Shenheng Power Equipment Co.,Ltd.

---Wholeheartedly serve the happy and sincere you!

Catalogue

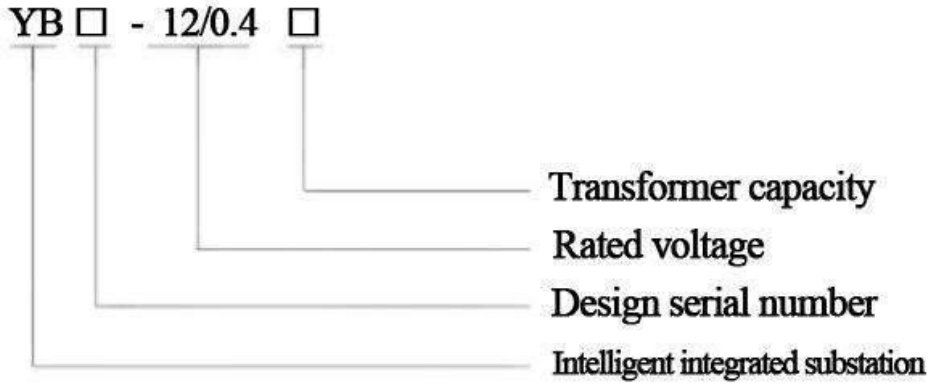
1. YB□ -12/0.4/1250 Outdoor prefabricated substation (European type)

Substation series

YB □ -12/0.4（F.R）
Outdoor prefabricated substation (European type)

Summary
It is widely used in urban power grid transformation, residential quarters, high-rise buildings, industries and mines, hotels, shopping malls, airports, railways, oil fields, docks, highways, temporary power facilities and other indoor and outdoor places.

Model and meaning



Service conditions

1. The altitude shall not exceed 1000m;
2. Ambient temperature: - 25 ° C ~ + 40 ° C;
3. Relative humidity: the daily average value shall not be greater than 95%, and the monthly average value shall not be greater than 90%;
4. Installation site: a place without fire, explosion hazard, conductive dust, chemical corrosive gas and violent vibration. If the above conditions are exceeded, the user can negotiate with our company.

Functions and features

1. High voltage switchgear, transformer and low voltage switchgear are Trinity, with strong completeness;
2. Perfect high and low voltage protection, safe and reliable operation and simple maintenance;
3. Small land occupation, low investment, short production cycle and convenient movement;
4. Flexible and diverse wiring schemes;
5. Unique structure: unique honeycomb structure, double-layer (composite plate) shell is firm, heat insulation, heat dissipation and ventilation, beautiful and high protection grade. The shell materials are stainless steel qin alloy, aluminum alloy, cold-rolled plate and color steel plate;
6. Various types: universal, villa, compact and other types;
7. The high-voltage ring network cabinet can be equipped with network automation terminal (FTU) to realize the reliable detection of short circuit and single-phase grounding fault, and has the "four remote" function to facilitate the upgrading of distribution network automation.

transformer

The intelligent integrated substation adopts low loss, oil immersed, fully sealed S9, S10 and S11 series transformers, as well as resin insulated or Nomex Paper Insulated environment-friendly dry-type transformers. A trolley can be equipped at the bottom, and the transformers can be easily accessed.

High voltage side
The high voltage of intelligent integrated substation is generally protected by load switch fuse combination. After one phase of fuse is fused, three-phase linkage tripping is carried out. The load switch can be selected in the form of compressed air, vacuum and sulfur hexafluoride. It can be equipped with electric operating mechanism to realize automatic upgrading; The fuse is a high-voltage current limiting fuse with impactor, reliable action and large breaking capacity. The main technical parameters are shown in the table below. For transformers above 800kVA, ZN12, zn28.vs1 and other vacuum circuit breakers can be selected for protection.
Low voltage side
The low-voltage side main switch adopts universal or intelligent circuit breaker with selective protection; The outgoing line switch is a new type of molded case switch with small volume and short arcing, up to 30 circuits; Intelligent automatic tracking reactive power compensation device has two switching modes of contactor and contactless for users to choose

Executive standard
This product meets the following standards:
GB / t17467-1998 high voltage / low voltage prefabricated substation
DL / t537-93 technical conditions for ordering 6-35kV box type substation

Technical parameters of load switch
Technical parameters of high voltage fuse

No.	Name	Unit	Load switch FN12-12	Vacuum load switch FZN12-12
1	Rated voltage	KV	10	
2	Maximum operating voltage	KV	12	
3	Rated frequenc	HZ	50	
4	Rated current	HZ	630	
5	Rated breaking current	A	630	
6	Thermal stability current（effective value）	KA/S	20/2	20/4
7	Dynamic stable current	KA	50	50
8	Short circuit making current	KA	50	50
9	Full load breaking times	次	20	10000
10	Mechanical life	次	2000	10000
11	1min power frequency withstand voltage (phase to phase and to ground)	KV	42	42
12	Lightning impulse voltage(phase to phase and to ground)	KV	75	75

Model		Rated voltage（KV）	Rated current（A）	Breaking current（KA）	Melt rated current（A）
British model	Domestic model				
SDL＊J		12	40	31.5	6.3,10,16,20,25,31.5,40
SFL＊J	XRNT-12	12	100	31.5	50,63,71,80,100
SKL＊J		12	125	31.5	125

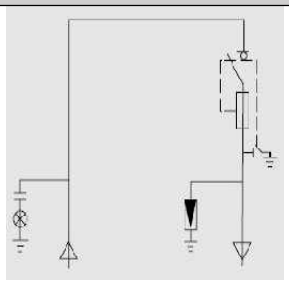
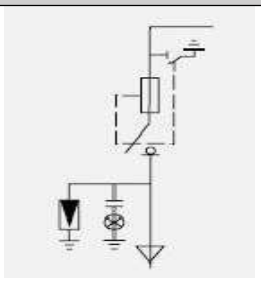
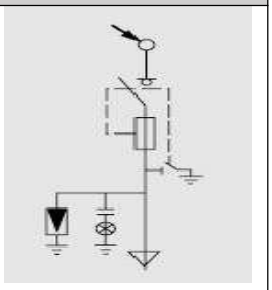
Technical parameters of Low voltage circuit break

Model	Release form	Rated current of release （A）	On-off capacityKA （AC380V）
DW15-630	Thermoelectric magnetic or electronic type	315, 400, 630	40
DW15-1000		600，800，1000	50
DW15-1600		1600	50
DW15-2500		1600,2000,2500	60
CW1-2000	Intelligent	630,800,1000,1250,1600,2000	65（80）
CW1-3200		2000,2500,3200	100

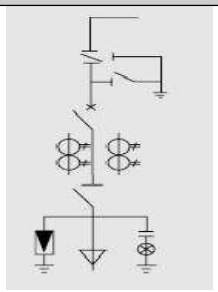
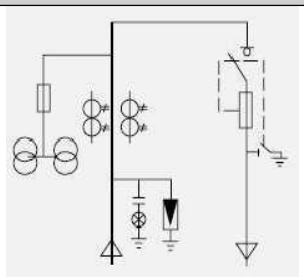
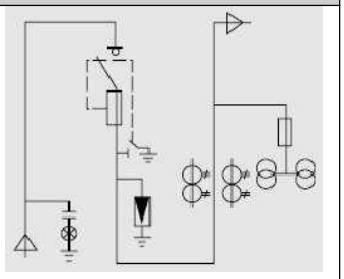
YB □ -12/0.4(F-R)
Outdoor prefabricated substation (European type)
Primary scheme diagram
See the attached figure for the primary scheme of the substation.
Typical scheme example diagram
See the attached drawings for typical scheme examples.
Foundation and plane layout
Refer to the attached drawings for the foundation drawing of the substation; See the attached drawings for the layout of the substation, which can be selected by users according to their needs.
Installation, use and maintenance
In addition to the regulations required by the power department, the following matters shall be paid attention to in the installation, acceptance, handover test, operation and maintenance of intelligent integrated substation:
♦ When receiving the goods, the user shall check carefully according to relevant regulations. For products that are not installed immediately, they shall be stored in appropriate places according to the provisions of normal use conditions.
♦ The product shall be lifted at the bottom with special spreader, as shown in Figure 3.
♦ The product shall be placed horizontally on the prepared foundation, and then the gap between the product base and the foundation shall be plastered and sealed with cement mortar to prevent rainwater from entering the cable room, and the high and low voltage cables shall be connected through the bottom sealing plate of the high and low voltage room.
♦ Reliable grounding shall be done after the product is installed in place; Two main grounding terminals on the channel steel of the base of the power station, the neutral point of the transformer and the outer flange, and the pile head under the lightning arrester
The installation department shall be grounded respectively. All grounding shall share a group of grounding devices, and the grounding resistance shall be less than 4 ohms;
♦ After installation or maintenance, the following items shall be inspected and tested before putting into operation:
◊ whether the substation is clean;
◊ whether the operating mechanism is flexible;
◊ whether the on-off of main electrical appliances is flexible and reliable;
O whether the on-off of auxiliary contacts of electrical appliances is reliable and accurate;
◊ whether the meter and relay action are accurate;
◊ whether the transformation ratio and wiring polarity of instruments and transformers are correct;
◊ whether all electrical installation nuts are tightened and whether the installation is firm and reliable;
◊ whether the bus connection is good, and whether its supporting insulators and clamps are installed reliably;
◊ whether the setting value of the electrical appliance meets the requirements and whether the fuse core specification is correct:
◊ whether the contacts of main circuit and auxiliary circuit meet the requirements of electrical schematic diagram.
♦ repair

◊ all components in the product shall be maintained according to their respective technical requirements:
◊ if the selected transformer is oil immersed, oil sample analysis and inspection shall be carried out at least once a year as required;
◊ after 20 times of on load or 2000 times of no-load opening and closing operations of the high-voltage side switchgear in operation, the contact condition and the arc extinguishing device shall be checked
The degree of loss. In case of any abnormality, it shall be repaired or replaced in time;
◊ after the automatic tripping of low-voltage switchgear, the tripping cause shall be checked and analyzed, and it can be put into operation again after the fault is eliminated;
◊ the lightning arrester shall be subject to a preventive test every year before the thunderstorm season;
*The product is attached with packing list, certificate of conformity, installation and operation instructions, electrical wiring diagram, instructions for main components and equipment used in the product, and key operation
As tools and spare parts provided according to the agreement.

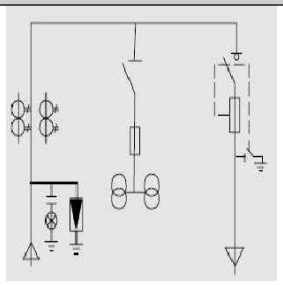
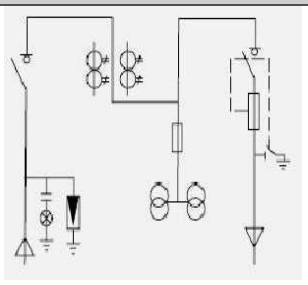
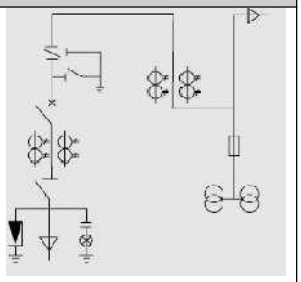
YB □ -12/0.4(F-R) Outdoor prefabricated substation (European type)
Legend of technical scheme

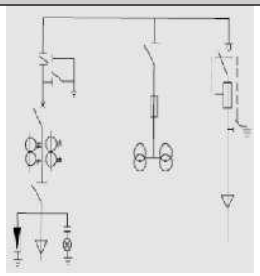
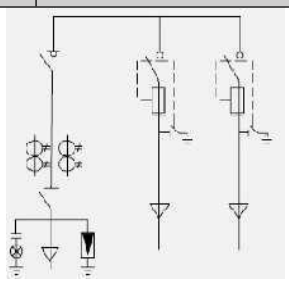
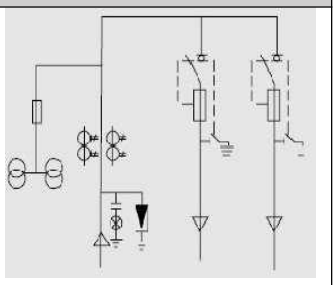
Scheme No.	01	02	03
Single line diagram of main circuit			
Purpose	Terminal type Cable incoming /1 outgoing line	Terminal type incoming line	Terminal type overhead incoming line
Cabinet type	HXGN-12	HXGN-12	HXGN-12
Selection of primary equipment			
Vacuum circuit breake VS1, ZN28			
Load switch FN, FZN, FLN	1	1	1
Disconnector GN			
Fuse XRNT	3	3	3
Fuse RN2			
Lightning arrester HY5W	3	3	3
Live display GSN	1	1	1
Current transformer LZZBJ			
Voltage transformer JDZ			

Legend of technical scheme

Scheme No.	04	05	06
Single line diagram of main circuit			
Purpose	Terminal type Vacuum circuit breake incoming line	Terminal type incoming line metering / 1 outgoing line	Terminal type Cable incoming /1 outgoing line/metering
Cabinet type	XGN66-12	HXGN-12	HXGN-12
Selection of primary equipment			
Vacuum circuit breake VS1, ZN28	1		
Load switch FN, FZN, FLN		1	1
Disconnector GN	2		
Fuse XRNT		3	3
Fuse RN2		3	3
Lightning arrester HY5W	3	3	3
Live display GSN	1	1	1
Current transformer LZZBJ	2	2	2
Voltage transformer JDZ		2	2

Legend of technical scheme

Scheme No.	07	08	09
Single line diagram of main circuit			
Purpose	Terminal type incoming line metering / Pt / 1 outgoing line	Terminal type incoming line metering / Metering / 1 outgoing line	Terminal type circuit breaker Incoming/ Metering
Cabinet type	HXGN-12	HXGN-12	XGN66-12
Selection of primary equipment			
Vacuum circuit breake VS1, ZN28			1
Load switch FN, FZN, FLN	1	2	
Disconnector GN	1		2
Fuse XRNT	3	3	3
Fuse RN2	3	3	3
Lightning arrester HY5W	3	3	3
Live display GSN	1	1	1
Current transformer LZZBJ	2	2	4
Voltage transformer JDZ	2	2	2

Scheme No.	10	11	12
Single line diagram of main circuit			
Purpose	Terminal type circuit breaker Incoming/PT/1 outgoing line	Terminal type 1 outgoing line/ 2 outgoing line	Terminal type incoming line metering/2 outgoing line
Cabinet type	HXGN66-12 HXGN-12	HXGN-12	HXGN-12
Selection of primary equipment			
Vacuum circuit breake VS1, ZN28	1		
Load switch FN, FZN, FLN	1	3	2
Disconnector GN	3	1	
Fuse XRNT	3	6	6
Fuse RN2	3		3
Lightning arrester HY5W	3	3	3
Live display GSN	1	1	1
Current transformer LZZBJ	2	2	2
Voltage transformer JDZ	2		2

YB □ -12/0.4(F R)

Outdoor prefabricated substation (European type)

Substation structure diagram

YB □ -12/0.4(F R)

Outdoor prefabricated substation (European type)

Ordering instructions

The following information shall be provided when ordering:

1. Model and quantity of substation;
2. Model and quantity of transformer;
3. HV and LV primary wiring scheme and models and parameters of main components;
4. Material and color of shell.

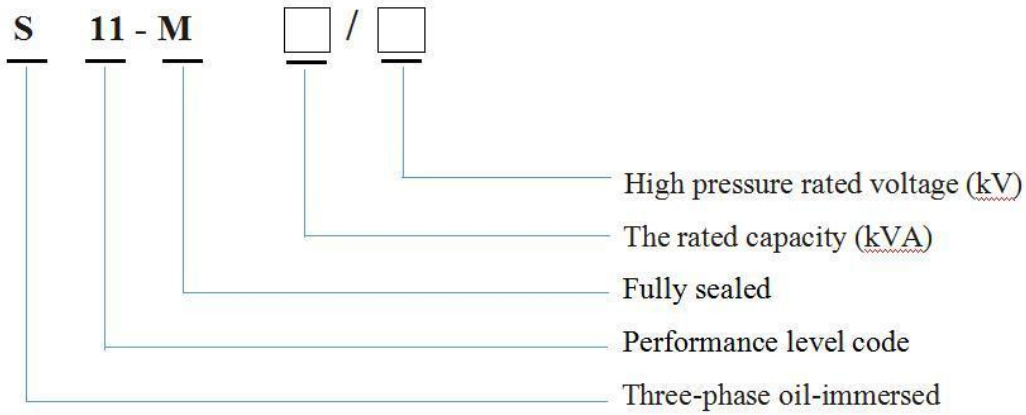
2. S11-M Oil immersed distribution outdoor transformer

General:

- This product conforms to the national standard GB1094.1-2013(IEC 60076) power transformer and GB / T6451-2015 three phase oil immersed power transformer technical parameters and requirements.
- The iron core is made of high-quality cold-rolled silicon-steel plate. High-voltage winding group is made up of high-quality oxygen-free copper lines and it adopts multi-layer drum type structure. As high-tech product that promoted by the country,
- the product has many advantages such as high efficiency, low loss. Its social benefits are remarkable that it will save much of electricity consumption and operating cost.

Compared with the original SZ11, the average of SZ13no-load loss reduced by 20% or more, the no-load current is reduced by 25% or more, operating costs dropped by an average of more than 15%

Relative to the conventional S11 type/S13 series three-phase double-winding and excitation surge of transformer power after manual voltage regulator, SZ11 SZ13 type series transformer can realize the load, through the controller on the ground remote power transformer to adjust the voltage, which can realize free power voltage regulator, reducing frequency of climbing and risk, greatly convenient for power operation personnel on site.



Rated

1. Capacity: 10kVA up to 31500kVA

2. High Voltage: 3.3kV up to 35kV

3. Connection Method: Optional

4.Rated Low Voltage: 0.4kV 3.15kV 6.3kV 6.6kV10.5kV

5.Rated frequency:50Hz

6.HV tap range: ±2.5%, ±5%

7.Material: Full copper Winding

Service conditions of Oil immersed distribution outdoor transformer

Device types:	outdoor type
Ambient temperature:	
Maximum	+40°C
Maximum 24 hour average	+35°C
Minimum	-25°C (-45°C when you order details0
Ambient humidity:	
Height above sea level at site	less than 1000m
Earthquake intensity	less than 8 degree
Height above sea level	less than 1000m
Mounting ambicnt:	No fire, explosion, earthquake and chemical corrosion environments.

Technical parameters of S11-M

1. S11-M Type 6~11 kV
Performance parameters

Rated capacity(KVA)	Voltage Combination and tap range			connection of transformer winding	No-load loss(W)	Load loss (W)	No-load current (%)	Short circuit impedance (%)
	High voltage (KV)	High voltage tap range (%)	Low voltage (KV)					
30	6 6.3 6.6 10 10.5 11	±5% ±2x 2.5%	0.4	Dyn11 Yzn11 Yyn0	80	630/600	1.8	4
50					100	910/870	1.6	4
63					110	1090/1040	1.6	4
80				Dyn11 Yyn0	130	1310/1250	1.5	4
100					150	1580/1500	1.4	4
125					170	1890/1800	1.4	4
160					200	2310/2200	1.3	4
200					240	2730/2600	1.2	4
250					290	3200/3050	1.2	4
315					340	3830/3650	1.1	4
400					410	4520/4300	1.1	4
500					480	5410/5150	1.0	4
630					570	6200	0.9	4.5
800					700	7500	0.8	4.5
1000					830	10300	0.8	4.5
1250					970	12000	0.7	4.5
1600200 02500					1170155 01830	145001830 021200	0.60.40 .4	4.55.05.0

6308001 000 1250 1600 2000 2500 3150	66.3 10 10.5	±5% ±2x 2.5%	33.1 56.3	Yd11Dy n11	8201000 1180 1400 1680 2010 2370 2800	692084609 910 11700 14100 16900 19600 23000	0.600.6 00.60 0.50 0.40 0.40 0.40 0.40	5.5
4000500 06300	1010 .5		3.15 6.3		3450410 04890	273003130 035000	0.400.4 00.40	

2. S11-M Type 20 kV
Performance parameters

Rated capacity (KVA)	Voltage Combination and tap range			connection of transformer winding	No-load loss(W)	Load loss (W)	No-load current (%)	Short circuit impedance (%)
	High voltage (KV)	High voltage tap range (%)	Low voltage (KV)					
50 100 125 160 200 250 315 400 500 630 800 1000 1250 16002000 2500	20 22 24	±5% ±2x 2.5%	0.4	Dyn11 YynOYz n11	100 150 170 200 240 290 340 410 480 570 700 830 970 1170155 01830	1270/1210 2120/2020 2500/2380 2970/2830 3500/3330 4160/3960 5010/4770 6050/5760 7280/6930 8280 9900 12150 14670 175501914 022220	2.0 1.80 1.70 1.60 1.50 1.40 1.40 1.30 1.20 1.10 1.00 1.00 0.90 0.800.6 00.50	5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 6.0 6.0 6.0 6.0 6.06.06.0

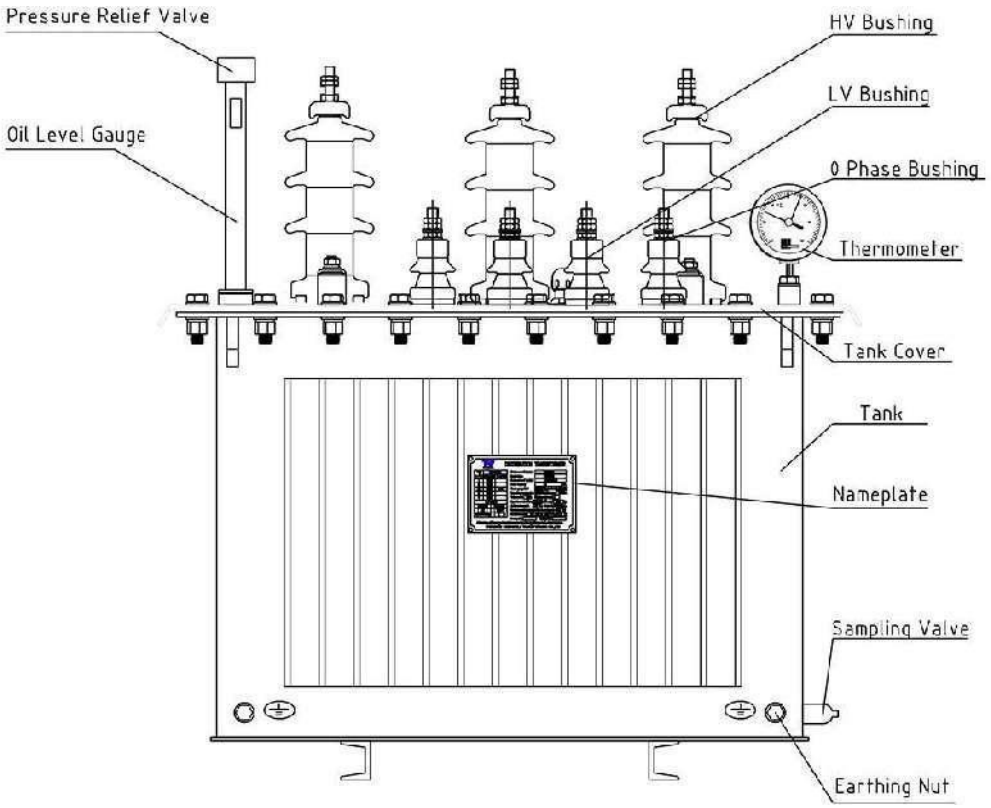
3. S11-M Type 38.5kV

Performance parameters

Rated capacity (KVA)	Voltage Combination and tap range			connection of transformer winding	No-load loss(W)	Load loss (W)	No-load current (%)	Short circuit impedance (%)
	High voltage (KV)	High voltage tap range (%)	Low voltage (KV)					

50 100 125 160 200 250 315 400 500 630 800 1000 1250 16002000 2500	3538 .5	±5% ±2x 2.5%	0.4	Dyn11 Yyn0	170 230 270 290 340 410 490 580 690 830 980 1150 1410 1700159 01890	1270/121 0 2120/202 0 2500/238 0 2970/283 0 3500/333 0 4160/396 0 5010/477 0 6050/576 0 7280/693 0 8280 9900 12150 14670 17550197 0023200	2.0 1.80 1.70 1.60 1.50 1.40 1.40 1.30 1.20 1.10 1.00 1.00 0.90 0.800. 750.75	6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.56.56.5
63080010 00 1250 1600 2000 2500	35	±5% ±2x 2.5%	3.156. 310.5	Yd11	8309801 150 1400 1690 2170 2560	78609400 11500 13900 16600 18300 19600	0.650. 650.65 0.55 0.45 0.45 0.45	6.5
31504000 5000 6300	3538 .5	±5% ±2x 2.5%	3.156. 310.5		3040361 04320 5240	23000273 0031300 35000	0.450. 450.45 0.45	7.07.07.0 8.0
80001000 012500 16000 20000 25000 31500	3538 .5	±5% ±2x 2.5%	3.153. 36.3 6.6 10.5	YNd11	7200870 010000 12100 14400 17000 20200	38400453 0053800 65800 79500 94000 112000	0.350. 350.3 0.3 0.3 0.25 0.25	8.08.08.0 8.0 8.0 10.0 10.0

Structural drawing of S11-M Type



Main Functions And Features

1. The low-voltage winding is of cylindrical or spiral structure, with high mechanical strength and good short-circuit resistance.

2. The corrugated oil tank is adopted to replace the oil conservator. The oil tank cover and the oil tank are all welded along the edge or fastened with bolts, thus prolonging the service life of the transformer oil.

3. After oil removal, embroidery removal and phosphating treatment, the product is sprayed with three times of primer and one time of finish paint inside and outside. The product is salt fog proof, damp heat proof and fungus proof, which can meet the special requirements of metallurgy, petrochemical system and wet and polluted areas. It is beautiful and reliable.

4. The transformer oil tank is fully sealed, and equipped with pressure reducing valve, signal thermometer, gas relay, etc according to the standard requirements to ensure the safe operation of the transformer.

5. This series of products are beautiful in appearance, small in size, and can reduce the installation area. It is an ideal maintenance-free distribution product.

6.We employ spiral coil with longitudinal oil path to make a better interior cooling effect;

3. SZC(B)-10~13 series intelligent 3 -Phase indoor dry-type Distribution transformer

General:

- This product conforms to the national standard GB1094.1-2013(IEC 60076) power transformer and GB / T6451-2015 indoor dry-type transformer technical parameters and requirements.
- Epoxy resin pouring transformer is a solid insulation encapsulated winding power transformer.
- Epoxy resin dry-type transformer uses epoxy resin as insulation material.High and low voltage winding is made of copper strip (foil), epoxy resin is poured and solidified in vacuum to form high strength FRP body. Insulation grade is F and H.
- Epoxy resin dry-type transformer has the characteristics of good electrical performance, strong lightning shock resistance, strong short-circuit resistance, small size and light weight etc.. The temperature display controller can be installed to display and control the operating temperature of the transformer winding to ensure the normal service life of the transformer.

Compared with the manual voltage regulation of traditional SCB series indoor dry 3-phase power transformer, SZC(B)-10 SZC(B)-11 SZC(B)12 SZC(B)13 series intelligent 3- Phase indoor dry-type Distribution transformer can realize the load through the controller on the ground remote power transformer to adjust the voltage, which can realize free power voltage regulator, reducing frequency of climbing and risk, greatly convenient for power operation personnel on site.

