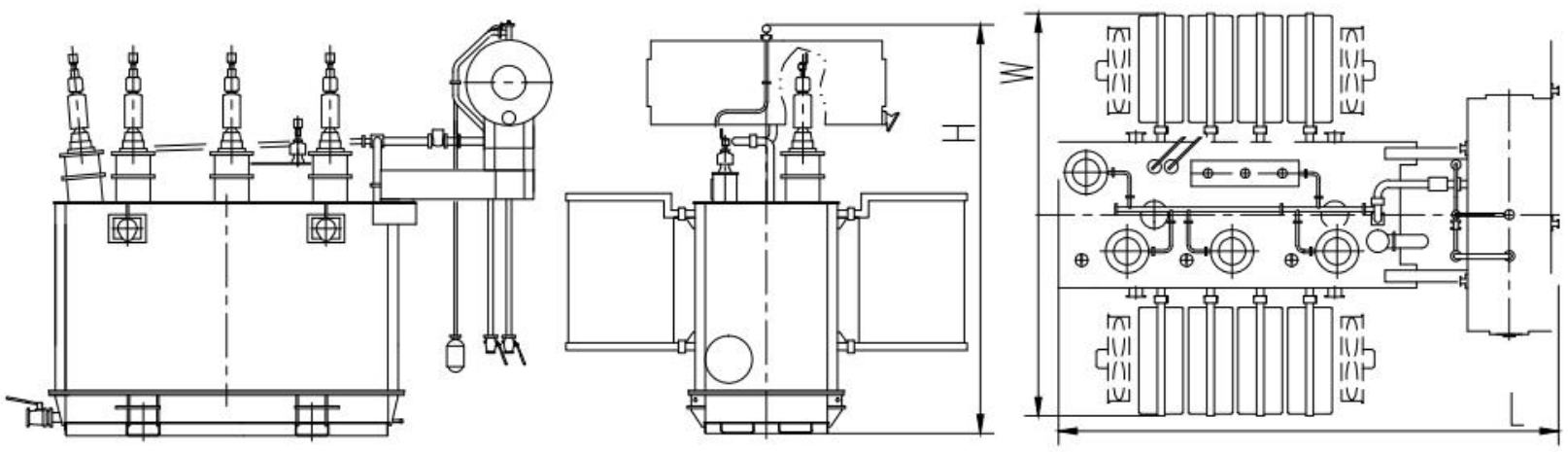
Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage (%)	Total Weight (t)	Shipping Weight (t)	Reference Dimension(mm)	No Load Loss (KW)	Load Loss (KW)
S(F)11-6300/66	6300	H.V. 63,66,69 ±2 × 2.5% ± 5% L.V. 6.3,6.6,10.5	YNd11	9	20	15	4800*3900*4000	7.3	34.2
S(F)11-8000/66	8000				22	17	4900*4100*4200	8.9	40.5
S(F)11-10000/66	10000				25	19	5000*4300*4400	10.5	47.8
S(F)11-12500/66	12500				28	21	5100*4400*4500	12.4	56.8
S(F)11-16000/66	16000				30	25	5200*4600*4600	15	69.8
S(F)11-20000/66	20000				34	28	5300*4700*4800	17.6	84.6
S(F)11-25000/66	25000				41	32	5500*4700*5000	20.8	100
S(F)11-31500/66	31500				46	36	5600*4800*5200	24.6	120
S(F)11-40000/66	40000				57	44	5800*5000*5300	29.4	141
S(F)11-50000/66	50000				67	51	6000*5300*5500	35.2	167
S(F)11-63000/66	63000				73	55	6200*5600*5700	41.6	198

Customize the parameters based on the experimental data.

Product Parameter

For 110kV Series:

Examples :S(F)ZS11 110kV Three Phase Oil Immersed Natural (Forced) Air Cooling Three Winding On Load Tap Changing Power Transformer



Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage (%)	Total Weight (t)	Shipping Weight (t)	Reference Dimension(mm)	No Load Loss (KW)	Load Loss (KW)
S(F)SZ11-6300/110	6300	H.V. 110±8×1.25% M.V. 36,37,38.5 L.V. 6.3,6.6,10.5,21	YNyn0 d11	H.V.-L.V. 18~19 H.V.-M.V. 10.5 M.V.-L.V. 6.5	30	26	6100*4100*4200	9.6	44
S(F)SZ11-8000/110	8000				34	28	6200*4300*4400	11.5	53
S(F)SZ11-10000/110	10000				36	31	6300*4600*4600	13.6	62
S(F)SZ11-12500/110	12500				42	36	6400*4600*4700	16.1	74
S(F)SZ11-16000/110	16000				49	41	6500*4800*4800	19.3	90
S(F)SZ11-20000/110	20000				55	45	6600*4900*5000	22.8	106
S(F)SZ11-25000/110	25000				60	50	7000*4900*5200	27	126
S(F)SZ11-31500/110	31500				67	57	7100*5000*5400	32.1	149
S(F)SZ11-40000/110	40000				78	65	7300*5200*5500	38.5	179
S(F)SZ11-50000/110	50000				86	71	7500*5500*5700	45.5	213
S(F)SZ11-63000/110	63000				104	87	7900*5800*5900	54.1	256

Customize the parameters based on the experimental data.

Main Components

Pressure Relief Valve

In large and medium-sized transformer, the pressure relief valve is employed instead of the explosion-proof tube, and it is usually installed on the top of the transformer tank. The pressure relief valve protects the transformer oil from external air during normal operation of the transformer. In the event transformer short-circuit fault, arc and spark will occur on the transformer winding, leading the transformer oil to produce a large number of gas in a short time, then the pressure inside the tank increases. When the pressure reaches a greater level, the pressure relief valve opens in 2 ms to release the pressure; the pressure relief valve closes automatically when the pressure value returns to a steady state. In this way, the transformer oil tank is avoided of deformation and explosion due to excessive pressures.



Gas Relay

A display which could identify the action signals of the relay baffle is added into this relay, without changing the inner and outside structure of the relay. When the baffle action causes the gas action, this display could distinguish the action, so as to distinguish from the relay action caused by the relay secondary circuit fault. A reset device is employed to restore the original signal position as the fault is eliminated.

The upper case and the inspection window plate are made of die-casting aluminum alloy, and the sealing groove structure is adopted to ensure no leakage and nice appearance.

The terminal box adopts double sealed enclosure to overcome the leakage problem of unsealed terminal box.



Pointer Type Oil Level Gauge

Pointer type oil level gauge is used in the wholly sealed, large and medium_x0002_sized transformer oil conservator. When the oil level inside the oil conservator changes, the float ball on the oil level gauge rod could drift up and down, through the mechanism inside the oil gauge, the pointer could be driven to be rotated, thus the oil conservator oil level could be indicated on the dial plate. Meanwhile, the signal transmission circuit converts the oil level signal to 4 ~ 20mA industry standard current signal, and sent it to the control room. Thus the remote oil level monitoring and alarming can be achieved.



