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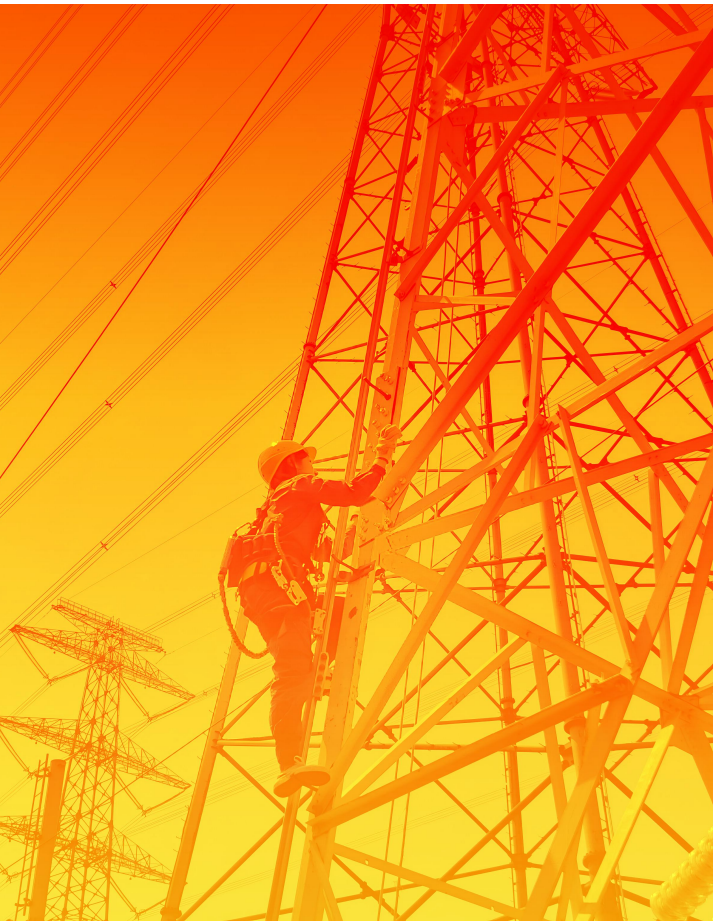
-Switchgear(2)-

Product Catalog

DSJ Electrical Co.,Ltd



About DSJ

Building Power, Building Trust: 42 Years of Excellence

Founded in 1983, DSJ has established itself as a leading force in China's electrical distribution industry, with 42 years of expertise in both medium-voltage and low-voltage electrical products.

As an outstanding enterprise, DSJ boasts independent research, development, production, and sales capabilities, ensuring that we can meet customers' needs with the fastest delivery and the highest level of customization. Our workforce consists of over 300 employees, including 50 senior management professionals, 30 experienced engineers, 8 senior designers, and 5 senior technicians.

We specialize in the manufacturing of distribution, circuit protection, and photovoltaic products that exceed both national and international quality standards. Over the past 40 years, DSJ has provided high-quality, safe electrical products to public facilities, large enterprises, and residential sectors worldwide, with one of the lowest return rates in the industry.

As a well-recognized Chinese brand, DSJ is dedicated to upholding our brand integrity. We adhere to the core philosophy of "Quality First, Customer Priority, and Integrity at the Core," striving to bring premium Chinese power equipment and exceptional service capabilities to customers worldwide.

Core Ideology

Quality First

Customer Priority

Integrity at the Core

40+
Years of Excellence
Established in 1983, DSJ has delivered trusted solutions for over four decades, solidifying its position as a pioneer in electrical equipment.

15,000+
Square Meters of Facility
Strong manufacturing capabilities, with the capacity to produce 8,000 units per month.

$108
Million in Revenue
The continuous growth in sales volume demonstrates the market's recognition of us.

Factory Introduction

DSJ is a financially robust company with a registered capital of **7.84 million** USD and a facility spanning more than **15,000** square meters.

Our production capabilities are supported by **30** units of intelligent product testing and debugging equipment, **50** machine tools, and **6** automated production lines.

DSJ is also home to four innovation laboratories, holding more than **60** national invention patents.

Honors and Certifications

- We are holding more than 60 national invention patents

Invention Patent

Utility Model Patent

- We have been awarded numerous prestigious national-level honors

KYN61-40.5kV

AIR-INSULATED METAL CLAD SWITCHGEAR >

General

KYN61-40.5kV (Z) air-insulated metal-clad withdrawable switchgear (hereinafter as “switchgear”) is a necessary indoor power distribution equipment in 40.5kV 3-phase AC 50/60Hz. It is mainly used to distribute electrical power in power station and substations of mine, industry and electrical power supply system. Also it is used in control, protection and monitoring etc for line circuit as well as frequently operation site. The switchgear meet the requirements of standard IEC62271-200, IEC62271-100 etc.

Main characteristic

1. Cabinet structure adopts assembly type, circuit breaker adopts handcart floor type structure.
2. Fitted with completely new type of composite insulation of vacuum circuit breaker, and has good compatibility and replace simply characteristic.
3. Handcart frame is provided with a screw nut propelling mechanism, which can be easily moved by the hand cart, and can prevent the damage of the pushing structure from the misoperation.
4. All operations can be carried out when the door closed.
5. Main switch, trolley, interlock between switchgear door adopts the mandatory mechanical locking to meet "five protection" function.
6. The space of cable room is ample, and can connect a plurality of cables.
7. The quickly earth switch for grounding and line circuit short circuit.
8. Shell protection class IP3X, when handcart room door opening, protection level IP2X.

Service Conditions

1. Ambient temperature: -10°C~ +40°C, and measuring average RH within 24 hours ≤35°C.
2. Altitude: Not exceed 1000m above sea level.
3. Ambient humidity: Daily average RH ≤ 95%; Monthly average RH ≤ 90%.
4. Earthquake intensity: ≤ Degree 8.
5. Water vapor pressure: Daily average RH ≤ 2.2kPa; Monthly average RH ≤ 1.8kPa.
6. Ambient environment: no fire, explosion danger, serious pollution, chemical corrosion and severe vibration place.

KYN61-40.5kV

AIR-INSULATED METAL CLAD SWITCHGEAR >

Technical Parameters

Vacuum Switchgear mainly technical parameters

No	Description	Unit	Value
1	Maximum system voltage	kV	40.5
2	Rated Voltage	kV	30 33 34.5 36
3	Rated Current	A	1250 1600 2000 3500 4000
4	Rated Frequency	Hz	50/60
5	Rated short-time withstand current	kA	20 25
6	Rated Peak withstand current	kA	50 63
7	Rated power frequency withstand voltage	kV	95/1min
8	Rated impulse lightning withstand voltage	kV	185
9	Rated short circuit duration	s	4
10	Protection level		IP4X

Vacuum Circuit Breaker Main Technical Parameters

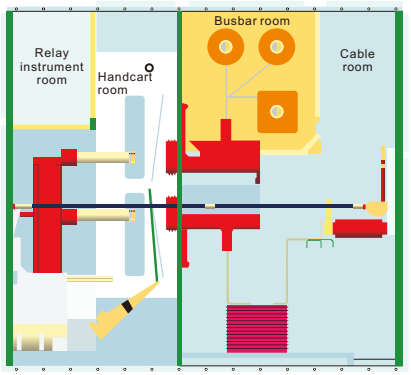
No	Description	Unit	Value
1	Rated Voltage	kV	40.5
2	Rated Current	A	1250 1600 2000 3500 4000
3	Rated Frequency	Hz	50/60
4	Rated short-time withstand current	kA	20 25
5	Rated short circuit break current	kA	20 25
6	Rated Peak withstand current	kA	50 63
7	Rated power frequency withstand voltage	kV	95/1min
8	Rated impulse lightning withstand voltage	kV	185
9	Rated short circuit duration	s	4
10	Open time	ms	30≤t≤60
11	Close time	ms	50≤t≤100
12	Rated short circuit break current numbers		2
13	Mechanical Endurance	Times	10000

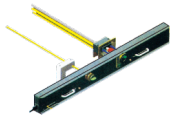
Spring operating mechanical main technical parameters

No	Description		Unit	Value
1	Rated Voltage	Open coil	V	DC220/110 AC220/110
		Close coil		
2	Rated operate current	Open coil	A	0.96(220 V) 1.05(110V)
		Close coil		
3	Spring charge motor		W	230
4	Spring charge motor rated voltage		V	DC220/110 AC220/110
5	Spring charge time		S	≤12

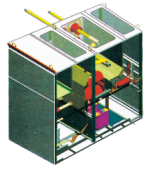
KYN61-40.5kV

AIR-INSULATED METAL CLAD SWITCHGEAR >

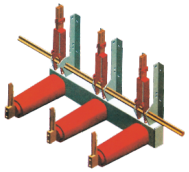




Propulsion interlocking device



KYN61-40.55(Z)
Metal-clad trolly switchgear



Earthing switch

Switchgear Structure Characteristic

The switchgear is designed in accordance with the requirement of metal-clad switchgear under the standard IEC298. The switchgear is composed of the cabinet body and center located withdrawable parts. The cabinet body of the structure is assembly type, and assembled by bolting, and adopting the metal board to divide switchgear into circuit breaker chamber, the main bus chamber, cable chamber and the relay instruments chamber. The protective level of the enclosure is IP3X, while the protective level is IP2X between the compartments, and all the metal structure parts are reliably grounded, and the main loop system of each compartments has independent exhaust pressure release channel.

1. Enclosure and partition

The Enclosure and partition plate of the switchgear is made of cold rolled steel plate after being processed by a numerical control machine and bolting by benting. As a result, the assembled switchgear can ensure the unity of the structural dimensions. Switchgear is divided into circuit breaker chamber, the main bus chamber, cable chamber and the relay instruments chamber, each parts to be separated by a grounded metal partition.

2. Handcart

According to handcart using purpose, it can be divided into the circuit breaker handcart, the voltage transformer handcart, measuring handcart isolation handcart, etc., all kinds of handcart outline dimension is same, the using purpose of handcart with interchangeability. Handcart has test / isolation position and service position, each position is equipped with interlocking devices to ensure that the handcart can not move when it is in above test / isolation position and service position.

3. Circuit Breaker Compartment

The circuit breaker compartment is fitted with the necessary guide rails to accommodate the withdrawable part, which can be moved between the service position and the test position. The isolation valve is automatically opened or closed to ensure staff not touch the charged body. The withdrawable part can be operated when the door of panel closed. through the observation window to see the handcart in the cabinet position, at the same time to see any function signs on the handcart.

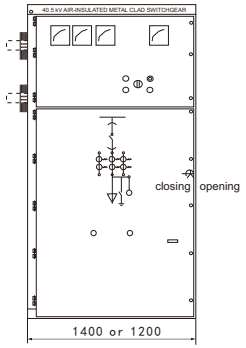
4. Bus Compartment

Main bus are laid in sections from panel to panel by branch small bus and fix contacts box to fix. Across side board of the adjacent cabinet with bus bushing to fix. All buses adopt composite insulation.

KYN61-40.5kV

AIR-INSULATED METAL CLAD SWITCHGEAR >

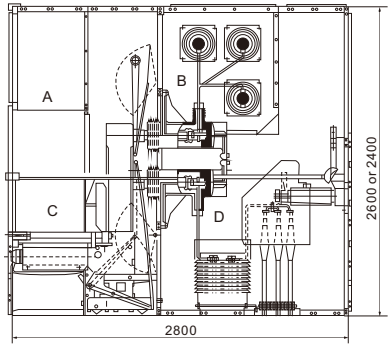
Switchgear Outline Dimension



Outline dimension (W×D×H)mm:

1400 × 2800 × 2600

1200 × 2800 × 2400



Switchgear structure sketch

A. Relay instruments chamber B. Bus chamber

C. Circuit beaker chamber D. Cable chamber

5. Cable Compartment

Cable compartment can be installed PT, earthing switch, lightning arrester and a plurality of cables.

6. Relay Compartment

Relay compartment inner board and panels can be installed to control, protection components, measurement, display instruments, live monitoring indicators etc secondary components.

7. Interlocks device

・Switchgear has reliable interlock device to ensure the safety of operators and equipment:

・When the earthing switch in the off position, the truck can move from the test / disconnected position to the service position and the back door can not be opened to prevent accessing into live space.

・When the truck pulled completely out of cabinet outside or truck in the test / isolation position in the cabinet and the earthing switch interlocking can unlock, the earthing switch can close operation; The truck is in the working position, earthing switch can not be closed to prevent the earthing switch mal-closing with the electrification and prevent the earthing switch in the closed position when the truck moved to the service position.

・The circuit breaker truck in the test / disconnected position or working position, we can operate circuit breaker; after circuit breaker closed, the truck can not move to prevent mal-pushing and mal-pulling circuit breaker under charged load.

・The electric interlocking can be installed between cabinets.

8. Earthing device

In the cable chamber, alone with Φ6×50mm^2 grounding bus, which can run through the adjacent cabinets, and good contact with cabinets.

Switchgear Installation

1.Height of electrical room: ≥4500mm;

2. Distance from cabinets back to wall: ⩾1500mm;

3. Basic frame of flatness: ⩽1 mm/m^2;

4.Baëed on embedded channel higher ground shall not exceed 3mm;

5. Available bolts or welding can be fixed on the foundation;

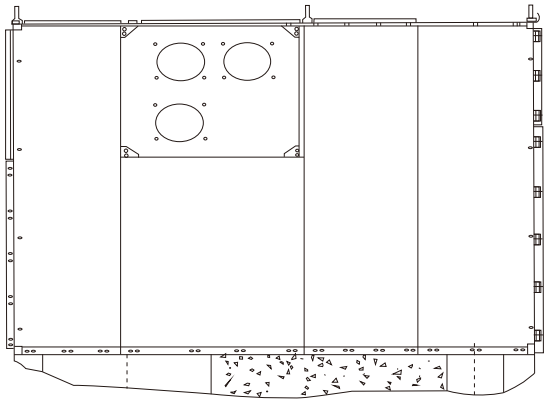
6. Switchgear weight about:1800Kg;

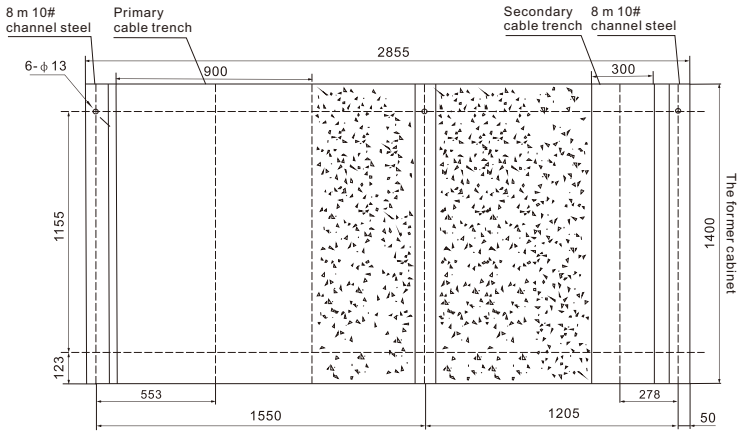
7. Switchgear operating corridor width (single row): ⩾ 3000mm, double row (face to face) ⩾4000mm.

KYN61-40.5kV

AIR-INSULATED METAL CLAD SWITCHGEAR >

Schematic Diagram of Switchgear Installation Foundation





KYN28-12/24kV

AIR-INSULATED METAL CLAD SWITCHGEAR >

General

KYN28A-12/24kV(GZS1) air-insulated metal-clad withdrawable switchgear (hereinafter as “switchgear”) is a necessary indoor power distribution equipment 3-phase AC 50/60Hz. It is mainly used to receive and distribute 3-24kV network electrical and control protection and monitoring to line circuit. Relay chamber panel can install in various types of microprocessor based relay protection device, and can realize the intelligent control system, with remote control, telemetry, remote communication and remote transfer function, through the CAN communication interface with fieldbus control network to prevent the mal-operation of circuit breaker, to prevent pushing and pulling handcart with load, to prevent grounding switch closed with charged, to prevent the grounding switch in the grounding position transmission and to prevent into live space, which is referred to as the "five-anti" function. The cabinet is equipped with VS1 (ZN63), ZN12V vacuum circuit breaker, also can be equipped with imported VD4 vacuum circuit breaker and VC series vacuum contactor. The switchgear meet the requirements of standard IEC62271-200,IEC62271-100 etc.

Service Conditions

1. Ambient temperature: -10°C ~ +40℃
2. Altitude: Not exceed 1000m above sea level
3. Ambient humidity: Daily average RH ≤ 95%; Monthly average RH ≤ 90%.
   Water vapor pressure: Daily average RH ≤ 2.2kPa. Monthly average RH ≤ 1.8kPa.
   There may be condensation, when the temperature plunged with filth, the products apply to the following two conditions more severe than normal.
   (1). Condensation not frequently(average monthly not more than two times) with mild pollution.
   (2). There is no condensation (average yearly not more than two times) with serious pollution.
4. No violent vibration, bumps and vertical gradient not more than 8° of place.

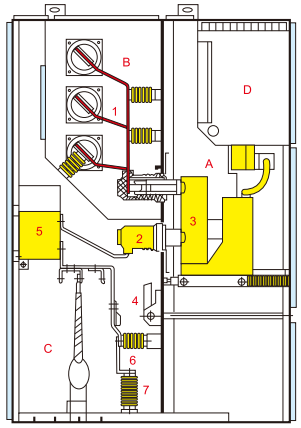
Note:

1. Allow to -30°C to storage and transportation.
2. When the area of altitude exceed 1000m, according to the JB/Z102 «high voltage

electrical appliances using the technical requirements of the altitude», when the altitude is not more than 2000m, low pressure auxiliary equipment does not need to take any measures.

3. When the actual use conditions is different with the above mentioned information, the user and the manufacturer should be negotiated.

Figure 1



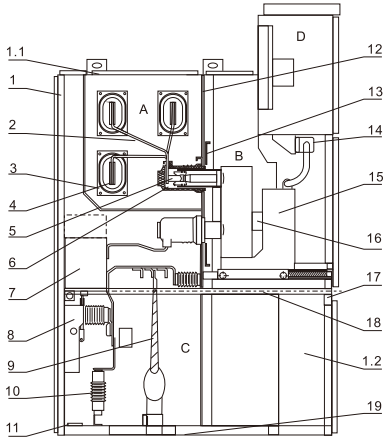
Standard

1. IEC 298
2. DL/T 404

Switchgear Structure

A.Circuit breaker chamber
B. Bus chamber
C. Cable chamber
D. Relay instruments chamber
1. Bus bar
2. Fix contact box
3. Circuit breaker
4. Earth switch
5. Current transformer
6. Capacitive voltage divider
7. Lightning arrester

Figure 2 Switch equipment structure



1. Enclosure
2. Branch small bus
3. Bus bushing
4. Main bus
5. Fix contact device
6. Fix contact box
7. CT
8. Earth switch
9. Cable
10. Lightning arrester
11. Grounding main bus
12. Loading and unloading type partition
13. partition(valve)

A. Bus chamber
B. Circuit breaker truck chamber
C. Cable chamber
D. Relay instruments chamber
1.1 pressure relief device
1.2 Control small wire slot
14. Secondary plug
15. Circuit truck
16. Heater
17. Draw out type horizontal partition
18. Earthing switch operation mechanism
19. Bottom plate

The switchgear is composed of a fixed body and a withdrawable part (the handcart) (switchgear structure shown in Figure 2), switchgear enclosure and function modules are using aluminum-clad galvanized steel sheet to bolt together. The protection level of the switchgear enclosure is IP4X, while the protection level is IP2X between the partition boards and

KYN28-12/24kV
AIR-INSULATED METAL CLAD SWITCHGEAR >

circuit breaker door.

KYN28A-12 type switchgear could match VS1, ZN 12V type vacuum circuit breaker handcart and VD4 vacuum circuit breaker handcart and ABB manufactured VC series vacuum contactor, switchgear can be installed to back-to-back arrangement. The switchgear installation and commissioning can be operated in the front, so the switchgear can be mounted against the wall, the biggest advantage of againsting the wall can save area, and can also off wall installation, namely double maintenance type, the two of internal structure layout is not uniform, it has the advantages of convenient maintenance.

Enclosure and Partition

The enclosure and partition of the switchgear is made of top quality imported aluminum-clad galvanized steel sheet through multiple edge-folding processing with CNC machine tool. The assembled switchgear could keep uniform in dimension, and it has high corrosion resistance and oxidation resistance and higher mechanical strength than equal steel sheet. The switchgear is divided to handcart chamber (circuit breaker chamber), bus chamber, cable chamber and relay instrument chamber (LV chamber) each unit enclosure are independently earthing.

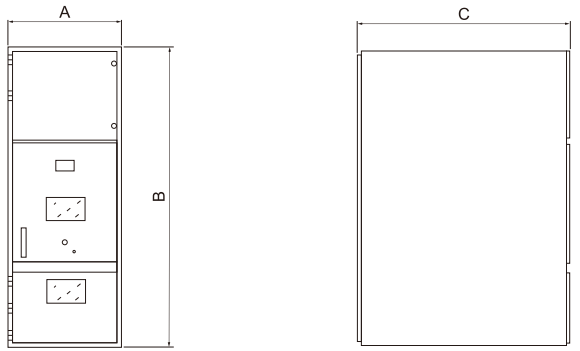
Cabinet Overview

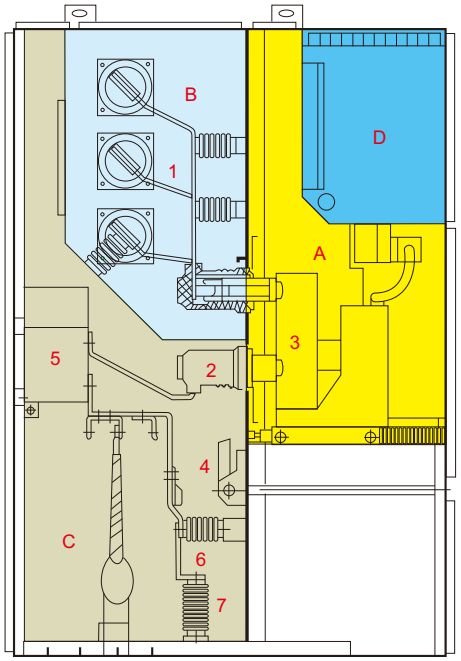
The enclosure and partition of the switchgear is made of top quality imported aluminum-clad galvanized steel sheet or steel sheet through multiple edge-folding processing with CNC machine tool. The assembled switchgear could keep uniform in dimension. Aluminum-clad galvanized steel sheet has a strong corrosion resistance and oxidation resistance, and higher mechanical strength than qual steel sheet. The switchgear is divided to handcart chamber (circuit breaker chamber), bus chamber, cable chamber and relay instrument chamber (LV chamber) each unit enclosure are independently earthing. The door of switchgear are using electrostatic spraying to make the surface with the advantage of anti impact, corrosion resistance, beautiful appearance (color can be set by the user) etc..

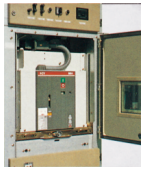
Outline Dimension

Height(B)		2300mm
Width(A)	Branch bus current less than 1600A, short circuit break current at 31.5kA	800mm
	Branch bus current more than 1600A	1000mm
Depth(C)	Cable inlet and outlet	1500mm
	Overhead inlet and outlet	1660mm
Weight(kg)	800~1200	

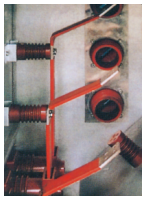
Switchgear Outline Dimension Diagram



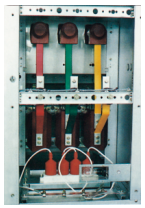




A Truck



B Bus chamber



C Cable chamber

A Handcart

The truck frame series adopts thin steel plate by CNC machine after processing by riveting, welding to make it. According to the use of handcart, which can be divided into circuit breaker handcart, voltage transformer handcart, isolator handcart, metering handcart, etc.. The handcart with same purpose could convenient to exchange. The handcart has the isolation position, the test position and the work position in the cabinet, each position is provided with the positioning device, so as to ensure that the handcart can not move freely when the position is in above, while moving handcart, it must be unlocked.