Type meaning

SCZB13 - □ □

SC：	Three-phase Solid molding (epoxy pouring)
Z：	Voltage can be adjust Auto
B:	Low prssure "foil"coil
13:	Performance level code
□:	The rated capacity (kVA)
□:	High pressure rated voltage (kV)

RATED

1. Capacity: 10kVA up to 31500kVA
2. High Voltage: 3.3kV up to 35kV
3. Connection Method: Optional
4.Rated Low Voltage: 0.4kV 3.15kV 6.3kV 6.6kV10.5kV
5.Rated frequency:50Hz
6.HV tap range: ±2.5%, ±5%
7.Material: Full copper Winding

Service conditions of indoor dry-type transformer

Device types:	outdoor type
Ambient temperature:	
Maximum	+40°C
Maximum 24 hour average	+35°C
Minimum	-25°C (-45°C when you order details0
Ambient humidity:	
Height above sea level at site	less than 1000m
Earthquake intensity	less than 8 degree
Height above sea level	less than 1000m
Mounting ambicnt:	No fire, explosion, earthquake and chemical corrosion environments.

Technical parameters of indoor dry-type transformer(10kV grade)

Technical parameters of SC(B)10 series 6kV, 10kV grade non-excitation voltage regulating distribution dry type transformer

Rated capacity kVA	Voltage tap range			Connection symbol	No-load loss kW	Load loss kW			No-load current %	Short circuit impedance %
	HV kV	HV tap range %	LV kV			130ºC(B)(100ºC)	155ºC(F)(120ºC)	180ºC(H)(145ºC)		
30	6 6.3 6.6 10 10.5 11	±2.5 ±5	0.4	Dyn11 Yyn0	0.19	0.67	0.71	0.76	2	5.5
50					0.27	0.94	1	1.07	2	
80					0.37	1.29	1.38	1.48	1.5	
100					0.4	1.48	1.57	1.69	1.5	
125					0.47	1.74	1.85	1.98	1.3	
160					0.54	2	2.13	2.28	1.3	
200					0.62	2.37	2.53	2.71	1.1	
250		±2×2.5 ±5			0.72	2.59	2.76	2.69	1.1	
315					0.88	3.27	3.47	3.73	1	
400					0.98	3.75	3.99	4.28	1	
500					1.16	4.59	4.88	5.23	1	
630					1.34	5.53	5.88	6.29	0.85	
630					1.3	5.61	5.96	6.4	0.85	6

800					1.52	6.55	6.96	7.46	0.85	
1000					1.77	7.65	8.13	8.76	0.85	
1250					2.09	9.1	9.69	10.3	0.85	
1600					2.45	11	11.7	12.5	0.7	
2000					3.05	13.6	14.4	15.5	0.7	
2500					3.6	16.4	17.1	18.4	0.85	
1600					2.45	12.2	12.9	13.9	0.7	
2000					3.05	15	15.9	17.1	0.7	8
2500					3.6	17.7	18.8	20.2	1.07	

Technical parameters of SC(B)11 series 6kV, 10kV grade non-excitation voltage regulating distribution dry type transformer

Rated capacity kVA	Voltage tap range			Connection symbol	No-load loss kW	Load loss kW			No-load current %	Short circuit impedance %
	HV kV	HV tap range %	LV kV			130ºC(B)(100ºC)	155ºC(F)(120ºC)	180ºC(H)(145ºC)		
30	6 6.3 6.6 10 10.5 11	±2.5 ±5	0.4	Dyn11 Yyn0	0.17	0.67	0.71	0.76	1.79	4
50					0.24	0.94	1	1.07	1.78	
80					0.33	1.29	1.38	1.48	1.34	
100					0.36	1.48	1.57	1.69	1.35	
125					0.42	1.74	1.85	1.98	1.16	
160					0.48	2	2.13	2.28	1.16	
200					0.55	2.37	2.53	2.71	0.98	
250		±2×2.5 ±5			0.64	2.59	2.76	2.69	0.98	
315					0.79	3.27	3.47	3.73	0.90	
400					0.88	3.75	3.99	4.28	0.90	
500					1.04	4.59	4.88	5.23	0.90	
630					1.2	5.53	5.88	6.29	0.76	
630					1.17	5.61	5.96	6.4	0.77	6
800					1.36	6.55	6.96	7.46	0.76	

1000					1.59	7.65	8.13	8.76	0.76	
1250					1.88	9.1	9.69	10.3	0.76	
1600					2.2	11	11.7	12.5	0.76	
2000					2.74	13.6	14.4	15.5	0.63	
2500					3.24	16.4	17.1	18.4	0.63	
1600					2.2	12.2	12.9	13.9	0.76	
2000					2.74	15	15.9	17.1	0.63	8
2500					3.24	17.7	18.8	20.2	0.63	

Technical parameters of SC(B)12 series 6kV, 10kV grade non-excitation voltage regulating distribution dry type transformer

Rated capacity kVA	Voltage tap range			Connection symbol	No-load loss kW	Load loss kW			No-load current %	Short circuit impedance %
	HV kV	HV tap range %	LV kV			130ºC(B)(100ºC)	155ºC(F)(120ºC)	180ºC(H)(145ºC)		
30	6 6.3 6.6 10 10.5 11	±2.5 ±5	0.4	Dyn11 Yyn0	0.15	0.67	0.71	0.76	1.58	4
50					0.215	0.94	1	1.07	1.59	
80					0.295	1.29	1.38	1.48	1.20	
100					0.32	1.48	1.57	1.69	1.20	
125					0.375	1.74	1.85	1.98	1.04	
160					0.43	2	2.13	2.28	1.04	
200					0.495	2.37	2.53	2.71	0.88	
250		±2×2.5 ±5			0.575	2.59	2.76	2.69	0.88	
315					0.705	3.27	3.47	3.73	0.80	
400					0.785	3.75	3.99	4.28	0.80	
500					0.93	4.59	4.88	5.23	0.80	
630					1.07	5.53	5.88	6.29	0.68	
630					1.04	5.61	5.96	6.4	0.68	6
800					1.21	6.55	6.96	7.46	0.68	
1000					1.41	7.65	8.13	8.76	0.68	
1250					1.67	9.1	9.69	10.3	0.68	

1600					1.96	11	11.7	12.5	0.68	
2000					2.44	13.6	14.4	15.5	0.56	
2500					2.88	16.4	17.1	18.4	0.56	
1600					1.96	12.2	12.9	13.9	0.68	
2000					2.44	15	15.9	17.1	0.56	8
2500					2.88	17.7	18.8	20.2	0.56	

Technical parameters of SC(B)13 series 6kV, 10kV grade non-excitation voltage regulating distribution dry type transformer

Rated capacity kVA	Voltage tap range			Connection symbol	No-load loss kW	Load loss kW			No-load current %	Short circuit impedance %
	HV kV	HV tap range %	LV kV			130ºC(B)(100ºC)	155ºC(F)(120ºC)	180ºC(H)(145ºC)		
30	6 6.3 6.6 10 10.5 11	±2.5 ±5	0.4	Dyn11 Yyn0	0.135	0.605	0.64	0.685	1.42	4
50					0.195	0.845	0.9	0.965	1.44	
80					0.265	1.16	1.24	1.33	1.07	
100					0.29	1.33	1.41	1.52	1.09	
125					0.34	1.56	1.66	1.78	0.94	
160					0.385	1.8	1.91	2.05	0.93	
200					0.445	2.13	2.27	2.44	0.79	
250		±2×2.5 ±5			0.515	2.33	2.48	2.66	0.79	
315					0.635	2.94	3.12	3.35	0.72	
400					0.705	3.37	3.59	3.85	0.72	
500					0.835	4.13	4.39	4.7	0.72	
630					0.965	4.97	5.29	5.66	0.61	
630					0.935	5.05	5.36	5.76	0.61	6
800					1.09	5.89	6.26	6.71	0.61	
1000					1.27	6.88	7.31	7.88	0.61	

1250					1.5	8.19	8.72	9.33	0.61	
1600					1.76	9.94	10.5	11.3	0.61	
2000					2.19	12.2	13	14	0.50	
2500					2.59	14.5	15.4	16.6	0.50	
1600					1.76	11	11.6	12.5	0.61	
2000					2.19	13.5	14.3	15.4	0.50	8
2500					2.59	15.9	17	18.2	0.50	

Technical parameters of indoor dry-type transformer(20kV grade)

Technical parameters of SC(B)10 series 20kV non-excitation distribution dry-type transformer

Rated capacity kVA	Voltage tap range			Connection symbol	No-load loss kW	Load loss kW			No-load current %	Short circuit impedance %
	HV kV	HV tap range %	LV kV			130ºC(B)(100ºC)	155ºC(F)(120ºC)	180ºC(H)(145ºC)		
50	20 22 24	±2.5 ±5	0.4	Dyn11 Yyn0	0.34	1.16	1.23	1.31	2.00	6
100					0.54	1.87	1.99	2.13	1.80	
160					0.67	2.33	2.47	2.64	1.50	
200					0.73	2.77	2.94	3.14	1.50	
250		±2×2.5 ±5			0.84	3.22	3.42	3.66	1.30	
315					0.97	3.85	4.08	4.36	1.30	
400					1.15	4.65	4.84	5.18	1.10	
500					1.35	5.46	5.79	6.19	1.10	
630					1.53	6.45	6.84	7.32	1.00	
800					1.75	7.79	8.26	8.84	1.00	
1000					2.07	9.22	9.78	10.4	0.85	
1250					2.38	10.8	11.5	12.3	0.85	
1600					2.79	13	13.8	14.8	0.85	
2000					3.24	15.4	16.3	17.5	0.70	
2500					3.87	18.2	19.3	20.7	0.70	

2000					3.24	16.8	17.8	19.1	0.70	8
2500					3.87	20	21.2	22.7	0.70	

Technical parameters of SC(B)11 series 20kV dry-type transformer

Rated capacity kVA	Voltage tap range			Connection symbol	No-load loss kW	Load loss kW			No-load current %	Short circuit impedance %
	HV kV	HV tap range %	LV kV			130ºC(B)(100ºC)	155ºC(F)(120ºC)	180ºC(H)(145ºC)		
50	20 22 24	±2.5 ±5	0.4	Dyn11 Yyn0	0.31	1.16	1.23	1.31	1.82	6
100					0.48	1.87	1.99	2.13	1.60	
160					0.6	2.33	2.47	2.64	1.34	
200					0.65	2.77	2.94	3.14	1.34	
250		±2×2.5 ±5			0.75	3.22	3.42	3.66	1.16	
315					0.87	3.85	4.08	4.36	1.17	
400					1.03	4.65	4.84	5.18	0.99	
500					1.21	5.46	5.79	6.19	0.99	
630					1.38	6.45	6.84	7.32	0.90	
800					1.57	7.79	8.26	8.84	0.90	
1000					1.86	9.22	9.78	10.4	0.76	
1250					2.14	10.8	11.5	12.3	0.76	
1600					2.51	13	13.8	14.8	0.76	
2000					2.92	15.4	16.3	17.5	0.63	
2500					3.48	18.2	19.3	20.7	0.63	
2000					2.92	16.8	17.8	19.1	0.63	8
2500					3.48	20	21.2	22.7	0.63	

Technical parameters of SC(B)12 series 20kV dry-type transformer

Rated capacity kVA	Voltage tap range			Connection symbol	No-load loss kW	Load loss kW			No-load current %	Short circuit impedance %
	HV kV	HV tap range %	LV kV			130ºC(B)(100ºC)	155ºC(F)(120ºC)	180ºC(H)(145ºC)		
50	20 22 24	±2.5 ±5	0.4	Dyn11 Yyn0	0.27	1.16	1.23	1.31	1.59	6
100					0.43	1.87	1.99	2.13	1.43	
160					0.53	2.33	2.47	2.64	1.19	
200					0.58	2.77	2.94	3.14	1.19	
250		±2×2.5 ±5			0.67	3.22	3.42	3.66	1.04	
315					0.77	3.85	4.08	4.36	1.03	
400					0.92	4.65	4.84	5.18	0.88	
500					1.08	5.46	5.79	6.19	0.88	
630					1.22	6.45	6.84	7.32	0.80	
800					1.4	7.79	8.26	8.84	0.80	
1000					1.65	9.22	9.78	10.4	0.68	
1250					1.9	10.8	11.5	12.3	0.68	
1600					2.23	13	13.8	14.8	0.68	
2000					2.59	15.4	16.3	17.5	0.56	
2500					3.1	18.2	19.3	20.7	0.56	
2000					2.59	16.8	17.8	19.1	0.56	8
2500					3.1	20	21.2	22.7	0.56	

Technical parameters of indoor dry-type transformer(35kV grade)

Technical parameters of SC(B)10 series 35kV dry-type transformer 1.0

Rated Capacity (kVA)	Voltage Combined			Vector-group	No-load Loss (w)	load Loss (w) 120° C	No-load current (%)	Short-circuit impedance (%)
	HV(KV)	Tapping Ranges	LV(KV)					
50	35~38.5	±5% ±2×2.5%	0.4	Dyn11 Yyn0	450	1240	2.30	6.0
100					630	1830	2.00	
160					790	2450	1.50	
200					880	2900	1.50	
250					990	3320	1.30	
315					1170	3940	1.30	
400					1370	4720	1.10	
500					1620	5810	1.10	
630					1860	6720	1.00	
800					2160	7970	1.00	
1000					2430	9080	0.75	
1250					2830	11090	0.75	
1600					3240	13450	0.75	
2000					3820	1590	0.75	

						0		
2500					4450	1904 0	0.75	

Rated power (kVA)	High voltage (kV)	H.V.Tap (kVA)	Low Voltage (kV)	Vector group	No-load Current (%)	Insulation class	No-load current (%)	Short circuit impedance
800	35 38.5	±5% +2×2.5 %	3.15 6 6.3 10 10.5 11	Yyn0 0 Dyn1 1 Yd11	2250	8210	0.95	6.0
1000					2670	9520	0.95	
1250					3130	11270	0.85	
1600					3690	13450	0.85	
2000					4230	15900	0.75	
2500					4860	19040	0.75	
3150					6030	21400	0.70	
4000					7020	25680	0.70	
5000					8370	30480	0.60	
6300					9900	35630	0.60	
8000				Ynd11 Dyn1 1 Yd11	11300	40170	0.50	9.0
10000					12900	48470	0.50	
12500			6 6.3 10 10.5 11		15700	56420	0.40	
16000					19300	66380	0.40	
20000					22900	74670	0.30	10.0
25000					27100	88210	0.30	

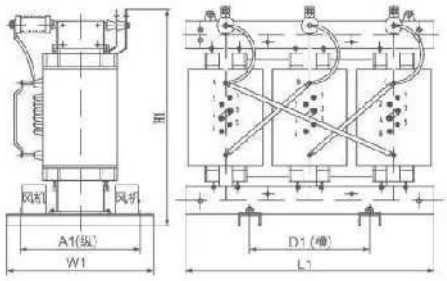
Technical parameters of SC(B)10 series 35kV dry-type transformer 2.0

Technical parameters of SC(B)11 series 35kV dry-type transformer

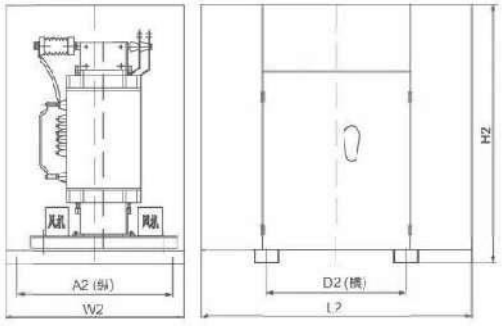
Rated Capacity (kVA)	Voltage Combined			Vector-group	No-load Loss (w)	load Loss (w) 120°C	No-load current (%)	Short-circuit impedance (%)
	HV(KV)	Tapping Ranges	LV(KV)					
50	35~38.5	±5%± 2×2.5 %	0.4	Dyn11Yyn0	405	1240	2.10	6
100					570	1830	1.80	

160					710	2450	1.30	
200					790	2900	1.30	
250					890	3320	1.10	
315					1050	3940	1.10	
400					1230	4720	0.90	
500					1460	5810	0.90	
630					1670	6720	0.80	
800					1940	7970	0.80	
1000					2190	9080	0.60	
1250					2550	11090	0.60	
1600					2920	13450	0.60	
2000					3440	15900	0.60	
2500					4000	19040	0.60	

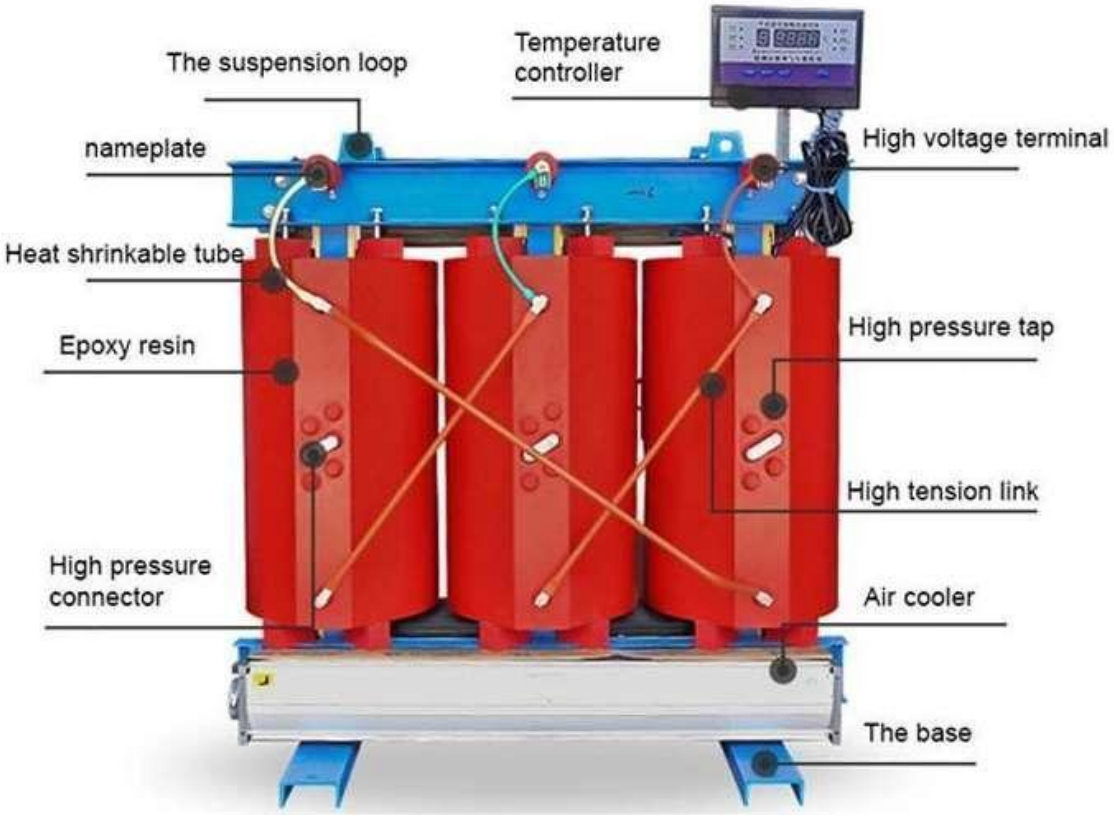
Transformer Structure of Dry Type Power Transformer:



SC(B)10-□-□/10-0.4 Overall Dimensions



SC(B)10-□-D/10-0.4 Overall Dimensions with case



PERFORMANCE CHARACTERISTICS

1. No oil, no pollution, flame retardant, self-extinguishing and fire prevention.

2. Low loss, high efficiency and low noise. It can run long time under 125% rated load under the forced air-cooling condition and is equipped with intelligent temperature controller. The functions of fault alarm, over temperature alarm, over temperature trip and black gate. It is connected with computer through RS485 serial interface and achieves centralized monitoring and control.

3. Small local discharge (under 30 PC) and high reliability, can ensure long-term safe operation, life up to 30 years.

4. Resistance to crack and temperature change, high mechanical strength, strong ability to resist sudden short-circuit.

5. Good moisture-proof property, it can run normally under 100% humidity and can be put into operation without drying treatment after shutdown.

6. There is no need for a separate transformer room, core maintenance or load-bearing beam saving civil land and occupation No oil, so it will not produce toxic gas to pollute the environment. No need of oil collecting pits or other ancillary buildings which reduces the cost of construction Easy installation, no debugging, almost no maintenance; No need to replace or check the oil, low operation and maintenance cost.

4. KYN28A-12 Armored removable enclosed switchgear

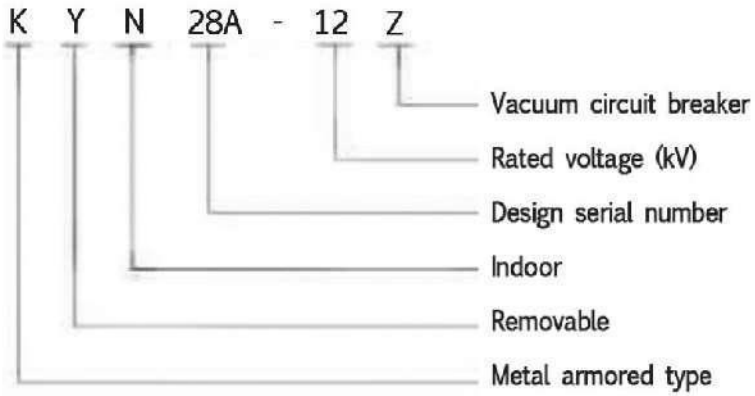
High Voltage Switchgear Series

KYN28A-12 Armored removable enclosed switchgear

Summary

KYN28A-12(Z) (GZS1)armored removable AC metal enclosed switchgear (hereinafter referred to as "switchgear") is applicable to three-phase AC 50Hz power system, which is used to receive and distribute electric energy and control, protect and monitor the circuit. This product meets the standards: GB3906 3 ~ 35kV AC metal enclosed switchgear, GB / T11022 common technical requirements for high voltage switchgear and control equipment standards, and IEC60298 AC metal enclosed switchgear and control equipment with rated voltage of 1kV and above.

Type and meaning



Service conditions

1. Ambient air temperature: maximum temperature + 40 ° C, minimum temperature - 15p;

Daily average relative humidity: no more than 2.2 kPa; Monthly average relative humidity w 90%; The monthly average water vapor pressure shall not exceed 1.8kpa;

3. Altitude: ≤ 1000m;

4. Earthquake intensity: no more than magnitude 8;

5. The surrounding air shall not be obviously polluted by corrosive or combustible gas, water vapor, etc;

6. Places without violent vibration;

7. When it is used under normal conditions beyond those specified in GB3906, it shall be negotiated between the user and the company.

Rated insulation level 1min power frequency withstand voltage Between phases
Between fractures
Lightning impulse withstand voltage Between poles
Between fractures
Degree of protection

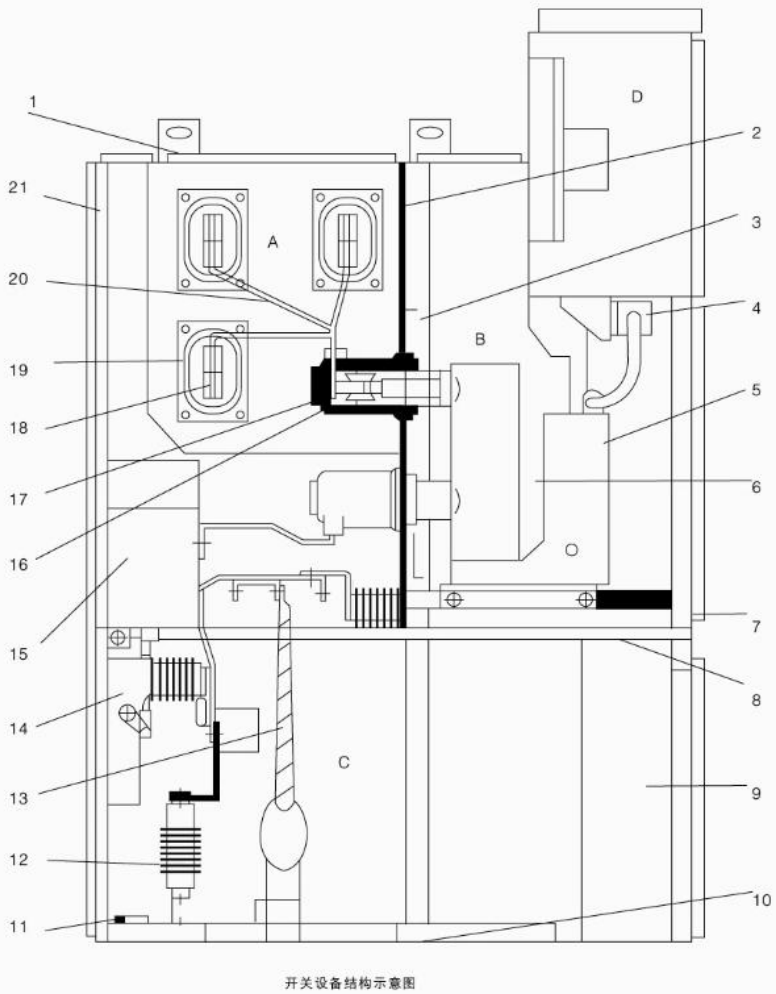
Main technical parameters

No.	Project			Unit	Parameters
1	Rated voltage			KV	3.6,7.2,12
2	Rated frequency			HZ	50
3	Rated current of circuit breaker			A	630,1250,1600,2000,2500,3150
4	Rated current of cabinet			A	630,1250,1600,2000,2500,3150
5	Rated short-time withstand current (4S)			KA	20,25,31.5,40
6	Rated peak withstand current (peak)			KA	50,63,80,100
7	Rated short-circuit breaking current			KA	20,25,31.5,40
8	Rated short-circuit making current (peak)			KA	50,63,80,100
9	Rated insulation level	1min power frequency withstand voltage	Between phases、Phase to ground	KV	24,32,42
			Between fractures	KV	24,32,42
		Lightning impulse withstand voltage	Between phases、Phase to ground	KV	40,60,75
			Between fractures	KV	46,70,85
10	Degree of protection				The enclosure is IP4X, and the compartment is IP2X when the door of the circuit breaker room is opened

Structural features

1. The structure of switchgear is shown in the figure below. All metal modular assembly structure. The cabinet body is made of imported aluminum coated zinc plate with strong anti-corrosion ability without surface treatment. It is processed by CNC high-precision equipment and adopts advanced multiple folding process. The connection is connected with potassium pulling nut and high-strength bolt, with high precision, light weight and good strength.

The switchgear can be equipped with VS1 series, VD4 series, zn65 series and other vacuum circuit breakers produced by the company, with wide adaptability and strong interchangeability. The handcart is equipped with working position and test position, and each position is equipped with positioning and display device, which is safe and reliable.