Transformer Temperature Controller

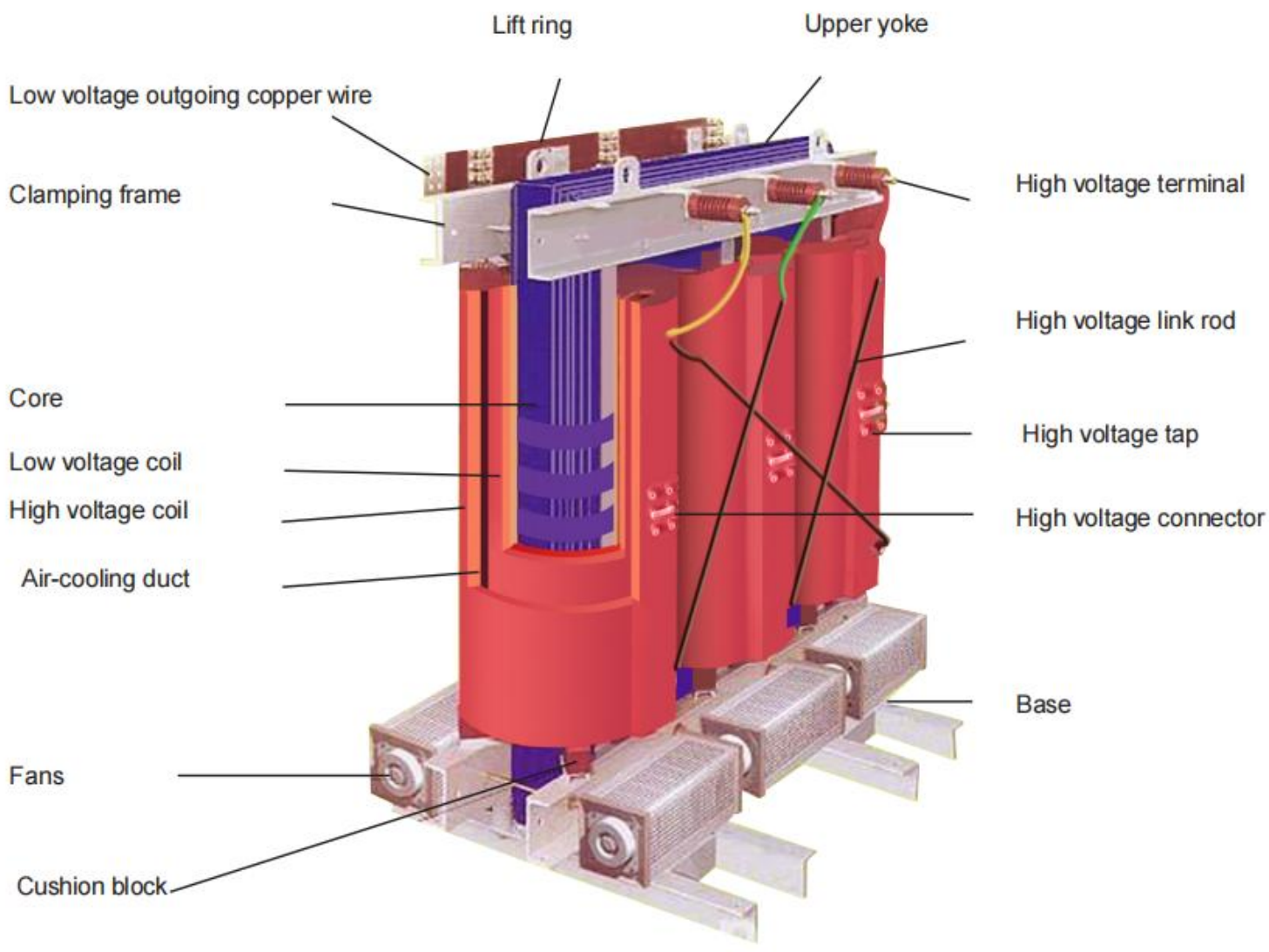
The controller is used to measure the oil temperature of the large and medium_x0002_sized oil-immersed transformer. Its functions are starting and shutdown the cooling system, signal alarming and over-temperature tripping. In order to transmit the real-time temperature signal to the control room, the temperature controller can be equipped with digital thermometer, which synchronously displays the transformer oil temperature, and the digital thermometer can be connected with the computer.



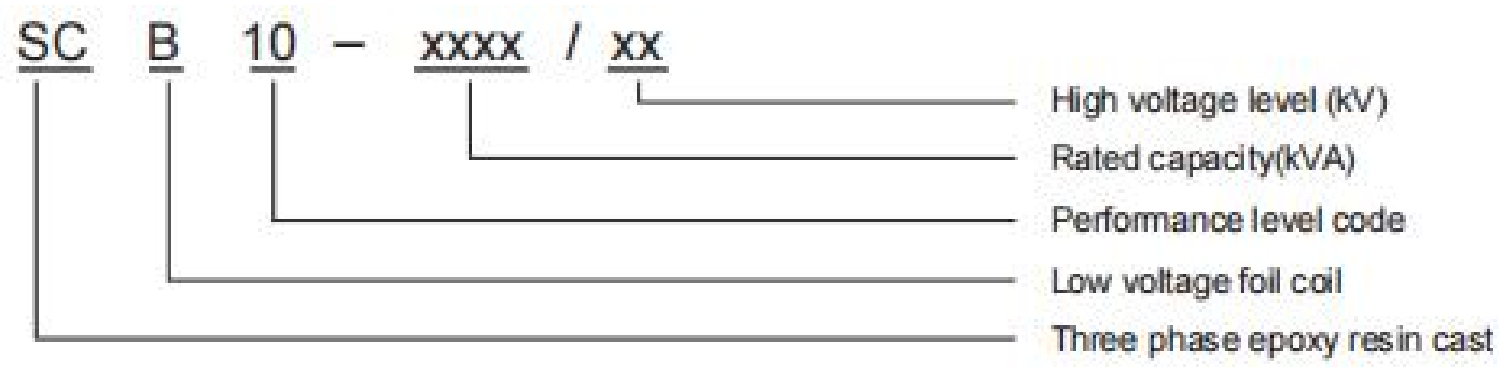
Dry Type Transformer

Introduction

Our dry-type transformers, rated up to 35kV, are power transformers where the core and windings are encapsulated in epoxy resin without any insulating oil, offering a fire-safe, maintenance-free, and environmentally friendly solution for indoor and load-sensitive applications. Manufactured with advanced vacuum casting technology and strict quality control, our dry-type transformers provide excellent overload capacity and low partial discharge, high operational safety with self-extinguishing materials, silent performance ideal for residential or commercial areas, immediate power-on capability without warm-up time, and compact design for space-saving installation, complying with international standards such as IEC and ANSI, making them perfect for high-rise buildings, hospitals, data centers, tunnels, railways, and renewable energy systems like offshore wind or solar farms.



Model Explanation



Normal Service Condition

Ambient air temperature:
Maximum temperature: +40℃
Minimum temperature: -25℃ (Outdoor dry type transformer)
Minimum temperature: -5℃ (Indoor dry type power transformer)
Highest average temperature of month: +30℃
Highest average temperature of year month: +30℃
Altitude: ≤1000m
Outdoor wind speed: ≤35m/s
Relative air humidity: ≤90%(+25℃)
Note: Dry-type transformers are typically installed indoors. If outdoor installation, high-altitude operation (>1000m), extreme low temperature (< -25℃), or higher contamination class (III or above) is required, please specify when ordering for special design consideration.