B Bus room

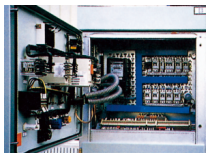
The bus bar is led from one switchgear to another switchgear by branch bus bar and static contact box to fix. The flat branch bus bar is connected with the static contact box and main bus bar by bolts, and it does not need any other wire clip or insulator connection. When the user and the special needs of the project, the busbar connection bolts can be insulated and end cap packaging. When the bus across clapboard of the switchgear by bus bushing to fix. If an internal fault arc occurs, the accident can be limited to extend to the adjacent panel and the mechanical strength of the busbar can be ensured.

C Cable room

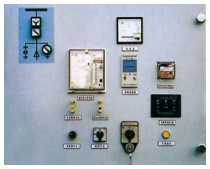
An cable room could install current transformer, grounding switch, arrester and cable, and at the bottom of the preparation of slotted removable aluminum plate to ensure the construction site conveniently.

KYN28-12/24kV

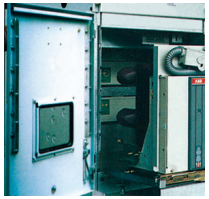
AIR-INSULATED METAL CLAD SWITCHGEAR >



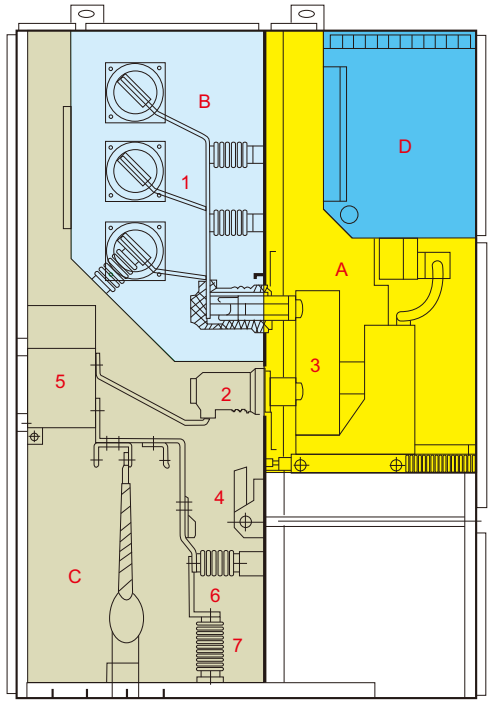
D relay instrument room instrument room door open, instrument room inner view.



D relay instrument room instrument room door close, instrument room front view.



Lock structure



D Relay instrument room

The relay instrument room is used to install all kinds of relays, instruments, signal indication, operation switch and other components. In addition, according to user requirements for adding a small bus room in the top of the instrument room, and can lay of sixteen loops controlling small bus.

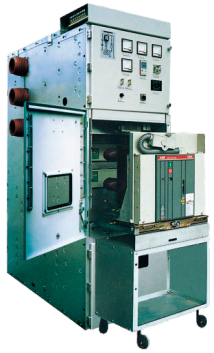
Pressure relief device

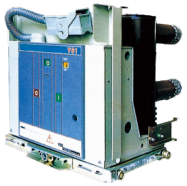
A pressure relief device in the upper handcart rooms, bus room and cable room, when the circuit breaker or main bus, cable indoor occur internal fault arc, with the appearance of arc, internal pressure of switchgear rises, and reaches a certain pressure, the pressure relief device at the top of the metal plate will be opened automatically, and release the pressure and excretion of gas to ensure the safety of operators and switchgear.

Lock structure

Connection between the door and the cabinet with lock structure, and with the lifting mechanism to make it more convenient for opening the door, when medium door is in the closed state, which is connected with a strength of the cabinet body, strengthens the ability to effectively combat internal arcing fault.

VS1 Vacuum Circuit Breaker





VS1 Vacuum Circuit Breaker

VD4 Vacuum Circuit Breaker

Overview

VS1 vacuum circuit breaker is a kind of advanced product developed in domestic, its shape and operating principle are similar to VD4. VS1 type vacuum circuit breaker with closed insulation form, main insulation cylinder and inner and outer skirt, the creepage distance to meet the requirements of DL standards.

VD4 vacuum circuit breaker

VD4 vacuum circuit breaker and handcart are ABB products, it is currently the world's most advanced products, the circuit breaker and the cabinet is used both for KYN withdraw type. It is not only convenient to operation, observation, but also facilitate the circuit breaker exit, transfer, maintenance. Due to the special design of the VD4 vacuum circuit breaker, this ensures that the same specifications of the handcart could exchange. Circuit breaker moving is driven by a lead screw to push mechanism in cabinet, so that the circuit breaker is very reliable.

Avoid Misoperation Interlocking Device

The switchgear has reliable interlock device, which provides reliable safety and protection for operators and equipment, its function as follow:

1. When the grounding switch is in open position, the handcart can move from the test position to service position.

2. The handcart of the circuit breaker has been fully engaged in the test or service position before operation.

3. Handcart is in the service position, the secondary plug is locked and can not be removed.

4. The grounding switch is closed, the handcart cannot from the test position move to service position.

5. Grounding switch can only be operated when the handcart is in the test position or isolated position. The switchgear can be equipped with an electromagnet locking mechanism in the grounding switch operating mechanism to improve the reliability to prevent high voltage charged and misoperation grounding switch. Its order can be according to the user's needs.

Secondary Plug and Handcart Position Interlock

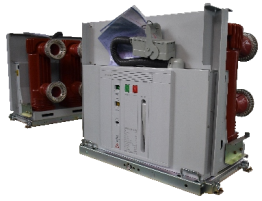
The secondary wires of the switchgear is connected with the secondary of the handcart through the manual secondary plug. The movable contact of the secondary plug is connected by the handcart and a nylon corrugated telescopic pipe, and the secondary static contact seat is arranged on the upper right side of the handcart compartment of the switchgear. Handcart is only in the test position and then can plug and remove secondary plug. When the handcart is in the service position, the secondary plug is locked and can not be removed, because of the interlocking mechanism.

Grounding device

In a separate cable room install 8 x 40mm grounding bus bar, this row can run through the adjacent cabinet and good contact with cabinet, this ground row directly grounding for components using, at the same time, as the whole cabinet with aluminum-clad galvanized steel sheet combining together, so that the entire cabinet are in good grounding state to ensure the safety operator touching cabinet.

KYN28-12/24kV
AIR-INSULATED METAL CLAD SWITCHGEAR >

EP High Voltage Sealed Type Vacuum Circuit Breaker



Overview

EP series high voltage sealed type vacuum circuit breaker is a kind of vacuum interrupter and its conductive connecting piece, which is made up of the environment resin by special process, and installed on the VSL mechanism is a third vacuum circuit breaker.

EP series high voltage sealed type vacuum circuit breaker is a kind of vacuum interrupter and its conductive connecting piece, which is made up of the environment resin by special process, and installed on the VSL mechanism is a third vacuum circuit breaker.

Main Technical Characteristics

1. Application of miniaturized ultra low resistance vacuum interrupter.
2. Solid sealed pole mounted end double skirt designation.
3. High reliability, arc free maintenance.
4. Miniaturization design, phase distance can be reduced by 30-60mm.

Transport and Storage

Switchgear in the transport and storage process to pay attention to the following points:

1. Do not turn over, upside down and suffered severe vibration, to prevent closing to fire.
2. Should prevent rain so as to avoid product moisture.
3. Do not disassemble products and components.

Switchgear Installation

1. Switchgear installation size and the basic installation size, see figure.

2. Separate cabinet, cabinet corridor to 2.5 meters is appropriate. Double arrangement layout, the operation of the corridor in front panel to 3 meters is appropriate.

3. According to the needs of the project and the drawings indicate that the switchgear will be connected to their specific location, if a row of longer switchgear arrangement (for more than 10 units), combining cabinet work should start from the central.

4. When the switchgear has been completely combined (splicing), when available M12 anchor bolts with the base frame connected by welding or welding foundation.

Documents and Materials

Complete set to provide the following documents

1. Product certificate.
2. Product packing list.
3. Product factory test report.
4. Product manual instruction.
5. Equipment list.
6. Secondary wiring diagram.
7. The products are supplied according to the catalog and equipment list;
8. Handcart operating handle, grounding switch operation handle and handcart transport vehicle (contract units below 10 units, each 5 units provides one set, more than 10 units, each increase of 10, plus 1 sets).

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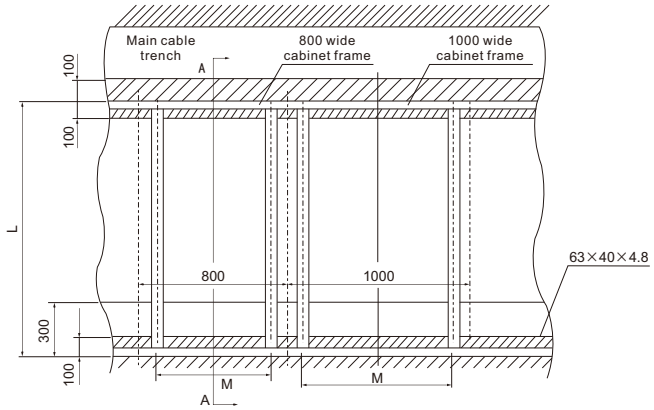
AIR-INSULATED METAL CLAD SWITCHGEAR >

Schematic Diagram of Switchgear Installation

Width (mm)	Depth (mm)	M (mm)	L (mm)
800	1500 cable	630	1450
	1660 overhead		1610
1000	1500 cable	830	1450
	1660 overhead		1610

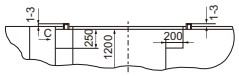


Front panel

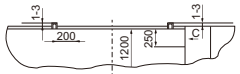
Schematic Diagram of Switchgear Installation Foundation

Width (mm)	Depth (mm)	L1 (mm)	L2 (mm)
800	1500 cable	530	630
	1660 overhead		
1000	1500 cable	730	830
	1660 overhead		

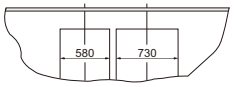
A-A rotary switchgear off wall installation



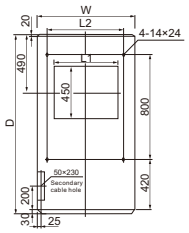
A-A rotary switchgear against wall installation



C direction view



Back panel



Front panel

KYN28-12/24kV

AIR-INSULATED METAL CLAD SWITCHGEAR >

Technical Parameter of Switchgear

No	Name		Unit	Parameter		
1	Insuation level	Rated voltage	kV	3.6	7.2	12
		1minpower frequency withstand volatge	kV	24	32	42
2	Lightning impulse withstand voltage (full wave)		kV	40	60	75
3	Rated frequency		Hz	50/60		
4	Rated current		A	630, 1250, 1600, 2000, 2500, 3150,4000		
5	4s short time withstand current		kA	20, 25, 31, 31.5, 40, 50		
6	Rated peak withstand current		kA	50, 63, 80, 100, 125		
7	Protection level			Enclosure IP4X, partition of each compartment is IP2X		

Technical Parameter of VSI、ZN12V、and VD4 Vacuum Circuit Breaker

No	Name		Unit	VS1 ZN12V	VD4
1	Insuation level	Rated voltage	kV	12	
		1min power frequency withstand volatge	kV	42	
2	Lightning impulse withstand voltage (full wave)		kV	75	
3	Rated frequency		Hz	50/60	
4	Rated current		A	630, 1250, 1600, 2000, 2500, 3150,4000	
5	Rated short circuit break current		kA	20, 25, 31, 31.5, 40, 50	
6	4s short time withstand current		kA	20, 25, 31, 31.5, 40, 50	
7	Rated peak withstand current		kA	40, 50, 63, 80, 100, 125	
8	Rated operate sequence			O—0.3S—CO180S—CO	
9	Rated short circuit break current ≥ 40kA, operation sequence			O—180SCO—180S—CO	
10	Closing sequence			≤ 70	≈ 60
11	Open sequence			≤ 50	≤ 45
12	Arcing time			≤ 15	≤ 15
13	Break time			≤ 65	≤ 60

BRSM6-12/24/40.5kV

MODULE TYPE RMU SWITCHGEAR >

Summary

BRSM6-12/24/40.5kV series SF6 ring main unit, load break switch cabinet is a new generation of switching equipment based on SF6 load switch. The products are widely used in the power supply loop or double radiation power supply system for its excellent performance and compact design and extension design concept for the purpose of making and breaking load current and overload current, can also be used for making and breaking no-load long line, no-load transformer and the capacitor etc.. The switch device adopts high performance load break switch and current limiting fuse combination, which can replace the circuit breaker, that is, load break switch bears making and breaking kinds of load current, and limiting fuse bears greater breaking of overload current and short-circuit current.

BRSM6-12/24KV unit SF6 ring main unit is SF6 switch as the main switch and the entire unit adopts air insulated, suitable for power distribution automation, both compact and expandable metal enclosed switchgear, which has the characteristics of simple structure, flexible operation, convenient installation, reliable interlock etc, providing satisfactory solutions both a variety of application occasions and different user requirements. The adopting of sensor technology and the latest protection relays, coupled with advanced technical performance and easy and flexible assembly solutions, which can fully meet the changing needs of the market. The main switch XGN unit type SF6 ring main unit separately adopts FLN36D type or ABB produced SFG type SF6 load break switch; it can also be assembled according to the needs of users with the highest technical level of contemporary international Ukraine BP series permanent magnetic vacuum circuit breaker or ABB produced HD4 type SF6 circuit breaker or equipped with the our company production of RVM-12 type vacuum circuit breaker with permanent magnetic actuator. There are two kinds of operation modes of the main switch in the ring main unit: manual and electric. Attaching with FTU, RTU, which can meet the requirements of "four remote". The switchgear meet the requirements of standard IEC62271-200, IEC62271-100 etc.

BRSM6-12/24/40.5kV

MODULE TYPE RMU SWITCHGEAR >

Service Conditions

1. Altitude: Not exceed 2500m above sea level.
2. Ambient temperature:-25℃ ~ +45℃.

   the highest temperature is not exceed25℃.
3. Ambient humidity: Daily average RH ≤ 95%.

   Monthly average RH ≤ 90%.
4. Earthquake intensity: ≤ 8°.
5. No flammable, explosive, no serious pollution.

   No chemical corrosion and severe vibration.

Main Technical Parameter

No.	Item		Unit	Parameter			
1	Rated voltage		kV	12	24	33	40.5
2	Rated current		A	630/1250*			
3	Rated frequency		Hz	50/60			
4	1min Power frequency withstand voltage	Phase to phase, phase to earth	kV	42	55	80	95
		Fracture		48	65	95	110
5	Lightning impulse withstand voltage	Phase to phase, phase to earth	kV	75	125/150	170	95
		Fracture		85	150/160	185	215
6	Short time withstand current	Main circuit	k	25/2s			
		Earthing circuit		25/2s			
7	Rated withstand current (peak)		kA	63			50
8	Rated transferring current			1300-1700			
9	Rated load circuit making current			630			
10	Rated cable(line) charging breaking current			50/10			
11	No load transformer breaking current			20			
12	Cable charge breaking current in earthing fault			100			80
13	Rated short circuit breaking current (peak)		kA	20**			
14	Rated short circuit making current (peak)		kA	63			50
15	Protection level			IP3X			
16	Load break switch life		Times	5000			
17	Earthing switch life		Times	5000			

BRSM6-12/24/40.5kV

MODULE TYPE RMU SWITCHGEAR >

Outline dimension

		12kV	24kV
Height(mm)	Cabinet	1600 (1800)	2000
Width(mm)	Cabinet	375\500\750	650(1000)
Deepth(mm)	Cabinet	840	1200
Weight(kg)	130~450		

A Bus room

The bus bar is led from one switchgear to another switchgear by branch bus bar and static contact box to fix. The flat branch bus bar is connected with the static contact box and main bus bar by bolts, and it does not need any other wire clip or insulator connection. When the user and the special needs of the project, the busbar connection bolts can be insulated and end cap packaging. When the bus across clapboard of the switchgear by bus bushing to fix. If an internal fault arc occurs, the accident can be limited to extend to the adjacent panel and the mechanical strength of the busbar can be ensured.

B Cable room

An cable room could install current transformer, grounding switch, arrester and cable, and at the bottom of the preparation of slotted removable aluminum plate to ensure the construction site conveniently.

C Relay instrument room

The relay instrument room is used to install all kinds of relays, instruments, signal indication, operation switch and other components. In addition, according to user requirements for adding a small bus room in the top of the instrument room

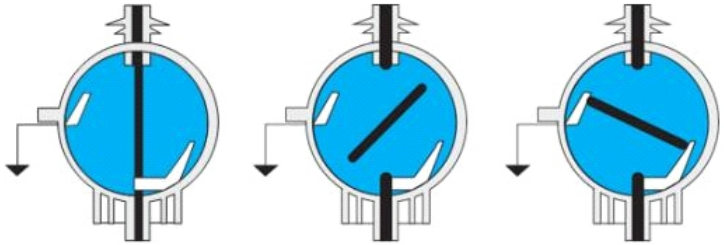
Pressure relief device

A pressure relief device in the upper circuit breaker rooms, bus room and cable room, when the circuit breaker or main bus, cable indoor occur internal fault arc ,with the appearance of arc, internal pressure of switchgear rises, and reaches a certain pressure, the pressure relief device at the top of the metal plate will be opened automatically, and release the pressure and excretion of gas to ensure the safety of operators and switchgear

BRSM6-12/24/40.5kV

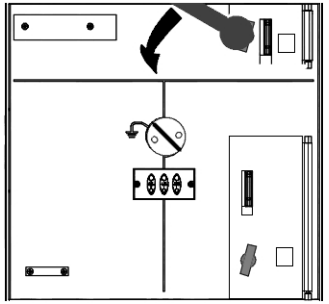
MODULE TYPE RMU SWITCHGEAR >

Structure & Principle

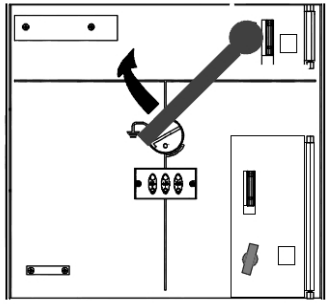


On position　　Off Position　　Grounding Position

Main Technical Parameter

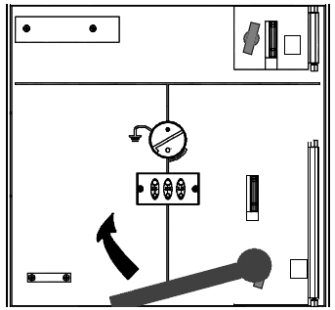


Operate the grounding switch when switch off

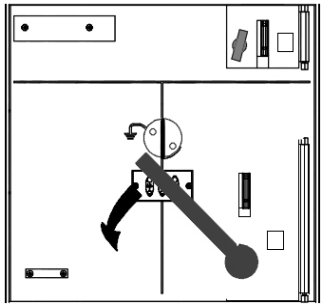


Switch when switch onOperate the grounding

Main switch operation



operate main switch when switch on



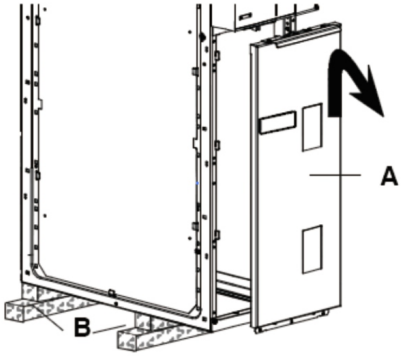
Operate the main switch when switch off

Inter-lock

	When load break switch in switching on, can not switch on the grounding switch, and the lower door can not be opened
	When grounding switch is switched on, the load break switchcan not be switched on
	When grounding switch is switched on, the load switch can not be operated switching on
	When grounding switch is off and door closed, the load switch can be switched on
	For composite electrical switchgear cabinet, if any phase fuse blow, its impactor can let the load switch in reliable switching off. In this time ,can not switch on the load switch, can not keep it in on position too.

BRSM6-12/24/40.5kV
MODULE TYPE RMU SWITCHGEAR >

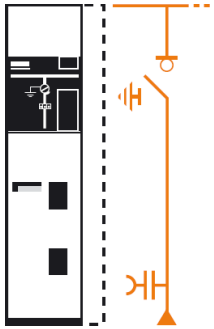
Inter-lock



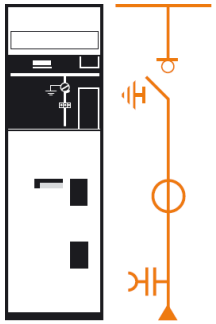
When the LBS is in the grounded working position, the door can be opened. (Cable Compartment!)

For Distribution switchboard schema

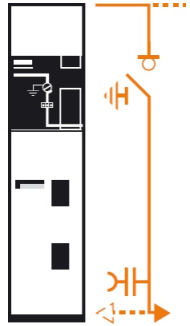
1. Load break switch(IM)



Switch unit
(375/500 mm)



Switch unit
(500 mm)

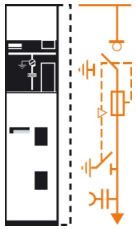


Switch unit-with/ without earthing switch -right or left outgoing line (375 mm)

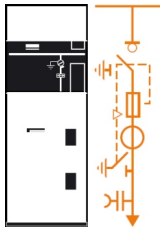
Note:Extra components for example lightning arresters or lower earthing switch is optional.

For Distribution switchboard schema

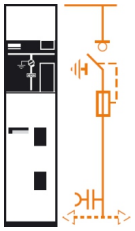
2. Fuse-switch protection(QM)



Fuse-switch-combination unit (375/500 mm)



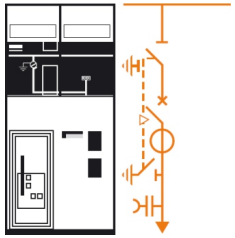
Fuse-switch-combinationunit (750 mm)



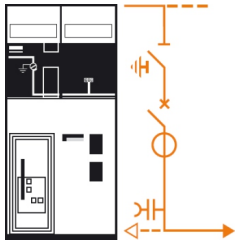
Fuse-switch-combination unit -right or left outgoing line (375mm)

Note:Extra components for example lightning arresters or zero sequence CT is optional.

3. Circuit-breaker protection (DM)



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, LNR/Boerstn, PF/Areva, 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.

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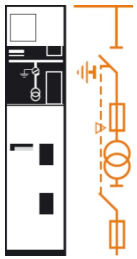
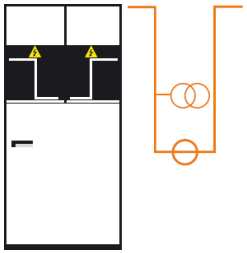
MODULE TYPE RMU SWITCHGEAR >

4. MV metering(GBC-B)



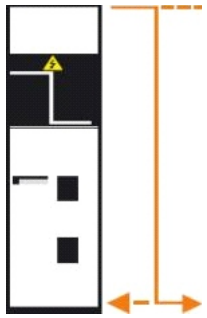
Voltage transformers for mains with earthed neutral system (375/500 mm)



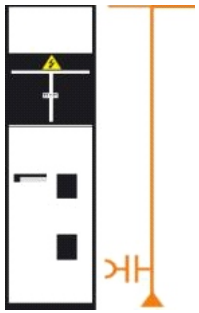
Current and/or voltage measurement unit (750 mm)

Note:Extra components for example lightning arresters or zero sequence CT is optional.

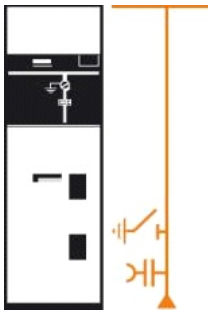
5. Casings (Bus bar Panel)(GBM)



Connection unit Right/left outgoing line(375 mm)



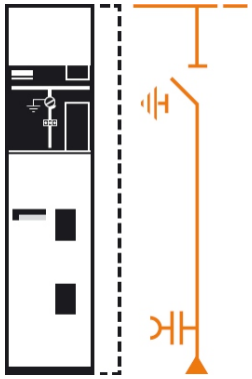
Incoming cable-connection unit(375mm)



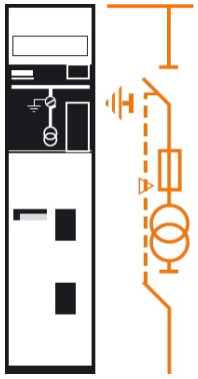
Incoming cable-connection unit(500mm)

Note:Other extra components is optional (Disconnecting switch etc.)