开关设备结构示意图

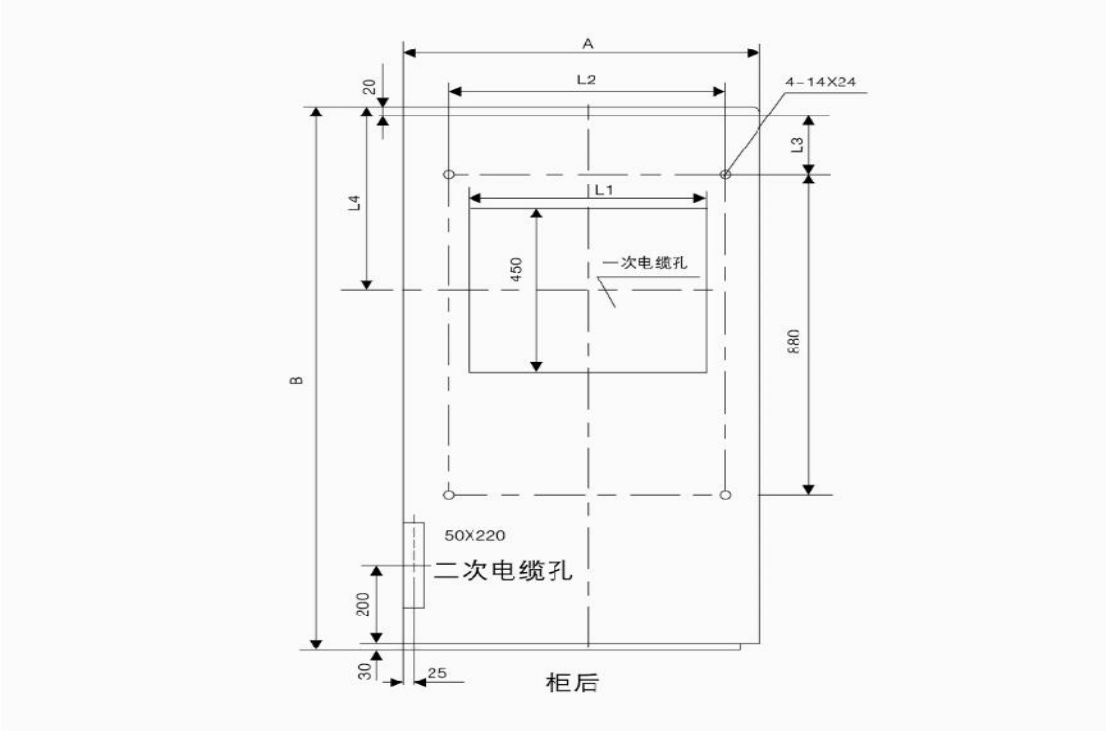
A、母线室
B、断路器手车室
C、电缆室
D、继电器仪表
1、泄压装置
2、装卸式隔板
3、隔板（活门）
4、二次插头
5、断路器手车
6、加热装置
7、可抽出式水平隔板
8、接地开关操作机构
9、控制导线槽
10、底板
11、接地母线
12、避雷器
13、电缆
14、接地开关
15、电流互感器
16、触头盒
17、静触头装置
18、主母线
19、母线套管
20、分支母线
21、外壳

Overall dimension（mm）

Height		2300
Width	Rated current below1250A	800
	Rated current below1600A	1000
Depth	Cable incoming and outgoing	1500
	Overhead incoming and outgoing	1660

Installation dimension（mm）

Cabinet width	Cabinet depth	L1	L2	L3	L4
800	1500 Cable	530	630	150	490
	1660 Overhead	530	630	310	650
1000	1500 Cable	730	830	150	490
	1660 Overhead	730	830	310	650



5. SF6 gas filled switchgear Intelligent switching station (outdoor ring network cabinet)

Short Description:

- Intelligent switching station (outdoor ring network cabinet) using 12kV / 24kV /35KV switchgear, circuit breaker, load isolating switch, current transformer, 12kV / 24kV power PT, to block DTU FTU,PTU, communication control terminal (CCU), 12kV / 24kV/35KV metering and automatic meter reading.
- The UPS power supply and indicator instruments are installed into a sealed moisture-proof stainless steel box with a moving shell, thus realizing the integration of the primary and secondary systems of the urban distribution network, the modularization of assembly, shortening the construction period and greatly improving the reliability of the operation of the urban power network.



- Switchgear is modular unit mode, which can be combined according to different uses. It can be divided into fixed unit combination and expandable unit to meet the flexible use of compact switchgear in various substations.

• SF6 gas filled switchgear Intelligent switching station is a fully sealed system, all its live components and switches are enclosed in stainless steel housing.

• SRM16-12 type inflatable switchgear is divided into non-expandable standard configuration and expandable standard configuration. Because of the combination of full module and half module and its scalability, it has very special flexibility.

• SRM16-12 inflatable switch implements GB standard. The design life of operation under indoor conditions (20 C) exceeds 30 years.

Main features of products

• SRM16-12 series inflatable cabinet SF6 gas as arc extinguishing and insulation medium.

• The switch cabinet is fully sealed and insulated. Buses, switches and live parts are completely enclosed in stainless steel housing.

• The chamber is filled with 1.4 bar SF6 gas, and the protection level is up to IP67： The whole switch device is completely free from the influence of external environment conditions, even in short-term water immersion and other extreme circumstances, it can ensure the normal operation of the switch, and the product is lifelong maintenance-free.

• The switch cabinet has perfect "five-proof" interlocking device, which completely eliminates the possible malfunction of personnel and equipment caused by human misoperation.

• All switchgear cabinets have reliable safety relief channels, even in extreme cases can guarantee the personal safety of operators.

• Switchgear can be divided into fixed unit combination and expandable unit combination.

• The switch cabinet usually consists of front entry and exit lines, and can also be extended side-out lines or side-out lines according to different installation positions.

• The cabinet body size is easy to install, and can be suitable for small space and poor environmental conditions.

• Switchgear can be equipped with electric, remote control and monitoring devices according to different needs of users.

The modular structure is easy to disassemble and maintain. and the module allows users to quickly and flexibly increase and delete the circuit, so as to meet the power consumption expansion demand of the machine room.

Distribution cabinet is usually composed of automatic control switch, isolating switch, fuse, contactor, relay, electricity meter, indicator light, button, switch and other mechanical and electrical components, semiconductor components and cabinet.

The automatic control switch, contactor, fuse, isolation switch and other parts selected in the distribution cabinet, to reliable performance, technical indicators to meet the design requirements, can meet the requirements of the work of computer equipment and auxiliary equipment.

There should be an emergency switch in the power distribution cabinet. When there is a serious accident or accidental fire in the computer room, it should be able to cut off the computer power supply, air conditioning power supply and new Phoenix power supply immediately.

The computer equipment control distribution cabinet should be set up frequency table: for observation of UPS power output frequency changes.

The power supply in each branch of the distribution cabinet set up indicator light, indicating the situation of the power supply on and off.

The power distribution cabinet is based on the different requirements of computer equipment and auxiliary equipment, set up the connecting device of the middle line and the ground wire. The center wire is insulated from the ground wire and the shell of the distribution cabinet.

The bus, wiring bar and all kinds of cables, conductors, neutral wires and ground wires used in power distribution cabinets shall meet the national standards.And according to the state provisions of the color mark, number.

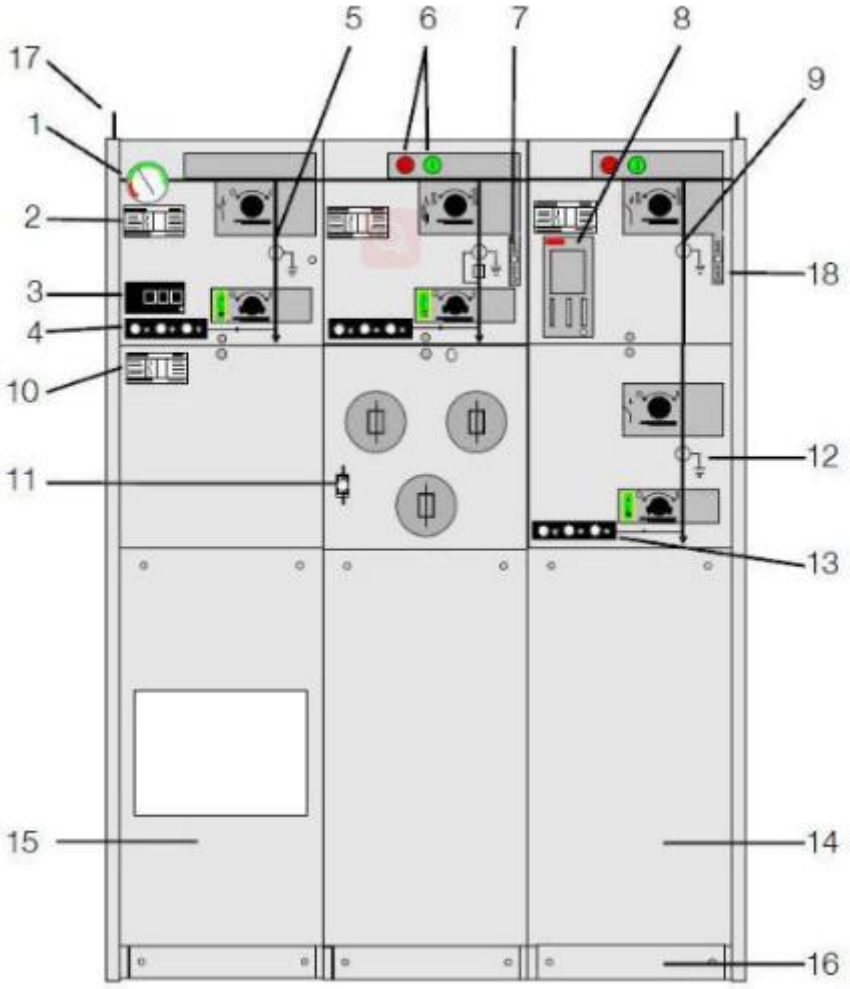
When the aluminum row in the power distribution cabinet is connected with the copper parts, used aluminum and copper transition materials

The insulation performance of the distribution cabinet should meet the requirements of 20.1.1 in the national standard GBJ232-82 "Electrical Equipment Hanover Test Standard", which is generally not less than 0.5m Ω.

Normal service conditions of switchgear as follows:

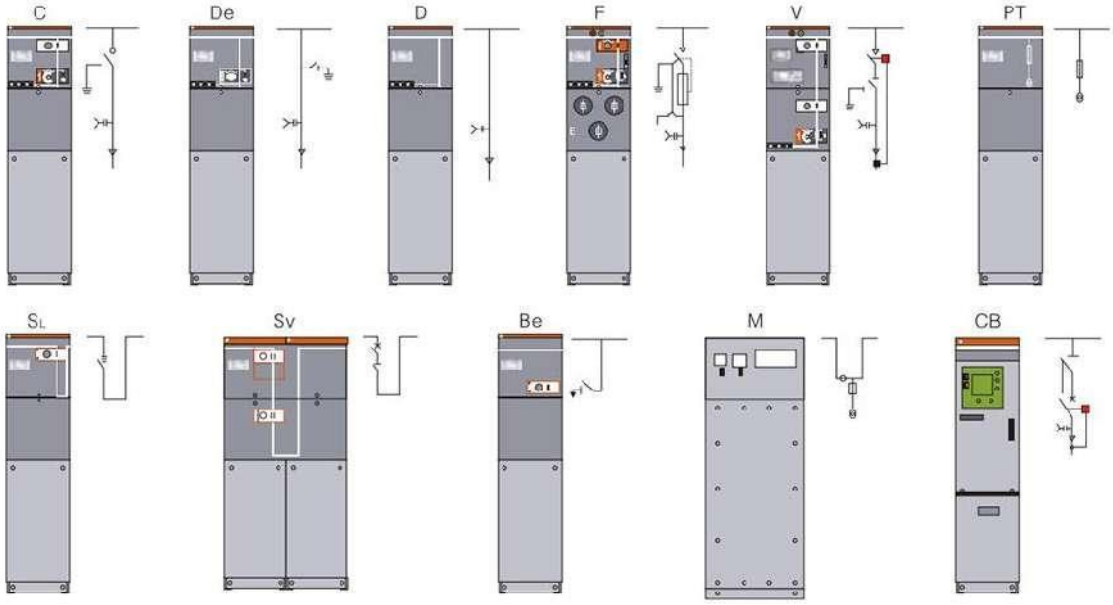
Ambient temperature:	
Maximum	+40° C
Maximum 24 hour average	+35° C

Minimum (according to minus 15 indoor classes)	-50° C
Ambient humidity:	
Daily average relative humidity	less than 95%
Monthly average relative humidity	less than 90%
Earthquake intensity	less than 8 degree
Height above sea level	less than 2000m



1.	pressure gauge	11.	Fuse blow indicator
2.	Module nameplate	12.	Isolator / ground switch position indicator
3	Short circuit indicator	13.	Capacitor voltage indication
4	Capacitor voltage indication	Cable compartment cover	
5	Load disconnect / ground switch position indicator	14.	Cable compartment cover standard
6	Button close / open operation	15.	Cable compartment cover with inspection window
7	Spring indicator	16.	Support rod (removable)
8.	Self-powered protective relay	17.	Lifting ear
9.	Vacuum circuit breaker position	18.	Operating handle

10	Switchgear nameplate		



6. ZW32 Series Outdoor High Voltage Vacuum Circuit Breaker (Recloser)

ZW32 outdoor HV vacuum circuit breaker is a 3-phase AC 50Hz 12kV、24KV、40.5KV outdoor switch equipment
♦ Installation way: pole mounted;
♦ Operating mechanism: spring operating mechanism and permanent magnetic operating mechanism;
♦ Pole type: sealed pole，upper-lower Dole one-piece pole, embedded pole;
♦ Application: outdoor 12kV 、24KV、40.5KVsubstation, power plant.
♦ Operation type manual, electric, remote control.

Product Standards
♦ IEC62271-100 High Voltage Switchgear and Controlgear Part 100: AC Circuit-breakers
♦ GB1984 High Voltage AC Circuit-breakers
♦ GB/T11022 Common Specifications for High-voltage Switchgear and Controlgear Standards
♦ JB/T 3855 High Voltage AC Vacuum Circuit-breakers
♦ DL/T402 Specification of High-voltage AC Circuit-breakers

Environmental Conditions
♦ Ambient temperature: -35°C ～+45°C;
♦ Altitude: <1000m;
♦ Wind speed < 35m/s;
♦ Earthquake intensity: <8 level;
♦ Filthy level: IV;
♦ Installation places: No fire, explosion hazard or serious filthy.

ZW32-12 Main Technical Parameters

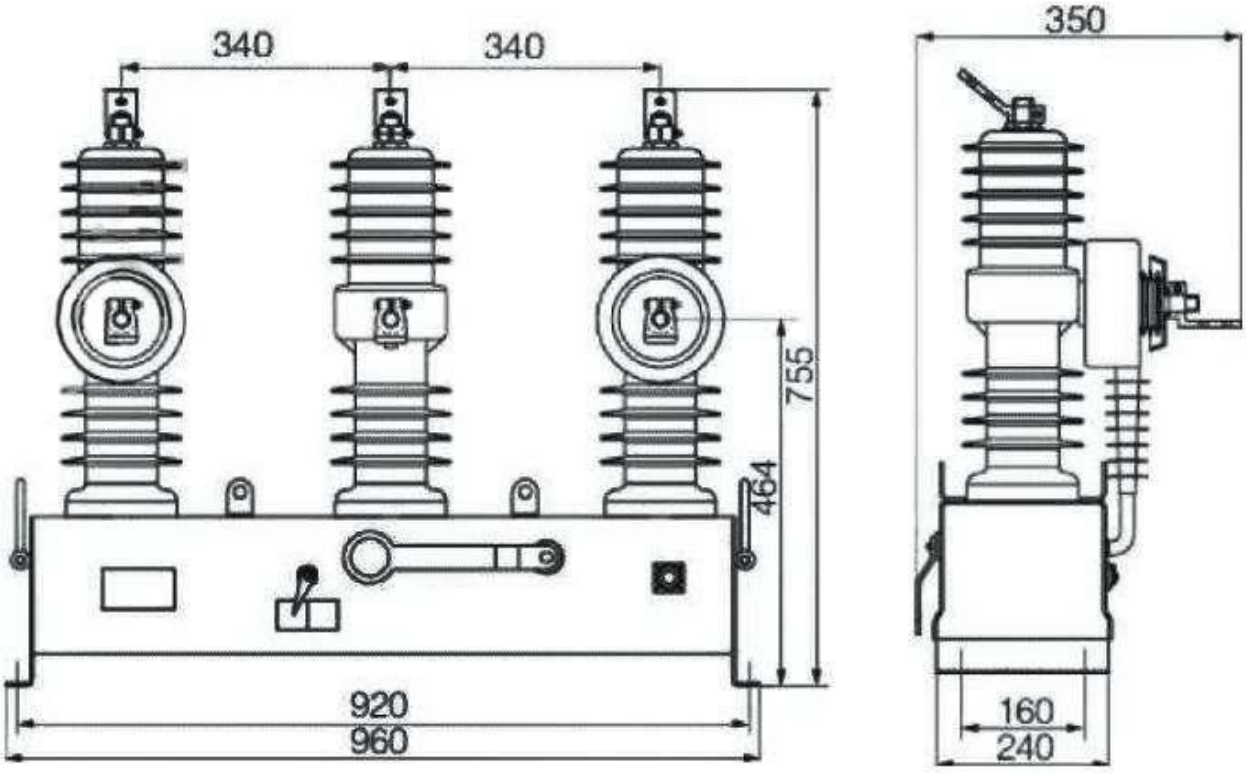
No	Item	Unit	Value
1	Rated voltage	kV	12
2	Rated frequency	Hz	50
3	Rated current	A	630, 1250

4	Rated short circuit breaking current	kA	20, 25
5	Rated peak value withstand current (peak)	kA	40, 50
6	Rated short time withstand current	kA	16, 20
7	Rated short circuit duration	s	4
8	Rated short-circuit closing current (peak)	kA	40, 50
9	Rated operating sequence	Times	O-0.3S-CO-180S-CO
10	Mechanical life(spring type/permanent magnetic type)	Times	10000/30000
11	Rated circuit breaking number	Times	10000
12	Rated short-circuit breaking current breaking times	Times	500

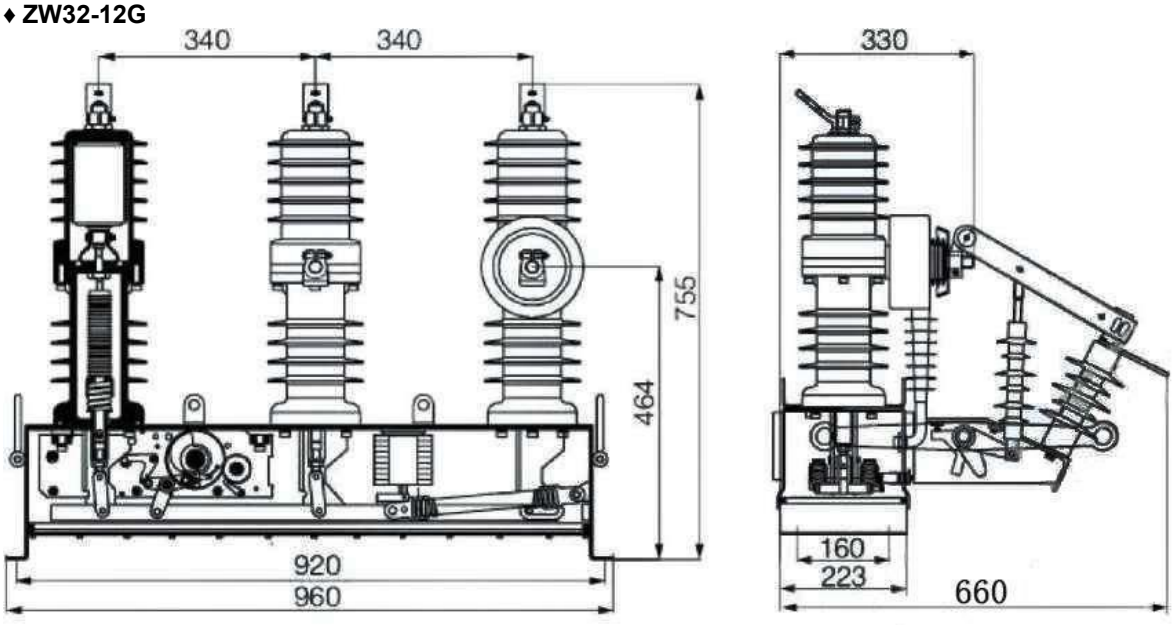
No	Item	Unit	Value
13	Power frequency withstand voltage (1min)(wet) inter-phase, earth(dry) inter-phase, earth/fracture)	kV	34 42
14	Lightning impulse withstand voltage (peak) inter-phase, earth/fracture	kV	75
15	Secondary circuit 1min power frequency withstand voltage except of electronic devices	V	2000
16	Clearance between open contacts	mm	9±1
17	Over travel	mm	$2\pm^{1}_{0.5}$
18	Opening speed	m/s	1.2±0.2
19	Closing speed	m/s	0.6±0.2
20	Contact closing bounce duration	ms	≤2
21	Inter-phase center distance	mm	340±1.5
22	Three phase closing and opening asynchronism	ms	≤2
23	Each phase conductive circuit resistance	μΩ	≤80
24	Closing time	ms	≤75
25	Opening time	ms	≤50
26	Rated power of energy storage motor	W	40

General Structure Drawing and Installation Size (unit: mm)

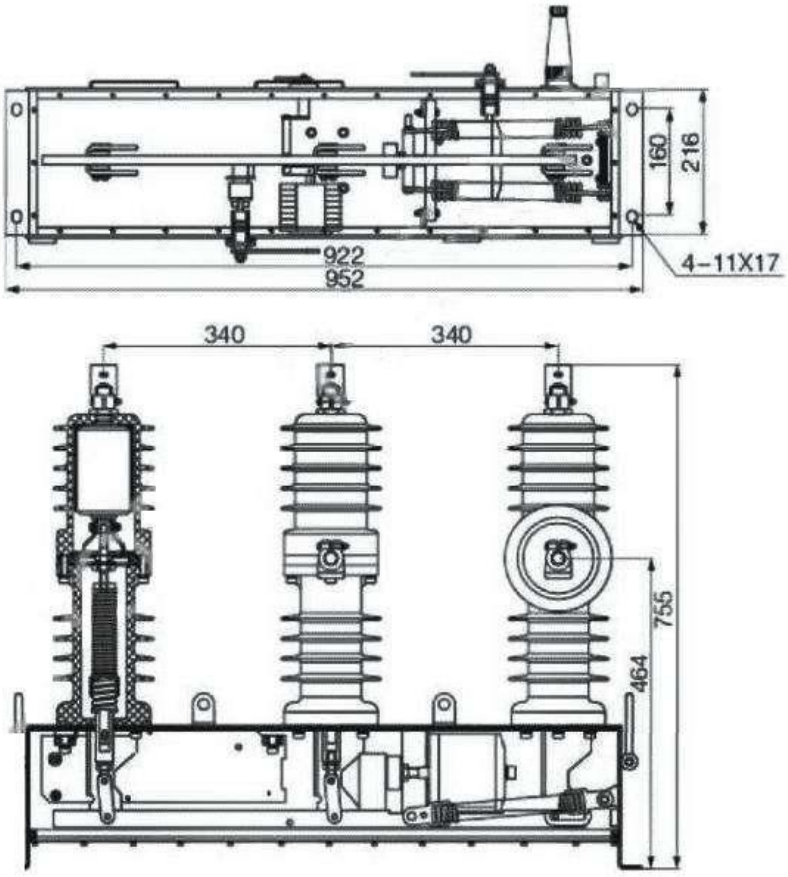
♦ ZW32-12



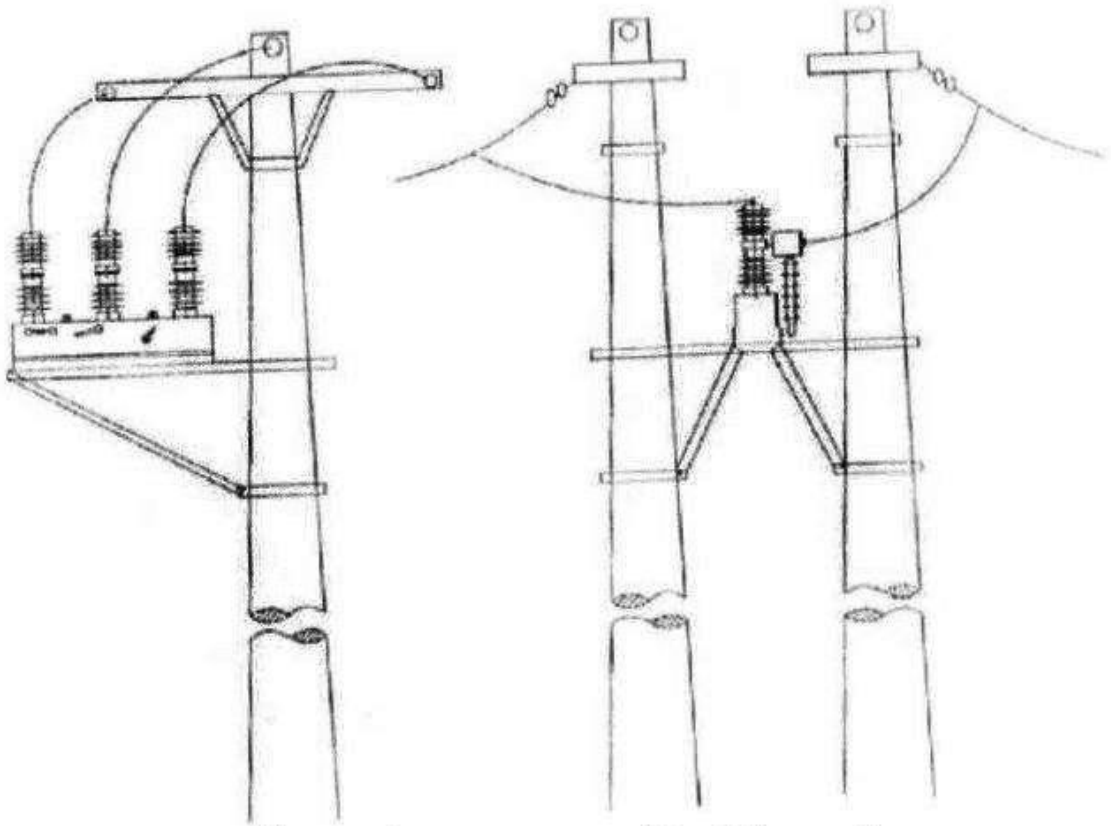
♦ **ZW32-12G**



♦ ZW32-12M



♦ **Installation ways**



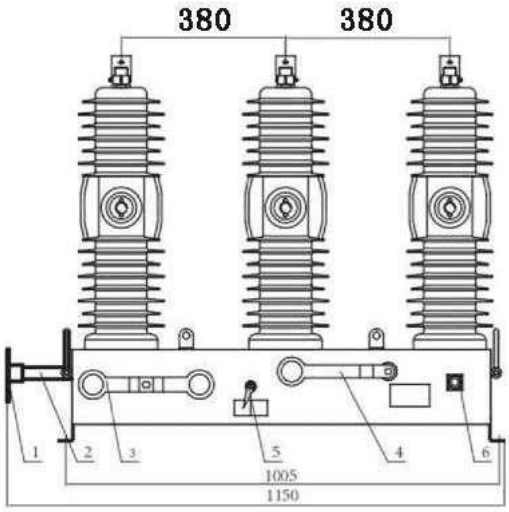
ZW32-24 Main Technical Parameters

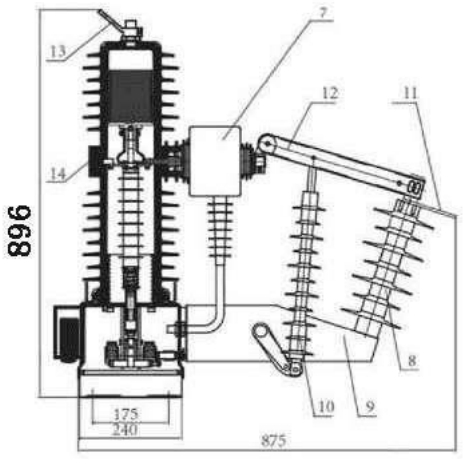
No	Item	Unit	Value
1	Rated voltage	kV	24
2	Rated current	A	630/1250
3	Rated frequency	Hz	50
4	Rated thermal current	kA	20/25