SCB14-630 10/0.4kv dry type transformer

Product Standards

GB1094.1 «Power transformers Part 1: General»
GB1094.11 «Power transformers Part 11: Dry-type transformer»
GB/T10228 «Specification and technical requirements for dry-type power transformers»
GB311.1 «Insulation co-ordination-Part 1: Definitions, principles and rules»
GB/T311.2 «Insulation co-ordination-Part 2:Application guide for insulation co-ordination for high voltage
transmission and distribution equipment»
GB/T311.6 «Voltage measurement by means of standard air gaps»
GB50150 «Standard for hand-over test of electric equipment electric equipment installation engineering»
GB/T5273 «Terminals for transformers, high-voltage apparatus and bushings»
GB/T17211 «Loading guide for dry-type power transformers»
GB/T191 «Packaging - Pictorial marking for handling of goods»
GB/T2900.15 «Electrotechnical terminology--Transformer, instrument transformer, voltage regulator and reactor»
JB/T10088 «Sound level for 6kV~500kV power transformers»

Product Features

Strong anti-short-circuit ability, low loss, low no-load current, strong impact resistance capability, low partial discharge, low noise, good heat sinking capacity.
Performance parameters are better than GB and IEC standards.
Safe, flame retardant, fireproof, non-polluting, it can be installed directly in the load site.
Maintenance-free, easy to install, low operating costs.
High reliability, high mechanical strength.
Good seismic capability.
Good anti-moisture & anti-corrosion features.
Good overload capability, in the absence of air-cooling, it can withstand 120% of the load long-term service.
Suitable to: substations located in densely populated, narrow urban places.

Core

Our cores are crafted from high-permeability, low-loss grain-oriented silicon steel, ensuring exceptional electromagnetic performance and compliance with GB 20052-2024 and IEC 60076 standards.

Precision Joint Design: 45° mitre cut joints ensure seamless magnetic flux connectivity, effectively minimizing stray-flux losses and eliminating joint vibrations that can lead to premature core fatigue.

Advanced Step-Lap Stacking: This technique optimizes the magnetic circuit by reducing no-load losses by up to 20% compared to conventional butt-lap designs, delivering superior energy efficiency.

Enhanced Mechanical Strength: Overlapping single laminations significantly improve core rigidity, reducing operational noise levels by 5–8 dB – ideal for residential areas and noise-sensitive installations.

Superior Corrosion Protection: Each core receives a full coating of bi-component epoxy resin, providing excellent resistance to moisture, salt spray, and corrosive environments – a critical advantage for outdoor oil-immersed transformers.

Reliable performance. Lower losses. Longer service life.

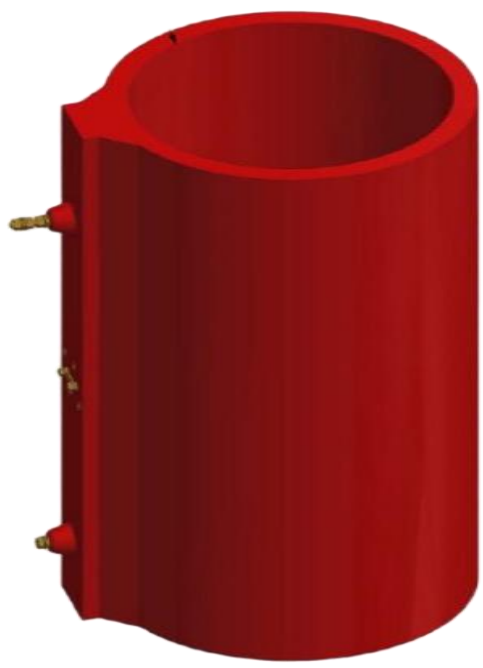


HV Winding

Depending on the transformer's rated current, our high-voltage windings are meticulously crafted using copper or aluminum wires or strips in accordance with customer specifications. Featuring a multi-layer helical and disc-type design, these windings ensure optimal performance under various operating conditions. The inter-layer insulation is carefully selected from high-quality Class F or Class H materials, tailored to meet specific customer requirements.

The high-voltage windings have continuous turns evenly distributed along the coil, promoting consistent and efficient energy flow. This design also ensures excellent linear impulse distribution, thereby enhancing the transformer's overall performance. The windings are ideally suited for cast resin encapsulation, which provides additional insulation and protection.

Our transformers exhibit extremely low partial discharge levels (guaranteed ≤10 pC), a decisive factor influencing transformer lifespan and its ability to withstand lightning impulses.

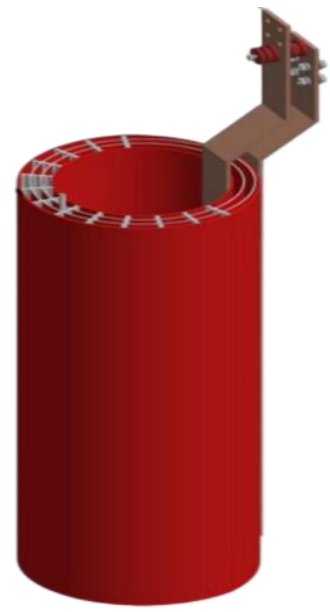


LV Winding

Our low voltage (LV) windings are meticulously wound with precision using high-quality aluminum or copper foils. Each layer is carefully insulated with an inter-layer film pre-impregnated with heat-activated epoxy resin. This advanced construction ensures not only mechanical durability but also exceptional thermal performance.

Each LV winding is equipped with tin-plated aluminum or copper connection points, streamlining connections and enhancing overall system efficiency. The LV windings provide superior insulation against various climatic conditions, ensuring long-term reliability and extended service life.

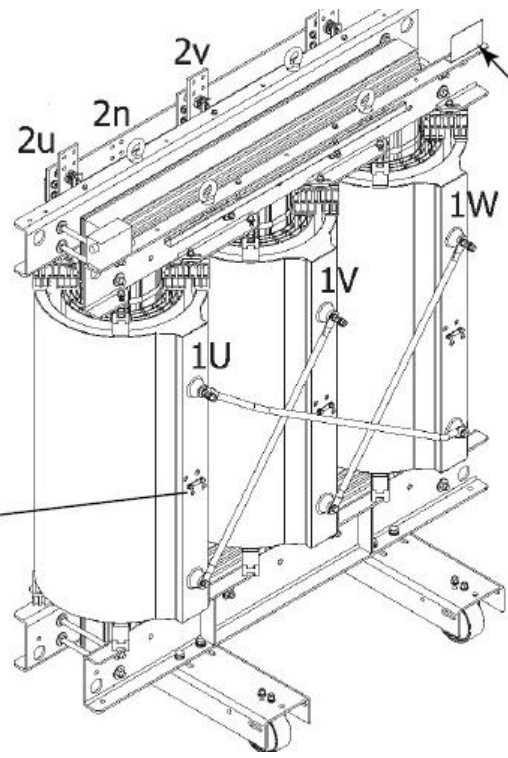
They offer excellent resistance to radial stress under short-circuit conditions. In terms of thermal management, the winding design achieves optimal temperature distribution within the coil, enhancing overall efficiency and minimizing the risk of overheating. Furthermore, our LV windings are specifically designed to reduce additional losses, delivering maximum energy efficiency and cost-effectiveness.