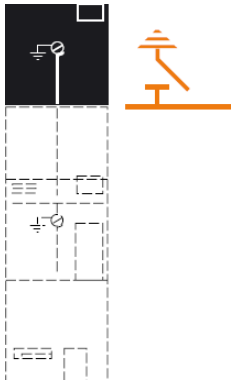
6. Other auxiliary schemas



Disconnector unit
(375/500 mm)



MV/LV transformer unit
for auxiliaries(375 mm)



Busbar earthing
compartment(375 mm)

Transport and storage

Switchgear in the transport and storage process to pay attention to the following points:

1 Do not turn over, upside down and suffered severe vibration, to prevent closing to fire;

2 Should prevent rain so as to avoid product moisture;

3 Do not disassemble products and components.

BRSM6-12/24/40.5kV
MODULE TYPE RMU SWITCHGEAR >

Switchgear installation

1.Switchgear installation size and the basic installation size, see figure.

2.installation of the basic reference to the following figure, the basic channel out of the ground 1-3mm, within the range of unevenness should not exceed 1.5mm, full length range of not more than 5mm

3. Place the switchgear on the basis of the order, adjust the location of the installation. And then use M12 bolts or spot welding method to be fixed, cabinet and cabinet with M8 bolts and tight.

4. Open the rear cover to install the main bus and a cable, the terminal contact surface should pay attention to clean and apply neutral Vaseline. After installation, pay attention to a good cable hole.

5. Connection between the cabinet grounding bus, so that along the direction of the switch cabinet connected into one, check the working ground and protective grounding is missing, the ground circuit is continuous conduction, working grounding resistance should not be greater than 1000μΩ, protective grounding resistance should not be greater than 4Ω

6. To install the secondary cable, the cable from the bottom of the cabinet into the front side of the chamber into the low pressure chamber, connected to the terminal block; or by the second row of small busbar into the low pressure chamber, installed after the closure of the cable hole.

7. Cleaning cabinet dust debris.

Transport and storage

Carried out the following checks and inspection before commissioning :

a:) Checking whether the fasteners are loose; checking whether the first and second wiring is correct; operate the disconnector, circuit breaker, mechanical interlock 3 ~ 5 times, should be flexible without jamming phenomenon, interlock to meet the "five prevention" requirements, and then filling grease to the mechanical parts .

b:) Checking the insulation level and circuit resistance of the switchgear and the mechanical characteristics of the circuit breaker according to the third and the factory test report of this manual. The test result shall be consistent with or similar to the factory test report.

Maintenance

11 / 131.Users should regularly carry out maintenance of the switchgear, the contents are:

● Clean all parts of the dust, especially the dust on the surface of the dust;●Check the mechanical activities of the site, regular filling grease to keep the action flexible and reliable;

●Circuit breakers, disconnectors, earthing switches and other components of the maintenance according to their respective instructions;

● Check the electrical contact parts are good, with or without overheating, ground circuit is turned on;

● Regularly check whether the fasteners are fastened.

Avoid misoperation interlocking device

“Five anti” - function: prevent false open and closing circuit breaker; To prevent falsing open and closing isolation switch with load; Prevent stray lines from being chargedThe switchgear adopts the compulsory mechanical locking mode, the locking device consists of the main components, such as the support, disk, panel, handle, connecting rod and so on. it has the characteristics of reliable performance, complete function, simple structure, convenient operation, easy to operate, and effective to realize the “five anti”

1. The control switch with red and green turn card is applicable to the circuit breaker scheme, which is used to prevent the wrong points and the circuit breaker

BRSM6-12/24/40.5kV
MODULE TYPE RMU SWITCHGEAR >

Avoid misoperation interlocking device

2. The small handle can be pulled out of the service position from the service position to the " beak and lockout" position only when the circuit breaker is broken. Open and closing isolator switch to prevent opening and closed isolator switch with load. That is, when the small handle is in the " beak and lockout" position, it can only be closed and open the upper and lower isolation switch, can not close the circuit breaker, avoid false closing circuit breaker

3. When the breaker and the upper and lower isolation switch are in the closing state, when the small handle is in the " work" position, the front and rear door cabinet doors cannot be opened to prevent straying into the charged interval

Documents and materials

12 / 13Complete set to provide the following documents

1 Product certificate;

2 Product packing list;

3 Product factory test report;

4 Product manual instruction;

5 Equipment list;

6.Secondary wiring diagram;

7. The products are supplied according to the catalog and equipment list;

BRM6-36kV

FULL GAS INSULATED RMU SWITCHGEAR >

Summary

The BRM6 series is completely insulated SF6 Ring Main Unit, This product is in conformity with the standards the IEC62271-200 & IEC62271-100 and the design of a high safety combined switch cabinets.One of the main components of circuit breaker and load break switch, high technical level, superb technology, stable performance, safe and reliable operation.

SafeRing and Safe Plus are respectively applied in SF6 insulated ring main and compact switchgear in high voltage distribution networks. Safering can be supplied as a 2,3 or 4-way standard configurations with additional equipment according to customer specification. There are combinations of standard configurations such as CF, CV, DV, DF, CCF, CCC, CFF, CCV, CVV, CCCC etc. SafeRing and SafePlus offers a sealed stainless steel tank which contains all the live components and switching functions

BRM6 series SF6 Ring Main Unit is widely used in industrial and civil ring network distribution system and power supply terminal, especially suitable for small secondary distribution substation, urban residential district, and other places

BRM6-36kV

FULL GAS INSULATED RMU SWITCHGEAR >

Service Conditions

a)Air temperature: ±50°C ; Daily average ≤25°C

b)Altitude above sea level: Maximum installation altitude: 4000m

c)Wind: less than 35m/s;

d)Earthquake intensity: no more than 8 degrees;

SF6 gas tank feature of BRM6

BRM6 use SF6 – gas (Sulphur hexafluoride) as insulation and quenching medium.The SF6 is contained in a welded stainless steel tank, which is sealed for life.The pressure system is defined as a sealed for life system with an operating life time exceeding 30 years. The leakage rate is less than 0.1% per year. Electrical and mechanical bushings penetrating the tank are clamped and sealed to the tank by high quality O-rings.

All SF6-tanks have to pass a leakage test before gas fill-ing.Leakage test and gas filling are done inside a vacuum chamber. The first step in the leakage test is to evacuate all air inside both SF6-tank and vacuum chamber simultaneously. The SF6-tank has a degree of protection of IP67 and can be immersed into water and still maintainable functions in a satisfactory way.

Main technical parameter

No.	Item	Unit	C/F Unit	V Unit	
			Load break switch	Circuit breaker	
1	Rated voltage	kV	30、33、36	30、33、36	
2	Rated current		630		
3	Rated frequency	Hz	50/60		
4	1min Power frequency withstand voltage	kV	85	85	
5	Lightning impulse withstand voltage	kV	185	185	
6	Rated transferring current	A	630	630	
7	Rated load circuit making current	A	630		
8	Rated cable(line) charging breaking current	A	50&10		
9	Rated short circuit breaking current (peak)	kA	20/31.5	20	
10	Rated short circuit making current (peak)	kA	63	63	63
11	Short time (1s) withstand current, load switch	kA	20	20	20
12	Rated withstand current (peak)	kA	63	63	
13	Mechanism life	times	5000	10000	
14	Size(W*D*H)	mm	420*940*1940(2200)	420*940*1940(2200)	

The accessories

GAS PRESSURE METER

Each tank of RMU is equipped with density meter to monitor the gas pressure inside.

SafeRing / SafePlus contains SF6 gas with a nominal pressureof 0.14~0.145 Mpa at 20 Safe Ring / SafePlus is «sealed for life» and is fitted with a temperature-compensated pressure indicator.A temperature-compensated device that emits anelectrical signaling accordance with requirements to indicatelower pressure can be supplied on request.

Pointer in green area - unit has correct pressure.

Pointer in red area - pressureis too low.

It is required to periodically inspect the density meter, to ensure the pressure in the normal range. Additionally, density meters with low pressure alarm is also available as an option. The meter is provided as the customer specified.

CAPACITIVE VOLTAGE INDICATION

According to IEC 61958, all modules can be equipped with VPIS (potential indicator system) capacitive voltage indication. This system is integrated with LEDS to indicate the state.

FAULT INDICATOR

Switch-disconnector can be supplied with different types of short circuit and earth fault indicators

CABLE CONNECTOR AND RELEVANT ACCESSORIES

● For connection of polymeric cable to transformers, switchgears, motors and other equipment with a premoulded separable connector.

●For indoor and outdoor installations

●System voltage up to 40.5kV

●Continuous current 630A

(900A overload for 8 hours)

●Cable particulars (XLPE, EPR , etc)

●Copper or aluminum conductors

●Semiconducting or metallic screems

●Conductor size 40.5KV 25-400mm²

0.5kv-630 Shielded For-Connector

CABLE CONNECTOR AND RELEVANT ACCESSORIES

Features:

●Provides a fully screened and fully submersible separable connection when mated with the proper bushing or plug

●Can be used under the circumstances

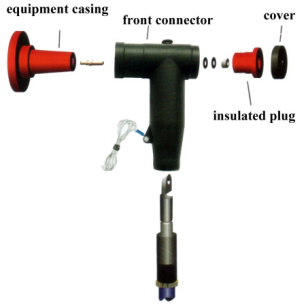
●Built-in capacitive tesr point to determine the circuit status or install a fault indicator

●No minmum phase clearance requirements

●Mounting can be vertical ,horzontal or any angle in between Installation

●Without any special tools

●When finish the installation of elbow connector , the power can be supply directly



OPERATION HANDLE

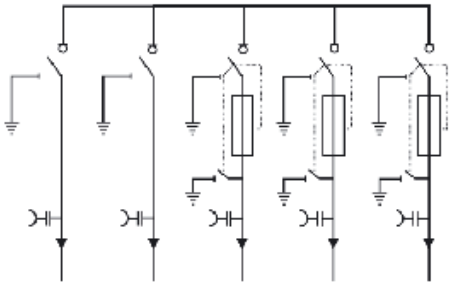
The operating handle has two sides,for both Load break switch,circuit breaker, and earthing switch manual operation,

Note:Above components of RMU is standard equipped, any special requirement pls consult us

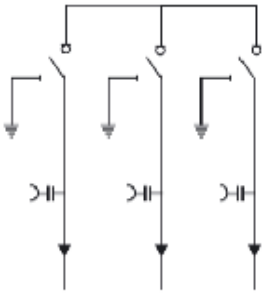
BRM6-36kV

FULL GAS INSULATED RMU SWITCHGEAR >

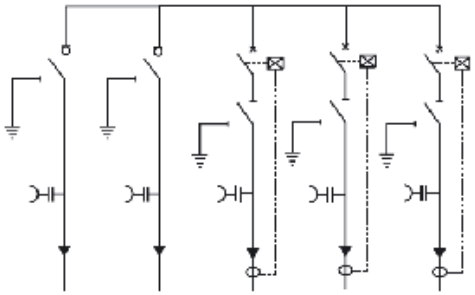
Standard combination



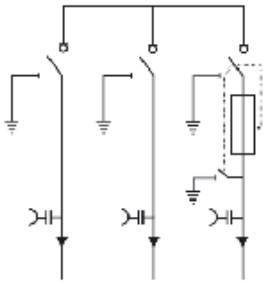
5 units CCFFF



3 units CCC



5 units CCVVV

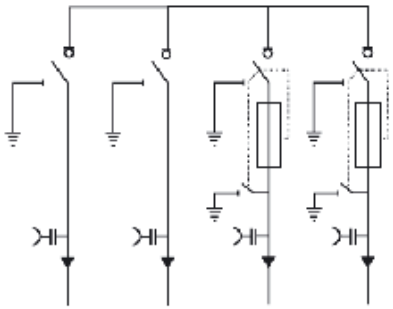


3 units CCF

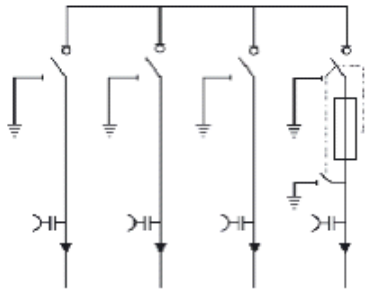
BRM6-36kV

FULL GAS INSULATED RMU SWITCHGEAR >

Standard combination



4 units CCFF



4 units CCCF

Standard instruction

C unit configuration

See standard configuration and features of "Load break switch module"

F unit configuration

See standard configuration and features of "Load break switch and fuse combination module"

V unit configuration

See standard configuration and features of " Vaccum switch module"

We can provide with the RMU according to Special requirement order

BRM6-12/24kV

FULL GAS INSULATED RMU SWITCHGEAR >

Summary

The BRM6 series is completely insulated SF6 Ring Main Unit, This product is in conformity with the standards the IEC62271-200 & IEC62271-100 and the design of a high safety combined switch cabinets.One of the main components of circuit breaker and load break switch, high technical level, superb technology, stable performance, safe and reliable operation.

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BRM6-12/24kV

FULL GAS INSULATED RMU SWITCHGEAR >

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b)Altitude above sea level: Maximum installation altitude: 4000m

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BRM6 use SF6 – gas (Sulphur hexafluoride) as insulation and quenching medium.The SF6 is contained in a welded stainless steel tank, which is sealed for life.The pressure system is defined as a sealed for life system with an operating life time exceeding 30 years. The leakage rate is less than 0.1% per year. Electrical and mechanical bushings penetrating the tank are clamped and sealed to the tank by high quality O-rings.

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Main technical parameter

No.	Item	Unit	C/F Unit		V Unit	
			Load break switch		Circuit breaker	
1	Rated voltage	kV	12/15	24	12/15	24
2	Rated current		630			
3	Rated frequency	Hz	50/60			
4	1min Power frequency withstand voltage	kV	45	55	45	55
5	Lightning impulse withstand voltage	kV	75	125/150	75	125/150
6	Rated transferring current	A	1700	1400		
7	Rated load circuit making current	A	630			
8	Rated cable(line) charging breaking current	A	50&10			
9	Rated short circuit breaking current (peak)	kA	20/31.5		20	20
10	Rated short circuit making current (peak)	kA	63	63	63	63
11	Short time (1s) withstand current, load switch	kA	25/20	20/20	25/20	20/20
12	Rated withstand current (peak)	kA	63	63	63	63
13	Mechanism life	times	5000		10000	10000

Standard combination

GAS PRESSURE METER

Each tank of RMU is equipped with density meter to monitor the gas pressure inside.

SafeRing / SafePlus contains SF6 gas with a nominal pressureof 0.14~0.145 Mpa at 20 Safe Ring / SafePlus is «sealed for life» and is fitted with a temperature-compensated pressure indicator.A temperature-compensated device that emits anelectrical signaling accordance with requirements to indicatelower pressure can be supplied on request.

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According to IEC 61958, all modules can be equipped with VPIS (potential indicator system) capacitive voltage indication. This system is integrated with LEDS to indicate the state.

■ FAULT INDICATOR

Switch-disconnector can be supplied with different types of short circuit and earth fault indicators

BRM6-12/24kV
FULL GAS INSULATED RMU SWITCHGEAR >

Standard combination

● For connection of polymeric cable to transformers, switchgears, motors and other equipment with a premoulded separable connector.

●For indoor and outdoor installations

●System voltage up to 40.5kV

●Continuous current 630A

(900A overload for 8 hours)

●Cable particulars (XLPE, EPR , etc)

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0.5kv-630 Shielded For-Connector

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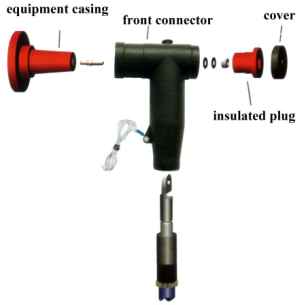


■ OPERATION HANDLE

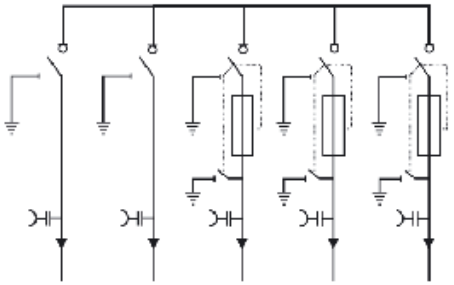
The operating handle has two sides,for both Load break switch,circuit breaker, and earthing switch manual operation,

Note:Above components of RMU is standard equipped, any special requirement pls consult us

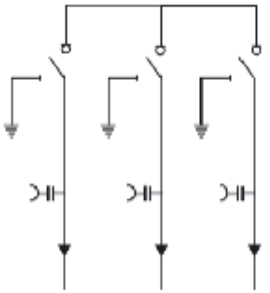
BRM6-12/24kV

FULL GAS INSULATED RMU SWITCHGEAR >

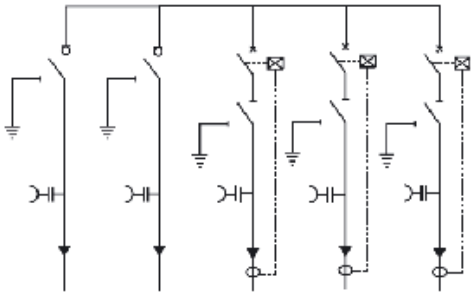
Standard combination



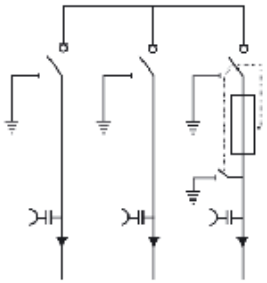
5 units CCFFF



3 units CCC



5 units CCVVV

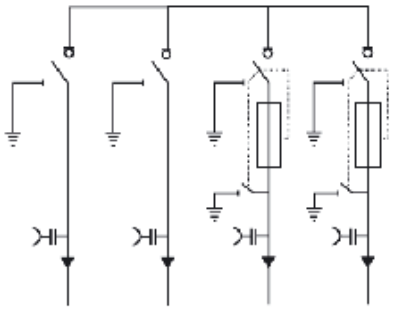


3 units CCF

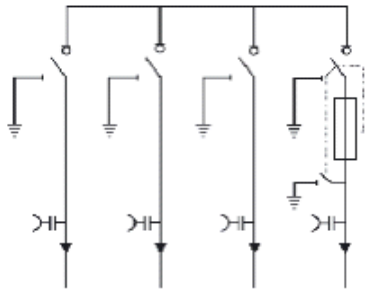
BRM6-12/24kV

FULL GAS INSULATED RMU SWITCHGEAR >

Standard combination



4 units CCFF



4 units CCCF

Standard instruction

C unit configuration

See standard configuration and features of "Load break switch module"

F unit configuration

See standard configuration and features of "Load break switch and fuse combination module"

V unit configuration

See standard configuration and features of " Vaccum switch module"

We can provide with the RMU according to Special requirement order

HXGN15-12/24kV

INDOOR FIXED METAL SEALED RMU SWITCHGEAR >

Summary

HXGN15-12/24kV series is composed by standard finished function units from the factory, it adopts advantaged FLN36 load break switch (LBS), use SF6 gas with superior performance as arcing insulating medium. It is small, compact and convenient installation, safety, stable working. It is widely used in 12KV electric power distribution system. The switchgear meet the requirements of standard IEC62271-200,IEC62271-100 etc.

Convenient Installation

Its small volume & light weight make user to install & delivery it more conveniently and easy. It can be completed wiring schemes according to user's need, also can choose the intelligent control units to realize intelligent controlling & operation. Standard design make this product to be the best choice of users.

Simple Operation

Each switchgear has single line diagram(SLD) & analog displayer which can display inside parts. For operation, it has interlock board to guarantee the handle direction of rotation with correct operation. In order to avoid the operation in mistake, on the door, there has operation manual to supply & guarantee the simple & safe operation.

Model

H X G N 15 — 12 (F 、R)

- (F) load distribution switch
- (F,R) load distribution switch fuse combination appliance

Rated voltage(kV)
Design Serial Number
Indoor
Fixed type
Box type
Ring net cabinet

HXGN15-12/24kV

INDOOR FIXED METAL SEALED RMU SWITCHGEAR >

Structural Features

Its enclosure, door & the upper chamber is spray processing. All cabinets have main grounding busbar which can connect near cabinet. All the metal parts, like grounding switch & interlocking parts are connected with grounding busbar. In order to ensure the continuity, between the parts which connected by screws, the connection is used by copper braid. On the back of cabinet, there has pressure relief door to ensure the gas release from the back to avoid inner burning arc. Its upper board is fixed by screws. So it can be opened from outside to connect bus. Its upper auxiliary devices chamber can be installed with terminals and other parts. After heighten the small chamber, it can realize the relay protection. The load break switch & grounding switch adopts block type interlock. The grounding switch & door adopts coercive interlock .Following below steps ,it can realize automatic interlock: close the door, turn on the grounding switch and close the load break switch. This separately operation can avoid fault.

Safe operation of HXGN15-11 series switchgear

- Its professional structure design to guarantee its operation safety.
- The whole switchgear is divided into 5 insulation intervals.
- The interlock structure is reliable, simple and convenient.

Structure Features

Appearance: its enclosure is used by cold –rolled steel or aluminium zinc plate mold. It is beautiful and high anti-erosion, compact, small volume and convenient combination.The inner has five insulation intervals. The rear side has two pressure release exits.

Convenient installation: it can be assembled freely & simply as different design requirements. No special need for its installation size.

Maintenance–free: Good sealing, SF6 insulation gas pressure complies with IEC60298 standard, safe and reliable working, maintenance free.

Design Advantages

Pressure release :

There have two pressure release exits for bus room & cable room to ensure the pressure release under the condition of extreme to ensure person safety .

Three position/double position:

Natural interlock switch, only in “Close “°C”Earthing “ or “Interlock” 3 position

Interlock position:

Switch is interlocked with operation structure to avoid misoperation High voltage cable room is interlocked with operation structure to avoid opening the installation door under the condition of switch non-grounding to protect person safety.

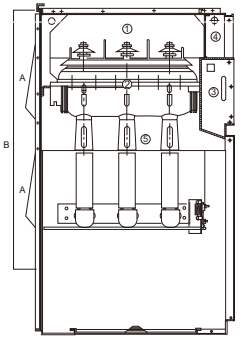
Panel Display:

Panel analog primary circuit and clearly display that charge display can flash to display the electric parts. Five independently intervals to avoid the accident spread.

Independent interval:

The five chambers are separated individually to prevent accidental accidents from spreading

- Bus interval
- Switch interval
- Operation mechanism interval
- Low voltage interval
- Wire connection interval



HXGN15-12/24kV

INDOOR FIXED METAL SEALED RMU SWITCHGEAR >

Main Technical Parameter

Name	Unit	HXGN15-12(F)		HXGN15-12(F R)
Rated voltage	kV		12	
Rated current	A	630		630
Rated frequency	Hz		50	
1min power frequency withstand voltage	kV		42	
Lightning impulse withstand voltage	kV		75	
Rated peak withstand current	kA	50		
Rated short time withstand current	kA	20		
No load transformer breaking capacity	kVA		1250	
Closing ring breaking current	A			
Main circuit resistant	μ Ω		≤ 80	≤ 80
Transfer current	A			1700
Rated short circuit breaking current	kA			31.5
Rated short circuit making current	kA	50		500
Protection degrees			IP3X	

Fuse Protection Transformer Parameter

Capacity (kVA)	50	100	125	160	200	250	31.5	400	500	630	800	1000	1250
Fuse current (A)	10	16	16	16	20	25	31.5	40	50	63	80	80	100

Service Conditions

1. Ambient temperature: −25oC ~ +40oC;
2. Altitude: Not exceed 1000m above sea level;
3. Ambient humidity: Daily average RH ⩽ 95%; Monthly average RH ⩽ 90%
4. Water vapor pressure:Daily average RH ⩽ 2.2kPa; Monthly average RH ⩽ 1.8kPa;
5. Ambient environment: no fire, explosion danger, serious pollution, chemical corrosion and severe vibration place

Quality Warranty

HXGN15-12KV series switchgear & FLN36 load break switch passed successfully all the lab projects according to IEC standard.