5	Rated short circuit breaking current	kA	20/25
6	Rated dynamic current (peak)	kA	50/63
7	Rated short-circuit closing current (peak)	kA	50/63
8	Thermal stability time	s	4
9	Rated operating sequence	Times	O-0.3S-CO-1 80S-CO
10	1 min power frequency withstand voltage (inter-phase, earth/fracture)	kV	65
	Lightning impulse withstand voltage (peak) (inter-phase, earth/fracture)		125
	Secondary circuit 1min power frequency withstand voltage		2

No	Item	Unit	Value
11	Mechanical life	Times	10000
12	Rated short-circuit breaking current breaking times	Times	30
13	Rated circuit breaking times	Times	10000
14	Contact distance	mm	12±1
15	Over travel	mm	3±1
16	Inter-phase center distance	mm	380±1.5
17	Three phase closing and opening asynchronism	ms	≤2
18	Contact closing bounce duration	ms	≤2
19	Closing time	ms	25 ～80
20	Opening time	ms	23 ～50
21	Average opening speed	m/s	1.1-1.7
22	Average closing speed	m/s	0.5-0.9
23	Main conductive circuit resistance	μΩ	≤80

◆ **Overall Drawing**



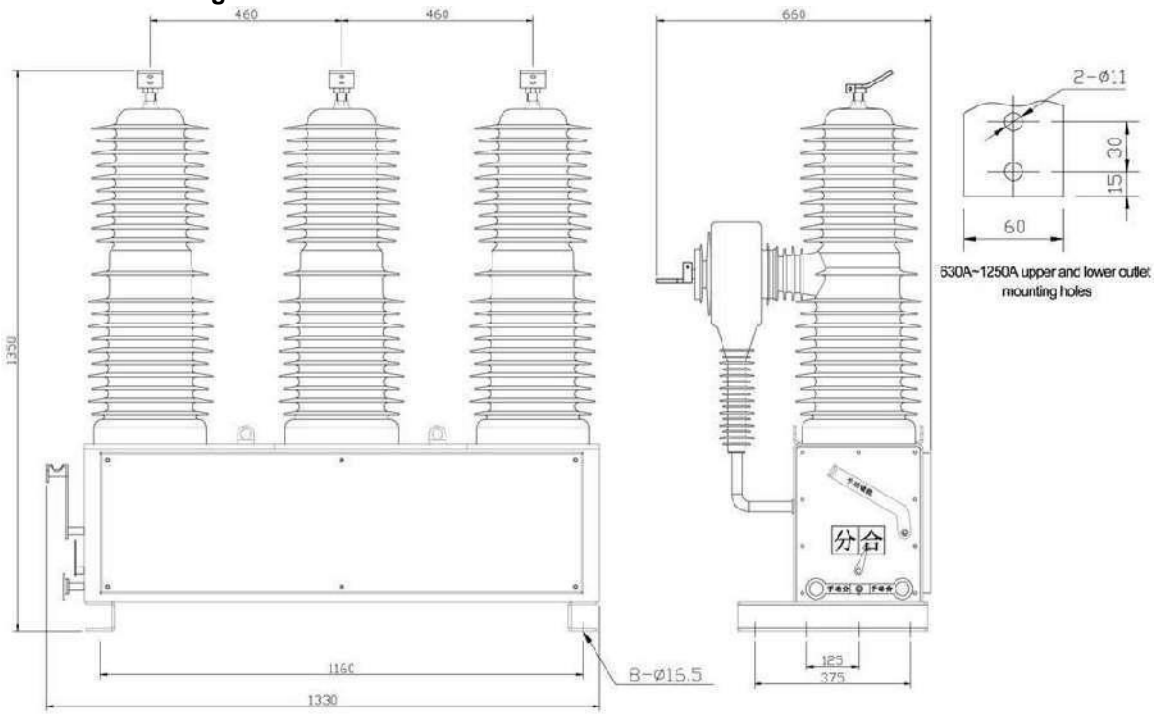


◆ ZW32-40.5 Main Technical Parameters

NO.	Items	Unit	Value
1	rated voltage	kV	40.5
2	1min power frequency withstand voltage	kV	95
3	lightning impulse withstand voltage	kV	185
4	rated frequency	Hz	50
5	rated current	A	630,1250, 1600
6	rated short circuit breaking current	kA	20, 25, 31.5
7	rated short circuit making current (peak)	kA	50, 63, 80
8	rated peak withstand current	kA	50, 63, 80
9	4s withstand current	kA	20, 25, 31.5
10	rated operating sequence	S	O-0.1s-CO-3s-CO-6S-60s recovery
11	rated short circuit current breaking number	times	30
12	mechanical life	times	10000
13	mechanism control voltage	V	AC/DC220
14	secondary circuit 1min power frequency withstand voltage	kV	2
15	clearance distance between open contacts	mm	16±1
16	over travel	mm	4±0.5
17	opening speed	m/s	1.4-1.8

18	closing speed	m/s	0.4-0.8
19	contact closing bounce time	ms	≤5
20	three phase opening/closing asynchronism	ms	≤2
21	closing time	ms	≤100
22	opening time	ms	≤50
23	weight	kg	270

◆ **Overall Drawing**

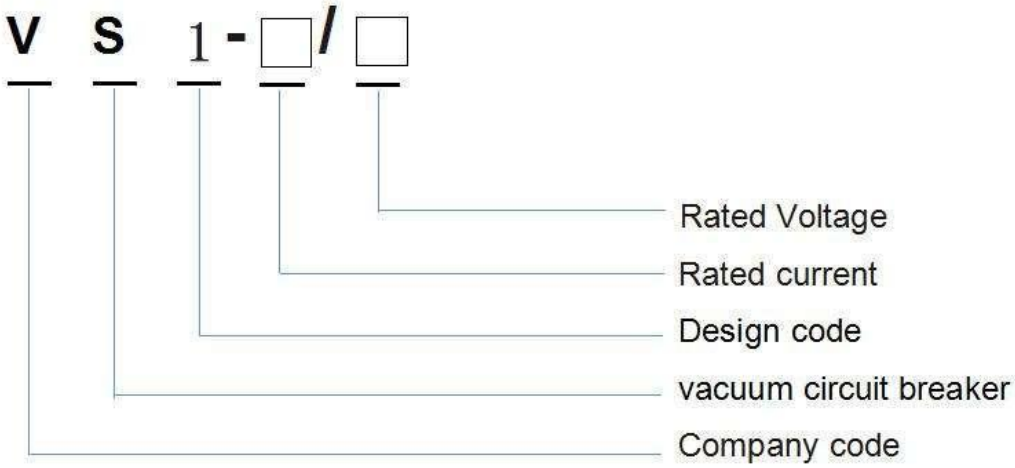


7. VS1-12 11kV 12kV Indoor High Voltage 630A-4000A Vacuum Circuit Breaker VCB

General:

- VS1-12 series of indoor vacuum circuit breaker with common insulated cylinder is three-phrase A.C. 50 Hz indoor power distribution equipment with the rated voltage of 12KV. It' s used for protecting controlling the electrical equipment in the fields of industry and mining enterprise, power plants and substation.This type vacuum circuit breaker conforms to national standards and the stipulation of IEC standard, the capability reaches grade of M2-E2-C2.
- The product adopts composite insulation way,spring charged operation and rod push mechanism,with the characteristics of small volume, compact design and reliable operation. It can easily match with the switchgear and meet the "Five Preventions" demands.
- This kind of vacuum circuit breaker can be used for many kinds of switchgear like KYN28(GZS1). This series of products include: VCB truck isolation truck and Fuse truck, etc.

Type meaning:



Service conditions

Normal service conditions of switchgear as follows:	
Ambient temperature:	
Maximum	+40° C
Maximum 24 hour average	+35° C
Minimum (according to minus 15 indoor classes)	-10° C
Ambient humidity:	
Daily average relative humidity	less than 95%
Monthly average relative humidity	less than 90%
Earthquake intensity	less than 8 degree
Height above sea level	less than 1000m
Saturated vapor pressure:	
average pressure of a day	should be no more than2. 2kPa
the average pressure of a month	should be no more than 1.8kPa

This product should not be used under conditions of fire, explosion, earthquake and chemical corrosion environments.

Product parameters

NO	Item	Units	Technical parameters		
1	Rated voltage	KV	12		
2	Rated short-duration power frequency withstand voltage		42/48(Interphase, ground/fracture)		
3	Rated lightning impulse withstand voltage		42/48(Interphase, ground/fracture)		
4	Rated frequency	Hz	50		
5	Rated current	A	630 1250	630 1250 1600 2000 2500 3150	630 1250 1600 2000 2500 3150 4000
6	Rated short-circuit breaking current	KA	20/25	31.5	40
7	Rated short-time withstand voltage		20/25	31.5	40
8	Rated short circuit duration	S	4		
9	Rated peak withstand current	KA	50/63	80	100
10	Rated short circuit closing current		50/63	80	100

11	Secondary circuit power frequency withstand voltage (1min)		2000
12	Rated single / back to back capacitor group breaking current	A	630/400(40kA:800/400)
13	Rated capacitor bank closing current		12.5 (frequency is not greater than)
14	Mechanical life	KA	20000
15	Rated current breaking times (electrical life)		20000
16	Rated short circuit current breaking times	times	50(40KA≤30)
17	Dynamic and static contacts allow wear cumulative thickness	mm	3
18	Energy storage time	s	≤10
19	Contact opening distance	mm	11±1
20	Overtravel		3.5±0.5
21	Contact closing bounce time	ms	≤2(40KA≤3)
22	Three-phase split/closed period		≤2
23	Average opening speed (contacts are separated by -8mm)	m/s	1.2±0.2
24	Main conductive loop resistance		0.6±0.2
25	Main conductive loop resistance	μΩ	≤50(630A)≤45(1250A) ≤40 (1600,2000A)≤35 (2500A or more)
26	Rated operation sequence		0-0.3s-Co-180s-Co

NO.	Items		Unit	Value		
1	Rated voltage		KV	40.5		
2	Rated Current		A	1600		2000
3	Rated short circuit breaking current		KA	20	25	31.5
4	Rated short-circuit current (peak)			50	63	80
5	Rated short (heat stable) current			20	25	31.5
6	Rated peak withstand (dynamic stability) current			50	63	80
7	Rated short circuit duration		S	4		
8	Rated insulation level	1 min power frequency withstand voltage	Dry	KV	95	

			We t		80
		Lightning impulse withs tand voltage (peak)			185
9	Rated operating sequence		Ti mes	20	
10	Rated short-circuit current breaking times		ms	≤80	
11	Full-time off (with spring operating mechani sm)			o-0.3s-co-180s-co	
12	Mechanical life			10000	
13	Ratod operating voltago			AC110,220;DC110 ,220	
14	Contact opening distance			20	
15	Contact overtravel			5±1	
16	Bounce time			≤5	
17	DC resistance per phase circuit			≤120	
18	Circuit Breaker Dimensions (L x W x H)			2460x2400x500	
19	Circuit breaker with a total mass of body			1100	

Main features:

1.Mechanical and electrical durability During rated current, breaking times can reach to 10000, 20000 During rated
short-circuit current, breaking times can reach to 20, 30 and 50 times.

2. The circuit breaker has complete functions. It is used to switch on/off various loads as specified by DL standards, such as method 1-5, capacitor, out-of-phase conditions.

3. Easy maintenance Normally, it just needs to clean the operating mechanism and add lubricants.

4.Vertical insulating tube Protect it from various environmental impacts.

5.With complete product portfolio Rated current from 630A to 5000A Rated short-circuit current form 20kA to 50kA

6.It has the features of series, strong versatility, convenient use and easy maintenance. All products have passed
100 running-in tests according to reliability principle in the factory before delivery, so as to ensure the reliability.

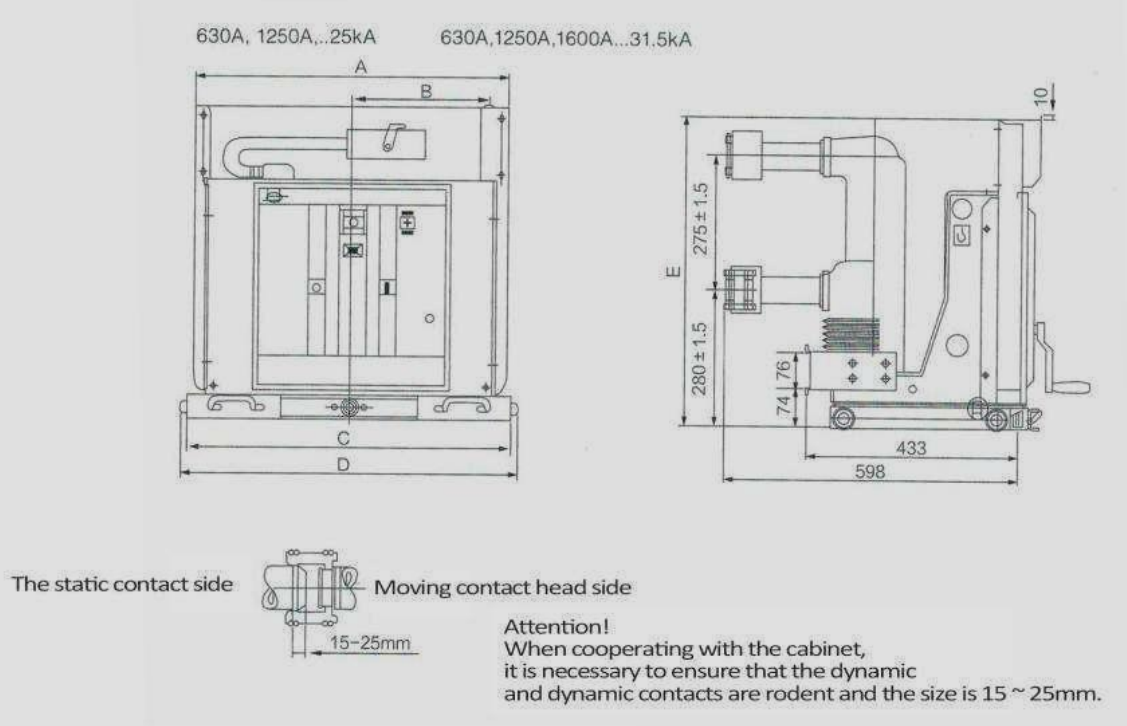
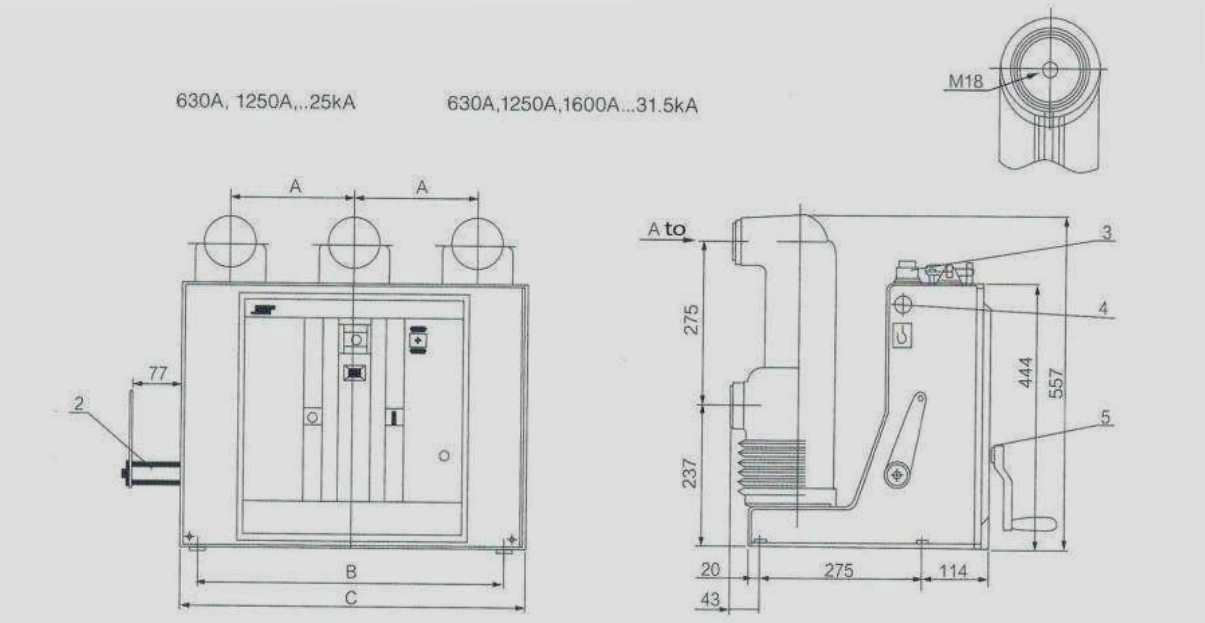


Fig. 1. Dimensions of (VS1) E handcart type (fixed sealing pole column)



1. Switching and closing mechanical interlock (left extension or right extension)

2. Spindle interlock (left extension or right extension or no extension)

3.46 Core aviation socket or secondary terminal

4. Handling lifting hole

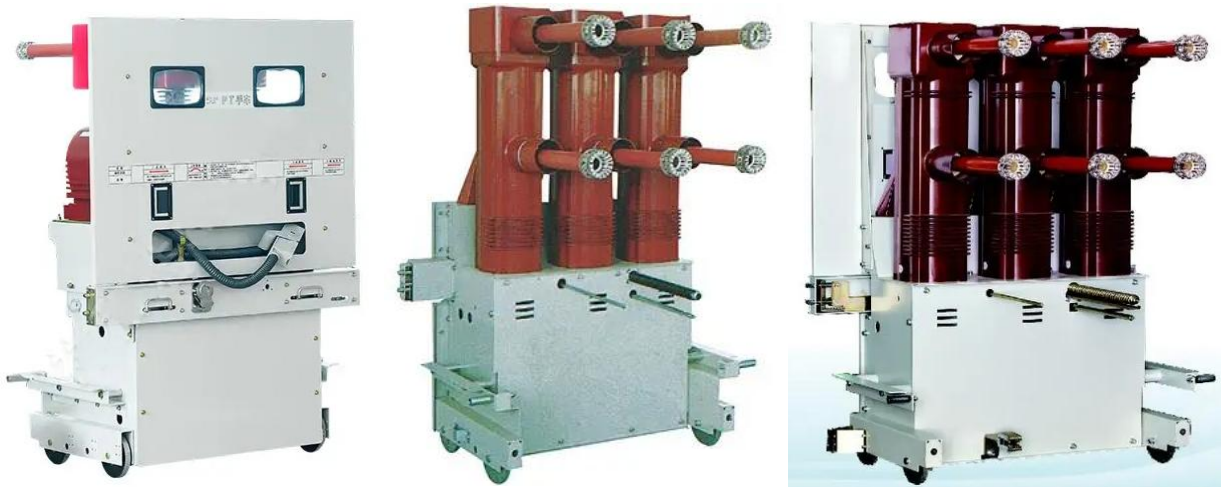
5. Energy storage handle

Fig. 2. Dimensions of (VS1) E stationary (fixed sealing pole column)

8. ZN85-40.5 Series Indoor High Voltage Vacuum Circuit Breaker

ZN85-40.5 indoor HV vacuum circuit breaker is a 3-phase AC 50Hz 40.5kV indoor switch equipment.

♦ Installation way: withdrawable type;
♦ Operating mechanism: spring operating mechanism;
♦ Pole type: assembled pole, embedded pole;
♦ Application: switchgear KYN61-40.5.
♦ Secondary plug: 58pins, 64pins.



Environmental Conditions

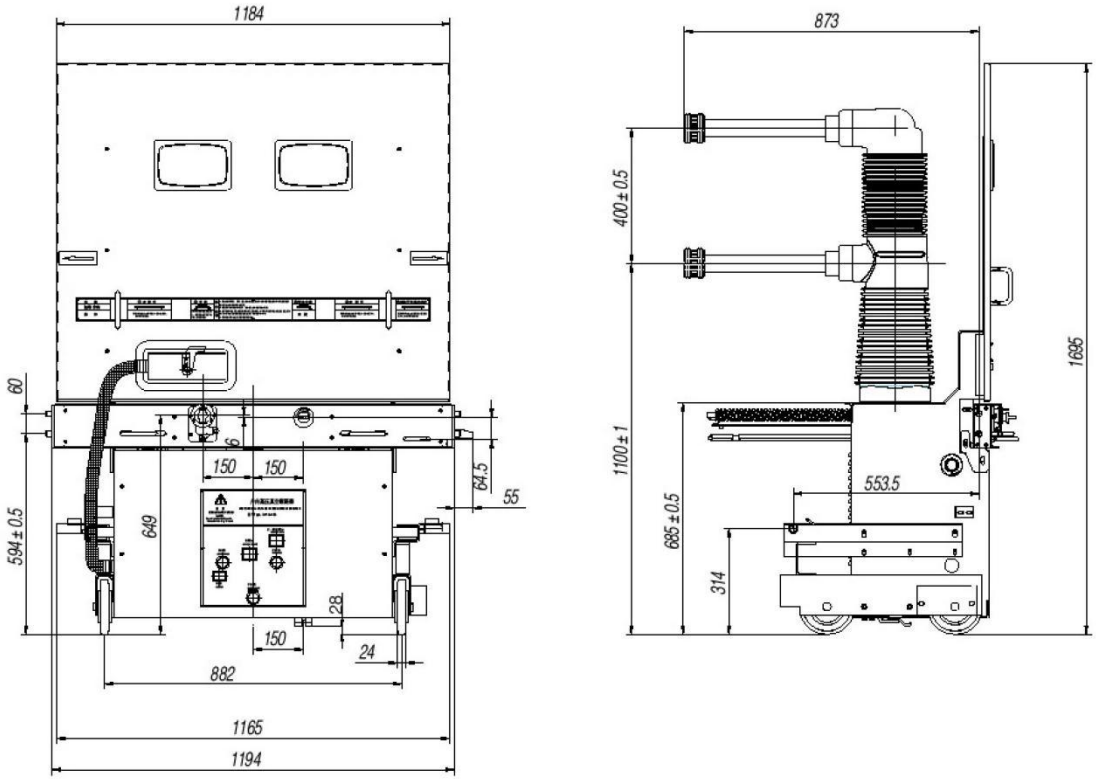
♦ Ambient temperature: -15r~+40r;
♦ Altitude: <1000m;
♦ Relative humidity: daily average <95%, monthly average <90%;
♦ Earthquake intensity: <8 level;
♦ Places without fire, explosion hazard, serious filthy, chemical corrosion, as well as intense vibration.

No	Item	Unit	Value
1	Rated voltage	kV	40.5
2	Rated current	A	1250 1600, 2000, 2500
3	Rated short circuit breaking current	kA	25, 31.5
4	Dynamic current (peak)		63, 80
5	4s thermal stability current		25, 31.5
6	Rated short circuit making current (peak)		63, 80

7	Rated short circuit current breaking number	Times	20
8	Rated operating sequence		O-0.3s-CO-180s-CO
9	1 min power frequency withstand voltage	kV	95
10	Rated lightning impulse withstand voltage		185
11	Mechanical life	Times	10000
12	Rated single capacitor bank switching current	A	630
13	Rated back-to-back capacitor bank current		400
14	Rated voltage of energy storage motor	V	AC/DC 220/110
15	Power of energy storage motor	W	≤230
16	Energy storage time	s	≤15
17	Ratea voltage of closing/opening coil	V	DC 220/110
18	Rated current of closing/opening coil	A	1.05(110V) 0.96(220V)
19	Clearance between open contacts	mm	20±2
20	Contact travel		7.5±1.5
21	Three phase opening and closing asynchronism	ms	≤2
22	Contact closing bounce time		≤3
23	Main circuit resistance (not include contact arm)	μΩ	≤40

Main Technical Parameters
General Structure Drawing and Installation Size (unit: mm)

♦ Draw out type assembled pole
♦ Draw out type embedded pole



9. KYN61-40.5 Armored removable AC metal enclosed switchgear

High Voltage Switchgear Series

KYN61-40.5

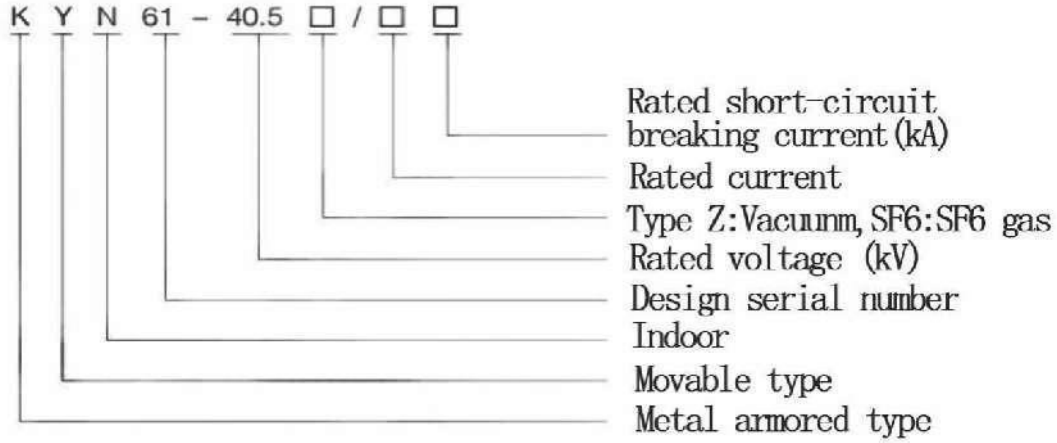
Armored removable AC metal enclosed switchgear

Summary

KYN61-40.5 (z) armored removable AC metal enclosed switchgear (hereinafter referred to as "switchgear") is applicable to three-phase AC 50Hz power system, used for receiving and distributing electric energy in power plants, substations and distribution rooms of industrial and mining enterprises, and controlling, protecting and monit or ing the circuit.

This product meets the standards: GB3906 3 ~ 35kV AC metal enclosed switchgear, GB / t11022 common technical requirements for high voltage switchgear and control equipment standards, and iec6029 AC metal enclosed switchgear and control equipment with rated voltage above 1kV and below 50kV.

Model and meaning



Environment conditions

1. Ambient air temperature: maximum temperature + 40p. Minimum temperature - 10p;
2. Altitude: W 1000m;
3. Relative humidity around: daily average 95%, monthly average w90%;
4. Surrounding air: not applicable to places with c or rosion, serious pollution, combustible gas and violent vibration;
5. If an earthquake occurs, the earthquake intensity shall not exceed magnitude 8.

Structural features

The switch cabinet structure is designed according to the standard of arm or ed metal enclosed switchgear in GB3906-2006 and IEC298. The whole is composed of cabinet body and withdrawable part (handcart). The cabinet structure is assembled, bolted and combined. The interi or of the switch cabinet is divided into circuit breaker room, main bus room, cable room and relay instrument room with metal partition. The enclosure protection grade shall reach IP3X, the protection grade between compartments shall be IP2X, and all metal structural parts shall be reliably grounded. There shall be an independent exhaust pressure release channel between compartments of the main circuit system.

Handcarts can be divided into circuit breaker handcarts, voltage transformer handcarts, star counting handcarts, isolation handcarts, etc. the overall dimensions of all kinds of handcarts are the same, and handcarts f or the same purpose have good interchangeability; The handcart has test / isolation position and w or king position in the cabinet, and each position is equipped with interlocking device to ensure that the handcart cannot move freely when it is in the above two positions.