HV Voltage Tappings

HV tapping points allow direct connection without any contact interface, such as grease or bimetal strips. This not only simplifies installation but also ensures reliable, maintenance- free operation throughout the transformer's lifespan. Adjustment must be performed with the transformer de- energized. The HV voltage is typically regulated in 5 steps, with a common configuration of ±2 × 2.5%.



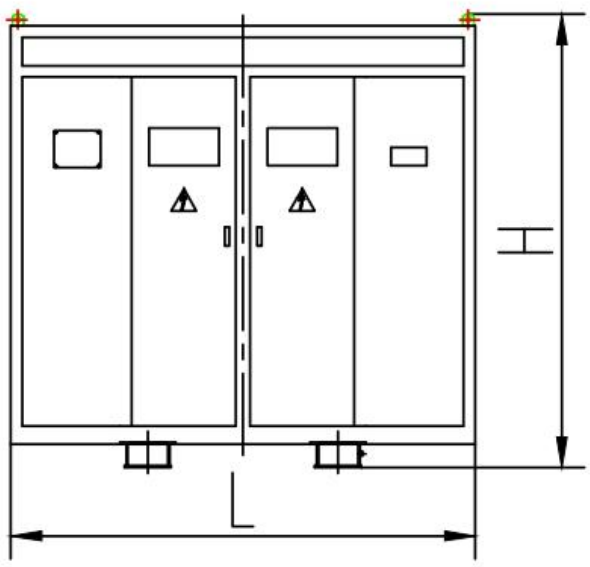


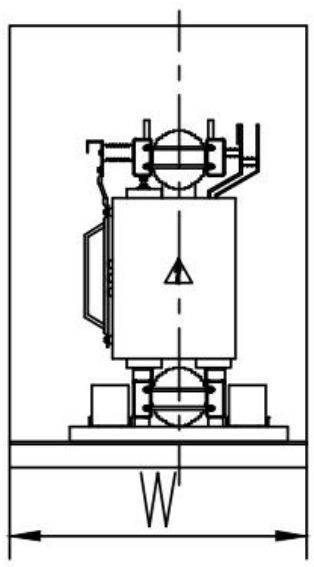
Tap Position	Tapping Link	%	HV Line - (V)
1	8-7	+ 5	14490
2	6-7	+ 2.5	14145
3	6-5	0	13800
4	4-5	-2.5	13455
5	4-3	-5	13110

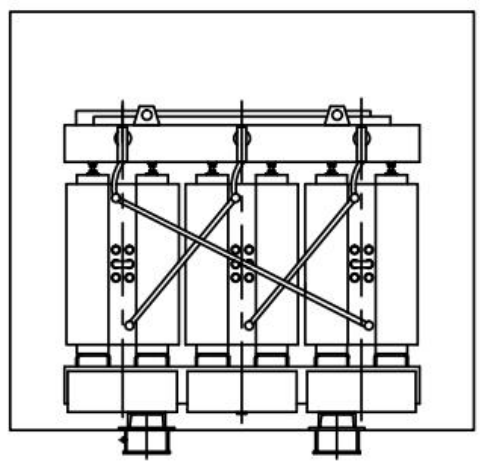
Product Parameter

For 10kV Series:

Examples : SC(B)11 Three Phase Epoxy Resin Cast Dry Type Power Transformer







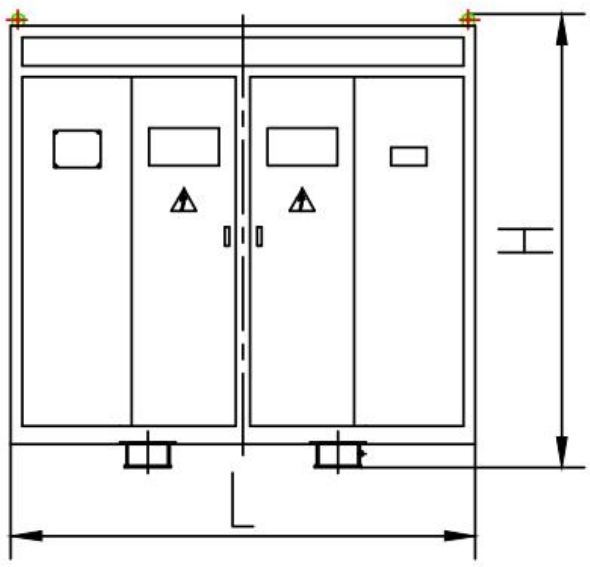
Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage(%)	Transformer Weight(kg)	Total Weight (kg)	Reference Dimension(mm)	Enclosure Dimension(mm)	No Load Loss (KW)	Load Loss (KW)
SC11-30	30	±2 × 2.5% H.V. 6,6.3,10,10.5,11 L.V. 0.4	Dyn11 Yyn0	4	250	400	680*450*640	1080*850*1020	168	710
SC11-50	50				300	450	700*450*640	1100*850*1040	238	1000
SC11-80	80				430	600	860*450*760	1260*850*1150	322	1380
SC11-100	100				630	830	920*780*900	1500*1300*2200	350	1570
SC11-125	125				700	900	920*780*950	1500*1300*2200	413	1850
SC11-160	160				800	1000	920*780*1000	1500*1300*2200	476	2130
SC11-200	200				950	1150	1100*780*960	1800*1300*2200	546	2530
SC11-250	250				1100	1300	1100*650*1150	1800*1300*2200	630	2760
SC11-315	315				1300	1500	1100*940*1150	1800*1300*2200	770	3470
SC(B)11-400	400				1500	1800	1100*940*1200	1800*1300*2200	854	3990
SC(B)11-500	500				2000	2250	1350*940*1200	2000*1500*2200	1015	4880
SC(B)11-630	630				2050	2300	1350*940*1300	2300*1500*2200	1176	5880
SC(B)11-630	630			6	2050	2300	1400*940*1130	2300*1500*2200	1134	5960
SC(B)11-800	800				2350	2600	1450*940*1140	2300*1500*2200	1330	6960
SC(B)11-1000	1000				2750	3000	1500*940*1250	2300*1500*2200	1547	8130
SC(B)11-1250	1250				3100	3300	1500*940*1300	2300*1800*2200	1827	9690
SC(B)11-1600	1600				3600	4000	1550*940*1410	2300*1500*2200	2142	11730
SC(B)11-2000	2000				4600	5000	1650*1190*1780	2400*1600*2200	2905	14450
SC(B)11-2500	2500				6000	5500	1720*1190*1800	2500*1600*2200	3500	17170

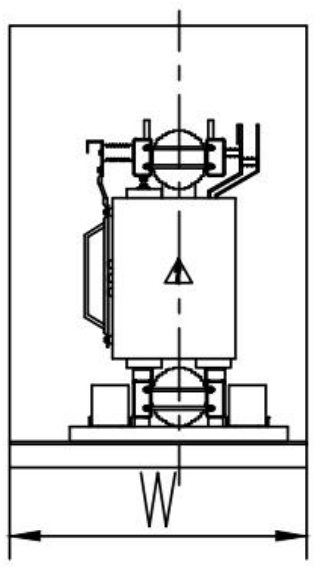
Customize the parameters based on the experimental data.