Applicable Standard

IEC298、IEC265、IEC129、IEC694、IEC420 etc.

Documents and Materials

Complete set to provide the following documents
1. Product certificate;
2. Product packing list;
3. Product factory test report;
4. Product manual instruction;
5. Equipment list;
6. Secondary wiring diagram;
7. Cabinet color

Scheme Selection

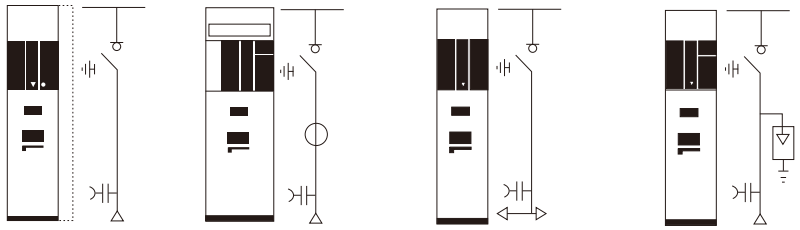
Incomer and Outgoing : HXGN15-12KV (F)

HXGN15-12/24kV

INDOOR FIXED METAL SEALED RMU SWITCHGEAR >

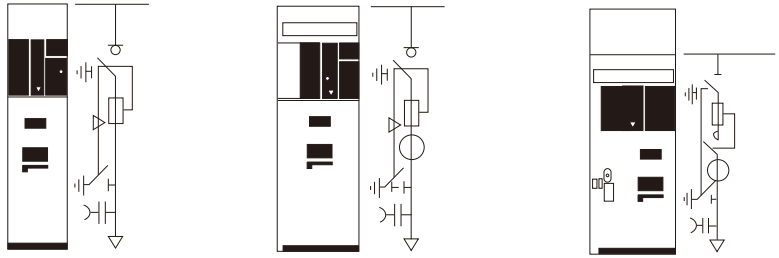
Scheme Selection

Incomer and Outgoing : HXGN15-12KV (F)



F-1(375 or 500) F-2(500) F-3(375 or 500) F-4(375 or 500)

Fuse combination electrical cabinet :HXGN15-12KV(F · R)

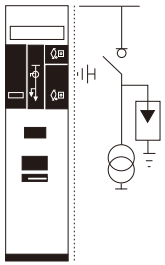


F·R-1(375 or 500) F·R-2(300 or 750) F·R-3(500 or 750)

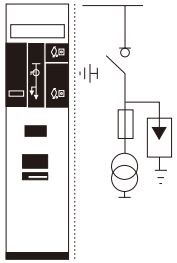
HXGN15-12/24kV

INDOOR FIXED METAL SEALED RMU SWITCHGEAR >

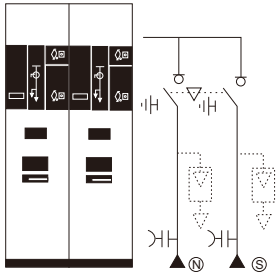
Metering cabinet :HXGN15-12KV(F)



F·C-1(375 or 500)



F·C-2(750)



M-4(750mm)

Wire-connection Requirement & Size

The 3 cores cable connection by making cable terminal lug.

The cable connection on the bottom through cable duct or base.

Foundation and cable trench size requirements :

The foundation shall be made of l50 × 50 × 50 angle steel or 18 channel steel ;

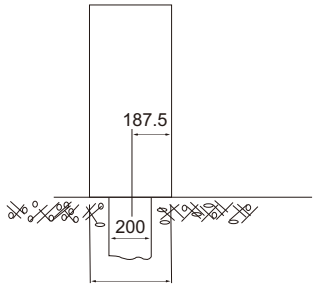
The width is 900 mm, and the length is determined by the combination size of the cabine

The width of the cable trench shall ⩾ 600mm, and the depth shall ⩾800mm

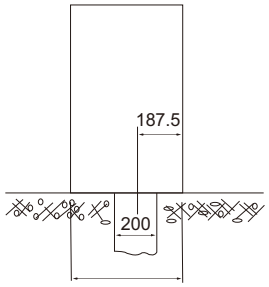
HXGN15-12/24kV

INDOOR FIXED METAL SEALED RMU SWITCHGEAR >

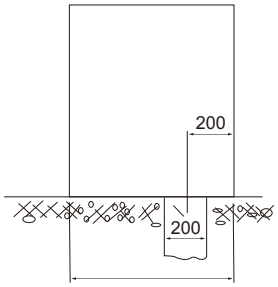
The Construction of Cable Duct Requirement



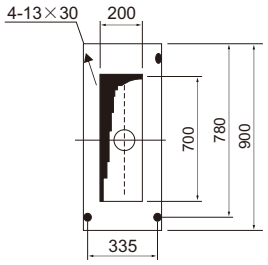
Cabinet width 375

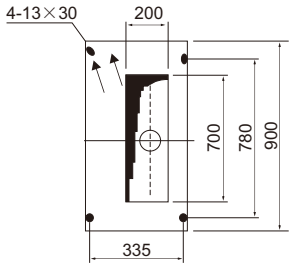


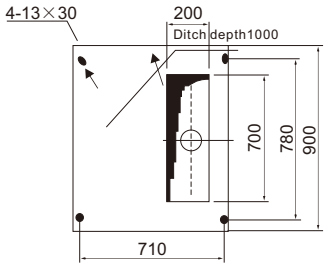
Cabinet width 375



Cabinet width 750







HXGN17 - 12/24kV

INDOOR FIXED METAL SEALED SWITCHGEAR >

Introduction of structure

HXGN17-12/24 series fixed AC metal enclosed switchgear with several new designs(Abbreviations“ switchgear ”. It's suitable for single busbar systems with power level from 3KV-24KV indoor 3 phase AC 50HZ, rated current as 630 ~ 3150 A. As the acceptance and distribution of electrical energy, and circuit control, saturation and monitoring. It can meet the requirements of power plant, substation (switching station) and industrial and mining enterprises. This switch cabinet has a reliable " five - proof" locking function. The cabinet is equipped with VS1 , VD4 Vacuum circuit breaker, strong compatibility, beautiful and generous, and easy maintenance, is a superior performance point collocation device. and accomodates to the demand of power market,reform of city and rural power grids, and packaged substations.

IEC62271-200 “AC Metal Enclosed Switch and Control Device above 1kV, below 50kV”

HXGN17 - 12/24kV

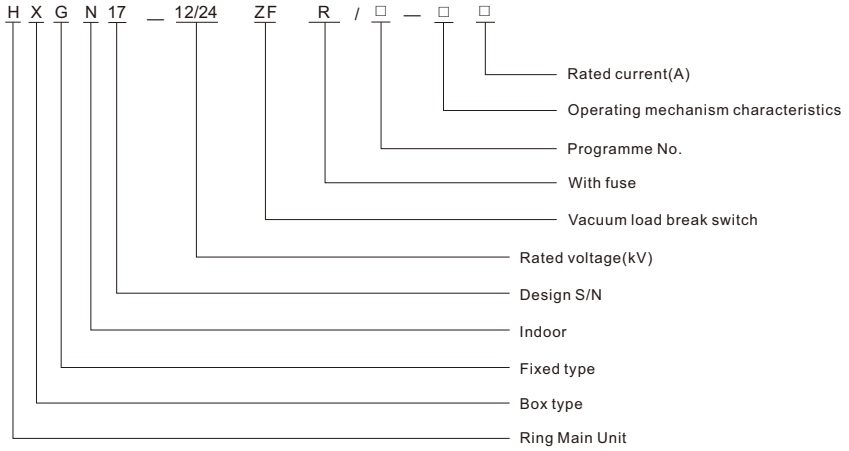
INDOOR FIXED METAL SEALED SWITCHGEAR >

Service Conditions

1. Ambient temperature: -10oC ~ +40oC;
2. Altitude: Not exceed 1000m above sea level;
3. Ambient humidity: Daily average RH ≤ 95%; Monthly average RH ≤ 90%
4. The around atmosphere should not contain distinct pollutions such as corrosive or flammable gas or steam
5. No severe contamination or frequency severe vibration, and the design of rigid grade under condition should meet the requirements of grade 1
6. No violent vibration, bumps and vertical gradient not more than 8° of place

Note: When the actual use conditions is different with the above mentioned information, the user and the manufacturer should be negotiated

Model



HXGN17 - 12/24kV

INDOOR FIXED METAL SEALED SWITCHGEAR >

Introduction of structure

●The cabinet body of this switch cabinet is welded with high quality angle steel;Standard with (VS1 /VD4) vacuum circuit breaker,

●The circuit breaker chamber is located in the cabinet body (lower part), which is convenient for installation, commissioning and maintenance.

●With pressure release channel to ensure personal safety;

●With the advanced and reliable rotary isolation switch, it can safely enter the circuit breaker room under the charge of the main bus.

●The protective grade of the whole cabinet is IP3X;

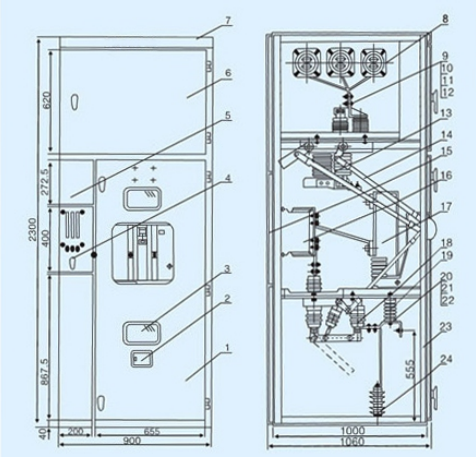
●The equipment has a reliable and fully functional mechanical locking device, which is simple and effective to meet the requirements of " five prevention ";

●The observation window is installed on the door, and the working state of the inner parts of the cabinet can be observed clearly.

●The incoming and outgoing cable is lower than the front of the cabinet and convenient for user connection.

Switchgear structure

1.Cabinet door
2. Lamp
3. Observation window
4. Operation mechanism
5. Small door board
6. Instrument door
7. Headletter
8.Wall bushing of busbar
9.Bolts
10.Washer
11.Waher
12.Nuts
13.Isolator switch
14.Pull rod
15.Rear sealing board
16.Current Transformer
17.Vaccum Circuit Breaker



18.Isolator switch 19.Sensor 20.Bolts 21.Washer 22.Washer 23.Frame 24.Surge arrester

HXGN17 - 12/24kV

INDOOR FIXED METAL SEALED SWITCHGEAR >

Outline dimension

		12kV	24kV
Height(mm)	Cabinet	2200	2200mm
Width(mm)	Cabinet	900	1100
Deepth(mm)	Cabinet	900	1200
Weight(kg)	800~1200		

A Bus room

The bus bar is led from one switchgear to another switchgear by branch bus bar and static contact box to fix. The flat branch bus bar is connected with the static contact box and main bus bar by bolts, and it does not need any other wire clip or insulator connection. When the user and the special needs of the project, the busbar connection bolts can be insulated and end cap packaging. When the bus across clapboard of the switchgear by bus bushing to fix. If an internal fault arc occurs, the accident can be limited to extend to the adjacent panel and the mechanical strength of the busbar can be ensured.

B Cable room

An cable room could install current transformer, grounding switch, arrester and cable, and at the bottom of the preparation of slotted removable aluminum plate to ensure the construction site conveniently.

C Relay instrument room

The relay instrument room is used to install all kinds of relays, instruments, signal indication, operation switch and other components. In addition, according to user requirements for adding a small bus room in the top of the instrument room

Pressure relief device

A pressure relief device in the upper circuit breaker rooms, bus room and cable room, when the circuit breaker or main bus, cable indoor occur internal fault arc ,with the appearance of arc, internal pressure of switchgear rises, and reaches a certain pressure, the pressure relief device at the top of the metal plate will be opened automatically, and release the pressure and excretion of gas to ensure the safety of operators and switchgear

VS1 vacuum circuit breaker

Overview

Vs1 vacuum circuit breaker is a kind of advanced product developed in domestic, its shape and operating principle are similar to VD4. VS1 type vacuum circuit breaker with closed insulation form , main insulation cylinder and inner and outer skirt, the creepage distance to meet the requirements of DL standards.

Service environment

a) Air temperature: Maximum temperature: +40 ℃ ; Minimum temperature:-25 ℃

b) Humidity: Monthly average humidity 95%; Daily average humidity 90% .

c) Altitude above sea level: Maximum installation altitude: 2500m

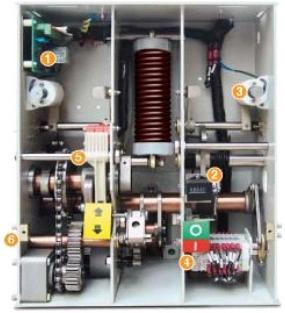
d) Ambient air not apparently polluted by corrosive and flammable gas, vapor etc.

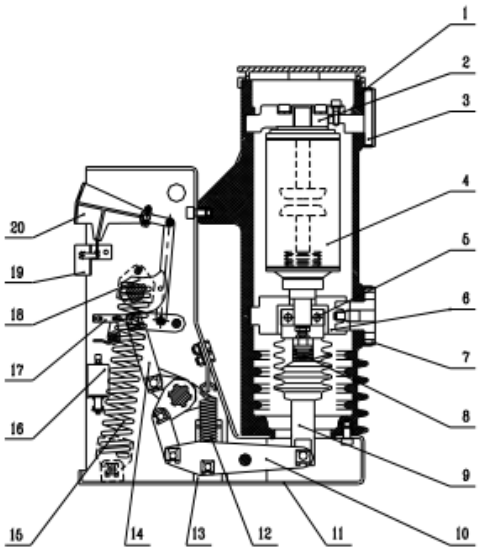
e) No frequent violent shake

HXGN17 - 12/24kV
INDOOR FIXED METAL SEALED SWITCHGEAR >

Service environment

1. Wiring board for income line secondary
2. Counter
3. Closing coil
4. Auxiliary switch 8NO,8NC is optional
5. Charging chain
6. Motor





VD4 vacuum circuit breaker

1.Insulate canister
2.Upper bracket
3.Upper terminal
4.Vacuum bulb
5.Soft connection
6.Nether bracket
7.Nether terminal
8.Dish spring
9.Insulating rod
10.Four bars linkage
11.VCB's shell
12.Trip spring
13.Buffer
15.Chargeable spring

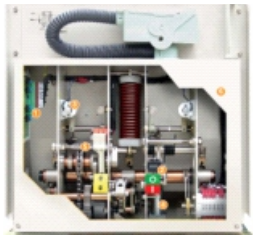
HXGN17 - 12/24kV

INDOOR FIXED METAL SEALED SWITCHGEAR >

Inside structure

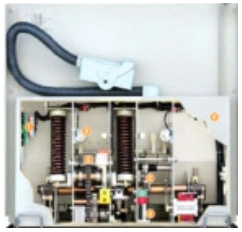
Modularized operating mechanism

Modularized operating mechanism is another feature of VD4.It can be divided into closing module, opening module, mainaxis module and secondary wiring module, which make the mechanism have characteristic of standard manufacture method, short producing period, convenient maintenance and rapid replacing. These modules are standard and applicable to all VD4 so the costs of facilities management and maintenance are reduced.



Special design of repair without many tools

During the design for VD4 circuit-breaker, the installation and repair must be taken into account. So for the disassembly of parts or accessories, users need no special tools and the repair becomes more convenient. Besides, all of the secondary controlling components are in front of the operating mechanism, which also make maintenance and repair convenient.



Conductors with silvered surface

All the conductors of VD4 circuit-breaker are disposed by silvered process so that it do not only reduce the contacting resistance but also improve the electricity-conducting capacity of conductors. Thanks to the reduced resistance the heat from circuit-breaker running can be decreased and the breaker's lifetime is also lengthened

Conductors with Silvered Surface

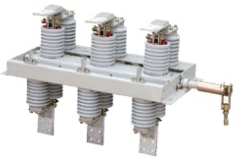
HXGN17 - 12/24kV

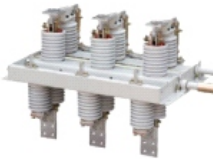
INDOOR FIXED METAL SEALED SWITCHGEAR >

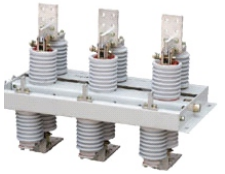
Overview

The GN30 series rotary type indoor high voltage isolation switch is a new type of isolation switch, the main structure is on the upper and lower two flatesurface of three-phase common frame, fixed two groups of insulators and contacts, through the rotary contact cutter, so as to realize the switch open and cloase.

The GN30 - 12(24) D switch is the form of adding a grounding knife on the GN30 - 12(24) type switch, which can meet the needs of different power systems. This product is compact, taking up small space, strong insulation, easy to install and adjust.It is applicable to 12 kV/24kV AC 50hz AC 50Hz and lower indoor systems .As the use of combination circuit under the condition of no load of voltage. It can be used with high voltage switch cabinet, can also be used alone.







Isolation switch Parameter Table

Rated voltag		11kV	24kV
Rated current		400A, 630A,1000A,1250A	
Thermal stable current		12.5kA, 20kA, 25kA,31.5kA	
Dynamic stable current		31.5kA,50kA, 80kA	
Insuation level	Lightning impulse withstand voltage	75/85kV	125/145kV
	1minpower frequency withstand volatge	42/48kV	55/65kV

Service environment

a) Air temperature: Maximum temperature: +40 ° C; Minimum temperature:-25 ° C

b) Humidity: Monthly average humidity 95%; Daily average humidity 90% .

c) Altitude above sea level: Maximum installation altitude: 1000m

d) No frequent violent shake

Technical parameter of switchgear

No	Name		Unit	Data	
1	Rated voltage		kV	12	24
2	Insuation level	Lightning impulse withstand voltage	kV	75/85	125/145
		1minpower frequency withstand volatge	kV	42/48	55/65
3	Rated frequency		Hz	50/60	
4	Rated current		A	630,1250,1600,2000,2500,3150	
5	4s short time withstand current		kA	20、25、31、31.5、40、50	
6	Rated peak withstand current		kA	50、63、80、100、125	
7	Thickness				
7.1	Base frame		mm	2.0	
7.2	Side panels		mm	2.0	
7.3	Top cover(with provisions of louvers for heat dissipation)		mm	2.0	
7.4	Doors		mm	2.0	
8	Live cable indicators for incoming & outgoing cables			Supply Live display	
9	Material			Steel sheet coated with aluminum-zinc alloy	
10	Protection level			Enclosure IP4X, partition of each compartment is IP2X	
11	Standard			IEC62271-200	
12	Color			RAL7032 / RAL7035	

HXGN17 - 12/24kV
INDOOR FIXED METAL SEALED SWITCHGEAR >

Technical parameter of VS1 and VD4 vacuum circuit breaker

No	Name		Unit	Vs1	VD4
1	Rated voltage		kV	12	24
2	Insuation level	Lightning impulse withstand voltage	kV	75/85	125/145
		1minpower frequency withstand volatge	kV	42/48	55/65
3	Rated frequency		Hz	50/60	
4	Rated current		A	630,1250,1600,2000,2500,3150	
5	Rated short circuit break current			20、25、31、31.5、40、50	
6	4s short time withstand current		kA	20、25、31、31.5、40、50	
7	Rated peak withstand current		kA	50、63、80、100、125	
8	Rated operate sequence			O—0.3S—CO180S—CO	
9	Type of interrupter employed			Vacuum	
10	Operating mechanism			Spring mechanism	
11	Standard			IEC 62271-100	

Recommended Operating Time

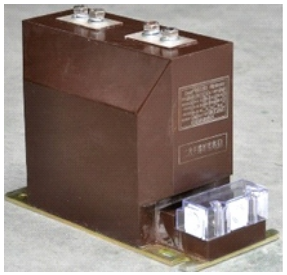
Item	Vd4
Closing time	35~70 ms
Opening time	20~50 ms
Arcing time	10~15 ms
Breaking time	30~65 ms

Note:1 Under the rated voltage of auxiliary circuit.

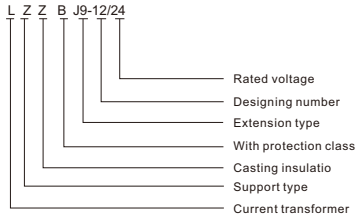
2 If the relay contact is started but it is failed to break the trip coil current.

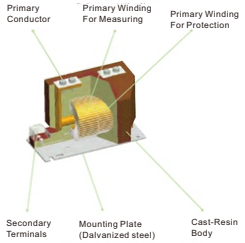
Current transformer

Eposy resin casting insulation and fully enclosed support construction , enclosed primary & secondary windings and annular core in the epoxy resin casting body. The product has two secondary windings(one measuring winding and one protective winding). It is widely used for measuring current, electric energy and protective relaying in the power system with the rated frequency 50 Hz or 60Hz and highest voltage for equipment 12/24 kV



Product type and meaning





Technical parameter

Rated primary current I_{1n} (A)	Rated secondary current I2n (A)	Combined accuracy classes	Capacity (VA)	Ith (kA/s)	Idyn (kA)
20,25,30,40	1	0.2/5P10	10/10	100xI_{1n}	2.5xI_{th}
50,60,75,100,125	1 (5)	0.2/5P10	15/15	100xI_{1n}	2.5xI_{th}
150,200,250,300	1 (5)	0.2 s/5P15	15/15	25 kA/1s	63 kA
400,500,600,750	5 (1)	0.2 s/5P20	20/20	31.5 kA/1s	80 kA
800,1000,1200,1250	5 (1)	0.2 s/5P20	20/20	31.5 kA/1s	80 kA

Note: 1. The products meet the standards IEC 60044-1, IEC 61869-1, IEC 61869-2.

2. The key components: core, epoxy resin, enameled wire.

3. The user if there are special requirements can be determined in consultation with supplier

4. The table above is not final ,it is only for client reference .We can custom it according to client special requirement

HXGN17 - 12/24kV
INDOOR FIXED METAL SEALED SWITCHGEAR >

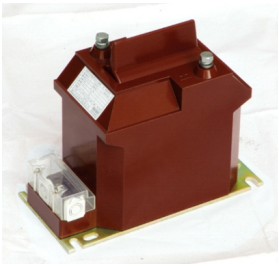
Application

LZZBJ9-12/24 type current transformer is casting resin and fully enclosed indoor type for 12kV (24kV) and current measurement and relay protection do AC 50/60 Hz line.

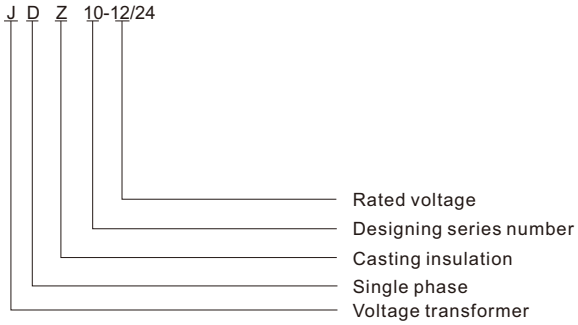
- Suitable for air-insulated switchgear
- Applicable altitude 2000 meters
- Equipment maximum operating voltage of 12 kV(24kV)·
- Rated Insulating Level:12/42/75kv ; 24/65/125kV

VOLTAGE TRANSFORMER

Eposy resin casting insulation and fully enclosed support construction , enclosed primary & secondary windings and annular core in the epoxy resin casting body. .It is single phase, indoor and cast resin voltage transformer,which is used for metering and relay protection of rated voltage 12kv 24kV. It is widely used for measuring current, electric energy and protective relaying in the power system with the rated frequency 50 Hz or 60Hz and highest voltage for equipment 12/24 kV



Product type and meaning



Technical parameter

Rated voltage ratio(kV)	Rated secondary output (VA)				Rated insulation level kV	Max output (VA)
	0.2	0.5	1 class	3 class		
11000/100 (220)	15	30	60	150	12/42/75	500
24000/100(220)	80	20	350	500	24/65/125	1000

Note: 1.The products meet the standards IEC 60044-2, IEC 61869-1, IEC 61869-2.

