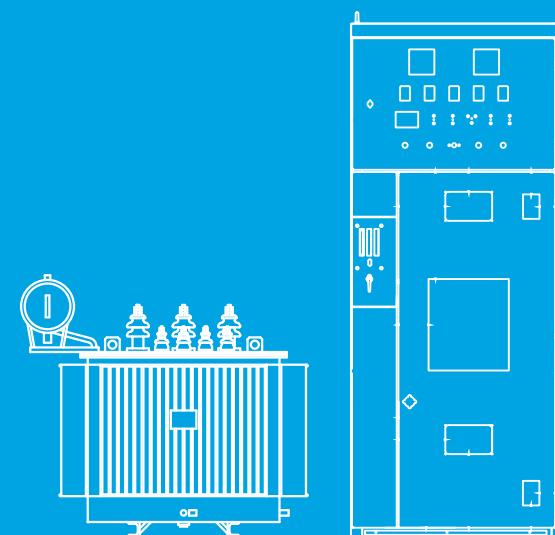


**CHANA<sup>®</sup>**

# CHANGAN ELECTRIC

>>Catalogue  
High Voltage Equipment



Web Site



We Chat

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**CHANGAN GROUP CO.,LTD.**

wisdom to protect

safe electricity

# ABOUT US



Changan Group Yueqing Economic Development Zone Industrial Park

## • Brief Introduction

Established in 1987, CHANGAN GROUP CO.,LTD. has been acknowledged as one of the most respected nation-wide manufacturers and exporters of low-voltage electrical apparatus in China.

Changan Group Co.,Ltd mainly develops, produces and sells 35kV and below switchgear and supporting components. The main products are YBM, YB6 EU type transformer substation and Pad mounted transformer, KYN61-40.5, KYN28-12, XGN15-12, SRM-12, MNS, GCS, GGD, CAGWB and other types of MV or LV switchgear, XL21, CAPZ1, PZ30 and other types of distribution board, oil immersed and dry type transformer, 12kV VCB and other high voltage outdoor equipments.

All of our production procedures strictly follow ISO9001, ISO14001 and OHSAS18001, most of our products are certified such as SEMKO, TUV, CB and CE which can prove our guarantee quality and our products also have been chosen as "CHINESE FAMOUS BRAND PRODUCT".

We not only make efforts in developing our own products with "CHANA" brand but also provide OEM services. Hope to establish good business relationships with your esteemed company in near future.



KYN61-40.5  
Metal-clad Movable Switchgear



◆Product Summary

KYN61–40.5 Air insulated metal–clad movable switchgear is an indoor switchgear, assembly operating under the Conditions of 50/60Hz three phase and rated 40.5kV AC voltage, which applied to the transmission and distribution for generators, transformer substations and the industry and mine enterprises.It also can be used to control, protect and monitor electric circuits, and very useful to frequent operating conditions. It complies with GB/T11022, GB/T3906, DL/T404 and other relative standards.

◆Environmental Conditions

- 1.Ambient Temperature: No more than +40℃ and no less than –15℃.Average temperature is no more than +35℃ within 24 hours.
- 2.Altitude: No more than 1000m.
- 3.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 4.Earthquake Intensity: No more than 8 degrees.
- 5.Vapor pressure: average daily value is no more than 2.2kPa, average monthly value is no more than 1.8kPa.
- 6.Installation locations without fire, explosion danger, serious pollution, chemical corrosion and violent vibration.

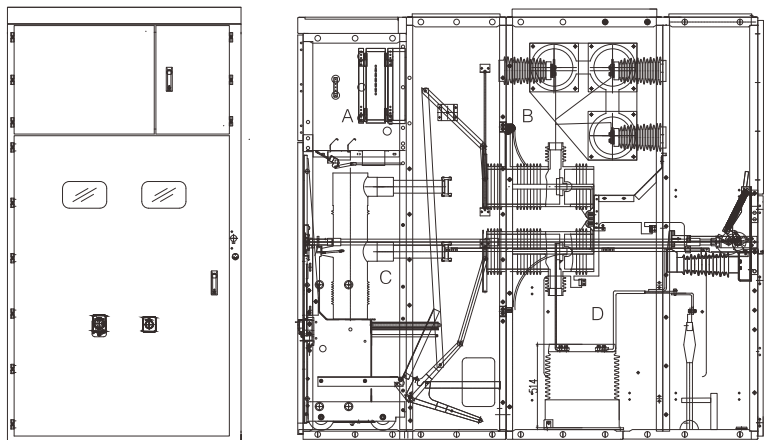
◆Product Features

- 1.The cabinets and partition board adopting hot–dip Al–Zn alloy–coated steel sheet and frame adopting assembled structure make high overall intensity and good earth continuity.
- 2.The cabinet is combined type and the handcart of breaker is floor structure type.
- 3.The new composite insulating vacuum circuit breaker has the characteristics of interchangeability and simple replacement.
- 4.The handcart adopts screw propulsion mechanism, which moves the handcart easily and prevent mis–operation to damage the propulsion mechanism.
- 5.All the operations could be done when the cabinet door is closed.
- 6.The interlocking between the main switch, the handcart and the switch cabinet adopts the mandatory mechanism of mechanical locking,meeting the functions of five–preventions.
- 7.The cable room is spacious and can be connected to a number of cables.
- 8.The degrees of protection is IP4X, which effectively prevents the equipment from being invaded by sundries and insect pests.
- 9.The product runs safely and reliably through the harsh condensation, filth and internal arc tolerance test.