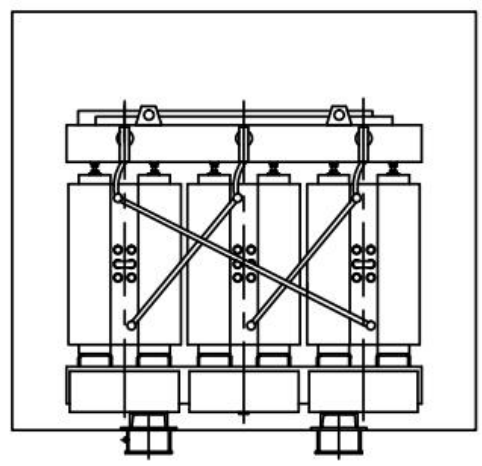
Product Parameter

For 20kV Series:

Examples : SC(B)10 Three Phase Epoxy Resin Cast Dry Type Power Transformer







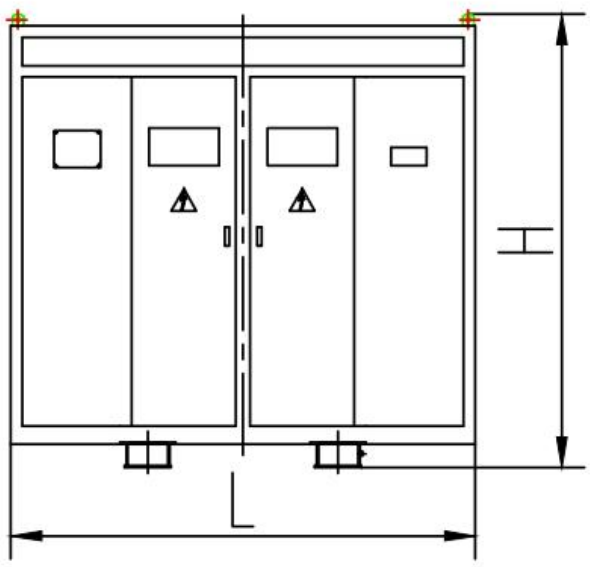
Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage(%)	Transformer Weight(kg)	Total Weight (kg)	Reference Dimension(mm)	Enclosure Dimension(mm)	No Load Loss (KW)	Load Loss (KW)
SC10-50	50	H.V. 20,22,24 ±2 × 2.5% L.V. 0.4	Dyn11 Yyn0	4	600	800	1050*700*950	1600*1300*2200	340	1230
SC10-100	100				900	1100	1100*700*1200	1600*1300*2200	540	1990
SC10-160	160				1100	1300	1200*800*1200	1600*1300*2200	670	2470
SC10-200	200				1200	1400	1250*800*1250	1800*1350*2200	730	2940
SC10-250	250				1500	1700	1300*800*1280	1800*1350*2200	840	3420
SC10-315	315				1700	1950	1400*940*1280	1800*1350*2200	970	4080
SC(B)10-400	400				1800	2050	1450*940*1300	2000*1400*2200	1150	4840
SC(B)10-500	500				2200	2450	1450*940*1340	2000*1400*2200	1350	5790
SC(B)10-630	630				2250	2500	1500*940*1480	2000*1400*2200	1530	6840
SC(B)10-800	800				2500	2750	1540*940*1510	2150*1450*2200	1750	8260
SC(B)10-1000	1000				2940	3200	1580*940*1730	2150*1450*2200	2070	9780
SC(B)10-1250	1250				3290	3800	1580*940*1760	2300*1500*2200	2380	11500
SC(B)10-1600	1600			6	4240	4550	1860*1190*1800	2400*1550*2200	2790	13800
SC(B)10-2000	2000				5200	5500	1910*1190*1900	2600*1600*2200	3240	16300
SC(B)10-2500	2500				6020	6400	2000*1190*2000	2600*1600*2200	3870	19300

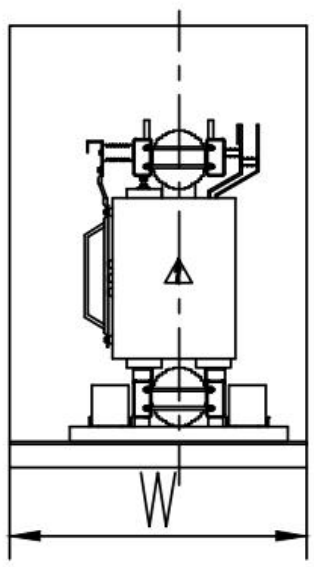
Customize the parameters based on the experimental data.

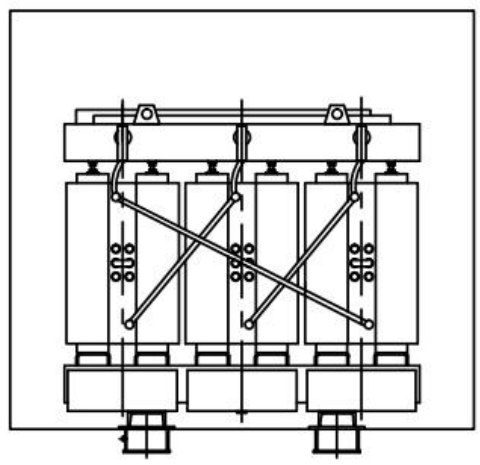
Product Parameter

For 35kV Series:

Examples : SC(B)10 Three Phase Epoxy Resin Cast Dry Type Power Transformer







Type	Rated Power (kVA)	Rated Voltage(kV)	Vector Group	Impedance Voltage(%)	Transformer Weight(kg)	Total Weight (kg)	Reference Dimension(mm)	Enclosure Dimension(mm)	No Load Loss (KW)	Load Loss (KW)
SC10-50	50	H.V. 35,36,37,38.5 ±2 × 2.5% L.V. 0.4	Dyn11 Yyn0	4	610	860	1100*750*1350	2000*1550*2200	450	1420
SC(B)10-100	100				920	1170	1300*750*1450	2000*1550*2200	630	2090
SC(B)10-160	160				1200	1500	1450*750*1450	2150*1550*2200	790	2810
SC(B)10-200	200				1350	1550	1450*750*1500	2150*1550*2200	880	3320
SC(B)10-250	250				1500	1800	1450*940*1550	2150*1550*2200	990	3800
SC(B)10-315	315				1750	1950	1500*940*1600	2300*1600*2200	1170	4510
SC(B)10-400	400				1900	2200	1540*940*1700	2300*1600*2200	1370	5410
SC(B)10-500	500				2250	2550	1560*940*1700	2300*1700*2400	1620	6650
SC(B)10-630	630				2550	2850	1650*940*1750	2500*1700*2400	1860	7690
SC(B)10-800	800				3250	3600	1750*940*1950	2700*1800*2500	2160	9120
SC(B)10-1000	1000				3600	3950	1800*940*1950	2700*1800*2500	2430	10400
SC(B)10-1250	1250				4150	4550	1850*940*2000	2800*1900*2700	2830	12700
SC(B)10-1600	1600			6	4800	5200	1900*1240*2200	2800*1900*2700	3240	15400
SC(B)10-2000	2000				5900	6300	2100*1240*2200	2800*1900*2700	3820	18200
SC(B)10-2500	2500				7250	6800	2200*1240*2300	3000*1950*2800	4455	21800

Customize the parameters based on the experimental data.