2. The key components: core, epoxy resin, enameled wire.

3. The user if there are special requirements can be determined in consultation with supplier

4. The table above is not final ,it is only for client reference .We can custom it according to client special requirement

Application

JDZ10-12/24 type current transformer is casting resin and fully enclosed indoor type for 12kV (24kV) and voltage measurement and relay protection do AC 50/60 Hz line.

- Suitable for air-insulated switchgear
- Applicable altitude 2000 meters
- Equipment maximum operating voltage of 12 kV(24kV)·

Transport and storage

Switchgear in the transport and storage process to pay attention to the following points:

1. Do not turn over, upside down and suffered severe vibration, to prevent closing to fire;

2. Should prevent rain so as to avoid product moisture;

3. Do not disassemble products and components.

HXGN17 - 12/24kV
INDOOR FIXED METAL SEALED SWITCHGEAR >

Switchgear installation

1.Switchgear installation size and the basic installation size, see figure.

2.installation of the basic reference to the following figure, the basic channel out of the ground 1-3mm, within the range of unevenness should not exceed 1.5mm, full length range of not more than 5mm

3. Place the switchgear on the basis of the order, adjust the location of the installation. And then use M12 bolts or spot welding method to be fixed, cabinet and cabinet with M8 bolts and tight.

4. Open the rear cover to install the main bus and a cable, the terminal contact surface should pay attention to clean and apply neutral Vaseline. After installation, pay attention to a good cable hole.

5. Connection between the cabinet grounding bus, so that along the direction of the switch cabinet connected into one, check the working ground and protective grounding is missing, the ground circuit is continuous conduction, working grounding resistance should not be greater than 1000μΩ, protective grounding resistance should not be greater than 4Ω

6. To install the secondary cable, the cable from the bottom of the cabinet into the front side of the chamber into the low pressure chamber, connected to the terminal block; or by the second row of small busbar into the low pressure chamber, installed after the closure of the cable hole.

7. Cleaning cabinet dust debris.

Operation

Carried out the following checks and inspection before commissioning :

a:) Checking whether the fasteners are loose; checking whether the first and second wiring is correct; operate the disconnector, circuit breaker, mechanical interlock 3 ~ 5 times, should be flexible without jamming phenomenon, interlock to meet the "five prevention" requirements, and then filling grease to the mechanical parts .

b:) Checking the insulation level and circuit resistance of the switchgear and the mechanical characteristics of the circuit breaker according to the third and the factory test report of this manual. The test result shall be consistent with or similar to the factory test report.

Maintenance

1.Users should regularly carry out maintenance of the switchgear, the contents are:

● Clean all parts of the dust, especially the dust on the surface of the dust;

●Check the mechanical activities of the site, regular filling grease to keep the action flexible and reliable;

●Circuit breakers, disconnectors, earthing switches and other components of the maintenance according to their respective instructions;

● Check the electrical contact parts are good, with or without overheating, ground circuit is turned on;

● Regularly check whether the fasteners are fastened.

Avoid misoperation interlocking device

“Five anti” - function: prevent false open and closing circuit breaker; To prevent falsing open and closing isolation switch with load; Prevent stray lines from being chargedThe switchgear adopts the compulsory mechanical locking mode, the locking device consists of the main components, such as the support, disk, panel, handle, connecting rod and so on. it has the characteristics of reliable performance, complete function, simple structure, convenient operation, easy to operate, and effective to realize the “five anti”

1. The control switch with red and green turn card is applicable to the circuit breaker scheme, which is used to prevent the wrong points and the circuit breaker

HXGN17 - 12/24kV
INDOOR FIXED METAL SEALED SWITCHGEAR >

Avoid misoperation interlocking device

2. The small handle can be pulled out of the service position from the service position to the " beak and lockout" position only when the circuit breaker is broken. Open and closing isolator switch to prevent opening and closed isolator switch with load. That is, when the small handle is in the " beak and lockout" position, it can only be closed and open the upper and lower isolation switch, can not close the circuit breaker, avoid false closing circuit breaker

3. When the breaker and the upper and lower isolation switch are in the closing state, when the small handle is in the " work" position, the front and rear door cabinet doors cannot be opened to prevent straying into the charged interval

Documents and materials

Complete set to provide the following documents

1 Product certificate;

2 Product packing list;

3 Product factory test report;

4 Product manual instruction;

5 Equipment list;

6.Secondary wiring diagram;

7. The products are supplied according to the catalog and equipment list;

GCK/MNS/GCS series

LOW VOLTAGE WITHDRAWABLE SWITCHGEAR >

Summary

The series of LV withdrawable switchgear is a kind of combination type switchgear, its technology reaches international levels. It is suitable for transformer station, electric power plant, petrochemical industry, metallurgical steel rolling, traffic energy, light and textile industry ,and residence community, high building ..etc. As electric power energy conversation ,distribution & controlling for power distribution equipments of AC 50-60Hz rated service voltage 660V or less. It complies with IEC61439-2 standard “Low Voltage withdrawable switchgear.

Service Conditions

1. Ambient temperature: -5℃~+40℃, and measuring average RH within 24 hours≤+35℃;

2. Altitude: Not exceed 2000m above sea level;

3. Ambient humidity: Daily average RH ≤ 95%; Monthly average RH ≤ 90%

4. Earthquake intensity: ≤ Degree 8

5. Water vapor pressure: Daily average RH ≤ 2.2kPa; Monthly average RH ≤ 1.8kPa;

6. Ambient environment: no fire, explosion danger, serious pollution, chemical corrosion and severe vibration place.

GCK/MNS/GCS series

LOW VOLTAGE WITHDRAWABLE SWITCHGEAR >

Basic Technical Parameters

1.Electric performance

Rated insulation voltage		690V(1000)V
Rated working voltage		400V、690V
Maximum working current of main bus		6300A
Rated withstand current of main busbar		100kA/1s
Main busbar rated peak withstand current		220kA/0.1s
Maximum operating current of distribution bus (vertical bus)		2000A
Peak current of distribution bus (vertical busbar):	Standard type	105kA(Max)/0.1s
	Reinforced type	176kA(Max)/0.1s

2. Protection grade

Comply with IEC529 and DIN40050 standards
IP30 protection for ⩾Ø2.5mm Solid protection
IP40 protection for ⩾Ø1.0mm Solid protection
IP54 protects against dust and splash in any direction
(Order IP54 protection level should be negotiated with the manufacturer)

Cabinet Structure

Its basic structure is an assembly of C type profiles which made from plate bending with E=25 module installation hole. The whole cabinet and inner compartments are purification treatment of zinc plating. The door panels and side panels are electrostatic sprayed.The cabinet basic structure is as picture.1 and basic size as picture.2 (table 1 and 2)

Cabinet Type

1.Power Distribution Center switchgear (PC): can adopt Emax,MT,3WN,AH,ME series circuit breakers.

2.Motor control center switchgear (GCK/MNS/GCS): it is the assembly of big & small drawer, every circuit main switch is high breaking moulded case circuit breaker or rotation type load break switch with fuse. Power factor automatic compensation cabinet is with manual or automatic and remote power factor compensation device.

A Power distribution center (PC) cabinet

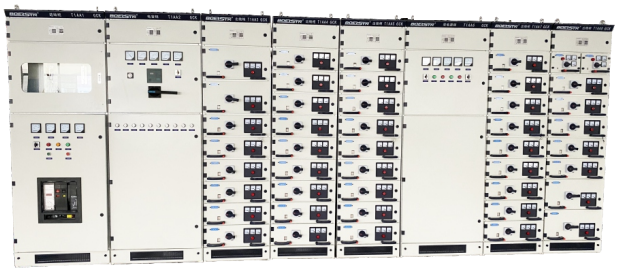
Table 1

Height	Width	Depth			Remark
H	B	T	T1	T2	
2200	400	1000	800	200	Main bus transfer
2200	400	1000	800	200	F_1s-1250-2000 ME630-1605
2200	600	1000	800	200	F_2s-2500
2200	800	1000	800	200	F_4s-3200 ME2000-3200
2200	1000	1000	800	200	F_5s-4000 Me3205
2200	1200	1000	800	200	ME4005

B Power distribution center (PC) cabinet

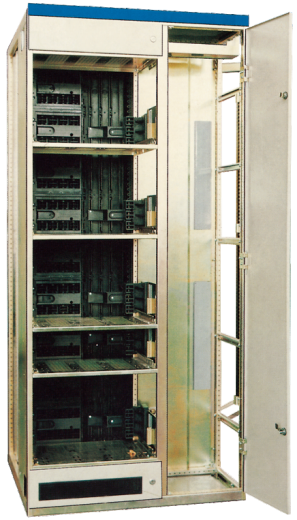
Table 2

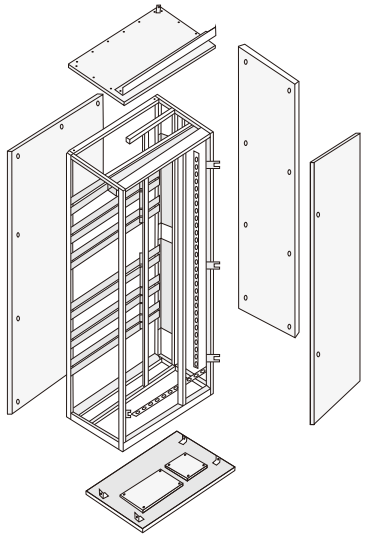
Height	Width				Depth		Remark
H	B	B1	B2	T	T1	T2	
2200	1000	600	400	600	400	200	Single-side operation
2200	1000	600	400	1000	400	200	Double-side operation



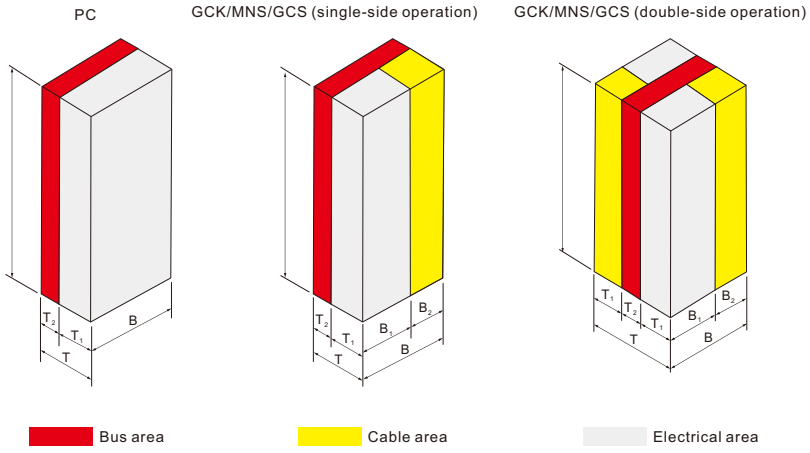
GCK/MNS/GCS series
LOW VOLTAGE WITHDRAWABLE SWITCHGEAR >

C type composed frame structure (Figure 1)





Schematic diagram of cabinet (Fig 2)



Cabinet compartment design

1. Power distribution center (PC).

(1) In the PC cabinet ,there has 3 compartments.

The horizontal busbar compartment is at the back of the cabinet.

Function unit compartment is at the front of cabinet or the left of cabinet.

(2) The way of compartment: use steel plate between the horizontal busbar compartment and function unit compartment. Use flame retardant polyphenylene oxide plastic shell between the circuit controlling compartment and function unit compartment.

(3) Inner installed air circuit breaker ,which can be operated by manual at outside cabinet when the door is closed. To determine whether the circuit breaker is in the test position or in the service position by observing circuit breaker ON-OFF state and the position between door and controlling systems.

(4) Between the main circuit and auxiliary circuit ,designing the compartments structure to auxiliary electric units like instrument, signal lamps & push buttons etc ,which are fixed on the plastic plate . At the back of this plate, the shell made of flame retardant polyamine foam plastics ,which is separated from the main circuit.

2. Withdrawable type motor control center & small current power distribution center (MCC):

Withdrawable GCK/MNS/GCS cabinet ,there also has 3 compartments, that is horizontal busbar compartment at the back of the cabinet, function unit compartment at the front left of the cabinet, cable compartment at the right of the cabinet. Separation of functional panel made of flame retardant foamed plastics between the horizontal busbar compartment and functional units compartment. Separation of steel panel between cable compartment, horizontal busbar compartment and functional unit compartment.

The MCC drawer has below 5 types:

8E/4: 200(H) x 150(W) x 400(D) mm
8E/2: 200(H) x 300(W) x 400(D)mm
8E :200(H) x 600(W) x 400(D) mm
16E: 400(H) x 600(W) x 400(D) mm
24E: 600(H) x 600(W) x 400(D) mm

GCK/MNS/GCS series
LOW VOLTAGE WITHDRAWABLE SWITCHGEAR >

3. The rear structure of outgoing :

This back outlet is designed for decreasing the arrangement width of the switchgear. Its main busbar is installed horizontally on the top of the cabinet, on the half of back is cable compartment. The incoming cables are all connected in this cable compartment. The front of the switchgear is a device small chamber to install functional units or parts. This system design will move the cable compartment at the side of the panel back ,which hardly decrease the arrangement width of cabinets to further satisfy the space requirements of power substation.

The width of feeder panel is 600mm,depth 1000/1200 mm. On its top, it is independent of the main bus compartment separated from device small chamber. The height of front device chamber is 72E(E=25mm) which separated from the back cable compartment through the multi-functional panel, fully usage of installation space of the cabinet. Its structure is compact & flexible unit configuration. The back cable compartment is with the door for convenient installation & maintenance . The width of incoming is according to the frame-current of incoming units . Advised width is 400/600/800/1000mm,cabinet depth 1000mm.

Busbar System

It can be equipped with 2 groups busbar which installed at the back busbar compartment of the switchgear. They are installed upper and lower back of cabinet. According to the needs of the incoming , up and down two sets of busbar can be adopted the materials with same or different cross-section. They can supply power separately ,also can supply power in parallel connection or as backup power source.

The distribution busbar (vertical busbar) assembly in flame retardant plastic functional panel, connected with main busbar through special connection parts to prevent arcing and person contact. The cabinet designs independent PE grounding system & N neutral conductor which installed on the bottom & right of the cabinet. The earthing of each circuit or the connection can be connected at the nearest place. The whole busbar system installation is as Picture. 3. The cabinet frame and structure adopts automatic self-tapping screws which has higher grounding reliability.

The neutral busbar & neutral protective busbar is installed horizontally at the lower place of the functional unit compartment and installed vertically in the cable compartment. If N line and PE line are separated by

insulators, N line & PE line should be used separately . If short connection by conductor between them, it will be PE/N line.

Protect Grounding System

The protection circuit is made from electrically conductive structural devices & PE lines(or PE/N lines) that are individually mounted and run through the entire length of the array . For the metal structural devices or parts, except the exterior door and seal plates, others are treated by zinc-coated.At the place of structural parts connection , do the carefully design to pass a certain short-circuit current.

Auxiliary Circuit and Cable Tray

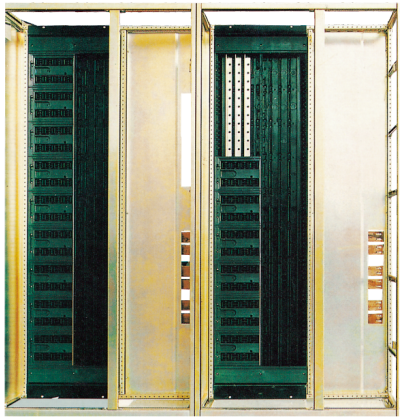
The auxiliary circuit cable tray is installed at the top of the compartment of the functional unit, and the connection line and the common power line can be put in the tray.

Cable and Control Wire Connection

At the side of withdrawable parts ,in the cable small chamber installed cable connection devices and terminals for connecting outlet cable and controlling line and devices. The wiring device is arranged in the chamber on the right side of the rail cable; Main circuit terminal is at the back; Control terminal is at the front 45°direction.Use screws to connect wires for control terminal or use copper lugs or plug-in type cable lugs. The main circuit terminal of the transfer parts is less than 63A , also with PE terminal blocks.

Safety Protection System

Each cabinet has a piece or a set of flame retardant plastic functional board which installed between electrical compartment & main busbar compartment. Its function is preventing arcing caused by fault of switch devices and avoiding the accident caused by a short circuit between the lines. Between the upper & lower drawer, there has metal zinc-coated board with air vent to separate them. Around the smaller 8E/4 、8E/2 drawer is flame retardant type plastic parts. So there is strong insulation isolation between adjacent circuits. A variety of plastic components are used in the cabinet to support the live part . These components are halogen free and it has the anti leakage performance above CT1300 level.



Drawer Type

There has 5 standard sizes based on height of 8E (200mm)
8E/2: assembly 2PCS drawer type units in 8E space.
8E/4: assembly 4PCS drawer type units in 8E space.
8E: assembly 1PC drawer type unit in 8E space
16E: assemble 1PC drawer type unit in 16E (400mm) space
24E: assembly 1PC drawer type unit in 24E (600mm) space
5 types of drawer unit can be assembled in a single cabinet ,can be mixed assembled too.
If assembled in a single cabinet, the max drawer No. is as parameter 3.

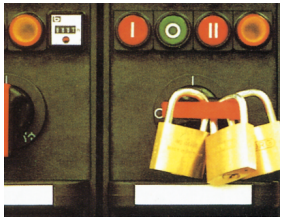
Drawer type	8E/4	8E/2	8E	16E	24E
Maximum number of units accepted	36	18	9	4	3

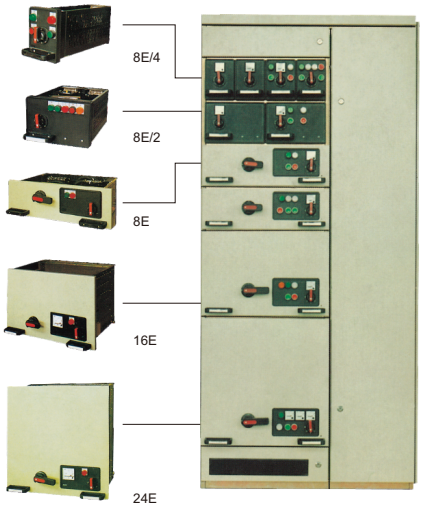
GCK/MNS/GCS series
LOW VOLTAGE WITHDRAWABLE SWITCHGEAR >

Electrical and Mechanical Interlocking of Drawers

The drawer unit has a reliable mechanical interlocking position. It has obvious accuracy in closing, testing, drawing out and isolating position through the operation handle control. The function of the operating mechanism is shown in Figure 4 and figure 5.

To strengthen security , when the handle is positioned, the padlock can be added. Max 3 padlocks can be added. See the left figure. After the drawer unit is positioned , it should be strictly operated as figure 4 & 5 which listed the switch functional operation. Otherwise it is easy to damage the structural device and parts, so please user pay attention to this.





Schematic - operation Switch Function

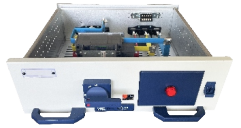


Figure 4 8E/4 and 8E operating switch function

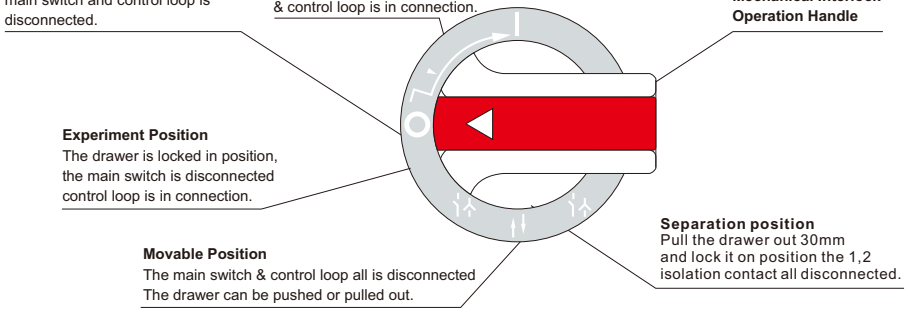
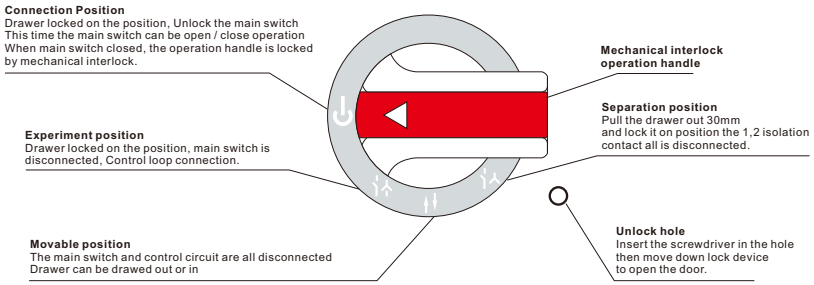


Figure 5 16E/24E operating switch function



Arrangement and Combination of Primary Schemes

1. The total height of functional unit compartment is 72E.

2. In the same cabinet, the arrangement of functional unit :small unit is upper and big unit is lower.

3.8E/4 drawer is assemble 4 drawers to be one 8E installation unit. 8E/2 drawer is assemble 2 drawers to be one 8E installation unit. Or 2x 8E/4 and 1 x 8E/2 to be one 8E installation unit.

4. The current transformer used in the scheme is the most installed quantity in the scheme (in scheme 01-19, 21-39, can add a piece of current transformer for reactive power compensation circuit. In the real usage, it can be decreased or cancelled according to system requirements.

5. Its depth has 600mm (GCK/MNS/GCS single-side operation cabinet) & 1000mm (PC and MCC double-sides operation cabinet), we advise PC & GCK/MNS/GCS are arranged separately. When use the breaking type functional board, allow PC & MCC to be fixed installed in the same cabinet.

6.When PC & GCK/MNS/GCS are in the adjacent arrangement,

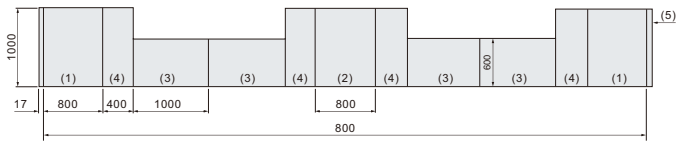
(1) When the GCK/MNS/GCS double sides cabinet (or 600 depth GCK/MNS/GCS single-side cabinet) is arranged adjacent to PC cabinet, between them, there must add the transit cabinet (width 400mm) as the example 1 in the figure 6.

(2) When add the depth of single side GCK/MNS/GCS to be 1000mm, no need of transit cabinet ,see the example 2 in figure 6.

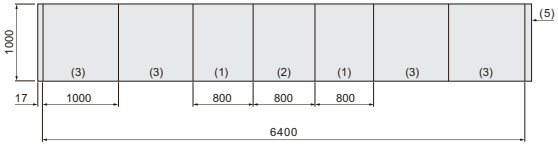
GCK/MNS/GCS series
LOW VOLTAGE WITHDRAWABLE SWITCHGEAR >

Arrangement and Combination of Primary Schemes

Example 1



Example 2



Installation, Use and Maintenance

1. The mounting reference figure 7 & 8

2. After the product reaches the destination, firstly go to inspect the package

If do not mount immediately, it should be put in the clear & dry place

3. Advise off -wall mounting. It can be on wall mounting too. The mounting face should be smooth .The channel steel deviation is 1/1000, total deviation 3mm.

4.For all bolted parts of the conductive part, 8.8 and tension washers are recommended ,its recommended value of tightening torque is shown in the following table:

Bolt specification	Tightening torque
M6	9.5
M8	25
M10	45
M12	80
M16	200

Installation, Use and Maintenance

5. GCK/MNS/GCS scheme, the cable head sheath of the accessory and the copper joint used in a certain number of secondary circuit. (In order to meet the cold pressing process of copper joint, multi-core soft wire are recommended for secondary cable.