◆Technical Parameters

Sr.	Content	Unit	Value
1	Rated Voltage	kV	40.5
2	Rated Current	A	630/1250/1600/2000/2500
3	Rated Frequency	Hz	50/60
4	Power Frequency Withstand Voltage in 1 min	Phase, Earthed	kV 95
		Isolating Fracture	kV 110
5	Lightning Impulse Withstand Voltage(Peak)	Phase, Earthed	kV 185
		Isolating Fracture	kV 215
6	Rated Current of the Main Busbar	A	630/1250/1600/2000/2500
7	Rated Current of the Branch Busbar	A	630/1250/1600/2000/2500
8	Rated Short–circuit Breaking Current	kA	20/25/31.5
9	Rated Short–time Withstand Current(4s)	kA	20/25/31.5
10	Rated Peak Withstand Current	kA	50/63/80
11	Rated Short Circuit Making Current	kA	50/63/80
12	Frequency Withstand Voltage in 1 min of Aux Control Loop	V	2000
13	Internal Arc Duration Test(0.5s)	kA	31.5
14	Degrees of Protection	IP	IP4X (IP2X when the front door is opened)
15	Rated Voltage of Aux Control Loop	V	AC or DC 110/220

◆Schematic diagram of structure



- A: Relay & instrument compartment
- B: Busbar compartment
- C: VCB compartment
- D: Cable compartment



KYN28A-12  
Metal-clad Movable Switchgear



◆Product Summary

KYN28A-12 indoor metal-clad movable switchgear is a complete power distribution device for 3.6kV~12kV, 3 phase AC 50/60Hz, single bus sectionalized system. It is mainly used for power transmission of middle/small generators in power plants, power receiving, transmission for substations in power distribution and power system of factories, mines and enterprises, and starting of large high-voltage motor etc., so as to control, protect and monitor the system. It complies with GB/T11022, GB/T3906, DL/T404 and other relative standards. It has functions of preventing to push or pull the breaker’s handcart with load, breaker’s mistakenly open or close, shut off the breaker when the grounding switch is on the position of close, enter into a electriferous compartment, mistakenly close the interlock function of the grounding switch when it is electriferous.It can be used with domestic VCA and VS1 vacuum circuit breaker, it can be used with VD4 from ABB and EV12S from Schneider.

◆Environmental Conditions

- 1.Ambient Temperature: No more than +40℃ and no less than -15℃.Average temperature is no more than +35℃ within 24 hours.
- 2.Altitude: No more than 1000m.
- 3.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 4.Earthquake Intensity: No more than 8 degrees.
- 5.Vapor pressure: average daily value is no more than 2.2kPa, average monthly value is no more than 1.8kPa.
- 6.Installation locations without fire, explosion danger, serious pollution, chemical corrosion and violent vibration.

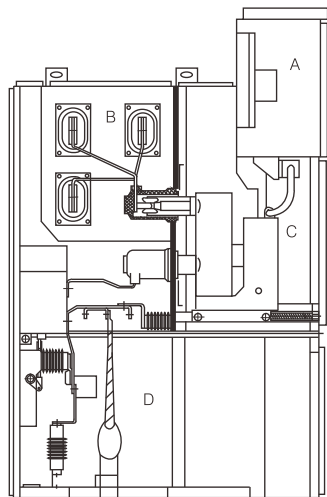
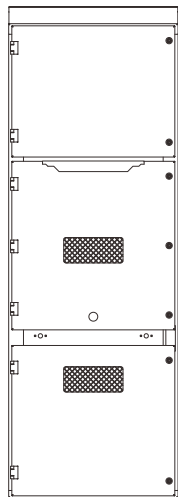
◆Product Features

- 1.The cabinets and partition boards adopting hot-dip Al-Zn alloy-coated steel sheet and frame adopting multiple bending technology make high overall intensity and good earth continuity.
- 2.Fully considering the operation characteristics of the neutral point of the power system without grounding or through the arc suppression coil grounding, increase the insulation clearance and enhance the insulation level, so as to ensure that the switchgear meets the high requirements for the insulation strength.
- 3.Completely metal clad and absolutely compartments separation.
- 4.The degrees of protection is IP4X, which effectively prevents the equipment from being invaded by sundries and insect pests.
- 5.Simple and effective mechanical block for five-preventions,preventing from mis-operating.
- 6.The movable handcart use worm and worm wheel propelling mechanism. The same type of handcart can be interchanged completely, easy to operate and maintain.
- 7.It can be installed away from the wall, which is more convenient for double sides maintenance. Or it can be installed against the wall, maintain in front of the cabinet, with less space occupation.
- 8.Min. width of panel is 550mm, which can increase the utilization of distribution room.
- 9.The product runs safely and reliably through the harsh condensation, filth and internal arc tolerance test.

◆Technical Parameters

Sr.	Content		Unit	Value
1	Rated Voltage		kV	12
2	Rated Current		A	630~4000
3	Rated Frequency		Hz	50/60
4	Power Frequency Withstand Voltage in 1 min	Phase, Earthed	kV	42
		Isolating Fracture	kV	48
5	Lightning Impulse Withstand Voltage(Peak)	Phase, Earthed	kV	75
		Isolating Fracture	kV	85
6	Rated Current of the Main Busbar		A	630~4000
7	Rated Current of the Branch Busbar		A	630~4000
8	Rated Short-circuit Breaking Current		kA	20/25/31.5/40/50
9	Rated Short Circuit Making Current		kA	50/63/80/100/125
10	Rated Short-time Withstand Current(4s)		kA	20/25/31.5/40/50
11	Rated Peak Withstand Current		kA	50/63/80/100/125
12	Frequency Withstand Voltage in 1 min of Aux Control Loop		V	2000
13	Internal Arc Duration Test(0.5s)		kA	31.5~40
14	Rated Voltage of Aux Control Loop		V	AC or DC 110/220
15	Degrees of Protection		IP	IP4X (IP2X when the front door is opened)

◆Schematic diagram of structure



- A: Relay & instrument compartment
- B: Busbar compartment
- C: VCB compartment
- D: Cable compartment



XGN□-12  
Fixed Type Metal-enclosed Switchgear



◆Product Summary

XGN□-12 fixed type metal-enclosed switchgear is applied 3.6kV~12kV three phase AC 50/60Hz system which work as indoor apparatus distribution device. It has functions like circuit protection and testing. Its busbar system is single busbar and single busbar with bypass busbar, also can derive dual busbars structure.