KYN61-40.5

Armored movable AC metal enclosed switchgear

Main technical parameters

Project		Unit	Parameters
Rated voltage		KV	40.5
Rated insulation level	Lightning impulse withstand voltage (full wave)	KV	185
	Power frequency withstand voltage (1min)		95
Rated frequency		HZ	50
Rated current		A	630;1250;1600;2000
Rated sh or t circuit breaking time	Power frequency withstand voltage (1min)	KV	20、25、31.5
Rated sh or t-circuit making current (peak)		KV	50、63、80
Rated dynamic stability current (peak)		KV	50、63、80
4S thermal stability current (effective value)		KV	20、25、31.5
Enclosure protection class	Vacuum circuit breaker cabinet	MM	IP4X

Overall dimension (width× deep× High)	SF6 circuit breaker cabinet		1400×2200×2600

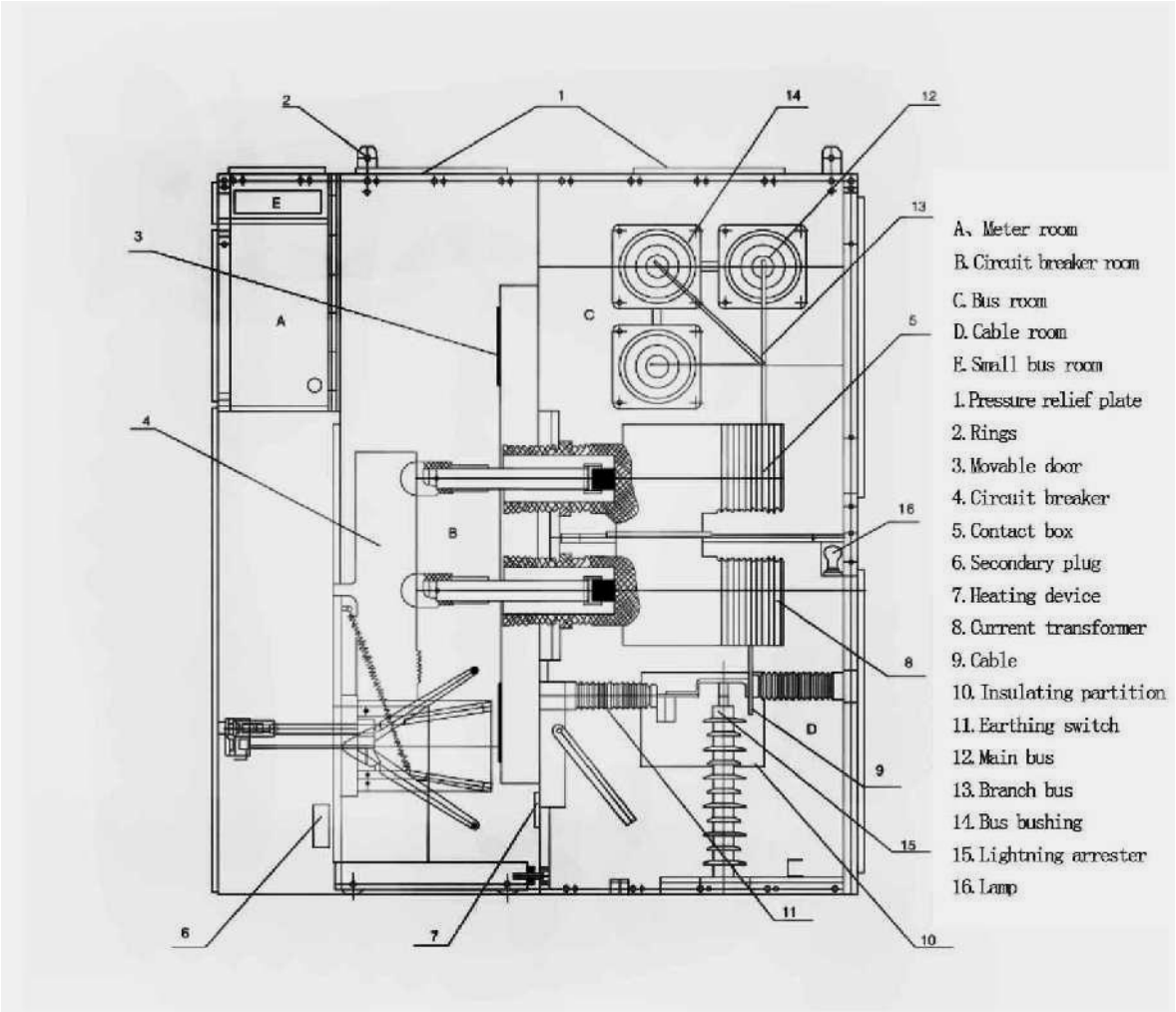
Circuit breaker technical parameter

Dimension（mm）

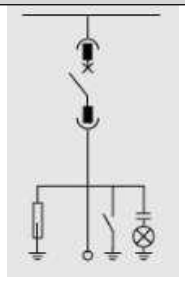
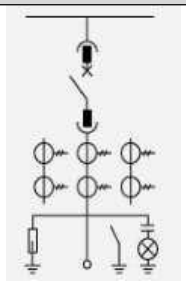
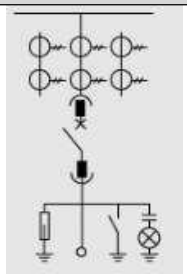
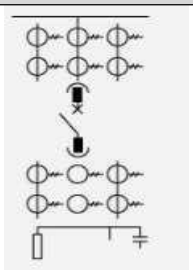
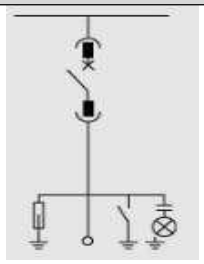
High		2650
Width	Rated current 1600A and above	1400
Deep	Lower cable inlet and outlet	2870
	Overhead incoming and outgoing lines	2950

Circuit breaker technical parameter

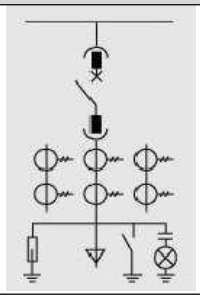
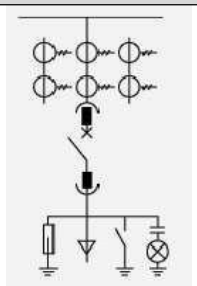
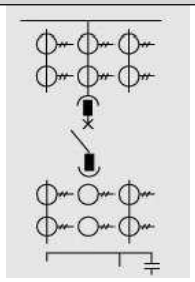
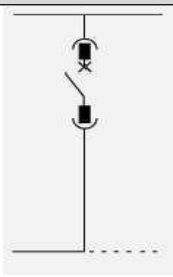
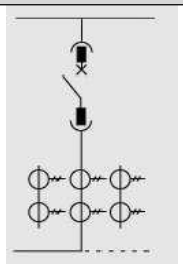
Project		Unit	Parameters	
Rated voltage		KV	40.5	
Rated insulation level	Lightning impulse withstand voltage (full wave)	KV	185	
	Power frequency withstand voltage (1min)		95	
Rated frequency		HZ	50	
Rated current		A	1250;1600;2000	630;1250;1600;2000
Rated sh or t circuit breaking time		KV	20、25、31.5	20、25、31.5
Rated sh or t-circuit making current (peak)		KV	50、63、80	63、80
Rated dynamic stability current (peak)		KV	50、63、80	63、80
4S thermal stability current (effective value)		KV	20、25、31.5	25、31.5(3s)
Opening time		ms	36~60	≤ 45
Closing time		ms	40~90	≤ 75
Rated operating sequence			Off-0.3s-On-Off-180S-On-Off	

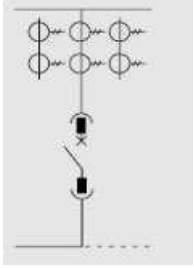
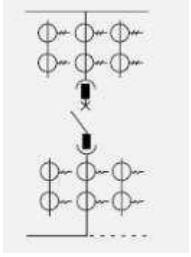
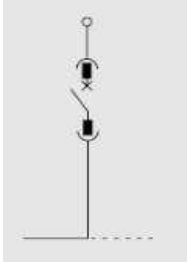
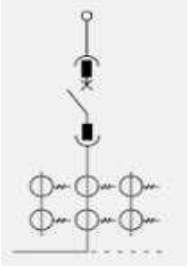
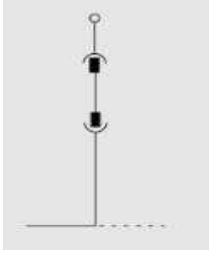


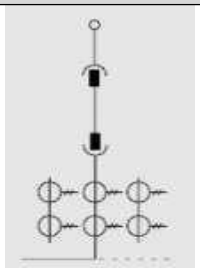
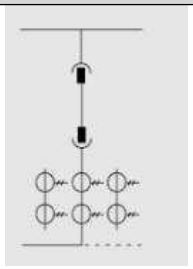
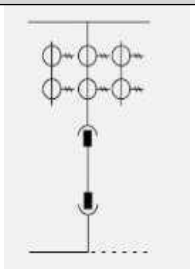
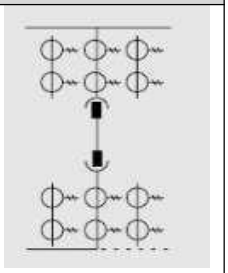
Armored movable AC metal enclosed switchgear

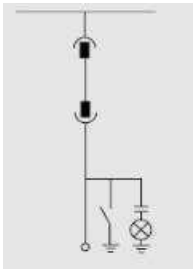
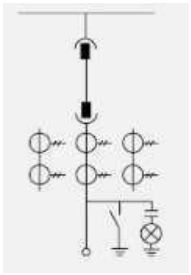
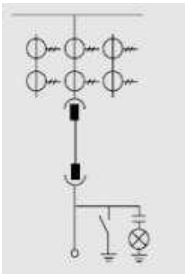
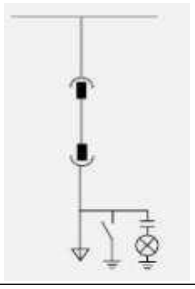
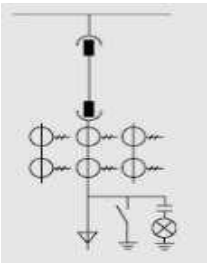
Scheme number	01	02	03	04	05
Main circuit scheme diagram					
Vacuum circuit breaker ZN85-40.5	1	1	1	1	1
Current transf or mer LDJ5-35		3	3	6	
Voltage transf or mer JDJ9-35					
Lightning arrester HY5WZ	0 or 3to select	0 or 3to select	0 or 3to select	0 or 3to select	0 or 3to select
Grounding switchJN12-35	0 or 1to select	0 or 1to select	0 or 1to select	0 or 1to select	0 or 1to select
Live display	0 or 1to select	0 or 1to select	0 or 1to select	0 or 1to select	0 or 1to select
Fuse XRNP-35					
Transformer SC9-35					
Purpose	Overhead incoming (outgoing) line	Overhead incoming (outgoing) line	Overhead incoming (outgoing) line	Overhead incoming (outgoing) line	Cable incoming (outgoing) line

Main circuit scheme diagram

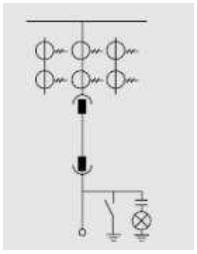
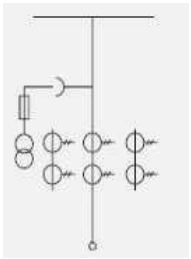
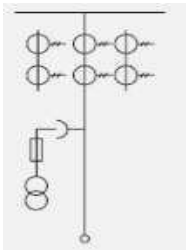
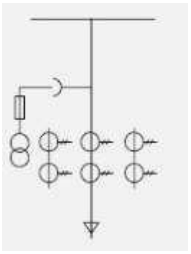
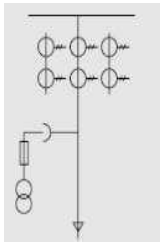
Scheme number	06	07	08	09	10
Main circuit scheme diagram					
Vacuum circuit breaker ZN85-40.5	1	1	1	1	1
Current transf or mer LDJ5-35	1~3	1~3	4~6		1~3
Voltage transf or mer JDJ9-35					
Lightning arrester HY5WZ	0 or 3to select	0 or 3to select	0 or 3to select		
Grounding switchJN12-35	0 or 1to select	0 or 1to select	0 or 1to select		
Live display	0 or 1to select	0 or 1to select	0 or 1to select		
Fuse XRNP-35					
Transformer SC9-35					
Purpose	Cable incoming (outgoing) line	Cable incoming (outgoing) line	Cable incoming (outgoing) line	Left (right) contact	Left (right) contact

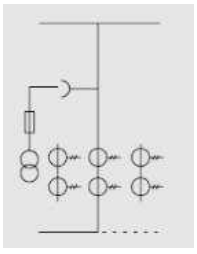
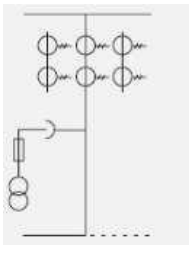
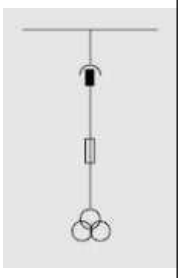
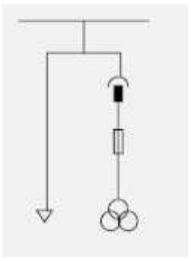
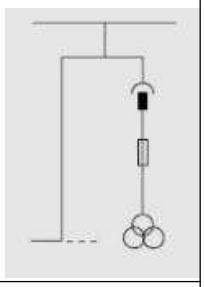
Scheme number	11	12	13	14	15
Main circuit scheme diagram					
Vacuum circuit breaker ZN85-40.5	1	1	1	1	1
Current transf or mer LDJ5-35	1~3	4~6		1~3	
Voltage transf or mer JDJ9-35					
Lightning arrester HY5WZ					
Grounding switchJN12-35					
Live display					
Fuse XRNP-35					
Transformer SC9-35					
Perpose	Left (right) contact	Left (right) contact	Overhead incoming (outgoing) line	Overhead incoming (outgoing) line	Overhead incoming (outgoing) line

Scheme number	16	17	18	19	20
Main circuit scheme diagram					
Vacuum circuit breaker ZN85-40.5					
Current transf or mer LDJ5-35	1~3		1~3	1~3	4~6
Voltage transf or mer JDJ9-35					
Lightning arrester HY5WZ					
Grounding switchJN12-35					
Live display					
Fuse XRNP-35					
Transformer SC9-35					
Purpose	Cable incoming (outgoing) line	Left (right) contact	Left (right) contact	Left (right) contact	Left (right) contact

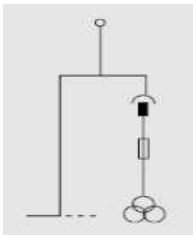
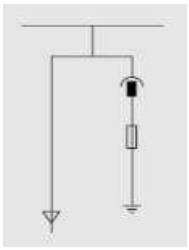
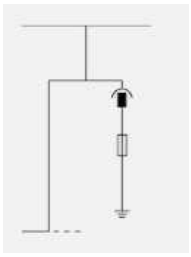
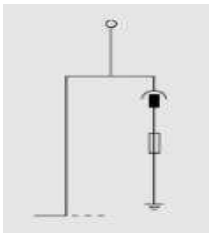
Scheme number	21	22	23	24	25
Main circuit scheme diagram					
Vacuum circuit breaker ZN85-40.5					
Current transf or mer LDJ5-35		1~3	1~3		1~3
Voltage transf or mer JDJ9-35					
Lightning arrester HY5WZ					
Grounding switchJN12-35	0 or 1to select	0 or 1to select	0 or 1to select	0 or 1to select	0 or 1to select
Live display	0 or 1to select	0 or 1to select	0 or 1to select	0 or 1to select	0 or 1to select
Fuse XRNP-35					
Transformer SC9-35					
Purpose	Overhead incoming	Overhead incoming	Overhead incoming	Cable incoming	Cable incoming (outgoing) line

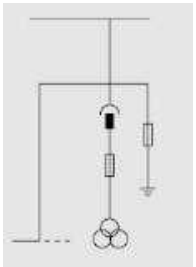
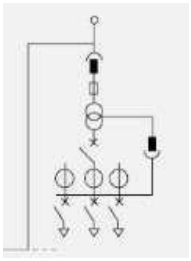
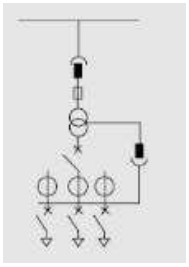
	(outgoing) line	(outgoing) line	(outgoing) line	(outgoing) line	

Scheme number	26	27	28	29	30
Main circuit scheme diagram					
Vacuum circuit breaker ZN85-40.5					
Current transf or mer LDJ5-35	1~3	1~3	1~3	1~3	1~3
Voltage transf or mer JDJ9-35		2	2	2	2
Lightning arrester HY5WZ					
Grounding switchJN12-35	0 or 1to select				
Live display	0 or 1to select				
Fuse XRNP-35		3	3	3	3
Transformer SC9-35					
Purpose	Cable incoming (outgoing) line	Metering and Overhead incoming line	Metering and Overhead incoming line	Metering and Overhead incoming line	Metering and Overhead incoming line

Scheme number	31	32	33	34	35
Main circuit scheme diagram					
Vacuum circuit breaker ZN85-40.5					
Current transf or mer LDJ5-35	1~3	1~3			
Voltage transf or mer JDJ9-35	2	2	1~3	1~3	1~3
Lightning arrester HY5WZ					
Grounding switchJN12-35					

Live display					
Fuse XRNP-35	3	3	3	3	3
Transformer SC9-35					
Purpose	Metering and contact	Metering and contact	Voltage transformer	Voltage transformer and Cable incoming (outgoing) line	Voltage transformer and contact

Scheme number	36	37	38	39	40
Main circuit scheme diagram					
Vacuum circuit breaker ZN85-40.5					
Current transf or mer LDJ5-35	1~3		1~3	1~3	4~6
Voltage transf or mer JDJ9-35					
Lightning arrester HY5WZ		3	3	3	3
Grounding switchJN12-35					
Live display					
Fuse XRNP-35	3			3	3
Transformer SC9-35					
Purpose	PT and Overhead incoming (contact) line	Lightning arrester	Lightning arrester and Cable incoming (outgoing) line	Lightning arrester and contact	Lightning arrester and Overhead incoming (contact) line

Scheme number	41	42	43		
Main circuit scheme diagram					
Vacuum circuit breaker ZN85-40.5					
Current transf or mer LDJ5-35					
Voltage transf or mer JDJ9-35	1~3				

	Lightning arrester HY5WZ	3				
	Grounding switchJN12-35					
	Live display					
	Fuse XRNP-35	3				
Transformer SC9-35			1	1		
Purpose		Lightning arrester and contact(PT)		Transformer for substation		

Ordering instructions:

The following technical data shall be provided when ordering:

1. Main circuit scheme number, purpose and main circuit scheme, layout plan and arrangement diagram of distribution room, etc;
2. Requirements f or control, measurement and protection functions of switchgear and requirements for other enclosed and automatic devices;
3. Model, specification and quantity of electrical components of switchgear;
4. If bus bridge connection is required between switchgear or into eel cabinet, specific requirements data such as rated flow of bus bridge, span of bus bridge and height from the ground shall be provided;
5. When the switchgear is used under special environmental conditions, it shall be described in detail when ordering;
6. Other special requirements shall be negotiated with the company.

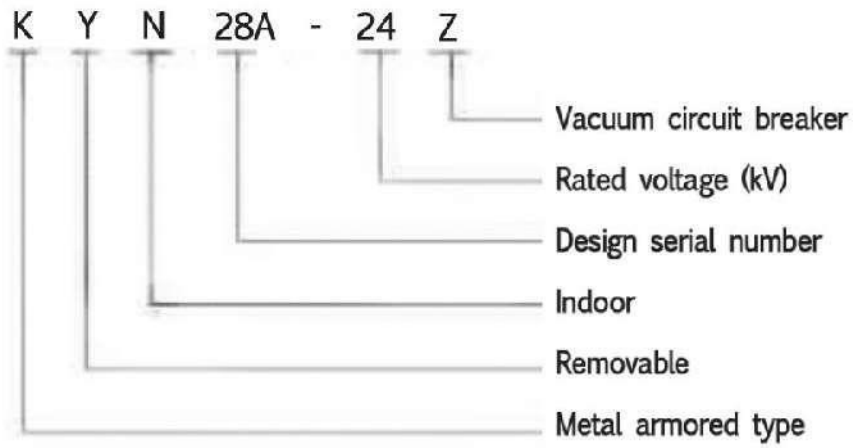
10. KYN28A-24 Armored removable AC metal enclosed switchgear

High Voltage Switchgear Series

KYN28A-24
Armored removable AC metal enclosed switchgear

Summary
Kyn28a-24 armored removable AC metal enclosed switchgear (hereinafter referred to as switchgear) is applicable to indoor three-phase 50 / 60Hz power system with rated voltage of 24kV. It is mainly used in power plants, substations, industrial and mining enterprises and high-rise buildings to receive and distribute electric energy and control, protect and monitor the circuit.
Kyn28a-24 switchgear has various functions to prevent misoperation, including preventing the loaded mobile handcart, preventing the closing of the circuit breaker at the closed position of the grounding switch, preventing the live grounding switch from closing and preventing the live compartment from entering by mistake. The switchgear is equipped with VS1 and vn2 series middle mounted high-voltage AC vacuum circuit breakers and solid sealed vacuum switches with excellent performance. The secondary circuit of switchgear is equipped with advanced and reliable control and protection elements; The bus bar is made of heat shrinkable insulating material or epoxy coated insulation to optimize the electrode shape and cabinet structure. The switchgear is a power distribution equipment with advanced technology, stable performance, reasonable structure, convenient operation, and safety.

Model and meaning



Normal service conditions

1. Environmental conditions: maximum temperature: + 40p, minimum temperature: - 15p, and the average value measured within 24h shall not exceed 35p;
2. The temperature conditions are as follows: the average value of daily relative humidity shall not exceed 95%; The average monthly relative humidity shall not exceed 90%; The average value of daily water vapor pressure shall not exceed 2.2kpa; The average monthly water vapor pressure shall not exceed 1.8kpa;
3. The altitude shall not exceed 1000m;
4. The surrounding air is not obviously polluted by dust, smoke, corrosive or combustible gas, steam or salt mist;

5. Vibration or ground motion from the outside of switchgear and control equipment can be ignored;
6. The amplitude of electromagnetic interference induced in the secondary system shall not exceed 1.6kv .

Special service conditions

When it is used under normal environmental conditions beyond those specified in GB / t11022, the company and users can negotiate and reach an agreement on special operating conditions beyond normal operating conditions. In order to prevent condensation, the switchgear is equipped with a heater, which shall be put into use when the switchgear is in standby state. The heater shall also be put into operation during normal operation of switchgear

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Armored removable AC metal enclosed switchgear

Technical parameter

No.	Project		Unit	Parameter			
1	Rated Voltage		KV	24			
2	Rated frequency		HZ	50/60			
3	Rated insulation level	Lightning impulse withstand voltage (peak)	KV	Phase to ground	60	Isolation fracture	79
		1min power frequency withstand voltage (effective value)	KV		125		145
		Power frequency withstand voltage of auxiliary control circuit	V	2000			
4	Rated current		A	630,1250,1600,2000,2500,3150			
5	Rated short-circuit breaking curren		KA	20	31.5		
6	Rated short-circuit making current (peak)		KA	50	80		
7	Rated short-time withstand current (4S)		KA	20	31.5		
8	Rated peak withstand current		KA	50	80		
9	Rated voltage of auxiliary control circuit		A	DC/AC 110/220			
10	Degree of protection			IP4X(Circuit breaker room door open or compartment：IP2X)			
11	Overall dimension（W×D×H）		MM	800×1810×2380		1000×1810×2380	
12	Weight		KG	840~1440			

Note: the depth of overhead incoming and outgoing line cabinet is 2360mm

VS1-24 、VN2-24 Main technical parameters of vacuum circuit breaker

No.	Project		Unit	Parameter	
1	Rated voltage		KV	24	
2	Rated insulation level	1min power frequency withstand voltage (effective value)		60	
		Lightning impulse withstand voltage (peak)		125	
3	Rated frequency		HZ	50/60	
4	Rated current		A	630,1250,1600,2000	630,1250,1600,2000,2500,3150
5	Rated short-circuit breaking current		KA	20	31.5
6	Rated short-circuit making current (peak)			50	80
7	Rated short-time withstand current （4s）			20	31.5
8	Rated peak withstand current			50	80
9	Rated breaking current of single capacitor bank		A	630	
10	Rated back-to-back capacitor bank breaking current			400	
11	Rated short-circuit breaking current breaking times		Times	50	
12	Mechanical life			20000	
13	Rated operating sequence			O-0.3S-CO-180S-CO	

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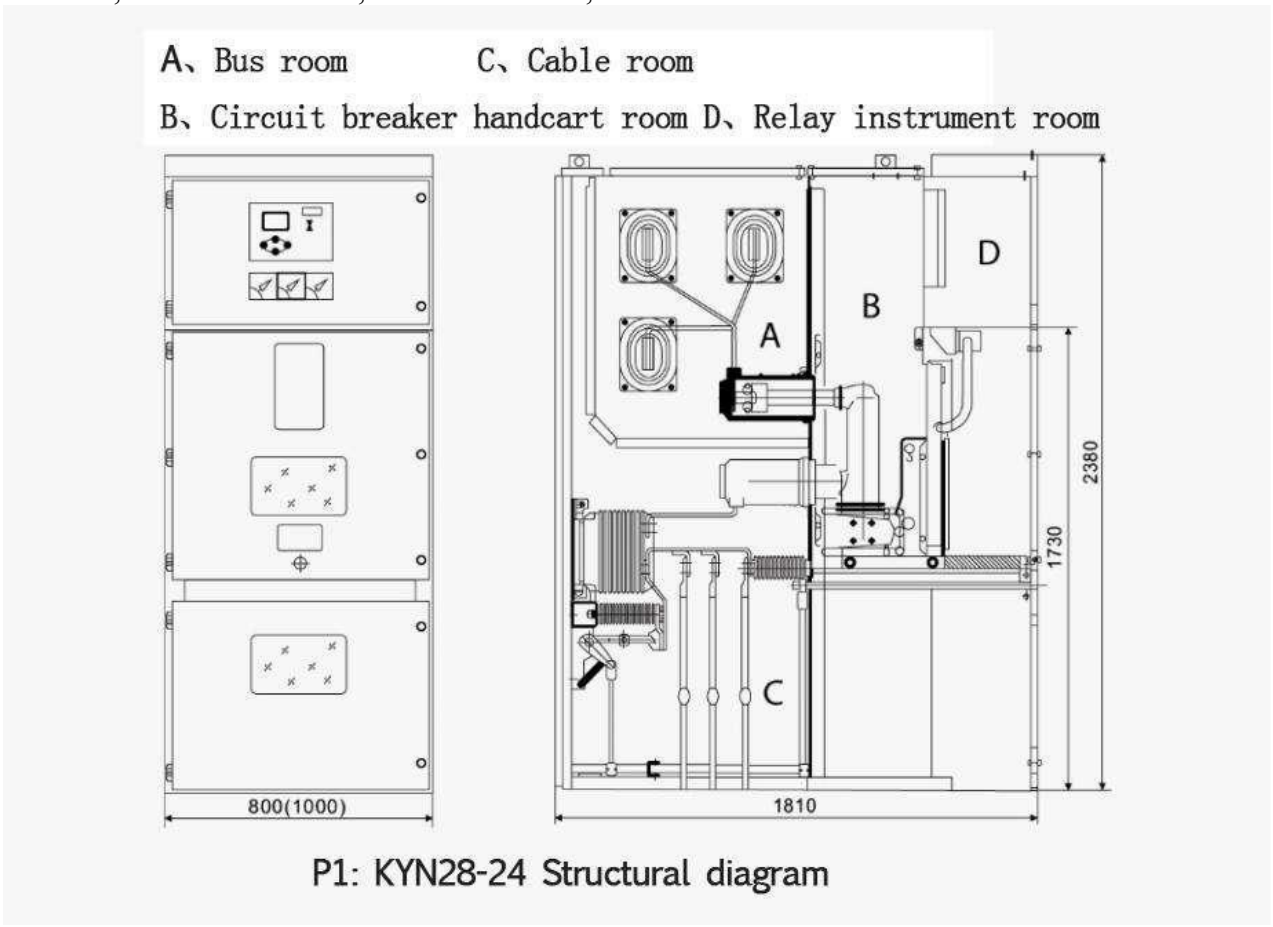
Technical parameters of spring operating mechanism

No.	Project		Unit	Parameter
1	Rated voltage	Closing trip coil	V	AC220,AC110,DC220,DC110
		Opening trip coil		
2	Rated current	Closing trip coil	A	AC220/DC220：1.1 AC1100/DC110：3.1
		Opening trip coil		
3	Energy storage motor power		W	80， 100
4	Rated voltage of energy storage motor		S	AC220,AC110,DC220,DC110
5	Electric energy storage time		V	≤110

Structure and working principle

KYN28A-24 switchgear consists of cabinet and removable parts (commonly known as handcart). The cabinet body is divided into multiple functional compartments with metal partitions, such as bus room, circuit breaker room, cable room, relay instrument room, etc. The removable parts of the switchgear can be equipped with vacuum circuit breaker handcart, voltage transformer handcart, lightning arrester handcart, isolation handcart, fuse handcart,etc.