6. After cable connection well ,enclose its bottom to avoid small animals come inside causing short-circuit accident.

7. After mounting and adjusting well, before the working, user should do the following testing & inspection:

(a) Inspect inside to see the installed electrical equipment and control wiring in line with the requirements of the factory drawing.

(b) Operate various of switches by hand, the operation should be flexible and no abnormal and rolling phenomenon .

© Inspect mechanical interlocking mechanism to see whether the operation of the electrical interlocking device is correct and reliable or not. It should comply with the requirement of system

(d) Check whether the insulation resistance of the main circuit and control circuit meets the requirements

(e) Check whether the electrical equipment installed in the device is in good contact and whether it is in accordance with the technical conditions of the appliance itself.

(f) Check whether there has any foreign body inside the inspection device and whether the mounting screws are loose in each component

8. Instructions for withdrawal type MCC operation.

(a) After the bottom of the drawer is correctly inserted into the guide, then can push inside cabinet. Otherwise, it will damage the drawer or pull out undesirable phenomena

(b) The signal mark & usage on 8E/4 & 8E/2 drawer face is as figure 4. In the figure from breaking position “O” to working position “I” arrow means: firstly push the operation handle inside ,then rotate handle from “O” to “I”. No need to push if come back, only need to rotate handle from “I” to “O”, after letting go, the handle automatically pops up

© The symbols, signs and functions on the 8E-24E drawer panel are shown in Figure 5. When handle is in the working position, The mechanism of the main switch to relieve mechanical atresia.At this time the main switch can be switched on or off. But after the main switch is switched on, then handle of interlock mechanism can not be operated. There has a plastic cover on the lower right door which in accordance with the symbol ,it is the unlocking mechanism of the door. Its operation is as following : When the drawer is in the working position, if need to open the door, firstly should pull out the plastic cover, then insert the screwdriver in the hole and move down the lock catch ,the door can be opened. After open the door, must cover that plastic cover. Otherwise the protection degree will be damaged.

Transportation and Storage

1. Don't tilt and shake violently

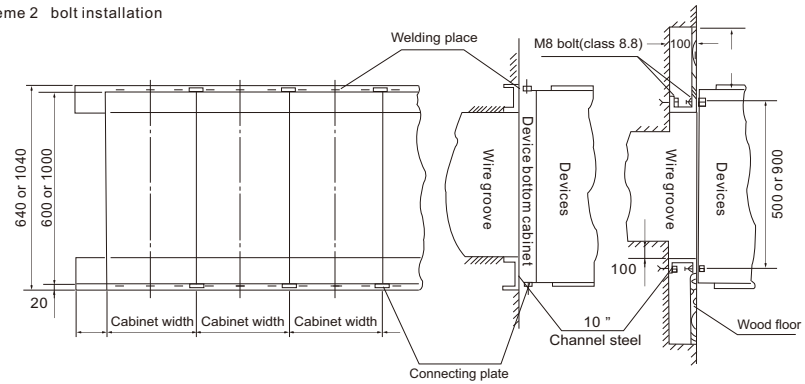
2. Use the transport of angle plate in unpacking after lifting, the angle between two steel wire ropes should be less than 120°. If use forklift, rolling stick or crowbar are not allowed to directly on the device on the chassis

GCK/MNS/GCS series
LOW VOLTAGE WITHDRAWABLE SWITCHGEAR >

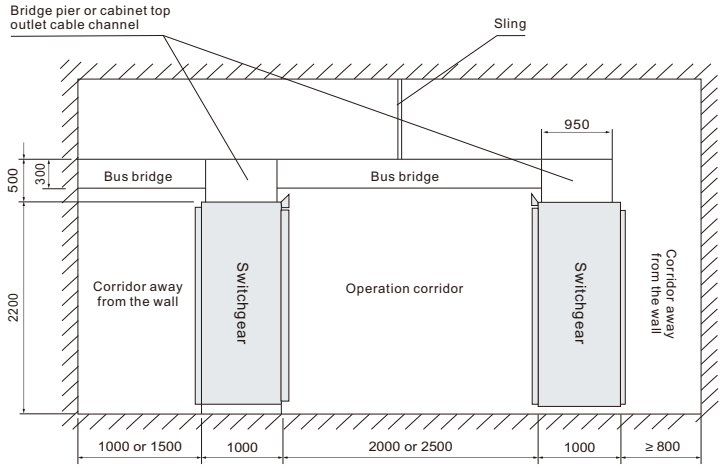
3. If need to move it a little after installation, can move four corners on the underframe
4. The inside electrical parts or accessories are not allowed to be disassembled

Installation Schematic Diagram (Figure 7)

Scheme 1 welding installation
Scheme 2 bolt installation



Bus Bridge Installation Diagram (Figure 8)



The manufacturer can provide all kinds of bus bridges according to the user's requirements.

MCC series

LOW VOLTAGE MOTOR CONTROL CENTER

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MCC series

LOW VOLTAGE MOTOR CONTROL CENTER

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Comply with IEC529 and DIN40050 standards
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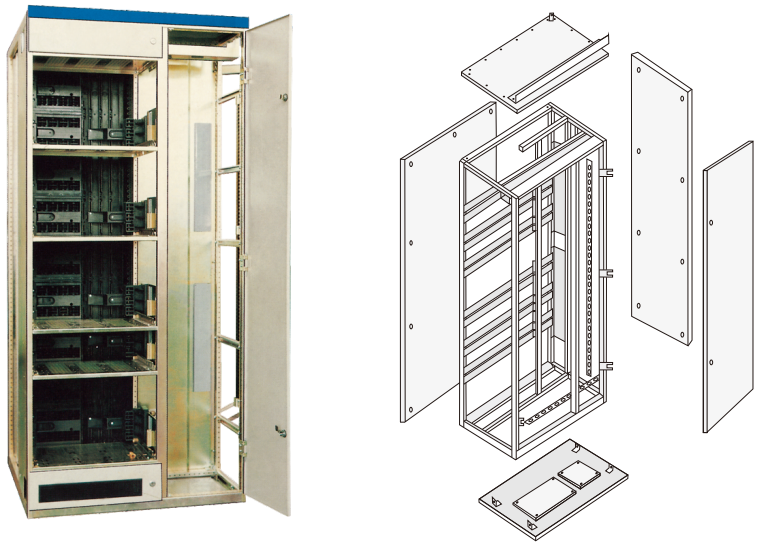
MCC series
LOW VOLTAGE MOTOR CONTROL CENTER

C type composed frame structure (Figure 1)



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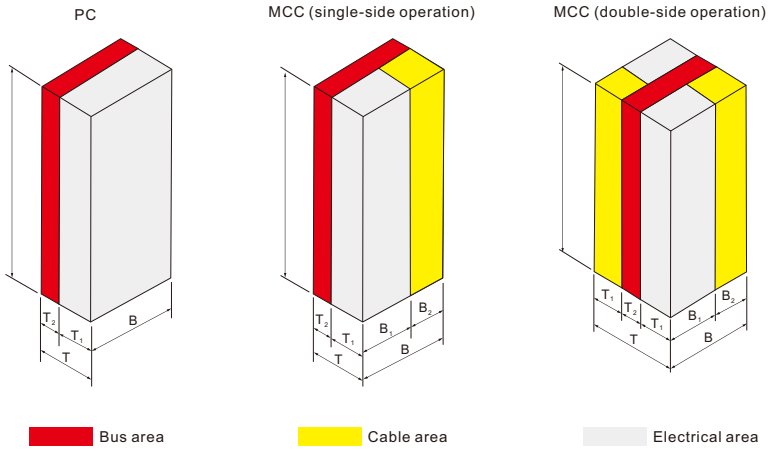

MCC series

LOW VOLTAGE MOTOR CONTROL CENTER

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MCC series

LOW VOLTAGE MOTOR CONTROL CENTER

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Busbar System

It can be equipped with 2 groups busbar which installed at the back busbar compartment of the switchgear. They are installed upper and lower back of cabinet. According to the needs of the incoming , up and down two sets of busbar can be adopted the materials with same or different cross-section. They can supply power separately ,also can supply power in parallel connection or as backup power source.

The distribution busbar (vertical busbar) assembly in flame retardant plastic functional panel, connected with main busbar through special connection parts to prevent arcing and person contact. The cabinet designs independent PE grounding system & N neutral conductor which installed on the bottom & right of the cabinet. The earthing of each circuit or the connection can be connected at the nearest place. The whole busbar system installation is as Picture. 3. The cabinet frame and structure adopts automatic self-tapping screws which has higher grounding reliability.

The neutral busbar & neutral protective busbar is installed horizontally at the lower place of the functional unit compartment and installed vertically in the cable compartment. If N line and PE line are separated by

insulators, N line & PE line should be used separately . If short connection by conductor between them, it will be PE/N line.

Protect Grounding System

The protection circuit is made from electrically conductive structural devices & PE lines(or PE/N lines) that are individually mounted and run through the entire length of the array . For the metal structural devices or parts, except the exterior door and seal plates, others are treated by zinc-coated.At the place of structural parts connection , do the carefully design to pass a certain short-circuit current.

Auxiliary Circuit and Cable Tray

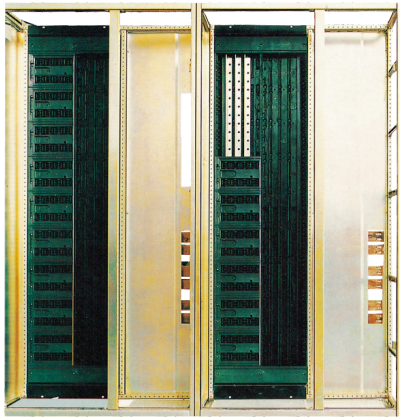
The auxiliary circuit cable tray is installed at the top of the compartment of the functional unit, and the connection line and the common power line can be put in the tray.

Cable and Control Wire Connection

At the side of withdrawable parts ,in the cable small chamber installed cable connection devices and terminals for connecting outlet cable and controlling line and devices. The wiring device is arranged in the chamber on the right side of the rail cable; Main circuit terminal is at the back; Control terminal is at the front 45°direction.Use screws to connect wires for control terminal or use copper lugs or plug-in type cable lugs. The main circuit terminal of the transfer parts is less than 63A , also with PE terminal blocks.

Safety Protection System

Each cabinet has a piece or a set of flame retardant plastic functional board which installed between electrical compartment & main busbar compartment. Its function is preventing arcing caused by fault of switch devices and avoiding the accident caused by a short circuit between the lines. Between the upper & lower drawer, there has metal zinc-coated board with air vent to separate them. Around the smaller 8E/4 、8E/2 drawer is flame retardant type plastic parts. So there is strong insulation isolation between adjacent circuits. A variety of plastic components are used in the cabinet to support the live part . These components are halogen free and it has the anti leakage performance above CT1300 level.



Drawer Type

There has 5 standard sizes based on height of 8E (200mm)
8E/2: assembly 2PCS drawer type units in 8E space.
8E/4: assembly 4PCS drawer type units in 8E space.
8E: assembly 1PC drawer type unit in 8E space
16E: assemble 1PC drawer type unit in 16E (400mm) space
24E: assembly 1PC drawer type unit in 24E (600mm) space
5 types of drawer unit can be assembled in a single cabinet ,can be mixed assembled too.
If assembled in a single cabinet, the max drawer No. is as parameter 3.

Drawer type	8E/4	8E/2	8E	16E	24E
Maximum number of units accepted	36	18	9	4	3

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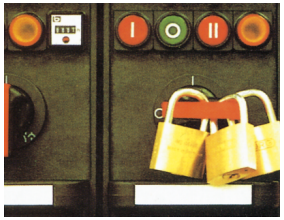
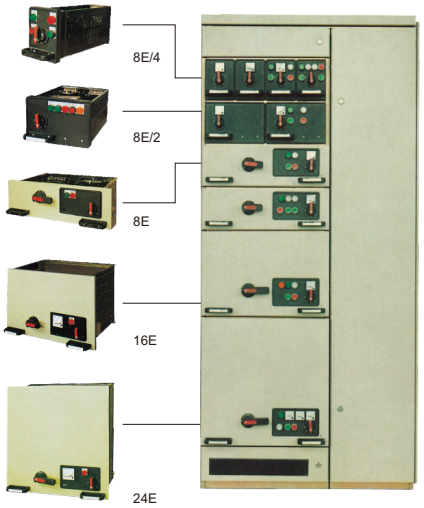
Electrical and Mechanical Interlocking of Drawers

The drawer unit has a reliable mechanical interlocking position. It has obvious accuracy in closing, testing, drawing out and isolating position through the operation handle control. The function of the operating mechanism is shown in Figure 4 and figure 5.

To strengthen security , when the handle is positioned, the padlock can be added. Max 3 padlocks can be added. See the left figure. After the drawer unit is positioned , it should be strictly operated as figure 4 & 5 which listed the switch functional operation. Otherwise it is easy to damage the structural device and parts, so please user pay attention to this.





Schematic - operation Switch Function

Figure 4 8E/4 and 8E operating switch function

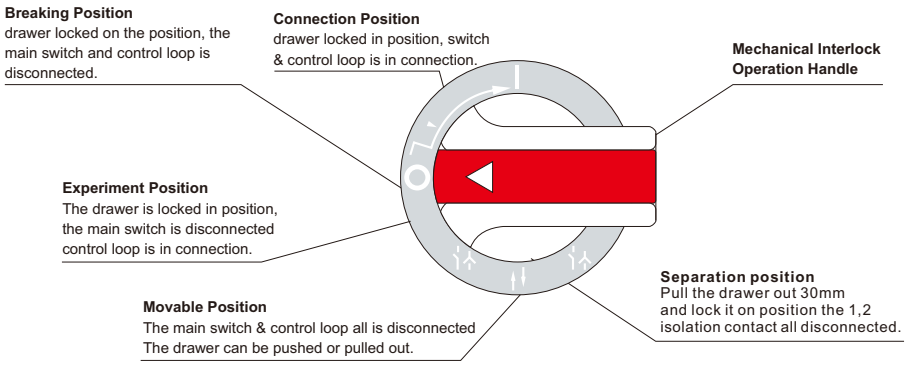
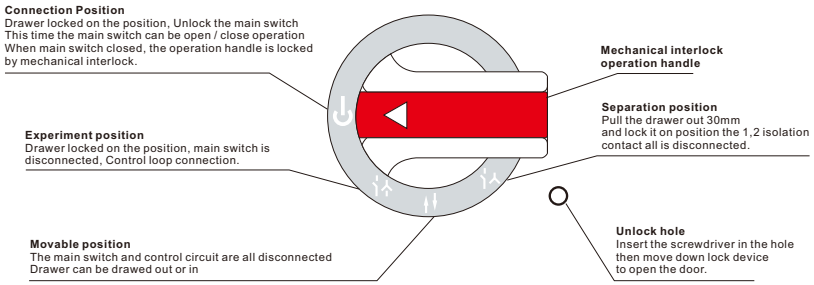


Figure 5 16E/24E operating switch function



Arrangement and Combination of Primary Schemes

1. The total height of functional unit compartment is 72E.

2. In the same cabinet, the arrangement of functional unit :small unit is upper and big unit is lower.

3.8E/4 drawer is assemble 4 drawers to be one 8E installation unit. 8E/2 drawer is assemble 2 drawers to be one 8E installation unit. Or 2x 8E/4 and 1 x 8E/2 to be one 8E installation unit.

4. The current transformer used in the scheme is the most installed quantity in the scheme (in scheme 01-19, 21-39, can add a piece of current transformer for reactive power compensation circuit. In the real usage, it can be decreased or cancelled according to system requirements.

5. Its depth has 600mm (MCC single-side operation cabinet) & 1000mm (PC and MCC double-sides operation cabinet), we advise PC & MCC are arranged separately. When use the breaking type functional board, allow PC & MCC to be fixed installed in the same cabinet.

6.When PC & MCC are in the adjacent arrangement,

(1) When the MCC double sides cabinet (or 600 depth MCC single-side cabinet) is arranged adjacent to PC cabinet, between them, there must add the transit cabinet (width 400mm) as the example 1 in the figure 6.

(2) When add the depth of single side MCC to be 1000mm, no need of transit cabinet ,see the example 2 in figure 6.

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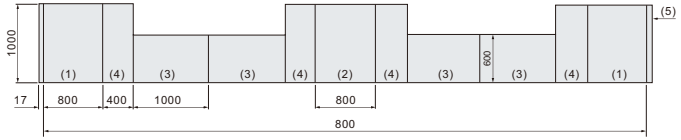
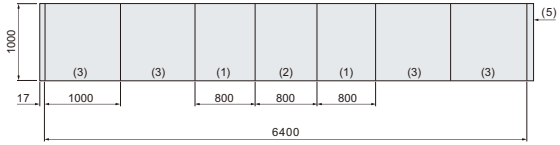
Arrangement and Combination of Primary Schemes

Example 1



Example 2



Installation, Use and Maintenance

1. The mounting reference figure 7 & 8

2. After the product reaches the destination, firstly go to inspect the package

If do not mount immediately, it should be put in the clear & dry place

3. Advise off -wall mounting. It can be on wall mounting too. The mounting face should be smooth .The channel steel deviation is 1/1000, total deviation 3mm.

4.For all bolted parts of the conductive part, 8.8 and tension washers are recommended ,its recommended value of tightening torque is shown in the following table:

Bolt specification	Tightening torque
M6	9.5
M8	25
M10	45
M12	80
M16	200

Installation, Use and Maintenance

5. MCC scheme, the cable head sheath of the accessory and the copper joint used in a certain number of secondary circuit. (In order to meet the cold pressing process of copper joint, multi-core soft wire are recommended for secondary cable.

6. After cable connection well ,enclose its bottom to avoid small animals come inside causing short-circuit accident.

7. After mounting and adjusting well, before the working, user should do the following testing & inspection:

(a) Inspect inside to see the installed electrical equipment and control wiring in line with the requirements of the factory drawing.

(b) Operate various of switches by hand, the operation should be flexible and no abnormal and rolling phenomenon .

© Inspect mechanical interlocking mechanism to see whether the operation of the electrical interlocking device is correct and reliable or not. It should comply with the requirement of system

(d) Check whether the insulation resistance of the main circuit and control circuit meets the requirements

(e) Check whether the electrical equipment installed in the device is in good contact and whether it is in accordance with the technical conditions of the appliance itself.

(f) Check whether there has any foreign body inside the inspection device and whether the mounting screws are loose in each component

8. Instructions for withdrawal type MCC operation.

(a) After the bottom of the drawer is correctly inserted into the guide, then can push inside cabinet. Otherwise, it will damage the drawer or pull out undesirable phenomena

(b) The signal mark & usage on 8E/4 & 8E/2 drawer face is as figure 4. In the figure from breaking position “O” to working position “I” arrow means: firstly push the operation handle inside ,then rotate handle from “O” to “I”. No need to push if come back, only need to rotate handle from “I” to “O”, after letting go, the handle automatically pops up

© The symbols, signs and functions on the 8E-24E drawer panel are shown in Figure 5. When handle is in the working position, The mechanism of the main switch to relieve mechanical atresia.At this time the main switch can be switched on or off. But after the main switch is switched on, then handle of interlock mechanism can not be operated. There has a plastic cover on the lower right door which in accordance with the symbol ,it is the unlocking mechanism of the door. Its operation is as following : When the drawer is in the working position, if need to open the door, firstly should pull out the plastic cover, then insert the screwdriver in the hole and move down the lock catch ,the door can be opened. After open the door, must cover that plastic cover. Otherwise the protection degree will be damaged.

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Site Installation

Site installation of cubicles should be under the guidance of professional technician to ensure the installation quality.Site installation should not be made until the completion of construction, power supply and mounting power. Distribution room must be dry, lockable and equipped with ventilation devices. Preparations including wall holes, cable tray for power cable and control cable etc. The height of ceiling of the distribution room should not be less than 2000mm. Besides the special operation conditions that are written approved, any associated standards and that are specified in this specification should be strictly satisfied.

Base frame

Cubicles should be erected on the base frame which are fabricated according to the typical drawing supplied by the manufacturer and are pre-bedded on the distribution room floor. When laying the basic, conformity should be made to the associated construction rules, especially to the requirements in this specification about basic line and flatness.

The quality of the base frames is decided by that of cubicles. EMMSedding work is usually finished by construction personnel.

Installation of base frames

● Welding should be made at the pre-decided joint points according to relevant rules to satisfy the required flatness of base frame surface.

●Place the base frame at the specified position precisely according to the layout of the distribution room.

● Carefully adjust the surface flatness of the whole base frame with level meter to ensure the proper height. The upper surface of the base frame should be 2mm higher than the finished room floor to facilitate cubicle installation and adjustment. If supplementary layer is needed upon the room floor, the thickness of the layer should be individually taken into account.

Allowed flatness tolerance is +1mm/m

Allowed tolerance of frame material aligning is +1mm/m. But the total deviation of the frame length should not be more than 2mm.

● Base frame should be reliably grounded. Zinc plated flat steel with cross section not less than 30*4mm must be used for grounding. When cubicles array is too long, base frame should be grounded at two ends.

● When the supplementary layer is finished, pay attention to the lower part of the base frame, no gap is allowed.

● Base frame can’t be exposed to hazardous bump or pressure especially during installation.

Installation of main busbar

- Remove the transparent cover for the linkage busbar.
- Clean busbar with dry and clear soft cloth, and remove the grease and sewage.
- Install the linkage busbar in each cubicle.

Remove the transparent cover for the linkage busbar

Install the linkage busbar in each cubicle

Connection of Power cable and control cable

- Remove cover of power cable and open the cover of control cable tray.
- Lead in the power cable and strip it at pre-decided length.
- Prepare and install the cable termination according to the cable specification supplied by the cable manufacturer.
- Install the cable nose with stress cone cable head in the specified cable hole.
- Cable grounded.
- Make insulation hood on the cable joint.
- If no hole is on the cable cover, then dig a cable incoming hole according to the quantity of power cable and close the cover and fix it.
- Lead the control cable into the guide slot of control cable.
- Connect control cable with corresponding terminal on the terminal board according to connection and terminal drawing.
- Control power between the adjacent cubicles should be led through the hole on the LV side plate.

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Cubicle Grounding

- Connect the main earth bus with pre-fabricated earthing barbar.
- Connect base frame with earth busbar.
- Connect main grounding wire in the cubicle with earthing electrodes in the distribution room.

Finally of Installation

- Check if there is any damage to the paint of cubicle, if necessary, just repair it.
- Check the bolt connection, especially the site installed busbar and bolt in the grounding system, if necessary just tighten it as required.
- Clean the cubicle carefully.
- Remove anything useless in the cubicle.
- Fix the cover that removed during the period of site installation and wiring.
- Push the circuit breaker truck into the cubicle.
- Check if the disconnecting contactor and interlocking mechanism is flexible, apply lubricant if necessary.

Pay attention to the field safety

Cubicle operation procedure and relative work should be performed by experienced and skilled professional technicians. They should be familiar with switchgear and obey relative safety regulations stipulated by specific institution and local regulations and other details.

Preparation work

The following preparations should be made before commissioning:

- Check the switchgear, find any unfavorable factor and make confirmation that resolutions have been taken.
- Observe the switching devices, insulating elements to see if they are in accordance with installation requirements.
- Check if the connection between main earthing bus and substation grounding conductor outside cubicle is dependable.
- Check if there is any damage to the painted coat.
- Remove any unnecessary items and tools in the cubicle.

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Preparation work

- Clean the cubicle insulating elements with clean and dry soft cloth, remove the dust and grease on the surface.
- Re-install the covers that are removed during field connection and any test period.
- Turn on auxiliary control power.
- Perform the operation test on switching devices manually or electrically meanwhile observe corresponding position indicators.
- Check service quality of mechanical and electrical interlocks with slight strength.
- Set protective relay to required value and check its function with testing devices.
- Introduce regular operation of cubicle to field operators.
- Make sure the operators are easy to get this instruction.
- Check operation preparations and on/off status of electrical system at upper stream and lower stream side.