It complies with GB/T3906 and DL/T404. It has a completely mechanical anti mis-operation locking device which is reliable performance, complete functions, simply structure and convenient operating, it can meet requirements of interlock function of five-preventions simply and effectively.

◆Environmental Conditions

- 1.Ambient Temperature: No more than +40℃ and no less than -15℃.Average temperature is no more than +35℃ within 24 hours.
- 2.Altitude: No more than 1000m.
- 3.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 4.Earthquake Intensity: No more than 8 degrees.
- 5.Vapor pressure: average daily value is no more than 2.2kPa, average monthly value is no more than 1.8kPa.
- 6.Installation locations without fire, explosion danger, serious pollution, chemical corrosion and violent vibration.

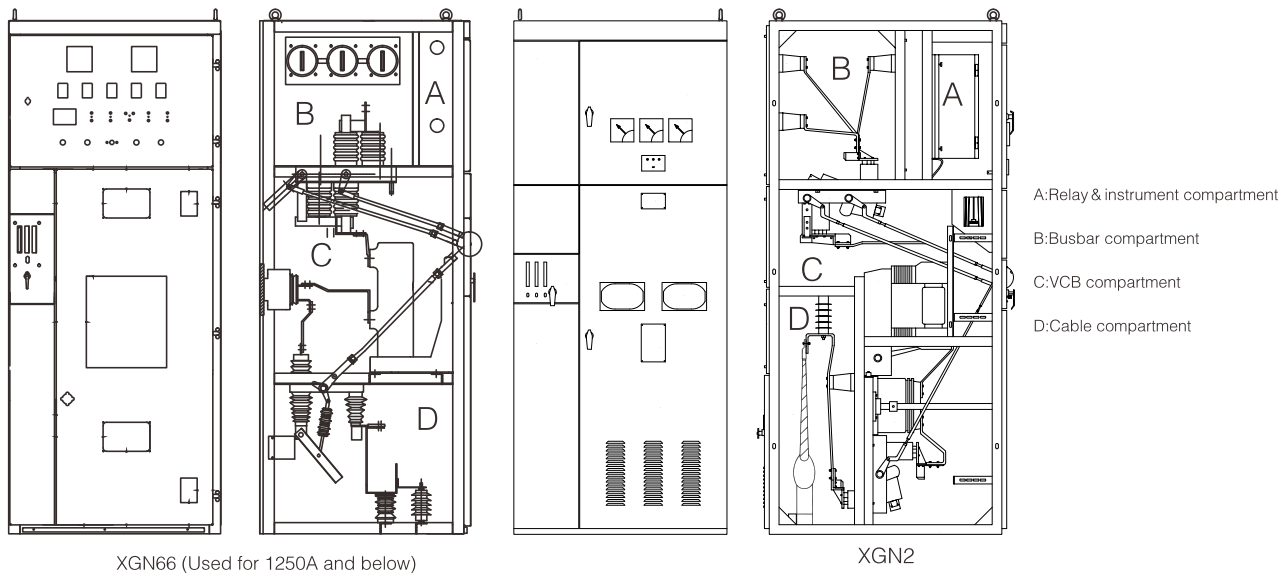
◆Product Features

- 1.XGN□-12 switchgear uses sealed metal box-type structure, and the framework of cabinet is welded by angle steel and steel sheet.
- 2.The cabinet is divided into circuit breaker compartment, busbar compartment, cable compartment and relay compartment, separated by steel plate between two compartments.
- 3.The switchgear was set by a front and a back door. And it is installed away from the wall and could be maintained from both sides.
- 4.A pressure relief channel is provided at the top of thecabinet. If internal arcing fault occurs, it is able to release pressure and discharge gas from the pressure relief channel to ensure the safety of operators.
- 5.The switchgear has a perfect "five-preventions", with simple and clear operation procedures.
- 6.The main circuit breakers that the switchgear using are ZN28-12, ZN63A, VCA, etc. series vacuum circuit breakers; and other types of circuit breakers can also be used according to the requirements.
- 7.The disconnecting switch is GN30 rotating disconnecting switch or GN22 big current disconnecting switch.