P1: KYN28-24 Structural diagram

KYN28A-24

Armored removable AC metal enclosed switchgear

Main structural features

The switchgear can be arranged back-to-back or installed against the wall, which improves the safety and flexibility of the switchgear and reduces the floor area.

♦ Shell

The shell of the switchgear is made of imported aluminum zinc coated steel plate, processed by CNC machine tool and made by multiple folding process. The whole cabinet has high precision and strong corrosion and oxidation resistance. Moreover, due to the adoption of multiple folding process, the cabinet has lighter weight, higher mechanical strength and beautiful appearance than other similar equipment. The cabinet adopts an assembled structure, which is connected with pull key nuts and high-strength bolts. It shortens the processing and production cycle, has strong universality of parts and components, occupies less land, and is easy to organize production.

♦ Handcart

The handcart frame is assembled from thin steel plate processed by CNC machine tool. The handcart and cabinet have high matching precision, and the mechanical interlocking is safe, reliable and flexible. Handcart can be divided into circuit breaker handcart, voltage transformer handcart, metering handcart, isolation handcart, etc. handcart of the same specification can be freely interchanged. The handcart has disconnection / test position and working position in the cabinet, and each position is equipped with positioning device to ensure reliable interlocking. All kinds of handcarts are pushed and pushed by screw rod, which is light and flexible for operators on duty. When the handcart needs to remove the cabinet, it can be easily taken out with a special transfer truck for various inspection and maintenance.

When the handcart is transported into the cabinet circuit breaker room with a running car, it can be reliably locked in the off / test position, and the cabinet position indicator shows its position. Only after the handcart is fully locked can the screw rod push structure be shaken to push the handcart to the working position. When the handcart reaches the working position, the operating force of the propulsion handle suddenly increases and does not rotate, and its corresponding position indicator will display its position. The mechanical interlocking of the handcart can reliably ensure that the circuit breaker can be closed only when the handcart is in the working position or test position; Moreover, the handcart can move only when the circuit breaker is open.

♦ Compartment

The main electrical components of the switchgear have their own independent compartments, i.e. circuit breaker handcart room, bus room, cable room and relay instrument room. The protection grade of each compartment shall reach IP2X. Except for the relay instrument room, the other three compartments have pressure relief channels respectively. Due to the central type, the space of the cable room is greatly increased, so the equipment can connect multiple cables in parallel.

◊ bus compartment a: the main bus is spliced and connected with each other, which is fixed through the branch bus (static contact box) and the insulating sleeve of the main bus. The main bus and connecting bus are copper bars with rectangular section, and double bus bars are used for high current load. For special needs. The bus can be covered with heat shrinkable sleeve and customized insulating cover box. Insulating sleeves are installed between adjacent cabinet busbars. In case of internal fault arc, the sleeves can effectively limit the accident to the compartment without spreading to others.

◊ circuit breaker compartment B: rails are installed on both sides of the compartment for the handcart to

move from the off / test position to the working position in the cabinet. The diaphragm (valve) of the static contact box is installed at the rear wall of the handcart chamber. When the handcart moves from the disconnection / test position to the working position, the upper and lower valves on the mouth of the static contact box will open automatically in linkage with the handcart; When moving in the reverse direction, the valve will close automatically until the handcart retreats to a certain position and completely covers the static contact box to form effective isolation. Since there is no linkage between the upper and lower valves, the valve on the live side can be locked during maintenance, so as to ensure that the maintenance personnel do not touch the live body. When the circuit breaker room door is closed, the handcart can also be operated. Through the observation window on the door, you can observe the position of the handcart in the compartment, closing and opening instructions and energy storage conditions.

◊ cable compartment C: the switchgear adopts the central type, so the cable compartment has a large space. The current transformer and grounding switch are installed on the rear wall of the compartment (the grounding switch can also be installed in the middle of the switchgear according to the needs of customers), and the lightning arrester is installed at the lower part of the compartment. After removing the handcart and the withdrawable horizontal partition,

Construction personnel can enter the cabinet from the front for installation and maintenance. For the cable connecting conductor in the cable compartment, 1 ~ 3 cables can be connected to each phase, and 6 cables can be connected to each phase if necessary. The cabinet bottom of the cable compartment is equipped with detachable slotted metal sealing plate or non-magnetic metal plate to ensure convenient construction.

◊ relay instrument room D: relay protection elements, instruments, live display indicators and secondary equipment with special requirements can be installed in the relay instrument room. The control line is laid in the trunking with metal plate, which can isolate the secondary line from the high-voltage components. The left front side trunking is reserved for the introduction and introduction of control cables, and the corresponding part of the bottom plate is provided with secondary cable threading holes. A bus crossing hole convenient for construction is also reserved on the top plate of the relay instrument room. During wiring, the top cover plate of the instrument room can be opened to facilitate the installation of small bus.

♦ Pressure relief device
Pressure relief devices are set above the handcart room, bus room and cable room. When an arc is generated due to a fault in the compartment, the air pressure inside the switchgear rises, the cabinet door is closed by a special sealing ring installed on the front door, and the pressure relief metal plate equipped on the top is automatically opened to release pressure and high-temperature gas to ensure the safety of operators and switchgear.

♦ Position connection between secondary plug and handcart
The secondary connection between the switchgear and the handcart is realized through the connection of the secondary plug, which is connected with the handcart through a nylon bellows, and the secondary socket is installed at the upper right of the handcart of the switchgear. Only when the handcart is in the test / disconnection position can the secondary plug be plugged in or pulled out. When the handcart enters the working position, the secondary plug is locked. For the circuit breaker handcart equipped with closing locking electromagnet, before the secondary plug is connected, the closing mechanism of the handcart is locked by the electromagnet, which can only be opened and cannot be closed.

♦ Live display device
The switchgear can be equipped with a live display device for detecting the operation of primary circuit, which is composed of high-voltage sensor and display. The device can prompt the charged status of the high-voltage circuit, and can also cooperate with the electromagnetic lock to realize the forced locking of the operating handle, cabinet door and adjacent cabinets, so as to prevent the loaded mobile isolation handcart, prevent the charged closing of the grounding switch, prevent entering the charged interval by mistake, and

improve the error prevention performance of the supporting products.

♦ Prevent condensation
In order to prevent condensation in the environment with high humidity and large temperature changes, electric heaters are installed in the circuit breaker room and cable room respectively to prevent insulation accidents under the above operating conditions.

♦ Grounding device
A 5x40mm2 grounding copper bar is separately set in the cable room, which runs through adjacent cabinets and is well connected with the cabinet body for directly grounded components. As the whole cabinet is connected with aluminum coated zinc plates, the whole cabinet is in a good grounding state to ensure the safety of operators when touching the cabinet.

♦ Anti misoperation interlocking device and its working principle
Safe and reliable interlocking device is installed in the switchgear, which fully meets the requirements of "five prevention".
O suggestive buttons or KK type change-over switches are installed on the door of the instrument room to prevent false closing and opening of the circuit breaker;
Only when the circuit breaker handcart is in the test or working position can the circuit breaker be closed and opened, and after closing, the handcart is locked and cannot move to prevent pushing and holding the handcart under load;
◊ only when the grounding switch is in the opening position, the handcart of the lower door circuit breaker moves from the test / off position to the working position; Only when the circuit breaker handcart is in the test / off position, the grounding switch can be closed (the grounding switch can be equipped with voltage display device), so as to prevent the circuit breaker from closing when the grounding switch is in the closed position and the grounding switch from being closed by mistake;

◊ when the grounding switch is in the opening position, the lower door and rear door are blocked to prevent entering the live interval by mistake;

◊ the circuit breaker handcart equipped with closing locking electromagnet according to the customer's requirements can prevent manual or electric closing operation without unlocking the locking device;
◊ when the circuit breaker handcart is in the working position, the secondary plug is locked and cannot be pulled out;
◊ electrical interlocking can be installed between cabinets.
The switchgear can also be equipped with an electromagnet locking device on the grounding switch operating mechanism to improve reliability, and can provide the reverse interlocking device for the operation of the rear cabinet door and the grounding switch according to the user's requirements. It can be selected according to the user's needs when ordering.

♦ Wiring principle of electrical control of switchgear
The electrical control principle of VS1-24. Vn2-24 vacuum circuit breaker is shown in Figure 4.
The secondary control principle of vacuum circuit breaker is composed of energy storage circuit, closing circuit, splitting circuit, locking circuit and auxiliary switch circuit, and the locking electromagnet can be selected. When the circuit breaker handcart is in the test position or working position and there is an operating power supply, the locking electromagnet Y1 is energized and closed, the limit switch SP5 contacts 13-14 are closed, and the closing coil HQ can normally conduct electrical closing operation. After the locking electromagnet Y1 is pulled in, the closing bending plate is unlocked and can also be closed manually. Therefore, when the secondary control power supply is finally turned on,
The locking electromagnet can prevent manual or electric closing operation.
Figure 5 shows the typical control circuit diagram of vacuum circuit breaker equipped with kyn28a-24 switchgear.

Transportation, installation and commissioning

♦ Precautions for transportation and storage
◊ during loading, unloading and transportation, the product shall not be overturned, inverted or subjected to severe vibration. The lifting rope shall be placed at the designated position of the packing box or switchgear;
◊ prevent rain to prevent the product from moisture;
◊ when the switchgear arrives at the site, the consignee shall check whether the outer packaging of the goods is complete and whether the goods are damaged or short. If necessary, the consignee shall notify the supplier to come to the site for joint inspection;
◊ the product shall be placed stably, and electrical components and parts shall not be disassembled at will.

♦ Installation of switchgear
◊ the foundation frame surface shall be flat and 2 ~ 4mm higher than the floor, and the allowable tolerance of frame flatness and straightness shall be 1mm / M;
Adjust the position of the switch cabinet one by one on the foundation frame and splice it successively, and the verticality shall not exceed 2mm. When the number of switchgear is more than 10, it is best to assemble from the middle. The switch cabinet and foundation frame are connected by bolts or welding;
◊ in order to facilitate the installation of main bus, the cabinet assembly installation of switchgear should be carried out alternately with the installation of main bus;
Connect the main grounding bus of the switchgear cabinet by cabinet with the pre installed grounding bus, and connect the main grounding bus of the switchgear to the grounding electrode of the distribution room;
◊ after the installation of primary and secondary cables, the gap around the cable perforation shall be blocked, and the sealing plate and diaphragm shall be installed.

♦ Commissioning of switchgear
Check whether the insertion depth and contact of the isolation contact are good;
◊ after the installation of switchgear, conduct operation test, manually operate circuit breaker, handcart, grounding switch and other components, and check the operation of all procedures of mechanical interlocking. The action shall be accurate and flexible without jamming;
◊ check whether the mechanical characteristics of the circuit breaker meet the requirements, and conduct the operation test according to the specified maximum and minimum operating voltage, and the closing and opening shall be normal;
◊ conduct power on test on the secondary circuit to check the correctness of protection, control and signal circuit action;
◊ when measuring the resistance of the main circuit, the circuit resistance of the circuit breaker shall not exceed the value specified in the standard;
O power frequency withstand voltage test between phases and phase to ground of main circuit shall be carried out according to handover acceptance regulations;
◊ secondary circuit insulation strength test 2000V / 1mino shall be free of breakdown and flashover. The test voltage of electronic devices in the secondary circuit shall be agreed between the user and the manufacturer.

Operating procedures for switchgear

Although the switchgear is designed with interlocking devices to ensure the correct operation procedures of all parts, the operators shall still operate the switchgear in strict accordance with the operating procedures and the requirements of this technical document. They shall not operate at will, nor shall they force operation without analysis when the operation is blocked, otherwise it will easily cause equipment damage and even accidents.

♦ Operation of circuit breaker cabinet without grounding switch

◊ install the removable parts of the circuit breaker into the cabinet: install and lock the circuit breaker

handcart on the transfer vehicle, push the transfer vehicle to the front of the cabinet, lift the trolley to a suitable position, insert the positioning lock plate at the front of the transfer vehicle into the partition socket in the cabinet, lock the transfer vehicle and the cabinet, open the locking hook of the circuit breaker trolley, push the circuit breaker handcart smoothly into the cabinet and lock it at the same time, After confirming that the handcart and the cabinet have been locked, unlock the transfer car and the cabinet and pull the transfer car away.

◊ the handcart operates in the cabinet: the handcart of the circuit breaker is in the disconnected position after it is installed in the cabinet. After the secondary plug of the auxiliary circuit is inserted, the handcart is in the test position. If it is powered on, the test position indicator on the panel of the instrument room is on. At this time, the handle can be shaken when the main circuit is not connected. At this time, the main circuit is connected, the circuit breaker is in the working position, and it can be closed and opened through the control circuit.

If you are going to exit the trolley from the working position, first confirm that the circuit breaker is in the off state, insert the handcart operating handle, rotate counterclockwise until the handle is obviously blocked and a crisp auxiliary switch is heard, and the trolley will return to the test position. At this time, the main circuit has been completely disconnected and the metal valve is closed.

◊ take out the handcart from the cabinet: when taking out the handcart from the cabinet, make sure that the circuit breaker is in the off state, then release the secondary plug of the auxiliary circuit and lock it on the handcart frame. At this time, push the transfer to the front of the cabinet (the same as when the handcart is installed in the cabinet) and lock it, and then unlock and pull out the handcart. When the handcart completely enters the transfer vehicle and confirms that it is locked with the transfer vehicle, release the lock between the operation vehicle and the cabinet and pull out the transfer vehicle backward. If the handcart needs to be transported for a long distance by transfer vehicle, be extra careful and when pushing the transfer trolley, so as to avoid overturning and other accidents during transportation.

◊ confirmation of opening and closing status of circuit breaker handcart in cabinet: the opening and closing status can be determined by the opening and closing indicator on the panel of circuit breaker handcart and the opening and closing indicator on the panel of instrument room. If the green opening indicator on the handcart panel is observed through the middle panel of the cabinet, it is determined that the circuit breaker is in the separated state. At this time, if the secondary plug of the auxiliary circuit is connected to the operating power supply, the opening indicator on the instrument panel is on.

♦ Operation of circuit breaker cabinet with grounding switch

Push the circuit breaker handcart into the cabinet and take out the handcart. The operation procedure is exactly the same as that of the circuit breaker cabinet without grounding switch. Only the points needing attention during the operation of handcart in cabinet and grounding switch are described as follows:

◊ operation of the handcart in the cabinet: when the handcart is ready to be pushed into the working position, in addition to complying with the requirements drawn attention in 5.1b), it should also confirm that the grounding switch should be in the off state, otherwise the next operation cannot be completed.

◊ operation of opening and closing the grounding switch: to close the grounding switch, first make sure that the handcart has retreated to the test / off position, remove the push crank, then press the interlocking bending plate of the grounding switch operation hole, insert the grounding switch operation handle and turn it clockwise for 90., The grounding switch is closed. If you turn 90 counterclockwise again., Then open the grounding switch.

♦ General isolation cabinet operation

The isolation plug does not have the ability to connect and disconnect the load current, so it is allowed to move the handcart under load. When carrying out the isolation operation handcart, it must be ensured that the matched circuit breaker is opened first (see D in 5.1). After the circuit breaker is opened, its auxiliary contact is converted to release the integrated isolation handcart

The isolation handcart can be operated only at this time. The specific operation procedure is the same as that of the circuit breaker handcart.

Kyn28a-24 switchgear realizes its "error prevention" function by mechanical interlocking. If the operating resistance increases during interlocking operation, the interlocking device shall be checked in time on the premise of eliminating the possibility of misoperation.

Maintenance of switchgear

The inspection and maintenance cycle of equipment / components (such as vulnerable parts) depends on their operation time, operation frequency, fault disconnection, etc. Inspect and maintain the switchgear every 3 ~ 5 years according to the operating conditions and site environment.

Check the working conditions of the circuit breaker and operating mechanism according to the requirements of the operation manual of the vacuum circuit breaker, and make necessary adjustment and lubrication;

Check the working conditions of the handcart in and out of the whole process, and adjust and lubricate it if necessary;

Check whether the interlocking device is flexible and reliable; Adjust and lubricate if necessary;

Check whether the contact surface of the dynamic and static isolation contact is damaged, whether the insertion depth meets the requirements, whether the spring pressure is weakened, and whether the surface coating is abnormally oxidized, and replace the old conductive paste on the isolation contact;

Check the contact between the bus and each conductive connection part and fasten the connection. If there is heating on the surface, it shall be treated;

Check the grounding circuit, such as the contact of grounding contact, main grounding wire and door grounding wire, to ensure the continuity of its conductivity;

Wipe the attached documents of vacuum arc extinguishing with a soft cloth:

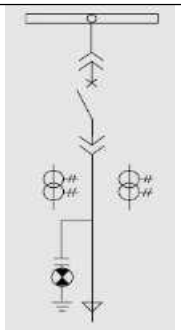
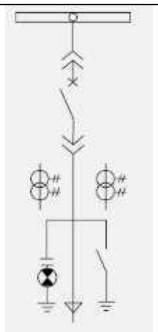
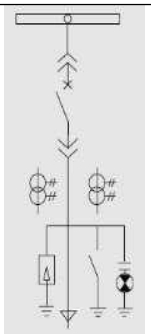
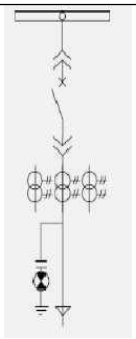
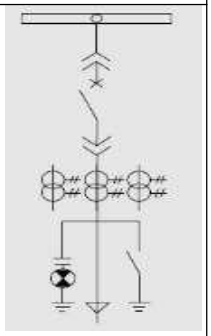
1. Product certificate;
2. Delivery inspection report;
3. Installation and operation instructions;
4. Secondary wiring diagram;
5. Packing list;
6. Special tools;

Operation instructions and other technical documents and accessories of main components of switchgear.

KYN28A-24
Armored removable AC metal enclosed switchgear

KYN28A-24
Armored removable AC metal enclosed switchgear

Main circuit scheme diagram

Scheme No.	01	02	03	04	05
Primary circuit scheme					
Rated current	630~3150				
components	Primary main electrical				
Vacuum circuit breaker VS1-24	1	1	1	1	1
Current transformerLZZB9-24	2	2	2	3	3
PT JDZ11-20/JDZX11-20					
Fuse XRNP-24 0.5A					
Grounding switch JN15-24			1		
Lightning arrester HY5WZ-32/84			3		
Purpose	Power receiving and feeding	Feeding	Feeding	Power receiving and feeding	Feeding

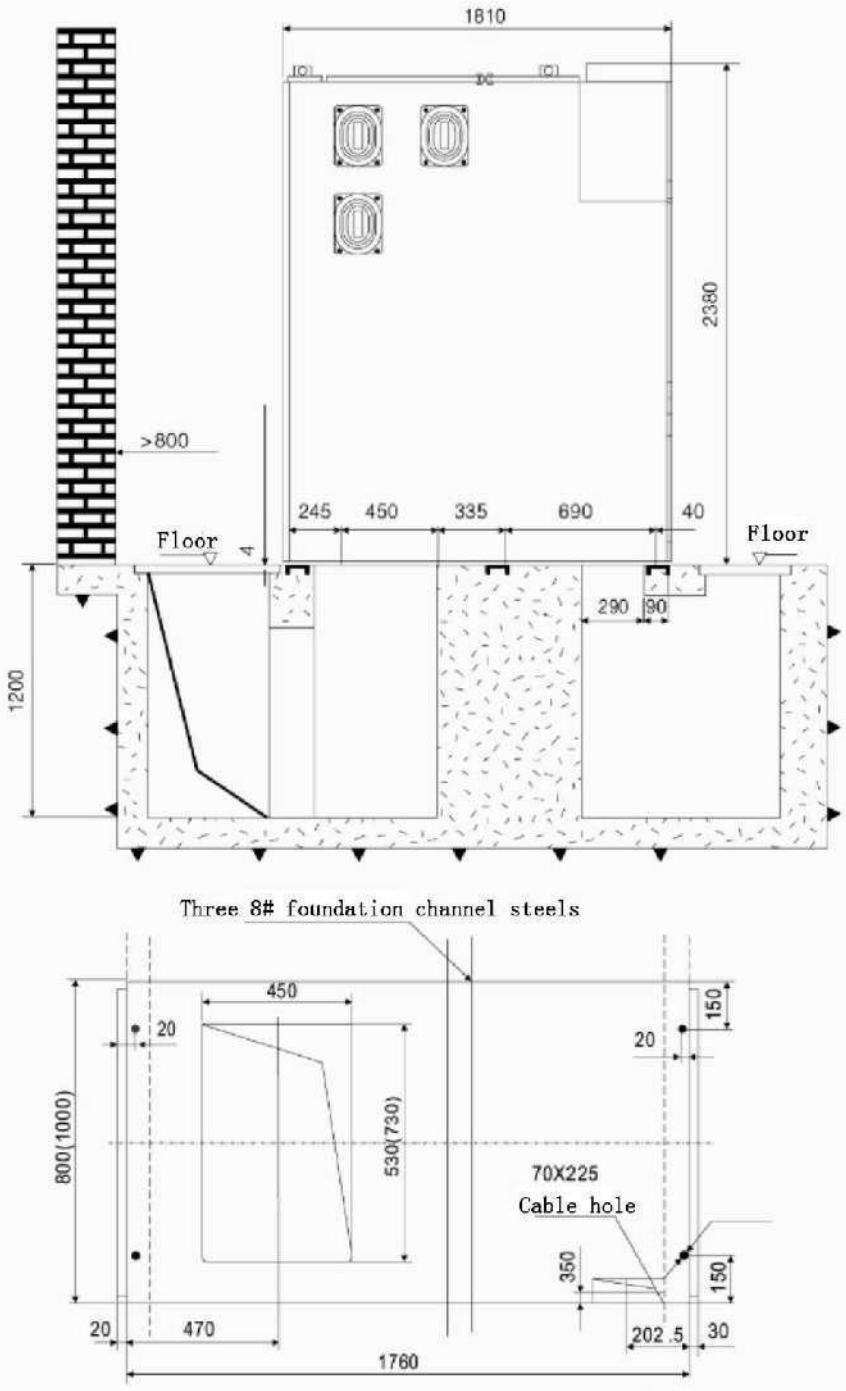
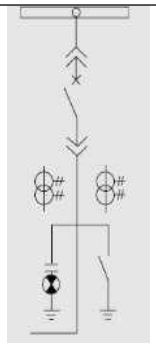
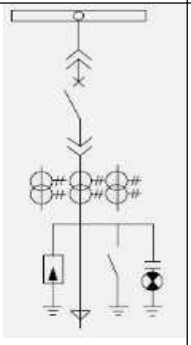
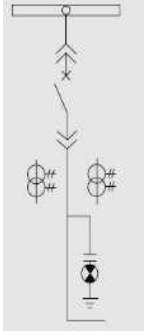
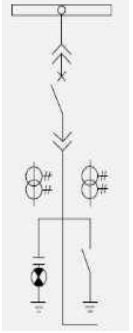
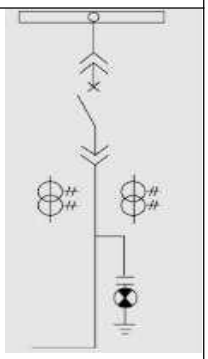
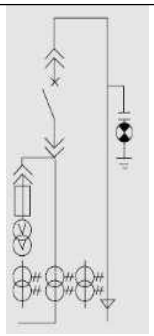
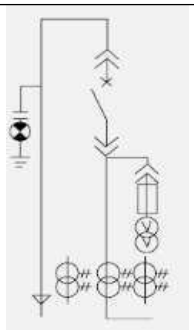
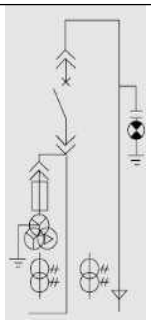
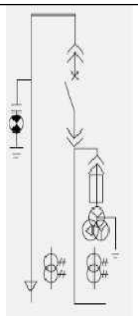
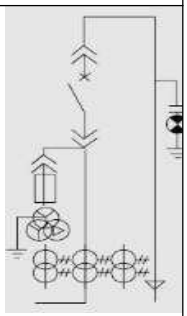
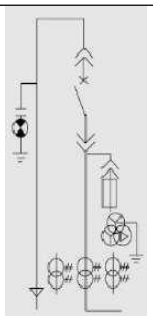
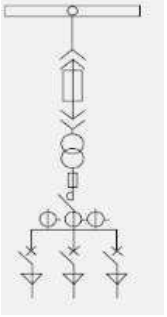
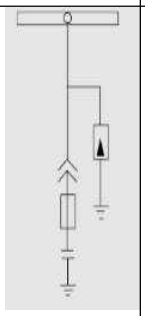
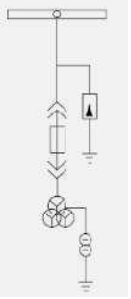
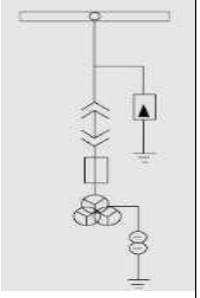


Fig. 2 opening dimensions of switchgear installation foundation and bottom plate

Scheme No.	06	07	08	09	10
Primary circuit scheme					
Rated current	630~3150				
components	Primary main electrical				
Vacuum circuit breaker VS1-24	1	1	1	1	1
Current transformerLZZB9-24	3	2	2	3	3
PT JDZ11-20/JDZX11-20					
Fuse XRNP-24 0.5A					
Grounding switch JN15-24	1		1		1
Lightning arrester HY5WZ-32/84	3				
Purpose	Feeding	Contact (right)	Contact (right)	Contact (left)	Contact (left)