Main Components

Enclosure



The protective enclosure includes indoor type and outdoor type.

While used in the indoor environment, considering situation of the heat dissipation and maintenance, if there is enough space to install, generally we do not install the enclosure, if user really needs, the enclosure can be installed. There are several observation holes on the enclosure, which could be sprayed into multiple colors that user need.

The protection levels of the enclosure are IP20 and IP23. IP23 level is to prevent water droplets that are within 60° of the vertical angle, thus it is suitable for outdoor use.

The materials of the enclosure includes: ordinary sprayed steel plates, stainless steel plates, aluminum composite plates

Temperature control device



Transformers are equipped with temperature overheat protection devices, overheat protection devices mainly complete the temperature detection and control via the PT thermistor that embedded in the low-voltage coil, and the digital signals are transferred through the RS232 / 485 communication interface. The temperature control device provides the following functions:

Winding temperature values display of three-phase during the operation of the transformer.

Display the highest winding temperature value of one phase.

Over-temperature alarm and over-temperature tripping.

Sound and light alarm, and then fan starts

Air cooling device



There are natural air cooling (AN) and forced air cooling (AF) for the dry-type transformer.

During the natural air cooling (AN), the transformer can continuously output 100% of the rated capacity in normal conditions of use.

During the forced air cooling (AF), in normal conditions of use, the transformer can achieve increased 50% of the rated capacity, which makes it is applicable to all kinds of emergent overload or intermittent overload services. Due to the large increase in load loss and resistance, the forced air cooling (AF) is not recommended for long time continuous overload services.

Pad-mounted / Compact Substations

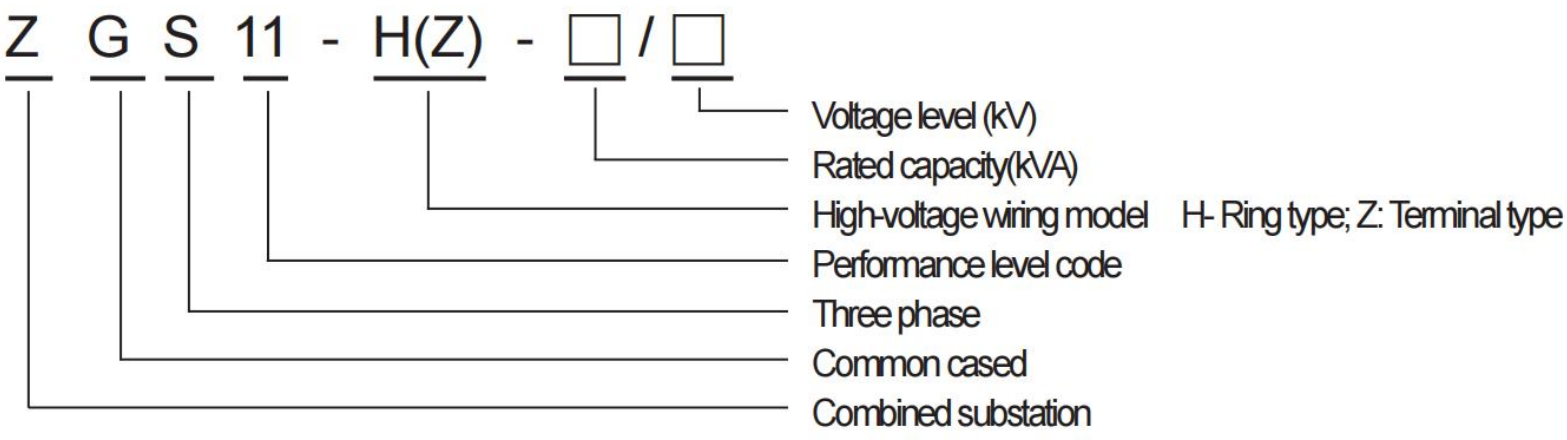
Introduction

ZGS11-H(Z) Pad-mounted Secondary Substation

ZGS11-H(Z) Pad-mounted Secondary Substation (hereinafter referred to as American type substation) is a uniformly designed transformer, in which the transformer body, the H.V. load switch, the protection fuse and other components put into a sealed oil tank, and equipped with running inspection instruments such as pressure meter, pressure relief valve, oil level gauge and oil thermometer, etc. It is reliable in power supply, with reasonable structure, fast and easy to install, convenient to operate, small size and costs low price. It is widely used indoor or outdoor in such place as industrial zone, residential quarter, commercial center and high building, etc.



Model Explanation



Feature

Hermetically sealed & fully insulated structure – Eliminates internal clearance distance requirements, ensuring reliable personnel safety and reducing accidental outage risks.

Ultra-compact footprint – Occupies only 1/3 the volume of conventional transformers, significantly reducing land acquisition and civil works costs.

Flexible network application – Suitable for both loop and terminal network configurations. Easy field conversion enhances power supply reliability and system planning flexibility.

High energy efficiency – Features low no- load and load losses, complying with international efficiency standards (e.g., DOE, Tier 2, or equivalent). This reduces total cost of ownership (TCO) and supports carbon reduction goals.

High- capacity cable connectors – Rated load current up to 200 A. Functions as both a load break switch and a disconnector, enabling simple and tool- safe operation without auxiliary power.

Dual- fuse protection system – Provides coordinated backup and primary protection, ensuring reliable fault clearing and extended equipment service life.

Robust for harsh environments – Corrosion- resistant housing combined with special paint treatment makes the unit suitable for coastal, desert, industrial polluted, and storm- prone areas.



YBM (YBP) Prefabricated Substation

Introduction

The YBM prefabricated substation adopts a three- compartment design, in which the HV switchgear, distribution transformer, and LV distribution equipment are each housed in separate compartments. They are electrically interconnected via cables or busbars. All HV/LV distribution equipment and the transformer are standard approved products.

The intelligent version of the substation consists of HV switchgear (RM6 or SFG, with load break switches equipped with motor- driven remote automatic control), distribution transformer, LV distribution equipment, LV intelligent switch, and automatic reactive power compensation based on regular wiring schemes. It supports local or remote operation, enabling remote control, remote measurement, remote metering, and remote regulation.