◆Technical Parameters

Sr.	Content	Unit	Value
1	Rated Voltage	kV	12
2	Rated Current	A	630/1250/1600/2000/2500/3150
3	Rated Frequency	Hz	50/60
4	Power Frequency Withstand Voltage in 1 min	Phase, Earthed	kV 42
		Isolating Fracture	kV 48
5	Lightning Impulse Withstand Voltage(Peak)	Phase, Earthed	kV 75
		Isolating Fracture	kV 85
6	Rated Current of the Main Busbar	A	630/1250/1600/2000/2500/3150
7	Rated Current of the Branch Busbar	A	630/1250/1600/2000/2500/3150
8	Rated Short-circuit Breaking Current	kA	20/25/31.5/40
9	Rated Short-time Withstand Current(4s)	kA	20/25/31.5/40
10	Rated Peak Withstand Current	kA	50/63/80/100
11	Rated Short Circuit Making Current	kA	50/63/80/100
12	Frequency Withstand Voltage in 1 min of Aux Control Loop	V	2000
13	Degrees of Protection	IP	IP2X
14	Rated Voltage of Aux Control Loop	V	AC or DC 110/220

◆Schematic diagram of structure



XGN15-12(SF6)  
Air Insulated SF6 RMU



◆Product Summary

The RMU is generally divided into air insulated and SF6 insulated types. XGN15–12 indoor fixed type SF6 RMU uses SF6 switch as its main switch, and air insulation is used for the entire cabinet. It is suitable for 10kV distribution systems in factories, enterprises, residential districts, high–rise buildings, mines and ports. And it can be combined into ring network system used for power supply and distribution of three–phase AC ring network, biradial power supply unit or line terminal,receiving, distributing and controlling electric power, and protecting the safety operation of electrical equipment.

◆Environmental Conditions

- 1.Ambient Temperature: No more than +40℃ and no less than –15℃.Average temperature is no more than +35℃ within 24 hours.
- 2.Altitude: No more than 1000m.
- 3.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 4.Earthquake Intensity: No more than 8 degrees.
- 5.Vapor pressure: average daily value is no more than 2.2kPa, average monthly value is no more than 1.8kPa.
- 6.Installation locations without fire, explosion danger, serious pollution, chemical corrosion and violent vibration.

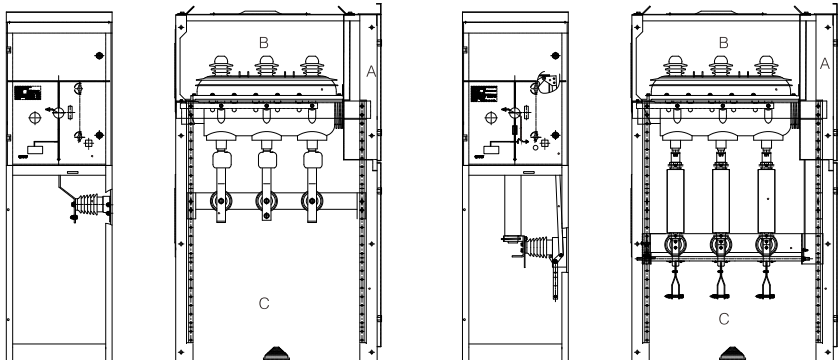
◆Product Features

- 1.Modular design. Each unit module can be combined and extended arbitrarily, which is easy to schemes combination, with a wide applicable range.
- 2.The armored structure is used for the cabinet. And each compartment is separated to the other one by metal partition board.
- 3.The corrosion resistant metal is used for the operating mechanism, and bearings of rotating parts are all self–lubricating bearings. The product will not be affected by the environment, thus exempting from regular maintenance.
- 4.In order to adapt to the power grid automation and improve the reliability of power distribution, the electric drive mechanism, control terminal unit of power distribution network and other equipment can be added. Thus, it possesses telemetering, remote signaling and remote control systems.
- 5.The cabinet is compact design, using three–positions rotary load switch, which effectively reduces the number of components and parts, and realizes the five–preventions interlocking.
- 6.The simulated single line diagram of primary circuit and analog display can display the internal conditions of the switch, so that the operation can be simple, correct and safe.

◆Technical Parameters

Sr.	Content		Unit	Value
1	Rated Voltage		kV	12
2	Rated Frequency		Hz	50/60
3	Rated Current		A	630
4	Max. rated Current of Fuse		A	125
5	Rated Short–circuit Breaking Current		kA	31.5 (Fuse Group)
6	Rated Peak Withstand Current		kA	50
7	Rated Short–time Withstand Current(4s)		kA	20
8	Rated Short Circuit Making Current		kA	50
9	Grounding Loop	Ratad Short–time Withstand Current(2s)	kA	20
		Rated Peak Withstand Current	kA	50
10	Power Frequency Withstand Voltage in 1 min	Phase, Earthed	kV	42
		Isolating Fracture	kV	48
11	Lightning Impulse Withstand Voltage(Peak)	Phase, Earthed	kV	75
		Isolating Fracture	kV	85
12	Rated Active Load Breaking Current		A	630
13	Rated Closed Loop Breaking Current		A	630
14	Rated Cable–charging Breaking Current		A	10
15	Rated Transfer Current		A	1750
16	SF6 Gas Pressure( Relative Pressure at 20℃)		MPa	0.045
17	Internal Arc Duration Test(0.5s)		kA	31.5
18	Mechanical Life	Load Switch	Times	5000
		Earth Switch	Times	2000
19	Degrees of Protection		IP	IP4X
20	Operation Mode		–	Manual/Electric

◆Schematic diagram of structure



A:Relay & instrument compartment  
B:Busbar compartment  
C:Cable compartment

SRM□-12  
Full Gas Insulated RMU



◆Product Summary

SRM□-12 Full Gas Insulated RMU is indoor cabinet type AC metal sealed switching device, with AC 10kV and 50/60Hz.It is suitable for distribution systems,ring power supply and biradial power supply system in factories, workplaces, residential high-rise buildings, it possesses functions of receiving, distribution and protection. It can also used in the prefabricated substation.