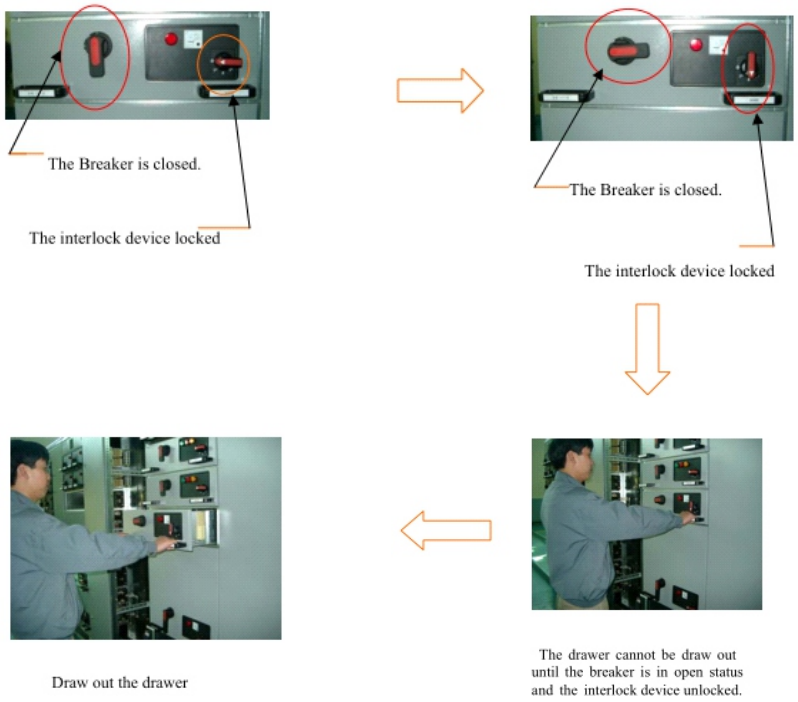
The following devices are probably to be checked

- Power cable
- Auxiliary cable
- Auxiliary power
- Remote system
- Earthing system
- Other devices in distribution room
- Condition of distribution room

Start-up

- Obey all relative safety regulations, especially installation regulations of power devices.
- Make sure breaker in cubicle is in off status.
- Remove any earthing wire and shorted wire in dangerous working area.
- Feeding cable should pass the voltage withstand test.
- Make commissioning as required and pay attention to signals and indicators.
- If necessary check phase sequence according to cubicle configuration.
- Make measurement and check all of the functions with the help power supply.
- Pay attention to any abnormal conditions.
- The power of anti-moist heater should not be off during cubicle operation.
- Signal bus should connect with alarm devices.

Operation of Cubicle



Maintenance and Inspection

• The purpose of maintenance is to ensure fault-free operation and lengthen the life. It includes the following:

Check: get a general idea of actual operating status.

Upkeep: method to keep required operating status.

Inspection: method to recover required operating status.

Note: maintenance should only be performed by skilled and careful professional technicians, they are familiar with detailed characteristics of switchgear. It is preferred that service personnel from Zhezhong will do the job.

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Maintenance and Inspection

• Check and maintenance interval of some device/components (such as wear-out parts) depends on the following rules:Running time, operating frequency and fault interrupting condition of breaker and etc. On the other hand, the maintenance period of other parts depends on working style, burden level and environmental effect of a certain occasion (including pollution and corrosive air).

• On some specific occasions, beside this M & O Manual, Instructions for Installation, Operation and Maintenance of Circuit Breakers should also be obeyed

• If necessary, contact manufacturer for detailed information.

Check and Maintenance

Perform check and upkeep to switchgear every 3-5 years depending on running condition and actual environment.

When running condition is abnormal (including unfavorable climatic condition) or harmful (such as serious pollution and corrosive air), the period of check and maintenance should be shortened. Check includes the following:

•Isolate workspace that check and maintenance will be performed according to safety regulations,and ensure that power isn't on during check period.

• Check if any abnormal factor, dust or other environmental factor affects the device.

• Check the function, control, interlocking, protection and signaling of switching device and other equipment.

• Check isolating contact surface, if silver r r plate i worn out or worse, or severely corroded, or has traces of damaged or over-heated, and then contact should be replaced.

• Check accessory and auxiliary equipment of switchgear.

• At rated operating voltage, no exterior discharge at the surface. This can be judged by specific noises when exterior discharging, obviously sensed ozone smell and visible brilliance.

Basic check and upkeep include

• If devices are dirty (in tropical climate, with the help of frequent moist, salt, mould, insects and conductive particles are easy to contaminate devices), then clean it carefully, especially insulating material surface. Dry and soft cloth can be used to clean dust with slight adhesion. If dust with great adhesion (such as greasy dust), use some alkali cleanser, then the water, finally dry the device.

• As to insulating material and severely contaminated components, aseptic cleanser can be used. For the sake of safety, obey the specifications of manufacturers. Thichloroethane, thichloroethyl lene and tetrachloromethane are forbidden to be used as cleansers.

• Check if bolts of bus and earthing system are tighten, isolating contact is properly operated.

• Lubricant should be added when truck's plug-in mechanism and contact is in short of or lack of lubricant.

• Clean the movable contact surface of switchgear (such as hinged shutter, interlocking mechanism,system levering mechanism and truck wheels), and apply lubricant.

• Observe maintenance instruction stipulated in this book.

General Repair

• If any defect, commit repair as soon as possible.

• Clean the rust on steel plate and other elements with mechanical method (such as copper brush).

• Rub softly the edge of paint and clean greasy dirt. Apply anti-corrosion base paint as soon as possible, after the base paint is dry, apply finishing coat. The thickness of coat is approximately 60um. Appropriate compatible paint can be used.

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General Repair

• Brush off the white rust spot on zinc plated or chrome plated functional element. Clean rust spot with dry and clean cloth. After installation is finished, apply base paint as soon as possible, then the finish paint. The total thickness of coat is approximately 30um. Epoxy resin base paint and polyurethane finish paint is especially applicable.

• Removable and rotating element(such as rotating shaft and link lever) don't need any paint, but lubricant should be applied.

Replacement of Components

When placing an order, the correct name, type, applicable current and voltage rating should be specified. Nameplate and technical instruction can be used as reference.

Warning

When placing an order, the correct name, type, applicable current and voltage rating should be specified. Nameplate and technical instruction can be used as reference.

Pay attention to this instruction and safety operation regulations.

Dangerous voltage may cause shock and fire.

Cut off the power before perform any work in the live area.

• Make sure the installation, operation and service must be processed by professional electrical engineers.

• Keep legal laws, operation criterion of local power department and relevant safety operation regulations.

• Any activity related to GCK switchgear should consult with this instruction.

• The Low voltage switchgear is of the indoor distribution equipment, it must be installed in buildings applicable for electrical devices.

Warning

- Never exceed the rated technical data specified by switchgear nameplate.
- Make sure personnel responsible for installation, operation and service are easy to get this instruction.
- Operator should take correct and efficient resolution when any problem occurs.
- We are always glad to answer any relevant questions.

Transportation and storage

1. Don't tilt and shake violently

2. Use the transport of angle plate in unpacking after lifting, the angle between two steel wire ropes should be less than 120°. If use forklift, rolling stick or crowbar are not allowed to directly on the device on the chassis

3. If need to move it a little after installation, can move four corners on the underframe

4. The inside electrical parts or accessories are not allowed to be disassembled

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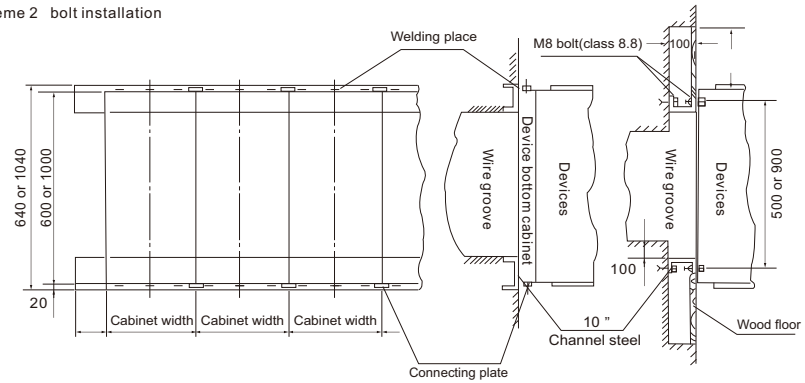
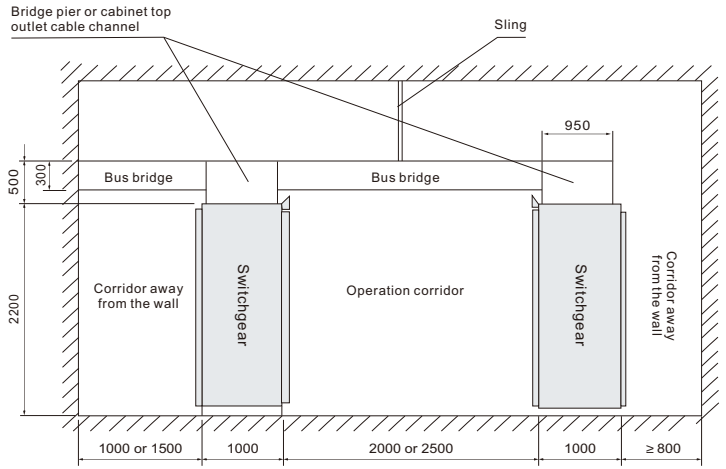
Replacement of Components

Scheme 1 welding installation
Scheme 2 bolt installation



Bus Bridge Installation Diagram (Figure 8)



The manufacturer can provide all kinds of bus bridges according to the user's requirements.

GGD series

LOW VOLTAGEFIXED SWITCHGEAR >



Purpose

GGD type LV low voltage distribution cabinet is suitable for three-phase AC 50/60Hz, max voltage 690V, rated current to 3150A power distribution system, it is widely used in power plants, substations, industrial and mining enterprises etc energy consumer and using for power, lighting and distribution equipment for electrical energy conversion, distribution and control purposes.

GGD type LV low voltage distribution cabinet is based on the higher charge of energy department and the power consumers and design department requirements, the principle of safety, economy, reasonable, reliable design of new type low-voltage distribution cabinet. The products with high breaking capacity, dynamic thermal stability, electrical flexible, convenient combination, a series of practical, novel structure, high protection level, which can be used as a replacement of low voltage switchgear.

GGD AC low voltage distribution cabinet is accords with the standards IEC61439-2 Low voltage complete switch device and Control Equipment etc.

Service Conditions

1.Ambient air temperature: -5℃~+40℃ and the average temperature should not exceed +35℃ in 24h.

2.Indoor altitude above sea level: Maximum installation altitude: 2000m.

3.Relative humidity should not exceed 50% at max temperature +40℃. Higher relative humidity is allowed at lower temperature. Ex. 90% at +20℃. But in view of the temperature change, it is possible that moderate dews will produce casually.

4.No fire, explosion danger, serious pollution, chemical corrosion and severe vibration.

5.Installation gradient not exceed 5°.

6.The equipment shall be installed in a place where there is no violent vibration and impact, and the place where the electrical components are not corroded.

7.Any specific requirement, consult with manufacture.

Product Model and Meaning

G G D □ — □ □

- Auxiliary circuit scheme code
- Main circuit scheme code
- Design S/N: 1-breaking capacity of 15kA; 2-breaking capacity of 30kA; 3-breaking capacity of 50kA
- Power cabinet
- Electrical components
- AC LV PDB

GGD series

LOW VOLTAGE FIXED SWITCHGEAR >

Electrical Properties

1. Basic electrical parameters

Type	Rated voltage (V)	Rate current (A)	Rated short circuit break current (kA)	Rated short time withstand current (1s) (kA)	Rated peak withstand current (1s) (kA)
GGD1	380	A 1000 B 600(630) C 400	15	15	30
GGD2	380	A 1500(1600) B 1000 C 600	30	30	63
GGD3	380	A 3150 B 2500 C 2000	50	50	105

2. Main circuit scheme

The main circuit of the GGD cabinet is designed with 129 schemes, which have 298 specifications (excluding the function of the auxiliary circuit and the change of the control voltage.

Among: GGD1 type 49 schemes 123 specifications
GGD2 type 53 schemes 107 specifications
GGD3 type 27 schemes 68 specifications

The main circuit scheme is for the design, use departments suggestions to select, increasing the power plant needs. Rated current to 3150A, suitable for 2000kVA and below distribution transformer selection. In addition, in order to meet the needs of the reactive power compensation designing of GGJ 1, GGJ2 capacitor compensation cabinet, its main circuit 4 schemes. a total of 12 specifications.

3. Auxiliary circuit scheme

The design of auxiliary circuit is divided into two parts: power supply scheme and power plant project, GGD cabinet will have enough space to install the secondary components, while NLS has developed special LMZ3D type current transformer to meet power plant and special user with relay protection needs.

4. Main bus

Considering the feasibility on price ratio and aluminum replacing copper , the rated current in 1500A and below, it can be used in single row aluminum busbar, rated current is greater than 1500A ,adopting double copper busbar, manufacturer is according to the provisions to produce prototype and passed the type test, of course, the production plant can also be based on user requirements to replace aluminum busbar to change the same carrying capacity of copper bus bar.

The lap surface of busbar are used soldering process.

5. Selection of electrical components

(1). The GGD cabinet mainly adopts advanced electrical components, but also according to the economic and reasonable principle, retain some of the available old DZ10D in full consideration of the feasibility of the premise, such as DZ20, do not use obsolete products.

(2). HD13BX and HS13BX type rotating operation type switch is a special element NLS designed to meet the needs of GGD cabinet unique structure, it has changed the mode of operation mechanism, retain the advantages of the old products to be a practical new type of electrical components.

(3). As the design department according to user needs, with more excellent performance, new electrical components, more advanced technology, because the GGD cabinet installation flexibility good, generally will not cause the difficulty of manufacturing and installation of the update for the electrical components.

(4). In order to further improve the dynamic stability of the main circuit, NLS designed the ZMJ type bus GGD cabinet special clamp and insulating support parts. Bus clamp is made of high strength, high flame retardant Pp0 alloy material, thermoplastic molding, high insulating strength, self extinguishing performance, unique structure, only need to adjust the block between the block easily combined into a single or double busbar busbar clamp clamp, insulating support sleeve is molded structure, low cost, high strength, the old product creepage distance is not defective.

GGD series

LOW VOLTAGEFIXED SWITCHGEAR >

Structure Characteristics

1.GGD AC low voltage distribution cabinet cabinet with universal cabinet form frame of 8MF cold-formed steel by local welding assembly, frame parts and special parts by steel production plant sentinel supporting supply, to ensure the accuracy and quality of the cabinet. The cabinet general principle of 2 parts according to the module 0 module, which is provided with a mounting hole. The general coefficient is high, can make the factory implementation of pre production, which can shorten the manufacturing cycle, but also improve work efficiency.

2. The GGD cabinet is designed to take full account of the heat problem in the operation of the cabinet in the cabinet. The upper and lower ends are different number of radiating slots, hot air rises when the cabinet electric heating element, and discharged through the top slot, and the cold wind constantly from the bottom slot supplemented cabinet, the cabinet body bottom sealed to form a natural ventilation and to achieve the aim of heat radiation.

3 .The GGD cabinet according to the modern industrial product shape design, using the golden ratio design method of the cabinet body and cut size of each part, the entire cabinet appearance, new look.

4.The door hinge and frame shaft movably connected with the installation, convenient disassembly, are a mountain type rubber block the hem of the door, when the door between the door and the frame of the molding a compression stroke, and the cabinet door can prevent direct collision, also improve the level of protection of the door.

5. Equipped with the electrical components of the instrument door with many baling wires connected to a frame, mounting cabinet with frame with knurling screw fastening, the entire cabinet form a complete grounding protection system.

6. The selection of orange shaped Polyester Topcoat Paint, with strong adhesion, good texture, the entire cabinet is sub light tone, avoid glare effect, to the personnel on duty to create a more comfortable visual environment.

7.The cover can be removed during installation and adjustment for field bus, on top of the cabinet with four angle rings, used for lifting and loading.

8. Cabinet protection grade is IP30, the user can choose between IP20 - IP40 according to the use requirements of the environment.

Installation and Use

The product reaches destination, at first, they should check whether the packaging is intact, once they found the problem , they should be timely notify the relevant departments to do business contract records and analysis cause , prepare visa and deal with sales after. For the product not immediately install, they should be based on the conditions of normal use and electrical equipment for temporary custody at appropriate places for safe keeping.

1. The product should be installed according to the installation diagram (see Figure2).

Adopting bolt to be fixed and foundation channel steel is owned by the user. When the main bus row of tin should be installed , the lap surface should repair leveling, clean, paint neutral Vaseline or other measures , and then fix it by bolts.

2. Before commissioning, inspect and test products after installation.

(1). Check the panel paint came off and cabinet inside dry, clean..

(2). Whether electrical components of the operating mechanism is flexible, it should not be too large or too difficult to operate.

(3). Whether the main and auxiliary contacts of main electrical appliances are reliable and accurate.

(4). Instrument calibration setting, transformers' ratio and polarity should be correct.

(5). The connection of each busbar should be good, the insulation support, installation and other accessories should be installed firmly and reliably.

(6). Whether the auxiliary contact meets the requirements, the fuse core specification is correct, the setting value of the relay meets the design requirements, and the action is reliable and accurate.

(7). The circuit connecting point is in line with the electrical schematic diagram.

(8). Whether protection circuit system meets the requirements.

(9). The insulation resistance shall not be less than 11MΩ by using 500V megameter.

3. Notice for using

(1). Device is not against wall installation, positive operation, double side maintenance for low voltage power distribution cabinet. Maintenance channel and cabinets door must be qualified professional personnel who shall enter into or open operation, inspection and maintenance.

(2). Air circuit breaker, molded case circuit breaker has several opened and closed, especially after short circuit opened and closed, it can make the contacts local burn and produce carbon material,which will cause the

GGD series

LOW VOLTAGE FIXED SWITCHGEAR >

contact resistance increases, it should be carried out maintenance and inspection according to circuit breaker instructions.

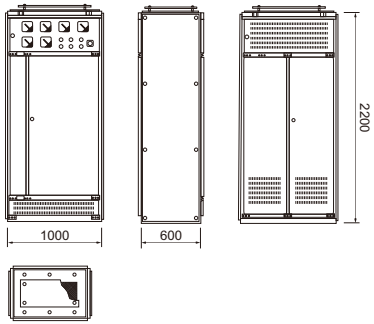
Product Integrity

The supplier shall provide the following documents and attachments:

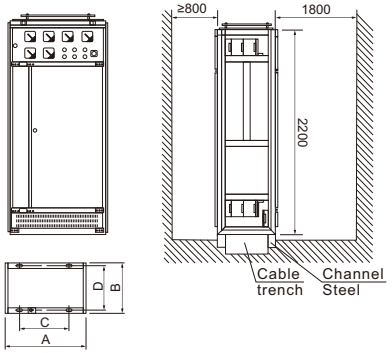
1. Device list;
2. Product qualification certificate;
3. Instruction manual;
4. Factory test report;
5. Relevant electrical drawings;
6. Door key, operating handle and contract requires for spare parts;
7. Main components of the installation instructions.

Installation and Use

Outline diagram



Installation diagram



Code	A	B	C	D
GGD06	600	600	450	556
GGD06A	600	800	450	756
GGD08	800	600	650	556
GGD08A	800	800	650	756
GGD10A	1000	600	850	556
GGD12	1000	800	850	756

XL-21 series

LOW VOLTAGE FIXED SWITCHGEAR >

Product Overview

The new type XL-21 power cabinet is widely used in power plants and industrial and mining enterprises as three phase AC 400V three-phase three wire, three-phase four wire, three-phase five wire power distribution system for power or illumination, indoor wall installation, front panel operation, front panel inspection; Cabinet is fully enclosed structure, by C a section or 8MF profile assembly. Cabinet inside adopts the new type rotary load isolating switch with load operation, front door installed ammeter, voltmeter and the signal lamp, button, selector switch and other components. The main distribution box adopts self-design of new components, compact structure, beautiful appearance, easy maintenance, a variety of wiring options for users to choose, it is an ideal alternative to the old XL-21 power cabinet.

The switchgear meet the requirements of standard IEC61439-2 etc.

Service Conditions

1.Ambient air temperature: -5℃~+40℃ and the average temperature should not exceed +35℃ in 24h.

2.Indoor altitude above sea level: Maximum installation altitude: 2000m.

3.Relative humidity should not exceed 50% at max temperature +40℃. Higher relative humidity is allowed at lower temperature. Ex. 90% at +20℃. But in view of the temperature change, it is possible that moderate dews will produce casually.

4.Installation gradient not exceed 5°.

5.The equipment shall be installed in a place where there is no violent vibration and impact, and the place where the electrical components are not corroded.

6.Any specific requirement, consult with manufacture.

XL-21 series

LOW VOLTAGE FIXED SWITCHGEAR >

Technical Parameter

No	Name	Unit	Parameter
1	Main circuit rated voltage	V	AC:400
2	Main circuit rated voltage	V	AC:220, 400
3	Rated frequency	Hz	50/60
4	Rated insulation voltage	V	690
5	Rated current	A	800A

Product Technical Features

1. Electrical properties are fully in accordance with the relevant provisions of GB 7251.1 and IEC 60439-1.

2. Feeder switch with small size, high breaking, short arc (or no arc) of the new type mold case circuit breaker and double tripping, which is equipped with overload, short circuit protection function, and can be added with the leakage protection function as per client requirement.

3. Motor circuit with overload, short circuit, under voltage, lack of phase protection function.

4. Auxiliary circuit with local, remote control function and local, remote automatic selecting function.

Order Notice

An order contract contains the following:

1. The full model includes the main circuit and auxiliary circuit scheme;

2. Combinatorial sequence diagram of main circuit system;

3. Auxiliary circuit electrical schematic;

4. List of components in the cabinet;

5. Parameters such as voltage, current, time, etc.;

6. Other special requirements that do not conform to the normal use of the product.

JPX, GZW Series

OUTDOOR DISTRIBUTION BOX >

Product Overview

JPX, GZW series outdoor comprehensive distribution box is a set of measuring, outlet protection and reactive power compensation integrated distribution device for users to flexibly select the device configuration of different components with short circuit, overload, over voltage, over frequency, leakage protection function etc. The ideal product is a new generation of urban and rural power grid.

The switchgear meet the requirements of standard IEC61439-2 etc.

Service Conditions

1. Ambient air temperature: -5℃~+40℃ and the average temperature ≤ +35℃ in 24h.

2. Maximum installation altitude: 1000m.

3. Relative humidity≤ 50% at max temperature +40℃. Higher relative humidity is allowed at lower temperature. Ex. 90% at +20℃.

4. The equipment shall be installed in a place where there is no violent vibration and impact, and the place where the electrical components are not corroded.

5. Any specific requirement, consult with manufacture.

JPX, GZW Series

OUTDOOR DISTRIBUTION BOX >

Echnical Parameter

Measuring protection device parameters:

No	Name	Unit	Parameters
1	Transformer capacity	kVA	30 - 400
2	Rated working voltage	V	AC400
3	Auxiliary circuit working voltage	V	AC220, AC380
4	Rated frequency	Hz	50
5	Rated current	A	≤ 630
6	Rated leakage active current	A	30 - 300
7	Protection level		IP44

Reactive power compensation parameters:

8	Compensation capacity	kVar	15~1000
9	Rated working voltage	V	AC400
10	Rated current	A	<600A

Order Notice

An order contract contains the following:

1. The full model includes the main circuit and auxiliary circuit scheme;

2. Combinatorial sequence diagram of main circuit system;

3. Auxiliary circuit electrical schematic;

4. List of components in the cabinet;

5. Parameters such as voltage, current, time, etc.;

6. Other special requirements that do not conform to the normal use of the product.

YB Series

OUTDOOR COMPACT TRANSFORMER SUBSTATION >

Product Overview

The product is in accordance with standard IEC62271-202《HV/LV prefabricated transformer substation》. It is suitable for city public power distribution, street lamp, industry & mining, urban construction, housing, mountainous areas, hotels, parks and site construction, etc. It can realize power supply mode of ring network and terminal typ.