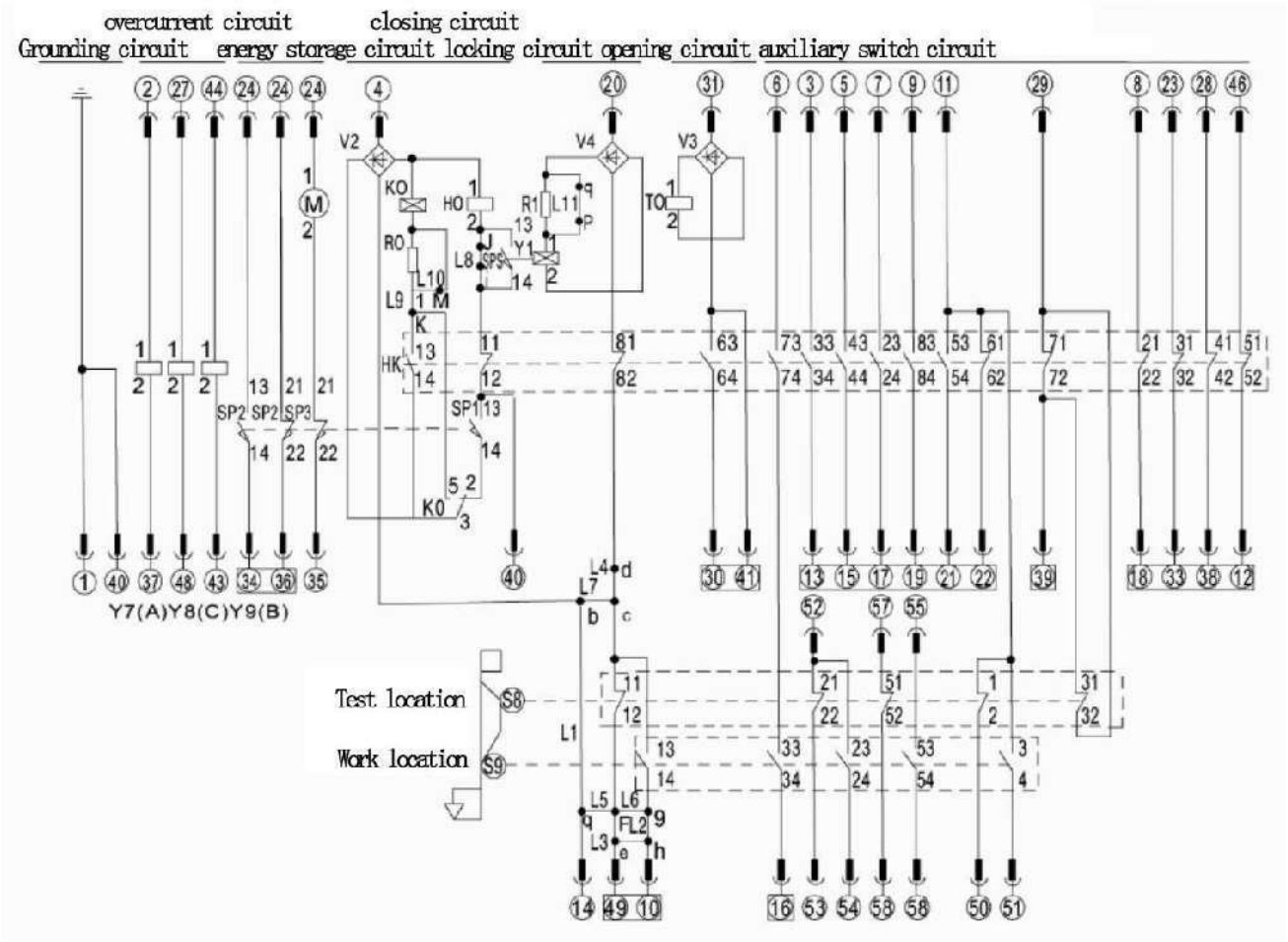
Scheme No.	11	12	13	14	15
Primary circuit scheme					
Rated current	630~3150				
components	Primary main electrical				
Vacuum circuit breaker VS1-24	1	1	1	1	1
Current transformerLZZB9-24	3	3	2	2	3

PT JDZ11-20/JDZX11-20	2	2	3	3	3
Fuse XRNP-24 0.5A	3	3	3	3	3
Grounding switch JN15-24					
Lightning arrester HY5WZ-32/84					
Purpose	Metering+incoming	Metering+incoming	Metering+incoming	Metering+incoming	Metering+incoming

Scheme No.	16	17	18	19	20
Primary circuit scheme					
Rated current	630~3150				
components	Primary main electrical				
Vacuum circuit breaker VS1-24	1				
Current transformerLZZB9-24	3		3		
PT JDZ11-20/JDZX11-20	3		3	4	4
Fuse XRNP-24 0.5A	3	XRNT3	XRNT3	3	3
Grounding switch JN15-24			3	3	3
Lightning arrester HY5WZ-32/84					
Purpose	Metering+incoming	Transformer for Substation	Capacitor cabinet	PT+Lightning arrester	PT+Lightning arrester

KYN28A-24

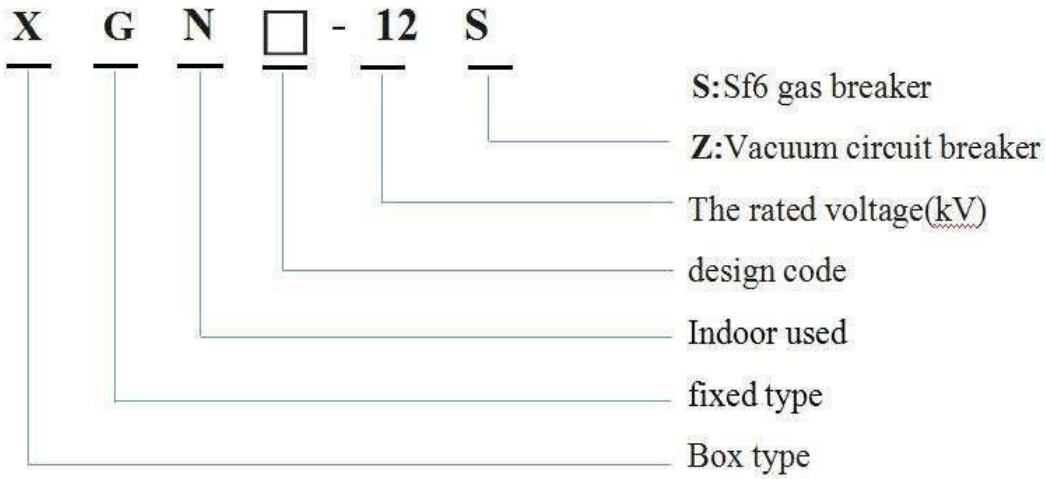
Armored removable AC metal enclosed switchgear



11. XGN15-12/24/40.5(SF6/VCB) KV Box Type Fixed AC Metal Enclosed Switchgear

General Description:

- XGN15-12/24/40.5 unit type air insulated ring main unit with SF6 load switch as main switch, for whole cabinet is suitable for electric distribution automation and compact also expandable metal close switchgear.
- It characters in its simple structure, flexible operation, reliable interlocking and convenient installation etc.,.
- It can take self-produced FLS-12/24 load break switch; also according to user's demand can be assembled with the internationally top-ranking brand LBS or VCB, Operational methods for the main switch inside ring main unit can be either manual or electric power driven.
- It can meet the requirement of "Four Controls" when matched with FTU and RTU. In accordance with the national standard GB3906 and international standardIEC298, protection degreeIP2X.



Service conditions of XGN15-12/24/40.5 Switchgear

Normal service conditions of switchgear as follows:	
Ambient temperature:	
Maximum	+40° C
Maximum 24 hour average	+35° C
Minimum (according to minus 15 indoor classes)	-25° C
Ambient humidity:	
Daily average relative humidity	less than 95%
Monthly average relative humidity	less than 90%
Earthquake intensity	less than 8 degree
Height above sea level	less than 2000m

This product should not be used under conditions of fire, explosion, earthquake and chemical corrosion environments.

Technical specification of XGN15-12/24/40.5 Switchgear

Rated voltage		kV	12	24
frequency		Hz	50/60	50/60
Lightning impulse withstand voltage	Phase to phase, phase to earth	kV	75	125
	Fracture	kV	85	145
1min Power frequency withstand voltage	Phase to phase, phase to earth	kV	42	65
	Fracture	kV	48	79
Rated frequency		Hz	50/60	50/60
Rated current	Main bus	A	630	630
	Branch bus	A	630	630
Short time withstand current	Main circuit	kA	20/3S	20/3S
	Earthing circuit	kA	20/2S	20/2S
Rated withstand current (peak)		kA	50	50
Rated transferring current		A	1700	870
Protection level		Ip2x		
Load break switch mechanical life		Times	2000	3000
Earthing switch mechanical life		Times	2000	2000

Structural drawing of XGN15-12/24/40.5

The cabinet is made up of four parts:

A Bus-bar compartment	B vacuum contactor compartment
C Cable compartment	D Low voltage compartment

Product Features

1. Switch disconnector
Switch unit (375/500 mm)
Switch unit (500 mm)
Switch unit-with/ without earthing switch -right or left outgoing line (375 mm)
Note: Extra components for example lightning arresters or lower earthing switch is optional.

- Fuse-switch protection
Fuse-switch-combination on unit (375/500 mm)
Fuse-switch-combination unit (625 mm)

Fuse-switch-combination unit -right or left outgoing line (375 mm)
Note: Extra components for example lightning arresters or zero sequence CT is optional.

- 3. Circuit-breaker protection

Single-isolation circuit breaker unit(750 mm)
Single-isolation circuit breaker unit right or left outgoing line (750 mm)
Note: 1. For HV SF6 circuit breaker also with many types can be selected. It Is according to client's requirement . (SF1/Schneider etc.) Also Vacuum circuit breaker is also optional.(VD4/S-12/24 or VSC-12/24) 2. Other extra components for example Zero sequence CT is considering after communicated by our company.

- 4. MV metering

Voltage transformers for mains with earthed neutral system (375/500 mm) Current and/or voltage measurement unit (750 mm)
Note: Extra components for example lightning arresters or zero sequence CT is optional.5. Casings (Bus bar Panel)
Connection unit Right/left outgoing line(375 mm)
Incoming cable-connection unit(375 mm)
Incoming cable-connection unit(500 mm)
Note: Other extra components is optional (Disconnecting switch panel, Voltage transformer panel, etc.)

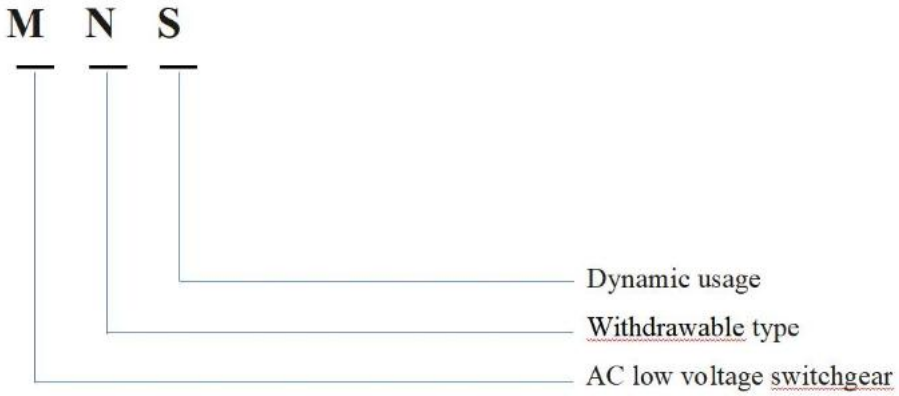
2. Other auxiliary schemas
Disconnector unit (375/500 mm)
MV/LV transformer unit for auxiliaries(375 mm)
Bus-bar earthing compartment(375 mm)

12. MNS Sealed Indoor Low Voltage Withdrawable Switchgear

General Description:

- MNS is a kind of modularized and multifunctional sealed low voltage distributing switchgear. It is used in the low voltage systems below 4000A that need highly reliable operation, such as metallurgy petroleum, chemical industries, mine enterprise and so on.
- Its body structures are flexible. It can install components of different types and specifications in the cubicle according to customers' demands or various service occasions; various kinds of feed units can be fixed in one cubicle or a row of cubicles according to different consumer.
- The product system is designed to provide a high reliability and safety.Performance Standard: IEC60439 GB7251.1.

Type meaning



Technical specification

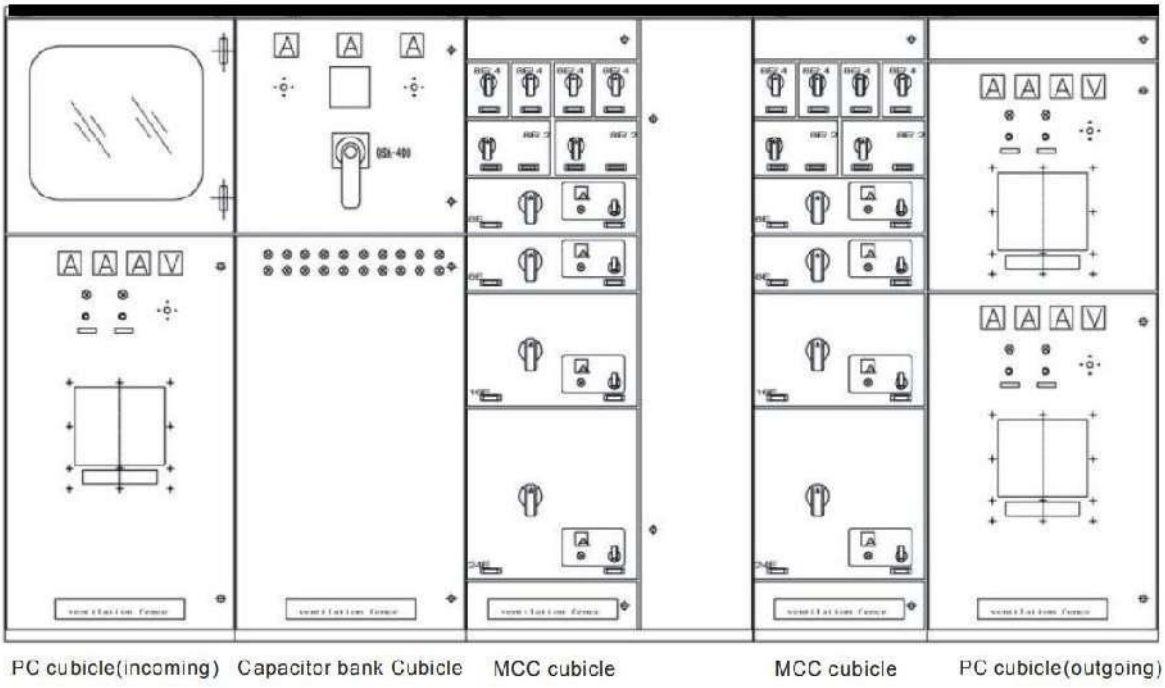
Item	Unit	Data
Rated voltage	V	400 / 690
Rated insulation voltage	V	690/1000
Rated frequency	Hz	50 / 60
Rated main bus bar max. current	A	5500(IP00),4700(IP30)
Rated short time withstand current of main bus bar (1s)	kA	100
Rated short time peak withstand current of main bus bar	kA	250
Rated distribution bus bar current	A	1000(IP30)
Rated short time peak withstand current of distribution bus bar	kA	95
Degree of protection		IP30,IP40

Service conditions

Normal service conditions of switchgear as follows:
Ambient temperature:

Maximum	+40° C
Maximum 24 hour average	+35° C
Minimum (according to minus 15 indoor classes)	-5° C
Ambient humidity:	
Daily average relative humidity	less than 95%
Monthly average relative humidity	less than 90%
Height above sea level at site	less than 1000m
Earthquake intensity	less than 8 degree
Height above sea level	less than 2000m

This product should not be used under conditions of fire, explosion, earthquake and chemical corrosion environments.

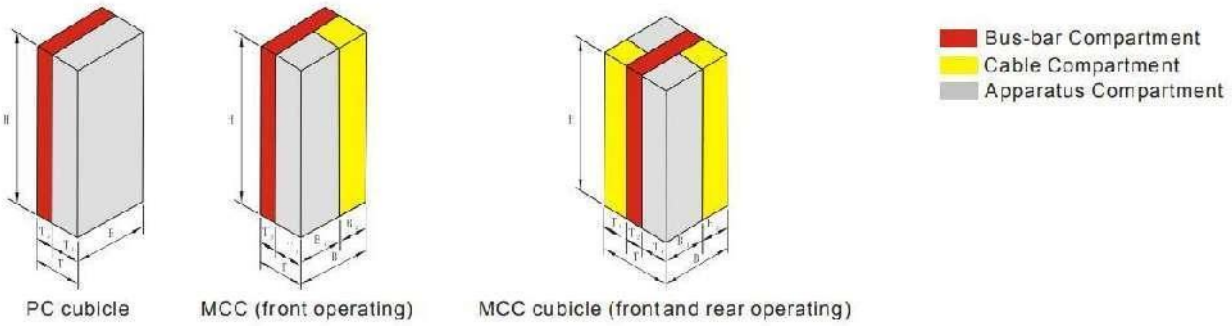


Outline dimension of MNS switchgear：

Normal service conditions of switchgear as follows:	
Ambient temperature:	
Maximum	+40° C
Maximum 24 hour average	+35° C
Minimum (according to minus 15 indoor classes)	-5° C

Ambient humidity:	
Daily average relative humidity	less than 95%
Monthly average relative humidity	less than 90%
Height above sea level at site	less than 1000m
Earthquake intensity	less than 8 degree
Height above sea level	less than 2000m

This product should not be used under conditions of fire, explosion, earthquake and chemical corrosion environments.



1.Dimension of power center (PC) cubicle

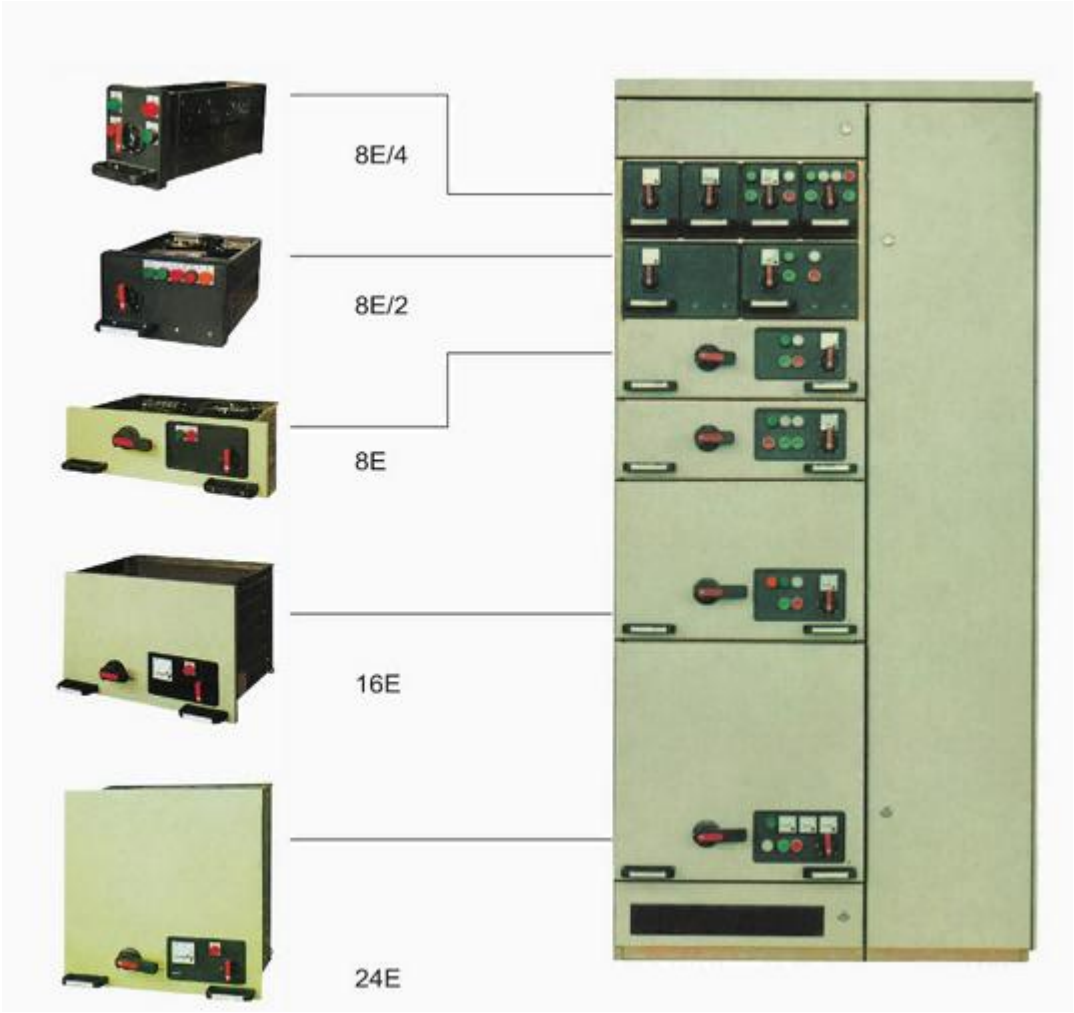
Height H(mm)	Width B(mm)	Depth(mm)			Remarks
		T	T1	T2	
2200	400	1000	800	200	The current through the main bus-bars
2200	400	1000	800	200	630A, 1250A
2200	600	1000	800	200	2000A, 2500A
2200	800	1000	800	200	2500A, 3200A
2200	1000	1000	800	200	3200A, 4000A
2200	1200	1000	800	200	4000A

2.Dimension of motor control center (MCC) cubicle

Height H(mm)	Width(mm)			Depth(mm)			Remarks
	B	B1	B2	T	T1	T2	
2200	1000	600	400	1000/800/600	400	600/400/200	Front operating
2200	800	600	200	1000/800/600	400	600/400/200	
2200	600	600	0	1000/800	400	600/400	
2200	1000	600	400	1000	400	200	Front and rear operating
2200	800	600	200	1000	400	200	

1.PC cubicle（Power distribution center）

2.MCC(Motor control center) drawers are divided into the following 5 types:

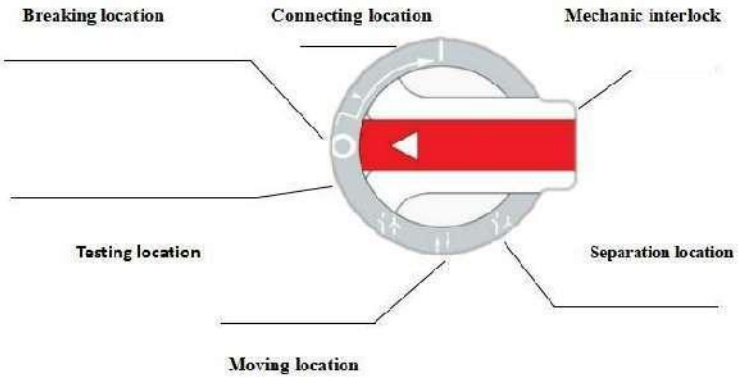


Unit	Height (mm)	Width (mm)	depth (mm)
8E/4	200	150	400
8E/2	200	300	400
8E	200	600	400
16E	400	600	400
24E	600	600	400

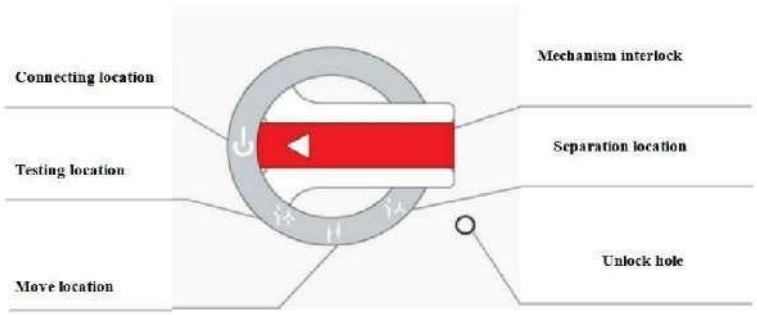
Unit	8E/4	8E/2	8E	16E	24E
Maximum number of units to accommodate	36	18	9	4	3

3.Rear outgoing switch structure

Structure of handle Operation

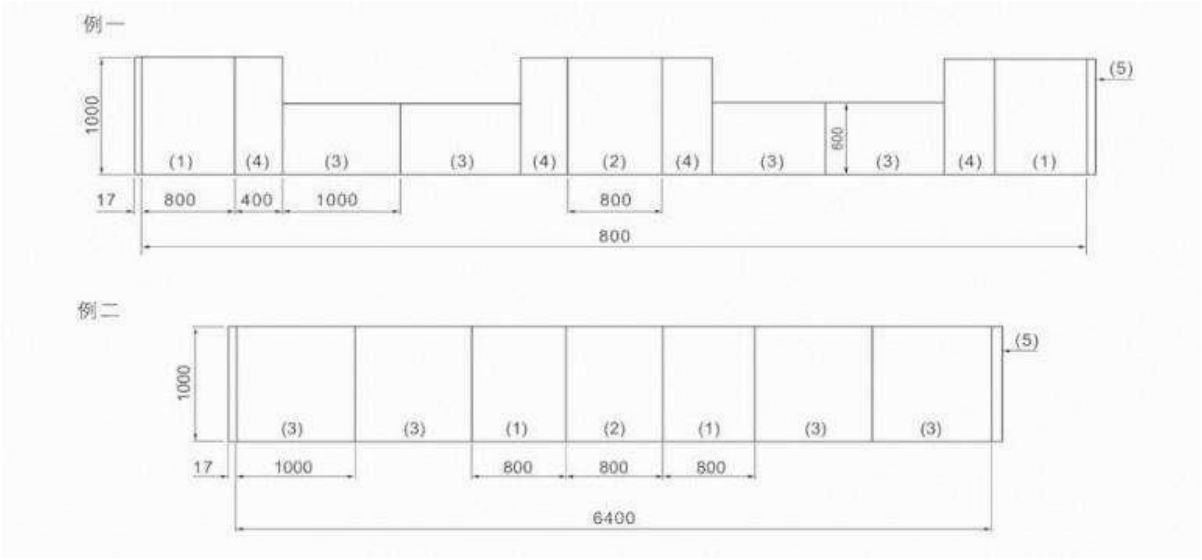


8E/4 and 8E handle operation



8E 16E 24E handle operation

Normal combining form

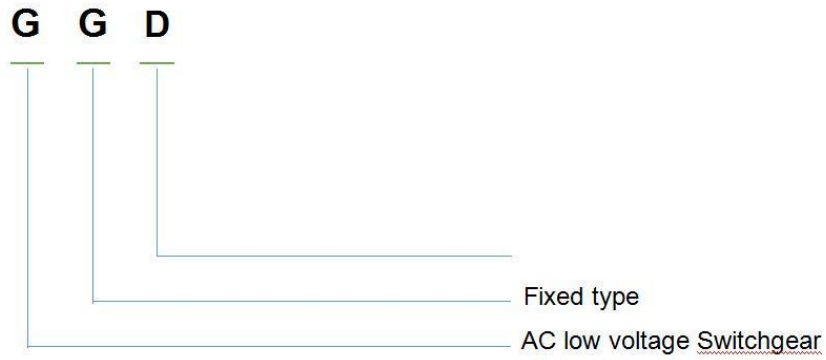

例一
1000
(1)
(4)
(3)
(3)
(4)
(2)
(4)
(3)
600
(3)
(4)
(1)
(5)
17
800
400
1000
800
800
例二
1000
(3)
(3)
(1)
(2)
(1)
(3)
(3)
(5)
17
1000
800
800
800
6400

13. GGD Indoor fixed type Low Voltage Switchgear

General Description:

- The GGD AC low voltage distribution cabinet is applied to certain distribution system of AC 50/60Hz, rated voltage 400V, rated current being 3150A or lower,
- mainly used for power transforming, distributing and controlling of power equipment, lighting and distribution equipment.
- high breaking capacity, well dynamic, thermal stability, flexible electric plant, simple combination, strong series performance and printability, novel structure, high protection rank etc.
- It conforms with technique demand of IEC60439.1 and GB7251.1 low-volt complete set switch equipment etc.