◆Environmental Conditions

- 1.Ambient Temperature: No more than +40℃, No less than -40℃.Average temperature no more than +35℃ within 24 hours.
- 2.Altitude: No more than 2000m.
- 3.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 4.Earthquake Intensity: No more than 8 degrees.
- 5.Vapor Pressure: the average daily value is no more than 2.2kPa,and the average monthly value is no more than 1.8kPa.
- 6.Installation locations without fire, explosion danger, serious pollution, chemical corrosion and violent vibration.

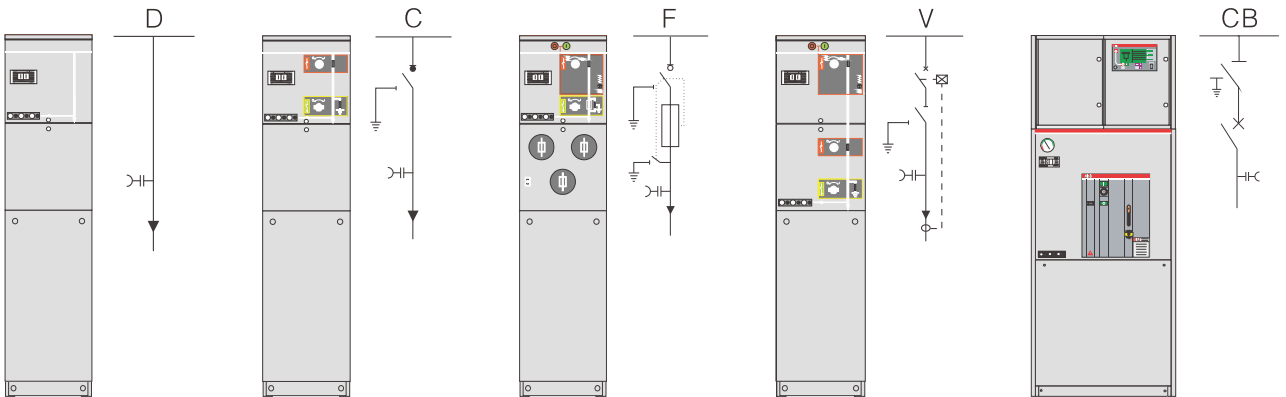
◆Product Features

- 1.Fully sealed design,all 10kV switches and busbar electrified bodies are sealed in the gas box welded by 3mm stainless steel plate, and the silicon rubber cable plug is applied to achieve the full insulation seal of the cable head, so that it is not affected by external environment such as dust, humidity and small animals.
- 2.The switching device has a perfect "five-preventions", with simple and clear operation procedures.
- 3.Modular design. Each unit module can be combined and extended arbitrarily, which is easy to schemes combination, with a wide applicable range.
- 4.Big capacity for feeder line, small occupation, suitable for a variety of needs, wide range of applications.
- 5.Equipment maintenance-free, highly reliable performance.

Content	Unit	C Module	F Module	V Module		CB Module	
		Load Switch	Load Switch With Fuse	Vacuum Switch	Disconnector/ Earthing Switch	Vacuum Circuit Breaker	Disconnector/ Earthing Switch
Rated Voltage	kV	12	12	12	12	12	12
Rated Frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60
Power Frequency Withstand Voltage in 1 min	kV	42/48	42/48	42/48	42/48	42/48	42/48
Lightning Impulse Withstand Voltage(Peak)	kV	75/85	75/85	75/85	75/85	75/85	75/85
Rated Current	A	630	注 <sup>1)</sup>	630		1250/630	
Rated Closed Loop Breaking Current	A	630					
Rated Cable Charging Breaking Current	A	10					
Rated Short Circuit Making Current	A	50	80	50	50	63	63
Rated Peak Withstand Current	kA	50		50		63	
Rated Short Time Withstand Current	kA/3S	20		20		25	
Rated Short Circuit Breaking Current	kA		31.5	20		25	
Rated Transfer Current	A		1700				
Max. Rated current of fuse	A	-	125				
Loop Resistance	μΩ	≤300	≤600				
Mechanical Life	times	5000	3000	5000	2000	5000	5000

Note: 1) Depends on the rated current of the fuse

◆Typical Scheme Diagram





TBB  
High Voltage Reactive Power Compensation Device



◆Product Summary

The High voltage Reactive Power Compensation Device is suitable for 3.6kV~40.5kV frequency 50Hz AC power system. It mainly adjusts the bus voltage and reactive power of power system, improves power factor, improves voltage quality and reduces power grid loss.

◆Environmental Conditions

- 1.Ambient Temperature: No more than +40℃ and no less than -15℃.Average temperature is no more than +35℃ within 24 hours.
- 2.Altitude: No more than 1000m.
- 3.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 4.Earthquake Intensity: No more than 8 degrees.
- 5.Vapor pressure: average daily value is no more than 2.2kPa, average monthly value is no more than 1.8kPa.
- 6.Installation locations without fire, explosion danger, serious pollution, chemical corrosion and violent vibration.

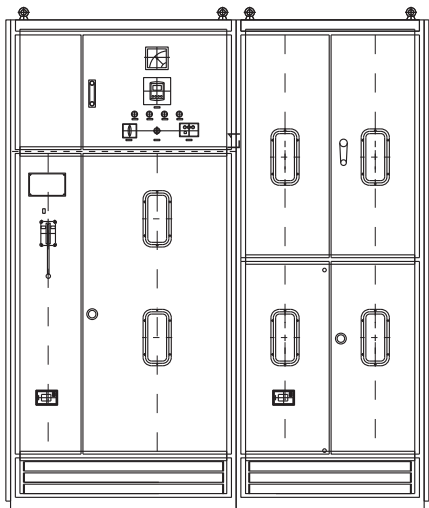
◆Product Features

- 1.The capacitor bank adopts grouped switching,which has high utilization of capacitors,
- 2.It is optional for manual switching,or automatically switching with reactive power controller.
- 3.The switching device has a perfect "five-preventions", with simple and clear operation procedures.
- 4.It can be connected through the communication interface to the integrated automation system to meet the operation and management requirements of the unattended and centralized control of the substation.
- 5.It has over temperature and over voltage protection, with internal and external fault locking function.