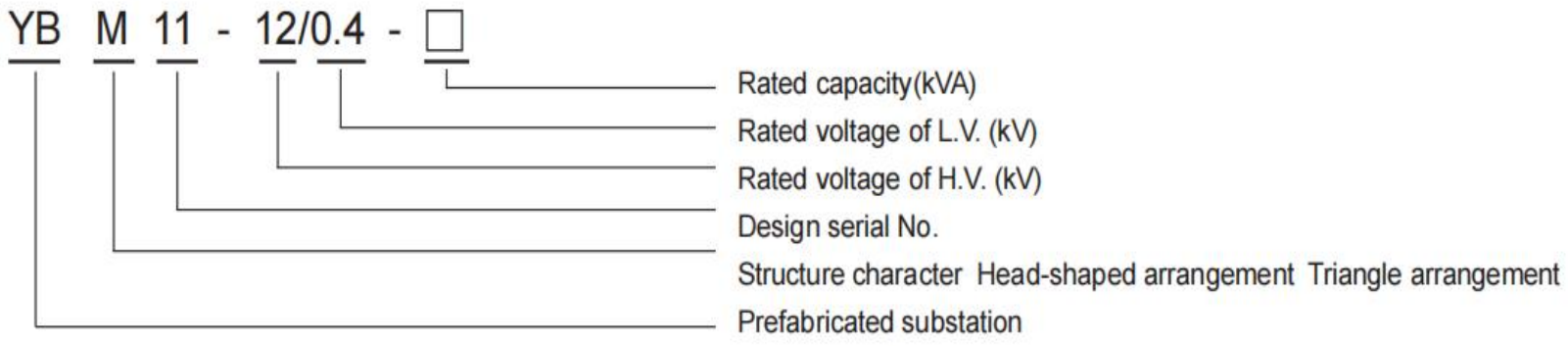
The substation is suitable for residential communities, industrial and mining enterprises, large construction sites, high- rise buildings, airports, quays, and temporary installations of public distribution networks. It is particularly designed for loop network and terminal power supply applications.

Rated parameters: Rated voltage up to 24 kV, three- phase 50 Hz system, rated power up to 2500 kVA.

Standards compliance: The YBM(P) prefabricated substation meets the SD320 "Box- type Substation Technical Conditions" and GB/T 17467 "High- voltage / Low- voltage Prefabricated Substations" standards.



Model Explanation



Structure Characteristics

This product consists of high- voltage power distribution devices, a power transformer, and low- voltage power distribution devices. It is divided into three functional compartments: the HV room, the transformer room, and the LV room. Both the HV and LV rooms are fully functional.

The primary power supply system on the HV side can be designed as a ring network supply system, a terminal supply system, a dual- power supply system, or other configurations. High- voltage metering components can be installed on the HV side to meet measurement requirements.

For the transformer room, low- loss oil- immersed transformers (such as S11, S13) or dry- type transformers can be used. The transformer room is equipped with a self- starting forced air- cooling system and a lighting system.

The LV room can adopt a panel- type or cabinet- type structure to form the power supply scheme according to user requirements, including power distribution, lighting distribution, reactive power compensation, power metering, and other functions. This enables user- friendly power management and improved power supply quality.

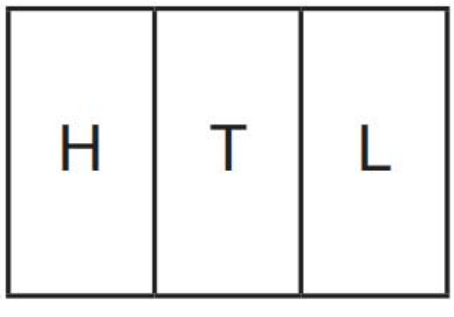
The HV room features a compact and reasonable structure with a comprehensive anti- misoperation interlocking function. The transformer can be easily accessed via rails through the doors on both sides of the transformer room as required. All rooms are equipped with self- lighting devices. All components used in both the HV and LV rooms are reliable and easy to operate, ensuring that the product is safe, reliable, and convenient for operation and maintenance.

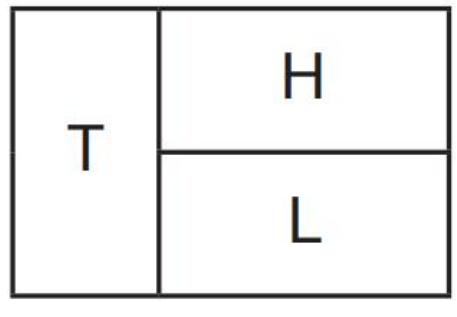
Both natural air cooling and forced air cooling are employed to maintain good ventilation and heat dissipation. The transformer room and LV room are each equipped with ventilation cooling ducts. The exhaust fans are fitted with temperature control devices, which automatically start and stop according to preset temperatures, ensuring safe full- load operation of the transformer.

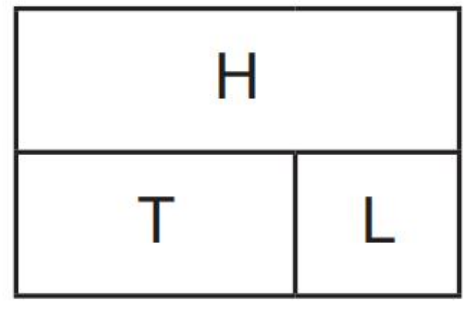
The enclosure is made of specially treated stainless steel sheets or aluminum alloy sheets with anti- corrosion properties. It is designed to prevent rain and dirt ingress, enabling long- term outdoor use. It also offers waterproof and dustproof performance, long service life, and an attractive appearance.

Layout Mode

H - High voltage room; T - Transformer room; L - Low voltage room







Charging Station Dedicated Pad-Mounted Transformer

This product is specifically designed for electric vehicle charging stations. It integrates high-voltage switchgear, a power transformer, and low-voltage distribution equipment into a single compact enclosure, with the additional integration of the charging pile host within the low-voltage compartment. The unit is divided into three functional compartments: the HV compartment, the transformer compartment, and the LV compartment which houses the charging host.

HV Compartment

The HV compartment contains the high-voltage incoming switchgear, typically including a load break switch or circuit breaker, fuse protection, and optional metering components. It supports ring network or terminal power supply configurations, providing flexible connection to the utility grid.

Transformer Compartment

The transformer compartment houses a low-loss oil-immersed or dry-type transformer, sized according to the total charging power requirements. The transformer is designed for high overload capacity, capable of handling the intermittent peak loads typical of EV fast charging. A forced air-cooling system with automatic temperature control ensures stable operation under heavy charge cycles.

LV Compartment with Integrated Charging Host

The LV compartment integrates both standard low-voltage distribution equipment and the charging pile host. Standard LV equipment includes incoming main breaker, outgoing feeders, reactive power compensation. The charging host consists of rectifier modules, power distribution units, charge control units, and communication interfaces. By placing the charging host inside the same enclosure as the transformer, separate cabinets and external cabling are eliminated.

System Integration & Coordination

The integrated design allows for direct low-voltage connection from the transformer secondary to the charging host busbar inside the same compartment. This shortens power supply paths, reduces line losses, and simplifies protection coordination. The control system communicates with the charging host for load management, allowing dynamic adjustment of charging power based on transformer load and temperature.

Key Advantages for Charging Station Applications

Space saving – Eliminates separate charging host cabinets, reducing overall footprint by approximately 30‑ 40% compared to conventional solutions.