Type meaning



Service conditions

Normal service conditions of switchgear as follows:	
Ambient temperature:	
Maximum	+40° C
Maximum 24 hour average	+35° C
Minimum (according to minus 15 indoor classes)	-5° C
Ambient humidity:	
Daily average relative humidity	less than 95%
Monthly average relative humidity	less than 90%
Earthquake intensity	less than 8 degree
Height above sea level	less than 2000m

This product should not be used under conditions of fire, explosion, earthquake and chemical corrosion environments.

Technical specification

Item	Unit	Data
Rated voltage	V	400 / 690
Rated insulation voltage	V	690/1000
Rated frequency	Hz	50 / 60

Rated main bus bar max. current	A	3150
Rated short time withstand current of main bus bar (1s)	kA	50/80
Rated short time peak withstand current of main bus bar	kA	105/176
Rated distribution bus bar current	A	1000
Degree of protection		IP30,IP40

Structural drawing of GGD switchgear

Remakes: Dimensions of actual structural is usually according to different customer requirements

Normal dimension of GGD switchgear

Product code:	A (mm)	B (mm)	C (mm)	D (mm)
GGD606	600	600	450	556
GGD608	600	800	450	756
GGD806	800	600	650	556
GGD808	800	800	650	756
GGD1006	1000	600	850	556
GGD1008	1000	800	850	756
GGD1208	1200	800	1050	756

Remakes: Dimensions of actual products is usually according to different customer requirements

Product Features

• The cabinet frame is welded by 8 MF cold bending steel, ensure quality of the cabinet body.

• there are 20 mold installation holes, the general coefficient is high

• There are different number of heat emission holes at the upper and lower ends of the cabinet. the sealed cabinet body forms a natural ventilation channel from the bottom up to achieve the purpose of heat dissipation.

• The cabinet door is connected with the cabinet frame by hinges, without adjustment and easy installation. The cabinet surface adopts electrostatic spraying, strong adhesion and good texture.

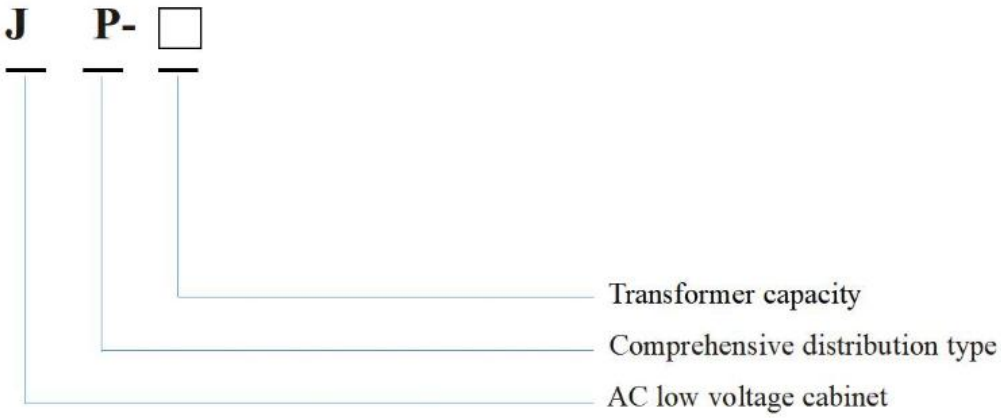
14. JP Integrated Distribution Cabinet

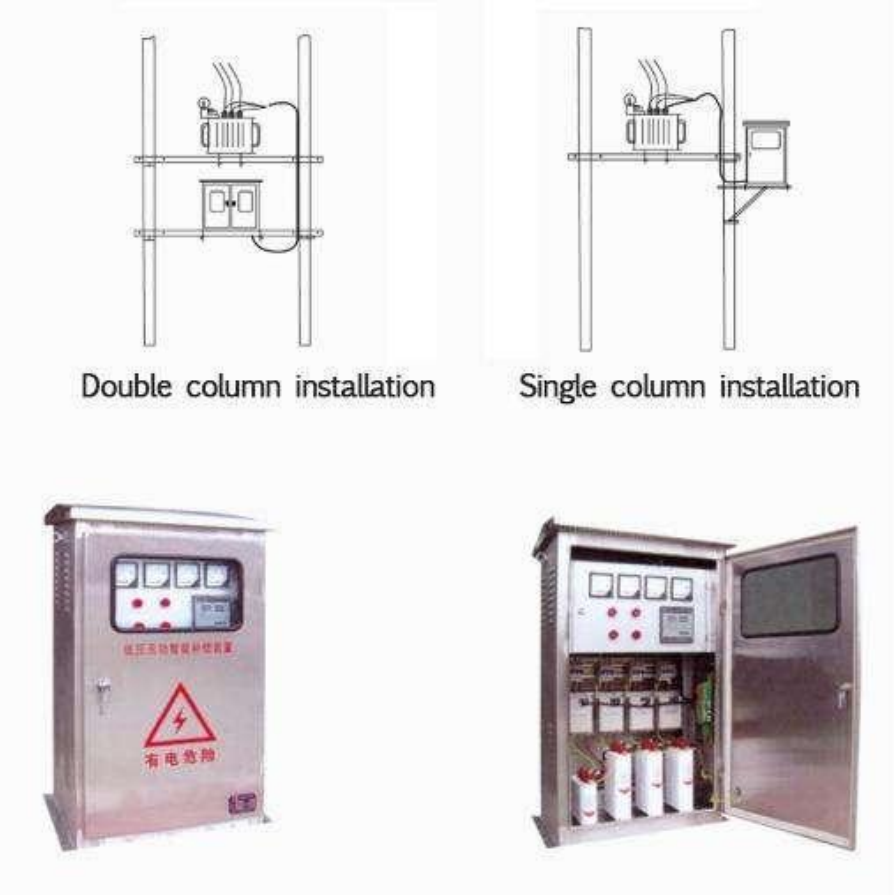
(Including incoming and outgoing circuit, metering, reactive power compensation, remote terminal acquisition and control)

General Description:

- An outdoor complete set of power distribution unit of three-phase AC 50/60Hz and rated voltage of 400V, is applicable to urban and rural power grids, used for control, compensation and metering of output of transformer of 10KV to transformer.
- It realizes load control, meter reading, remote maintenance, anti-electricity theft alarm, payment control of electric charge and other functions to circuit, there is air circuit breaker that is used for breaking loads in the switch chamber;
- Relative compensation chamber is equipped with muti-stage dynamic relative power compensation device that is of surge-free and long service life,
- Automated control, convenient for installation, it cuts down the investment, .
- This outdoor switchboard complies with the standards GB/1.1-2005, GB/15576-2008 . IEC439and so on.

Type meaning





Service conditions of JP type outdoor switchboard

Normal service conditions of switchgear as follows:	
Ambient temperature:	
Maximum	+40° C
Maximum 24 hour average	+35° C
Minimum (according to minus 15 indoor classes)	-25° C
Ambient humidity:	
Daily average relative humidity	More than 50%
Monthly average relative humidity	More than 50%
Earthquake intensity	less than 8 degree
Height above sea level	less than 1000m

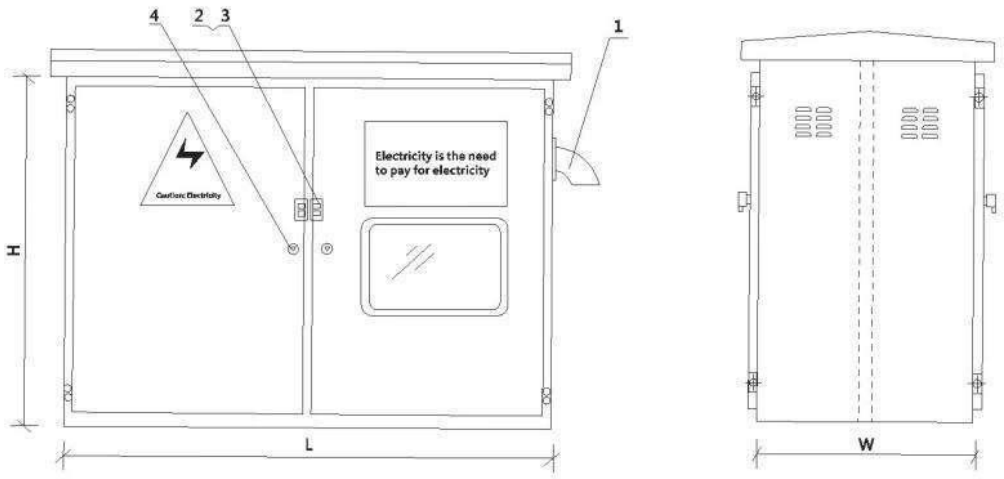
This product should not be used under conditions of fire, explosion, earthquake and chemical corrosion environments.

Technical specification of JP type outdoor switchboard

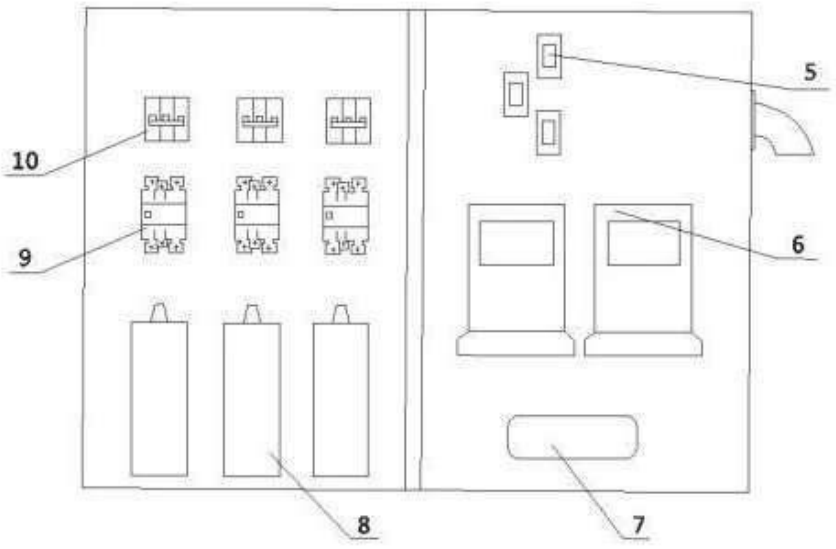
Name	Unit	Parameter
Transformer capacity	KVA	30-400
Rated working voltage	V	AC400
Operating voltage auxiliary	V	AC220, AC380

circuit		
Rated frequency	Hz	50/60
Rated current	A	≤630
Rated leakage current	mA	30-300 Adjustable
Protection class	IP54	

Structural drawing of JP type outdoor switchboard



OUTDOOR BOX SCHEMATIC
(Horizontal)



Internal component arrangement (FRONT)

1、Piple for incoming cable
2、Door lock (outside)
3、Door lock rain box
4、Door lock (inside)
5、Current transformer
6、Meter
7、Junction box
8、Capacitance

Structure features

• The use of honeycomb sandwich structure of stainless steel double-composite panels, flame retardant, environmental protection, thermal insulation, anti-condensation properties

• High overall strength the surface smooth as a mirror, internal mounting beam (board) for the hot dip galvanizing process, to ensure that twenty years does not rust;

• Front casing open, user-friendly operation and maintenance, high elastic around the door inlaid with anti-aging sealing strip, are equipped with every shade of two door locks, Ming lock with attempts to prevent rust storm hood;

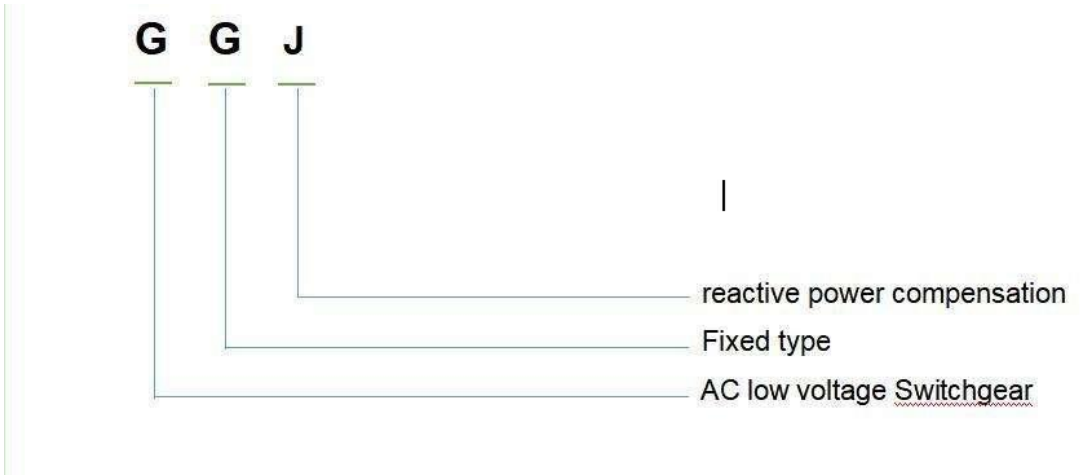
• Closed with a metering chamber seal means; incoming cable box side with rain preventing -foreign bodies through the tube,

• The bottom punch ventilation holes and cable entry hole,top with a duct and screen, waterproof, rust, dust, foreign body functions, protection class: IP54.

15. GGJ low-voltage power distribution reactive power compensation integrated cabinet

Short Description:

- Accordance with the principles of safety, economy, reasonableness and reliability.
- Applicable to city network, rural power network transformation, industrial and mining enterprises, street lighting, residential quarters, etc.
- Applicable to AC 50/60Hz , rated voltage 400V (can be customized according to local national standards), with power distribution, control, protection, Multi-functional outdoor integrated distribution box with reactive power compensation, electric energy metering, etc.can add leakage protection function .
- The product complies with GB7251.1, IEC439 . It is an ideal low-voltage complete set in the current power grid transformation.



Service conditions of GGJ Indoor Low Voltage Switchgear

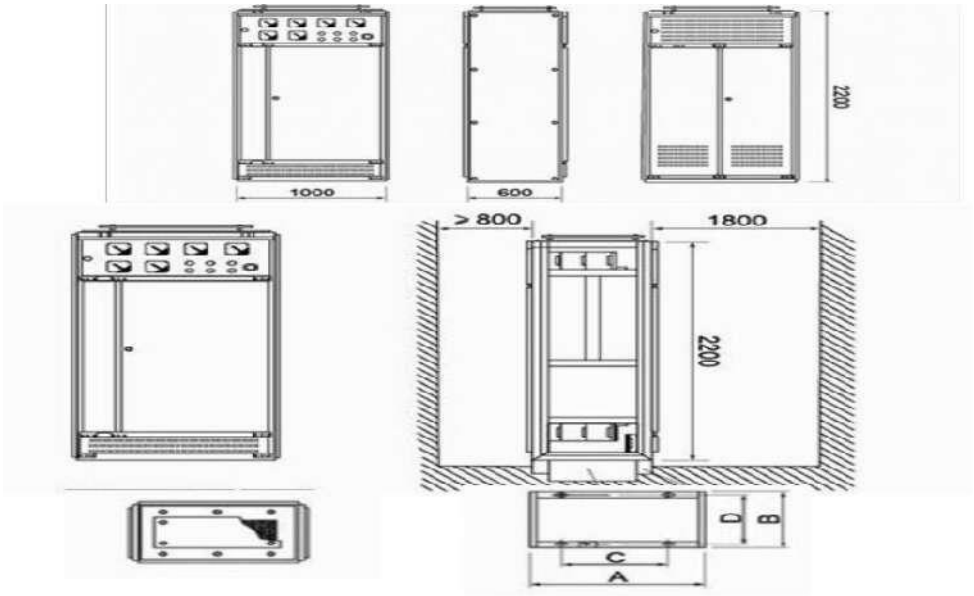
Normal service conditions of switchgear as follows:	
Ambient temperature:	
Maximum	+40° C
Maximum 24 hour average	+35° C
Minimum (according to minus 15 indoor classes)	-5° C
Ambient humidity:	
Daily average relative humidity	less than 95%
Monthly average relative humidity	less than 90%
Earthquake intensity	less than 8 degree
Height above sea level	less than 2000m

This product should not be used under conditions of fire, explosion, earthquake and chemical corrosion environments.

Technical specification of GGJ switchgear

SN	ITEM		Particulars
1	Electrical Data	Rated Voltage	220~690V
2		Rated Frequency	50/60Hz
3		Connection type	3 Phase 4 Wire
4		Rated Capacity	50kvar~5000kvar
5	Capacitors	Type	480V,3 ph,50/60Hz (Cylindrical)
		No.of Steps	≤36 steps
		Configuration	According to capacity
6	Reactors	Install reactors	Optional
		Reactance Rate	7%，14% optional
7	APFC Relay	Function	Automatically step switching
		Steps	36 Stage microprocessor based
8	Switchgear Details	Incomer	HRC Fuse Or MCCB
		Step outgoing	Contactors,Thyristor,IGBT
9	Enclosure Detals	Material	8MF Profile
		Application	Indoor free standing, floor mounted
		Cable Entry	Bottom or Top
		Painting	RAL7035
		Dimensions(mm)	1000*1000*2200
		Protection Class	IP3X

Normal dimension of GGJ switchgear



Normal dimension of GGJ switchgear

Product code:	A (mm)	B (mm)	C (mm)	D (mm)
GGJ 606	600	600	450	556
GGJ 608	600	800	450	756
GGJ 806	800	600	650	556
GGJ 808	800	800	650	756
GGJ 1006	1000	600	850	556
GGJ 1008	1000	800	850	756
GGJ 1208	1200	800	1050	756

Remakes: Dimensions of actual products is usually according to different customer requirements

Product Features

1.The response is timely and prompt, the compensation effect is good, the work is reliable, and the leakage protector can be added according to the user's needs.

2.Protection function: over-voltage, overload, under-voltage, undercurrent, short circuit and other functions.

3. Operation mode: It has two working modes: automatic operation and manual operation.

4. Can increase the power factor of the grid to more than 0.95%.

16. XL-21 floor-type low voltage power distribution switchgear

General Description:

- As a power supply system with AC 50Hz-60Hz, rated working voltage 380-400V, rated working current up to 630A, and breaking capacity up to 15kA,
- It provides power conversion, distribution and control for power distribution equipment such as power, lighting and fans. Can provide overload, short circuit and leakage protection.
- It contain 2 Two installation structure :Indoor box structure (protection grade IP30),Outdoor box structure (protection grade IP65).Easy to install, economical and practical
- It is suitable for power users such as power plants, substations, industrial and mining enterprises, and highway tunnels.

Type meaning

Service conditions of The XL low-voltage distribution box

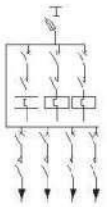
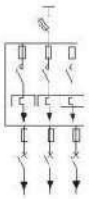
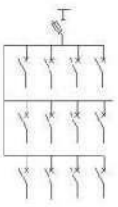
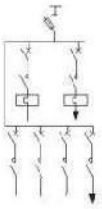
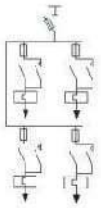
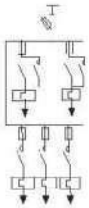
Normal service conditions of switchgear as follows:	
Ambient temperature:	
Maximum	+40° C
Maximum 24 hour average	+35° C
Minimum (according to minus 15 indoor classes)	-50° C
Ambient humidity:	
Daily average relative humidity	less than 90% in indoor (outdoor more than 50%)
Monthly average relative humidity	less than 90% in indoor (outdoor more than 50%)
Earthquake intensity	less than 8 degree
Height above sea level	less than 2000m
the inclination of the equipment with the vertical surface	shall not exceed 5°

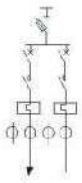
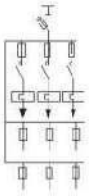
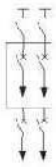
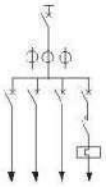
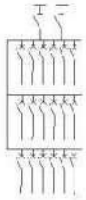
This product should not be used under conditions of fire, explosion, earthquake and chemical corrosion environments.

Main technical:

NO.	Item		Unit	Data
1	Rated operational voltage(V)		V	AC 380(400)
2	Rated insulation voltage(V)		V	660(690)
3	Rated frequency(Hz)		Hz	50(60)
4	Horizontal bus rated current(A)		A	≤630
5	Main bus rated short-time withstand current		kA/1s	15
6	Bus rated peak withstand current		kA	30
7	Bus	Three-phase four-wire system	\	A,B,C,PEN
		Three-phase five-wire system	\	A,B,C,PE,N
8	IP grade	use in indoor	\	IP30
		use in outdoor	\	IP65
9	Dimension		(600~1000)×370(470)×(1600~2000) mm	

Design plan

Scheme	13	14	15	16	17	18
Main circuit plan						

Scheme	19	20	21	22	23	24
Main circuit plan						

Structural Feature

1.Indoor box structure (protection grade IP30)

• The distribution box frame is made of cold-rolled steel plate by bending and welding(Support for custom).

• After spraying process, it has good anti-corrosion performance.

• the internal installation beams and installation boards are made of aluminum-zinc coated or cold-rolled steel plates for galvanizing passivation.

• Single-sided foam glue is attached to the inner edge of the door to prevent direct collision between the door and the box body, and also improve the protection level of the door.

• Both the bottom plate and the top plate of the box can be reserved for cable knock-out holes to facilitate cable entry and exit.

• The side can be equipped with heat dissipation holes or open heat dissipation windows according to user requirements to distribute internal gas and moisture.

• The cabinet can be installed on the floor, wall or embedded according to user requirements.

• The door can be opened with single door or double door for easy maintenance and installation.

2. Outdoor box structure (protection grade IP65)

• The distribution box frame is made of stainless steel plates by bending and welding(Support for custom).

• After outdoor spraying process, it has good anti-corrosion performance.

• The internal installation beams and installation boards are made of aluminum-zinc coated or cold-rolled steel plates for galvanizing passivation.

• Single-sided foam glue is attached to the inner edge of the door to prevent direct collision between the door and the box body, and also improve the protection level of the door.

• If there are secondary components on the panel, a double door structure is adopted. The outer door is a glass door, and the secondary components are installed on the inner door.The operating status of the equipment can be observed without opening the outer door. Cable knock-out holes are reserved on the bottom of the box to facilitate cable entry and exit.

• The side can be equipped with heat dissipation holes or open heat dissipation windows according to user requirements.

• The top is equipped with a rain-proof top cover, and the front lower part of the top cover has a heat dissipation hole to dissipate internal gas and moisture.

• The floor-mounted distribution box is equipped with lifting lugs at suitable positions on the top and both sides of the back of the box for lifting and installation. The bottom plate of the box body is equipped with mounting holes or the foot plates on both sides of the box bottom are installed on the ground.

• The wall-mounted distribution box is equipped with lifting lugs at the bottom of the rear top of the box and at suitable positions on both sides for lifting and installation.

• The door can be opened with single door or double door for easy maintenance and installation.

3. Bus-bar system

• The main bus-bar is supported by insulating supports.

• The insulating support is made of high-strength, high-flame retardant PPO alloy material, with high insulation strength and good self-extinguishing performance.

• The box is equipped with an independent PE protective grounding system and N neutral conductor. The neutral bus bar and the protective grounding bus bar are installed in parallel in the lower part of the box, and there are holes on the PE and N rows. The protective grounding or neutral cables of each circuit can be connected nearby. If the N wire and the PE wire are separated by an insulator, the N wire and the PE wire are used separately. If in a three-phase four-wire system, the neutral bus and the protective grounding bus share the same bus (PEN line).

4. Protective grounding system

Grounding copper blocks are welded on the frame outside and inside the box, which can be connected to the grounding bus inside and outside the box respectively. Ground bolts are welded behind the door and connected to the frame with copper wires. The installation beams in the box and the frame are connected by bolts to ensure the grounding continuity of the entire distribution box.

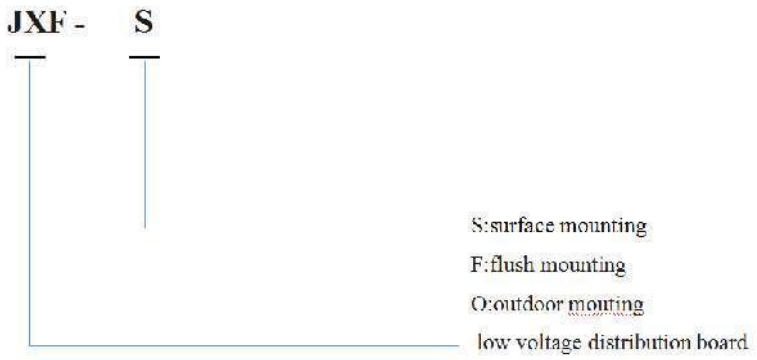
5. Wire entry and exit method

The cable or pipeline entry and exit method is adopted, and the box is equipped with a clamp for fixing the cable.

17. JXF Low Voltage Distribution Board

General Description:

- This distribution board is suitable for three-phase three-wire,three-phase four-wire,three-phase five-wire system of 50/60Hz, 500V or lower, no bigger than 250A loading current.
- It is used to control distribution system, leakage protection, and various control and protection of motor overloading, short-circuit, lacking phase.
- This box has reasonable design, small size, nice appearance, reliable performance, to be widely use in metallurgy, petrol, medical health, navigation, building, malls, school, city constructions.
- Wall-mounted, wall embedded, and outdoor box 3 options

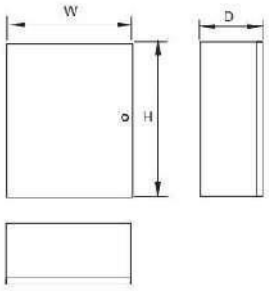


Service conditions of JXF low voltage distribution board

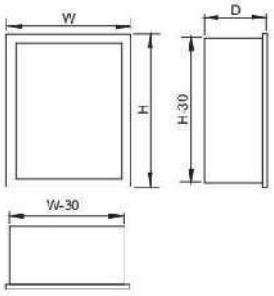
Normal service conditions of switchgear as follows:	
Ambient temperature:	
Maximum	+40° C
Maximum 24 hour average	+35° C
Minimum (according to minus 15 indoor classes)	-5° C
Ambient humidity:	
Daily average relative humidity	less than 95%
Monthly average relative humidity	less than 90%
Earthquake intensity	less than 8 degree
Height above sea level	less than 2000m

This product should not be used under conditions of fire, explosion, earthquake and chemical corrosion environments.

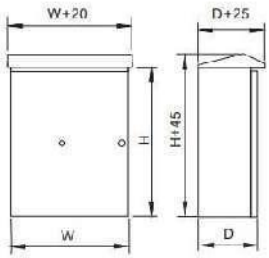
Outline and installation dimensions



JXF (Surface mounting)



JXF (Flush mounting)



JXF (Outdoor type)

JXF Dimension(Support for custom)

Specification	H	W	D
2520/14	250	200	140
3025/14	300	250	140
3025/18	300	250	180
3030/14	300	300	140
3030/18	300	300	180
6040/23	600	400	230
6050/14	600	500	140
6050/20	600	500	200
6050/23	600	500	230
7050/16	700	500	160
7050/20	700	500	200

7050/23	700	500	230
4030/14	400	300	140
4030/20	400	300	200
5040/14	500	400	140
5040/20	500	400	200
5040/23	500	400	230
6040/14	600	400	140
6040/20	600	400	200
8060/20	800	600	200
8060/23	800	600	230
8060/25	800	600	250
10080/20	1000	800	200
10080/25	1000	800	250
10080/30	1000	800	300