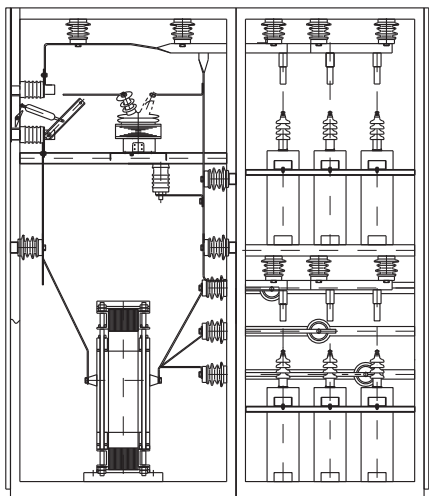
◆Technical Parameters

Content	TBBF6-□/□-AK(W)	TBBF10-□/□-AK(W)	TBBF35-□/□-AK(W)
Rated Voltage	6kV	10kV	35kV
Rated Current	Depends on the capacity		
Rated Capacity	600~7200kvar		
Rated Frequency	50/60Hz	50/60Hz	50/60Hz
Rated Short-time Withstand Current(4s)	20、25、31.5	20、25、31.5	20、25、31.5
Rated Peak Withstand Current	50、63、80	50、63、80	50、63、80
Capacitance Deviation	-5~+10%		
Connection Mode	Star or dual star		
Frequency Withstand Voltage in 1 min of Aux Control Loop	2000V		
Degrees of Protection	IP20	IP20	IP20

◆Schematic diagram of structure



Appearance



Internal Structure

YBM-12/0.4(F.R)/T-□  
Prefabricated Substation(EU Type)



◆Product Summary

YBM series prefabricated substation is a compact distribution device including HV switchgear, distribution transformer, LV switchgear, electric energy metrological device and reactive power compensator, all devices are packaged in one or several cubical units, which are wired by correct logic electrically schemes.It is suitable for three phase AC system with rated voltage of 10/0.4kV. It can be used to receive and distribute electric energy to factories, mines, oil fields, ports, airports, urban public buildings, highways, underground facilities and other places.

The prefabricated substation is featured technically by strong whole apparatus character, compact volume, good appearance, safe and reliable operating, easy maintenance, good appearance, convenient movement, deeply involved in load center, short construction period, and waste reduction and other advantages.

◆Environmental Conditions

- 1.Altitude: No more than 1000m.
- 2.Ambient Temperature: No more than +40℃ and no less than -45℃.
- 3.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 4.Earthquake proof Level: Horizontal Accelerations≤0.3g, Vertical Acceleration≤0.15g.
- 5.Installation Location: Well-ventilation, chemical corrosion and violent vibration for product installed place. Vertical slope of less than 3 degrees.

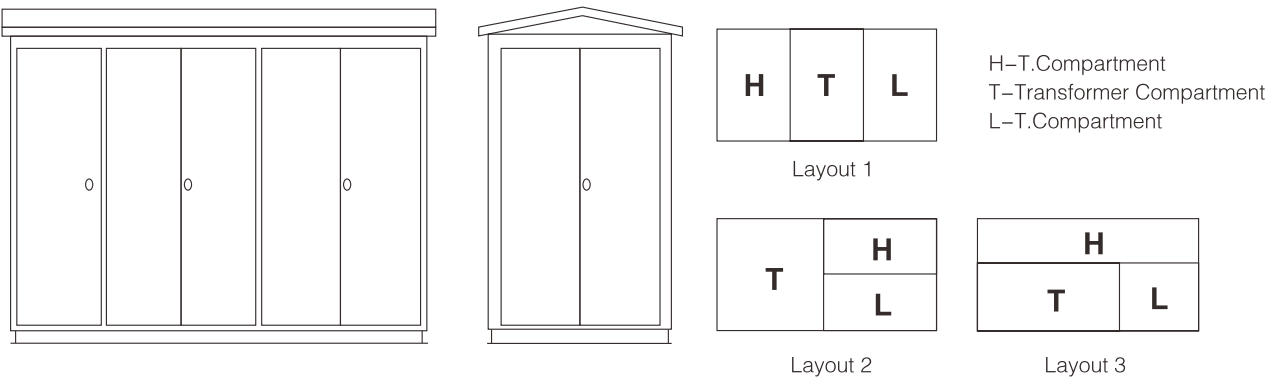
◆Product Features

- 1.The cabinet has two structures: one is skeleton welding, which weld skeleton with steel first, then pull riveting or weld panel. Another is skeleton assembly,the steel plate is formed by bending and forming the surface. Finally, the steel plate is assembled by bolt connection. The skeleton assembly is characterized by the expansion of the low voltage outgoing unit, which can be placed with no less than 6 panels of low voltage switchgear, with 8-12 loops. The prefabricated substation can be set up to operate the hallway and duty room.
- 2.It has good heat insulation and ventilation measures. A double layers structure is adopted in the cabinet, and the heat insulation material is also set in the interlayer, which effectively reduces the temperature rise caused by sunshine. The transformer compartment is arranged on the top of the side gate automatic ventilation fan, the upper part is provided with a shutter, can guarantee that the transformer can worksafe at full load in high temperature season.
- 3.Safe and reliable operation. The H.T side of the transformer substation selects RMU model XGN15-12 and SRM-12, could also adopt other types of metal clad switchgear, complete five-preventions interlock. Each door frame has good waterproof structure.
- 4.It is convenient to operate and maintain. Each compartment has automatic lighting device, transformer compartment has track and cart, convenient for transformer installation, maintenance and replacement. The H.T and L.T compartments adopt front wiring and front maintenance.
- 5.The appearance is beautiful and durable. The cabinet shell is made of high performance marine zinc rich epoxy primer and epoxy anticorrosive mortar, which has good anticorrosive property, and the surface color can be configured arbitrarily with the environment. All electrical installations are all galvanized, and it adopts a special anti blocking and anti rust universal lock.