Faster deployment – Pre‑ wired and pre‑ tested at factory, requiring only grid connection and charging cable connections on site.

Lower installation cost – Reduces civil works, cabling, and labor costs significantly.

Improved efficiency – Shorter LV cables between transformer and charging host minimize energy losses and voltage drop.

Enhanced reliability – Integrated protection coordination and thermal management ensure safe operation under frequent high‑ current charging cycles.

Easier maintenance – Single access point for both transformer and charging power electronics simplifies routine inspection and servicing.

Scalable design – Multiple units can be paralleled to support expanding charging capacity as station demand grows.

Typical Applications

This product is ideal for DC fast charging stations, highway service area chargers, fleet charging depots, and public EV charging hubs requiring compact, reliable, and cost‑ effective power distribution solutions.

Photovoltaic Dedicated Prefabricated Substation

This product is specifically designed for grid-connected photovoltaic power generation systems. It integrates high-voltage switchgear, a step-up transformer, and low-voltage distribution equipment into one compact enclosure, with the PV inverter and AC combiner housed inside the low-voltage compartment. The unit is divided into three functional compartments: HV compartment, transformer compartment, and LV compartment (containing the inverter and AC distribution).

The HV compartment contains outgoing switchgear such as a circuit breaker or load break switch with fuse protection, grounding switch, and optional metering. It supports single or multiple feeders for grid connection or collector lines.

The transformer compartment houses a low-loss, high-efficiency step-up transformer (oil-immersed or dry-type), converting inverter output voltage (e.g., 480V or 800V) to medium voltage (10kV–35kV). The transformer features low no-load loss, high overload capability for variable solar irradiance, and dual-voltage taps.

The LV compartment integrates AC distribution equipment and the PV inverter. The inverter converts DC power from PV arrays to grid-compliant AC, with integrated MPPT, grid protection (anti-islanding, ride-through), and communication interfaces for remote monitoring. AC combiner equipment collects outputs from multiple inverters before feeding into the transformer.

The integrated design allows direct AC connection from the inverter to the transformer via internal busbars, eliminating external cables and reducing system losses. A station controller collects real-time data from the inverter, transformer, and switchgear for centralized monitoring.

Key Advantages:

Plug-and-play – Factory pre-wired and pre-tested, reducing site installation time.

Space saving – Integrates inverter, combiner, transformer, and HV switchgear, saving up to 40% footprint.

Lower BoS cost – Eliminates external AC cabling, trenching, and labor.

Higher efficiency – Short busbar connections minimize energy losses.

Grid compliant – Pre-engineered protection meets anti-islanding, ride-through, and power factor requirements.

Easy maintenance – Single enclosure with accessible compartments for all components.

Scalable – Multiple units can serve large PV plants in modular fashion.

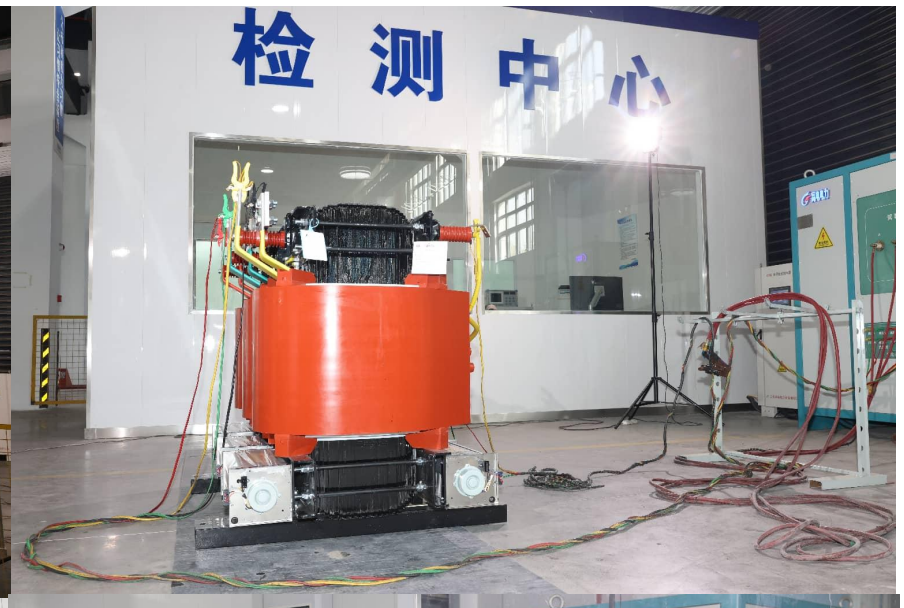
Durable – Corrosion-resistant, high-temperature rated (up to 50°C), sand/dust protected, UV-resistant for outdoor use.

Typical Applications: Utility-scale PV plants, commercial rooftop solar, agrivoltaics, floating PV, and distributed generation sites.

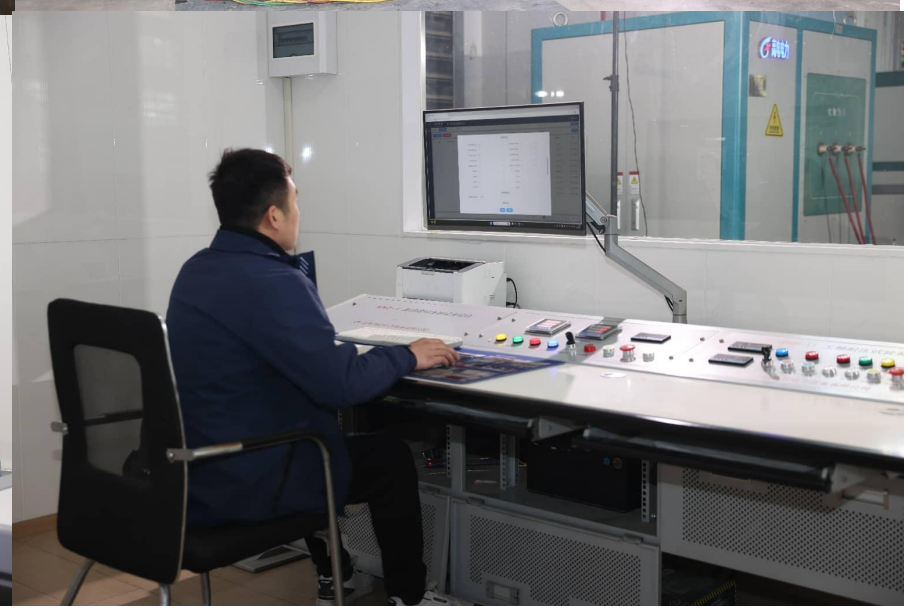


Testing









Routine Tests

- Measurement of winding resistance
- Measurement of voltage ratio and phase displacement
- Measurement of short circuit impedance and load losses
- Measurement of no-load losses and current
- Dielectric routine tests (separate source AC voltage withstand test and short duration induced over-voltage withstand test)
- Measurement of insulation resistance
- Oil leakage test

Type Tests

- Temperature rise test
- Lighting impulse test

Special Tests

- Short circuit withstand test
- Measurement of zero-sequence impedance(s) on three-phase transformers
- Determination of sound levels
- Measurement of the harmonics of the no-load current