Model

YB □ - □ / □ - □

- Rated capacity of transformer (kVA)
- Rated voltage at low voltage side (kV)
- Rated voltage at high voltage side (kV)
- Layout: M means “Mesh”, and “P” means “face to face”
- Prefabricated substation

Service Conditions

1. Ambient air temperature: -30℃~+40℃;
2. Altitude : Maximum installation altitude: 1000m;
3. Relative humidity: daily average value not more than 95%, the monthly average value not more than 90%;
4. Shock level: horizontal acceleration 0.4m/s, vertical acceleration 0.15m/s;
5. Installation site: no severe shock, serious pollution and chemical corrosion, no conductive dust and explosion hazardous sites.

Product Structure Diagram Features

● The basic structure is divided into "Mesh" shape and "O" shape, The box frame is welded by high quality channel steel and angle steel. It has higher mechanical strength. The box body is made of aluminum alloy material with better anti-erosion. The overall beautiful appearance can be coordinated with the surrounding environment by spraying painting coloring. A carefully designed bottom lifting device can supply more convenience for transportation and lifting.

● It has independent high voltage compartment, transformer compartment and low voltage compartment. The lighting of compartment can be automatic switched on when the door opening. The high voltage compartment installed high voltage ring main unit. User can choose air or vacuum load switch and has function of “ five prevention”. When use limited current high voltage fuse, the load switch will be closing automatically if there has lack of phase working to avoid any damage.

● The transformer compartment adopts natural ventilation and automatic control forced heat dissipation air cooling device, has automatic control exhaust system following the temperature changes which can efficiently control and decrease the inside temperature and satisfy working requirement. The anti condensation device can also be used according to the user's requirements. It can inlet and outlet through the 2 sides of transformer along track. Box materials can prevent rain and dirt from entering. Having conditions for long-term outdoor use, to ensure anticorrosion and waterproof, anti-dust, long life, simple maintenance and beautiful appearance.

● The transformer can be oil immersed or dry type transformer. Oil immersed transformer can use conservator type or without conservator with highly sealed type.

● The Low voltage compartment has whole function of L.V. switchgears for user choice which can be assembled freely.

● Its enclosure material has clad plate, stainless steel clad plate, stainless steel plate, SGCD(Steel sheet coated with aluminum-zinc alloy), Metal engraved plate.

● Structure characteristics: reliable and compact ,can choose SF6, FZN57, VHC ring main unit (RMU), all of them has function of five prevention interlocking. Natural ventilation and automatic ventilation cooling systems of transformer is suitable for dry type or oil immersed transformer.

● Low voltage compartment: can adopt distribution scheme with multiple structures according to user requirement, there has multiple function like power distribution, light distribution, reactive power automatic compensation, power energy metering. It has fitted automatic lighting system.

Technical Parameter

	Item	Unit	Parameter		
High Voltage Unit	Rated frequency	Hz	50/60		
	Rated Voltage	kV	6.6	11	33
	Max service voltage	kV	7.2	12	36
	Rated current	A	400 630 1250		
	Transfer current	A	1200-3150		
	1min power frequency withstand voltage to earth and phase / to phase /Fracture	kV	42/48 85/95		
	BIL: to earth and phase to phase /Fracture	kV	75/85 170/185		
	Rated short circuit breaking current	kA	25 31.5		
Transformer Unit	Rated Voltage	kV	6 11 33		
	Rated Capacity	kVA	30-2000		
	Tap ranging	%	+/-2x2.5% +/-5%		
	Vector Group		Yyn0 Dyn11		
	Impedance	%	4 4.5 6 8		
Low Voltage Unit	Rated Voltage	V	220 380 690 800		
	Main circuit rated current	A	50-4000		
	Branch current	A	5-800		
Enclosure	Protection Level		HV Room:IP33 Transformer Room:IP23 LV Room:IP33		
	Noise level	dB	≤50		

Enclosure Structure Classification

HV ROOM

TRANSFORMER ROOM

LV ROOM

ZBW

OUTDOOR COMPACT TRANSFORMER SUBSTATION >

Summary

1. Outdoor Compact transformer consists of high voltage switchgear, transformer and low voltage power distribution device to connect toghter, packaged substation is divided into three functional compartments (high voltage room, transformer room and low-voltage chamber), high and low voltage chamber functions completely. High voltage side of primary with many power supply methods, also can be fitted with the high-voltage measurement components to meet the high voltage measurement requirement.. The transformer room can choose S7, S9 and other low loss of oil immersed transformer and dry-type transformer; the transformer chamber is provided with ONAN system and lighting system, low voltage chamber adopts fix type structure or assembled type structures to consist of users required power supply scheme , such as power distribution, lighting power distribution, reactive power compensation, electric energy metering and electric quantity measurement, multiple functions to meet the different requirements of users, and to convenient for users to manage the power supply and improve the quality of power supply.

2. The structure of high voltage chamber is compact and reasonable, and has a comprehensive anti-misoperation interlocking function. The transformer under the condition of user requirements, can be provided with a guide rail for convenient to get in and out from the two sides door on transformer room . Each room has installed automatic lighting device, in addition, to high and low voltage chamber used all elements of reliable performance, convenient operation and to make the products running safety and reliable, convenient operation and maintenance.

3. Adopting natural ventilation and forced ventilation in two methods to make ventilation and cooling are good. The transformer room and the low voltage chamber are provided with ventilation channel. The exhaust fan is provided with a temperature control device, which is automatically start and close to ensure transformer in full load operation.

4. The box body structure adopts channel steel and angle steel manufacturing, with strong mechanical strength, the enclosure is made of Aluminum Alloy insulation composite plate, stainless steel plate or non metal material manufacturing, surface smoothly, elegant appearance, and has good insulation effect and strong corrosion resistance. The rooms are provided partitions to separate into independent chambers, the small chamber fitted lighting device, through a door to control switch. The top of the transformer room provided with an exhaust fan, automatically control transformer temperature, increasing air convection to reduces room temperature. The connection part of substation can rotate, which used with rubber seal with strong moisture resistant ability. Our company has a full set of and by the provincial Identification of drawing materials, alsp are all computerized and store in computer. If it is standard scheme, we can be efficient, high quality and complete the design task by simply invoke approved documents. If it is non - standard, we can according to user requirements and strictly accordance with ISO9001 quality system requirements,to design CAD drawings with user requirements.

5. This product as an important power supply unit of cable distribution network, setting high voltage control, protection, substation, power distribution device in the completely prefabricated product for 50/60Hz three-phase AC transformer at rated capacity to 1600KVA., It is widely used in the main house district, factories, hotels, hospitals, parks, airports, docks, oil.

ZBW

OUTDOOR COMPACT TRANSFORMER SUBSTATION

railway and temporary facilities and outdoor power supply place.

6. This equipment complies with the requirements of standard IEC62271-202 etc.

Service Conditions

1. Ambient air temperature: -25℃~+40℃;
2. Altitude: Maximum installation altitude: 1000m;
3. Outdoor wind speed is not more than 35m/s; relative humidity: daily average value not more than 95%, the monthly average value not more than 90%;
4. Seismic intensity not more than 8 degrees;
5. No fire, explosion danger, serious pollution, chemical corrosion and severe vibration.

Product Features

Substation skeleton structure adopt channel steel and angle steel manufacturing, mechanical strength reliability, enclosure can provide kinds of metal, stainless steel, non metal enclosure, which is according to different using occasions, the product is beauty appearance, friendly environment and good corrosion resistance. The substation rooms are separated into independent chambers by partitions.

The top cover is a double-layer structure to prevent heat radiation. The transformer top is arranged exhaust fan for automatic controlling transformer room temperature to increase air convection and reduces room temperature. The connection part of substation can rotate, which used with rubber seal, it has good moisture resistant ability.

Technical Parameter

Item		Unit	Parameter		
High Voltage Unit	Rated frequency	Hz	50/60		
	Rated Voltage	kV	6.6	11	33
	Max service voltage	kV	7.2	12	36
	Rated current	A	400 630 1250		
	Transfer current	A	1200-3150		
	1min power frequency withstand voltage to earth and phase / to phase /Fracture	kV	42/48 85/95		
	BIL: to earth and phase to phase /Fracture	kV	75/85 170/185		
	Rated short circuit breaking current	kA	25 31.5		
Transformer Unit	Rated Voltage	kV	6 11 33		
	Rated Capacity	kVA	30-2000		
	Tap ranging	%	+/-2x2.5% +/-5%		
	Vector Group		Yyn0 Dyn11		
	Impedance	%	4 4.5 6 8		
Low Voltage Unit	Rated Voltage	V	220 380 690 800		
	Main circuit rated current	A	50-4000		
	Branch current	A	5-800		
Enclosure	Protection Level		HV Room:IP44 Transformer Room:IP44 LV Room:IP44		
	Noise level	dB	≤50		

ZBW

OUTDOOR COMPACT TRANSFORMER SUBSTATION >

Enclosure Structure Classification

LV room

LV room

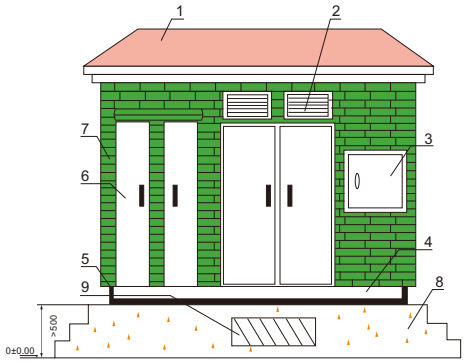
Transformer room

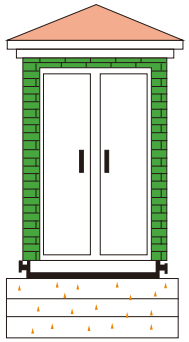
HV room

Non-metal enclosure

Non-metal enclosure

Enclosure Schematic Diagram





1. Roof
2. Shutters
3. External metering unit
4.Lifting ring
5. Channel base
6. Door
7. Brick, imitation brick wall
8.Concrete foundation
9.Foundation vents

Structure Type

"Mesh"shape structure

H	T	L

H	T	L
		Corridor
		L

Compact "face to face" shape structure

H	T
	L

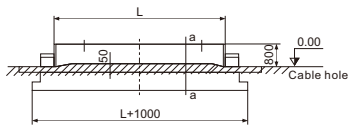
H	
T	L

ZBW

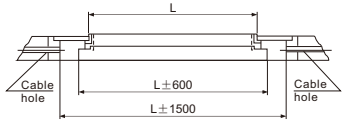
OUTDOOR COMPACT TRANSFORMER SUBSTATION

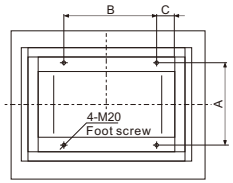
Civil Foundation Diagram of "Ground Type" Non-metallic Package Substation

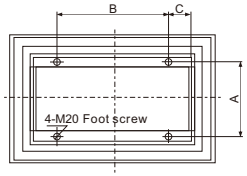
Foundation higher ground level

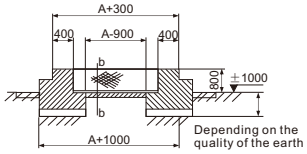


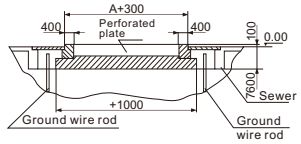
Foundation = ground level











Precautions for Installation of Hoisting and Transportation:

1.The grounding electrode should be pre buried around the foundation of package substation. The transformer & anti-lightning grounding can be used together, the grounding resistance R <4Ω.

2.Application of special lifting tools for package substation hoisting, the lifting part must be according to the marked location of the package substation .The connection place of bottom & foundation of package substation need to be sealed by cement for waterproof.

3.The gap must be sealed after the cables go into the bushing for insect prevention and waterproof.

4..It must check below conditions before the transportation :

The connection place of its bottom and the foundation must be smooth. If open the doors with stuck phenomenon , because of uneven foundation, So it must adjust the connection place to be even.

Adjustment method : slitting thin iron sheet on the gap between the package substation bottom side and base gap until the door opening flexible.

When the package substation is completely assembled, loadingmust pay attention to keep a certain distance between the whole package substation and the front of the vehicle to prevent the car front and rear crash due to brake , while bottom frame of package substation and car bottom must use welding to fix, then using steel wire to chassis vehicle bottom and bottom frame , and using rope from the top to the car to make it fix a few low on the road. Where the ropes are bent, the boards must be lined with cardboard or other soft materials to protect the surface of the coating from damage. In order to keep the box type station in operation intact, it is better to clean and wipe the interior and exterior after power cut for one year.

If it is found that the outer surface of the package substation is contaminated after the installation, it can be wiped with detergent and rinsed with clean water.

YB27

PAD-MOUNTED TRANSFORMER >

Applications

YB27 Pad-mounted Transformer is our company made American type substation. It is an important equipment in the cable distribution network. It is a kind of complete prefabricated product with high voltage control, protection, power transformation and power distribution, widely used in the urban and rural distribution network. This equipment complies with the requirements of standard IEC62271-202 etc.

The product equipped the HV load switch and HV fuse in transformer oil. It has common box or separate box with transformer body. Oil tank is enclosed sealed with oil temperature gauge, oil level indicator, pressure gauge , pressure relief valve, drain oil valve etc to monitor the transformer working conditions. The product has loop feed, radial feed & power supply type. In order to make this product more suitable for the actual requirements of power grid, we have also introduced plug-in type dry type fuse which fusing do not affect the transformer oil. According to the complexity of low voltage outgoing requirements, YB27 enclosure has standard type, intensive and comprehensive type to make user choice more economic & flexible.

Model

YB 27 - □ / □ - □

- Rated capacity of transformer (kVA)
- Rated voltage at low voltage side (kV)
- Rated voltage at high voltage side (kV)
- Layout: M means “Mesh”, and “P” means “face to face”
- Prefabricated substation

Service Conditions

1. Ambient air temperature: -30℃~+40℃;
2. Altitude : Maximum installation altitude: 1000m;
3. Outdoor wind speed is not more than 34m/s;
4. Relative humidity: daily average value ≤95%, the monthly average value ≤ 90%;
5. Inclination of installation site : not more than 3 °;
6. Installation site: no explosion danger, serious pollution, chemical corrosion , severe vibration.

Products Advantage

1. Compact structure, small volume, is only about the 1/3 – 1/5 of the same capacity european type substation, which greatly reduce the occupation area.

2. Fully sealed and fully insulated structure, no need insulation distance.

3. The wiring connection of high voltage can be used in loop feed and radial feed. Power supply method is flexible and reliable.

4. Excellent performance; low consumption, low noise, low temperature –rising, high overload, anti short-circuit, high impact resistance, reliable protection of personal safety.

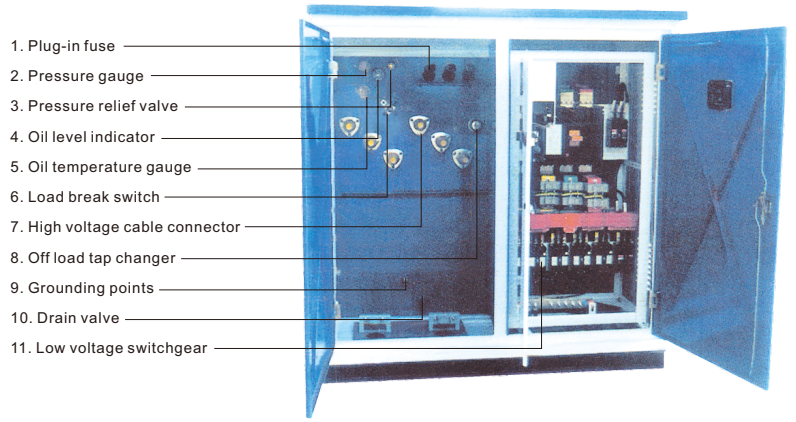
5. Meet all kinds of low voltage outgoing requirements.

6. Cable head has 200A elbow plug & 600A “T” shape fixed type. All insulated Zinc Oxide lightning arrester can be configured. 200A cable head can be plugged in with load, also can be acted as isolation switch.

YB27

PAD-MOUNTED TRANSFORMER >

Products Structure



Technical Parameter

Item	Unit	Parameter
Rated voltage	kV	11/0.4
HV side rated voltage	kV	11
HV side max voltage	kV	12
LV side rated voltage	V	400
Rated frequency	Hz	50/60
Thermal stability capacity of high voltage switch	kA/S	20/2
Rated short circuit breaking capacity of low voltage main circuit switch	kA	35
Rated short circuit breaking capacity of low voltage distribution circuit breaker	kA	35
Transfer current of high voltage load switch	A	>1500

Insulation level

Rated voltage(kV)	10			0.4
	Transformer	Switch to earth and phase to phase	Switch isolation fracture	
Power frequency (kV)	35	42	48	2.5
Impulse withstand voltage (kV)	75	75	85	—

Noise level <50dB

Protection level of enclosure: ≥IP3X

Structure Characteristics

The enclosure structure is made of channel steel and angle steel which has higher mechanical strength. The enclosure is made of aluminum alloy plate, its face is even and smooth. The product is elegant appearance with better anti-erosion. The foundation of substation is higher 300- 600 mm than ground. All the doors are opened outward with angle more than 90°. The

substation has handle, dark latch and dormant lock with waterproof anti-blocking and anti rust.

The body is whole enclosed against theft to ensure the working under a common air temperature, the temperature of all electrical devices do not be more than the max. allowed temperature of itself. It is equipped with enough natural vents and insulation measures. The prefabricated transformer substation is equipped with special grounding conductor. On the grounding conductor, there has terminals to connect with ground net. Its number is more than two pieces and has obvious grounding mark. The ground terminal is copper bolt with diameter more than 12mm. The grounding conductor adopts copper strip which current density can not be more than 200A/mm, the cross section is more than 30mm, to ensure that the flow through the maximum short-circuit current does not overheat or affect the safety of the

YB27

PAD-MOUNTED TRANSFORMER >

surrounding objects. Dynamic and thermal steady current of the special grounding conductor should be equipped with grounding methods of H.V. power distribution devices.

Transformer Performance Parameter

11kV Prefabricated transformer substation -Transformer parameter

No	Capacity (kVA)	Rated voltage		Tap Range (%)	No load current(%)		Losses(W)				Impedance (%)
		HV (kV)	LV (kV)				No load		Load		
					S9	S11	S9	S11	S9	S11	
1	30	6 6.3 11	0.4 (0.69)	+/-5 ±2*2.5%	2.2	2.0	130		600		4
2	50				2.0	1.8	170		870		
3	63				1.9	1.5	200		1040		
4	80				1.7	1.2	250		1250		
5	100				1.6	1.1	290		1500		
6	125				1.5	1.0	340	270	1800		
7	160				1.4	1.0	400	310	2200		
8	200				1.4	0.8	480	375	2600		
9	250				1.2	0.8	560	400	3050	3000	
10	315				1.1	0.7	670	475	3650	3600	
11	400				1.0	0.7	800	570	4300	4200	
12	500				1.0	0.6	960	680	5100	5000	
13	630				0.9	0.6	1200	800	6200	6000	4.5
14	800				0.8	0.6	1400	1120	7500	7400	
15	1000				0.7	0.5	1700	1320	10300	9860	
16	1250				0.6	0.5	1950	1360	12800	12000	
17	1600				0.6	0.5	2400	1840	14500	14000	

Note: a. According to customer requirements, the high voltage tap range of transformer can be designed to be + 2 * 2.5%.
b. According to customer requirements, the transformer low voltage can be designed as 0.69kV.

Load Break Switch Parameter

Rated Current (A)	Rated Voltage (kV)	BIL (kV)	Power frequecny Withstand voltage (1min.kV)	Rated short - time withstand current (kA/S)	Short circuit making current (kA)	Rated withstand current (peak) (kA)	Load Operation times (kA)	Mechanical Operation times
315	11	75	42	12.5/2	31.5	31.5	100	2000
630	11	75	42	16/4	40	40	100	3000

DFW Series

HIGH VOLTAGE CABLE BRANCH BOX >

Product Overview

DFW series high voltage cable branch box is widely used in 33KV, 24KV,11KV node connection of cable system. It is main electrical equipment for the cable to be assembled and separated from the outlet of the switchgear. Cable branch box adopts imported high grade rubber insulated tight insulation without naked live parts. Its switch is SF6 insulated load switch.

DFW cable branch box is designed for outdoor maintenance free operation, safe and reliable and its protection degree reaches IP44. The underground branch connector is anti-flood. It is widely used in urban industrial district, residential district, commercial center, mining area, large scale enterprises such as steel, automobile, petroleum, chemical industry, cement, and other occasions, It is particularly suitable for urban power grid reconstruction project, which can greatly save the investment of electrical equipment and cables, and improve the reliability of power supply.

This equipment complies with the requirements of standard IEC62271-200, IEC62271-100 etc.

Main New Advantages

- Small size, compact structure, easy to install and operate;
- Stainless steel or metal steel board ,which thickness ⩾ 2mm;
- Anti-corrosion & with special Spray-painting artworks;
- Usage life more than 30 years;
- It can be used in some harsh environments like high or lower temerature ,some dust area;
- Fully sealed structure,without insulation distance;
- High voltage electric parts with cable connector or use silicon rubber for people safety;
- With zno arrester;
- Its cables can be splitted into be 7 branches to work together with SF6 loading switches to reach net power-supplying;

DFW Series

HIGH VOLTAGE CABLE BRANCH BOX >

- The cable connector can be used as switch, it can be on or off with loading. The max on-off voltage can reach 200Amp;
- After fix the fault indicator, user can test circuit fault very quickly;
- Cheaper cost, save cable;
- Cable connectors comply with IEEE386 standard, all cables are suitable for cross linking polyethylene insulated cables.

Main Technical Parameter

No	Item	Unit	Data		
1	Rated voltage	kV	11kV	24kV	33kV
2	Rated current	A	630		
3	Rated short-time withstand current	kA	20/3s		
4	Dynamic stable current	kA/0.3s	50		
5	Thermally stable current	kA/3s	20		
6	Power frequency withstand voltage/1min	kV	38	50	70
7	Lightning impulse withstand voltage	kV	75	125/145	170
8	Partial discharge test		Less than 9kV	Less than 15kV	Less than 45kV
			Discharge amount: ≤10PC	Discharge amount: ≤10PC	Discharge amount: ≤10PC
9	Enclosure protection class		IP33		

Note:If any special required please consult with us before order.

- Cable connector200A, its diameter is 35-185mm2 cable
- Cable connector600A, its diameter is 25-500mm

European - style without switch branch box

American - style without switch branch box

DFW Series

HIGH VOLTAGE CABLE BRANCH BOX >

24KV Cable Branch Box

24kV cable branch box, with its excellent performance, standardized design, beautiful appearance, wide widely used in the cable distribution network system of cable engineering equipment, in the major industrial parks, urban. In the densely populated areas, commercial centers and high-rise buildings and other places have been generally recognized.

It opens in three directions: do with three busbar connection, with small width, flexible combination, full insulation, sealing and other significant advantage. In accordance with the rated current 250A, adopt plug type connection and can plug.

with load..The box body is made of metal plate or stainless steel plate with a thickness of 2mm.

Main Technical Parameter

Max system voltage	24kV
BIL	125kV
AC withstand voltage(5 min)	54kV
Constant rated current	250A
Overload current (max 8 hours)	300A
Short circuit current 1 second	12.5kA

11kV Outdoor High Voltage Switch House

11kV outdoor high voltage switch house is with excellent performance, standardized design, beautiful appearance. It is widely used in major industrial parks, residential areas, urban densely populated areas, highways, railways and so on.

The door can be opened in one direction or three directions, and the outer surface can be made of colorful steel plate or environmental protection landscape type steel and other materials, has a combination of flexible, full-featured and other significant advantages.

It can be assembled to be ring main unit switchgear with vacuum circuit breaker & SF6 or adopting SF6 ring main unit switchgear, which realize the remote controlling, telemetry and other functions, the box has IP33 protection level, good rainproof performance.

Cable Joint

11kV with load break switch branch box