◆Technical Parameters

Content	Unit	H.T side	Transformer side	L.T side
Rated Capacity	kVA		50-1250	
Rated Voltage	kV	10	10/0.4	0.4
Rated Current	A	400-600	72.2/1820	2000
Rated Short circuit Breaking Current	kA	≥20		≥30
Rated Short Circuit Making Current	kA	50		
Rated Thermal Stability Current	kA/S	≥20/4		≥30/1
Power Frequency Withstand Voltage in 1 min	kV	Earth: 42 Fracture: 48	Dry: 28 Oil: 35	2.0/2.5
Lightning Impulse Withstand Voltage	kV	Earth: 75 Fracture: 85		
Degrees of Protection	IP	IP33D		
Noise Level	DB	≤65(Dry Type Transformer) ≤55(Oil Immersed Transformer)		

◆Schematic diagram of structure



YB6-12/0.4-□  
Prefabricated substation(Box-type)



◆Product Summary

YB6 prefabricated substation,as an important power supply unit in cable distribution network, is a complete set prefabricated product integrated by high voltage control, protection, transformation and distribution equipment, which is widely used in urban and rural distribution network.

The high voltage load switch and high voltage fuse are placed in the transformer oil, which have two structural forms: share the same container with the transformer or separate container. The oil tank is fully sealed with oil temperature meter, oil level meter, pressure gauge, pressure release valve, oil discharge valve and other components to monitor the operation of the transformer. The product is divided into ring network type, terminal type and power supply side. The HV side adopts the pluggable fuse, and the fuse's fuse does not affect the performance of the transformer oil. According to the different low voltage feeder scheme, products are divided into standard, enhanced and comprehensive three kinds of shell form, users and design units in the selection, it is more flexible and more economical.

◆Environmental Conditions

- 1.Altitude: No more than 1000m.
- 2.Ambient Temperature: No more than +40℃ and no less than -45℃.
- 3.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 4.Earthquake proof Level: Horizontal Accelerations≤0.3g, Vertical Acceleration≤0.15g.
- 5.Installation Location: Well-ventilation, chemical corrosion and violent vibration for product installed place. Vertical slope of less than 3 degrees.

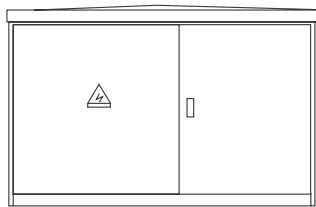
◆Product Features

- 1.Compact structure and small volume.It is only about 1/3 of EU type prefabricated substation with same capacity, which greatly reduce the floor space.
- 2.Fully sealed and insulated structure, which protects personal safety reliably.
- 3.The high voltage connection can be used in the ring network, and also can be used in the terminal, the power supply mode is flexible and the reliability is high.
- 4.The transformer has excellent performance,with low loss, low noise, low temperature rise, strong overload ability and strong ability to resist short circuit impact.
- 5.To meet the requirements of all kinds of low voltage feed out, it can be selected according to the scheme and also can be designed by itself.
- 6.The cable joints can be plugged and unplugged with load and play the role of the disconnecting switch.

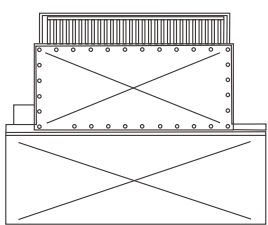
◆Technical Parameters

Content	Unit	H.T side	Transformer side	L.T side
Rated Capacity	kVA		50-1250	
Rated Voltage	kV	10	10/0.4	0.4
Rated Current	A	630	72/1800	2000
Rated Short circuit Breaking Current	kA	≥20		≥30
Rated Short Circuit Making Current	kA	50		
Rated Thermal Stability Current	kA/S	≥20/4		≥30/1
Power Frequency Withstand Voltage in 1 min	kV	Earth: 42 Fracture: 48	Oil: 35	2.0/2.5
Lightning Impulse Withstand Voltage	kV	75		
Degrees of Protection	IP	IP33D		
Noise Level	DB	≤55		

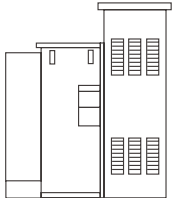
◆Schematic diagram of structure



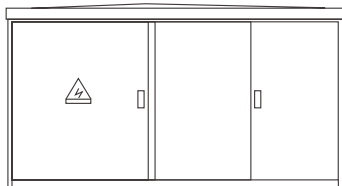
Standard/Comprehensive type orthographic view



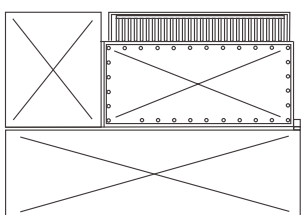
Standard/Enhanced type vertical view



Standard/Enhanced type side view



Enhanced type orthographic view



Comprehensive type vertical view



Comprehensive type side view



DFW  
Cable Distribution Box



◆Product Summary

Our Company's cable distribution box is divided into two types of American and European. This series of cable distribution box applied 12kV three pahse AC 50/60Hz system which work as apparatus distribution device. It is widely used in industrial parks, residential areas, business centers, mining areas, airports, railways, port areas, power stations and other distribution networks, especially for urban power grid transformation projects.

◆Environmental Conditions

- 1.Altitude: No more than 1000m.
- 2.Ambient Temperature: No more than +40℃ and no less than -30℃.
- 3.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 4.Earthquake proof Level: Horizontal Accelerations≤0.3g, Vertical Acceleration≤0.15g.
- 5.Installation Location: Well-ventilation, chemical corrosion and violent vibration for product installed place. Vertical slope of less than 3 degrees.

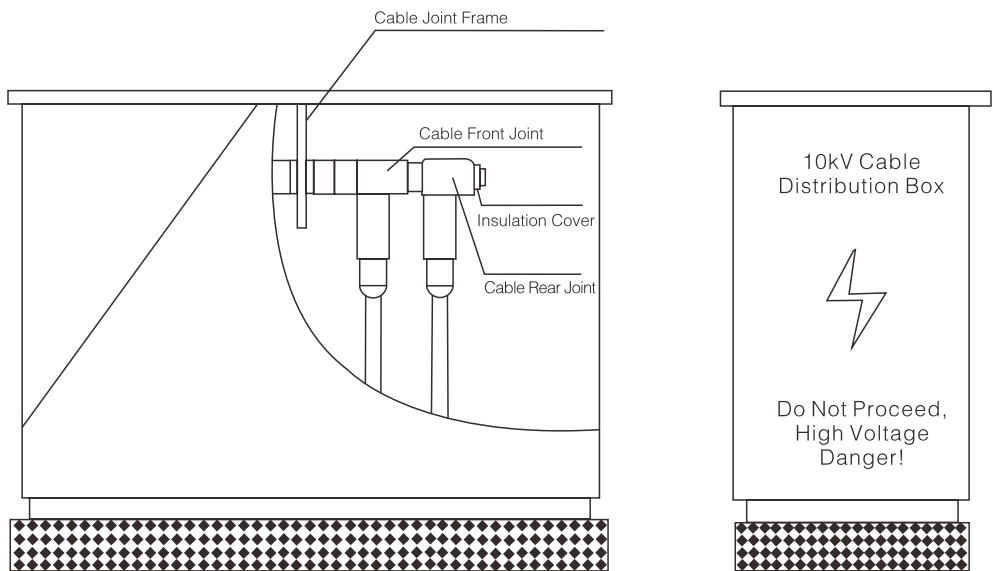
◆Product Features

- 1.Fully sealed and insulated structure, which protects personal safety reliably.
- 2.Outdoor type, dustproof, moistureproof, corrosion resistance and strong environmental adaptability.
- 3.The combination is flexible, incoming and outgoing lines could be from two to six circuits, meeting a variety of wiring requirements.
- 4.Small volume, compact structure, beautiful appearance, simple installation and maintenance free.
- 5.It could be equipped with live monitor, short circuit indicator and lightening arrester,etc.

◆Technical Parameters

Sr.	Content	Unit	Value
1	Rated Voltage	kV	12kV
2	Rated Current	A	630A
3	Rated Frequency	Hz	50/60Hz
4	Rated Thermal Stability Current	kA/s	20kA/3s
5	Rated Dynamic Stability Current	kA	50kA
6	Frequency Withstand Voltage in 1min	kV	42kV
7	Lightning Impulse Withstand Voltage	kV	105kV
8	Connection Point Resistance	μΩ	≤40 μ Ω
9	Working Temperature of The Conductor	℃	≤95℃
10	Partial Discharge	pc/kV	≤10pc/13kV

◆Schematic diagram of structure



CAMNS  
Low Voltage Withdrawable Switchgear



◆Product Summary

CAMNS low Voltage withdrawable type switchgear is used for conversion, distribution and control of electrical energy of power distribution equipment of AC 50~60Hz, 400V. It is mainly used in airports, power plants, substations, petrochemical plants, metallurgic plants, steel plants, transportation energy, light textile and residential districts, high-rise buildings, etc.The switchgear conforms to IEC439, GB/T7251.1 and other professional standard. It uses standard module design, and it can respectively form standard units—such as protection, operation, conversion, control, regulation, determination and indication. Over 200 types of assembly parts can form frame structures of different schemes, and form fixed separation or drawer units. The users can select assemblies arbitrarily according to their demands.

◆Environmental Conditions

- 1.Installation Site: Indoor
- 2.Altitude: No more than 2000m.
- 3.Earthquake Intensity: No more than 8 degrees.
- 4.Ambient Temperature: No more than +40℃ and no less than -15℃.Average temperature is no more than +35℃ within 24 hours.
- 5.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 6.Installation locations: without fire, explosion danger, serious pollution, chemical corrosion and violent vibration.

◆Product Features

- 1.The operation of drawer is combined with the control handle. It has simplified the operation, and overcome the shortcomings that the operation of traditional MNS cabinet is complicated.
- 2.The MCC unit has a lot of combinations, with compact structure. The cabinet body can share busbars, which are arranged back to back. A maximum of 36 loops can be assembled for each cabinet.
- 3.The cabinet body can be arranged back to back or against the wall, which can save installation space.
- 4.All of the standard components are selected to facilitate the design of engineering designers.
- 5.The whole series is standardized, the structure is versatile and the assembly is flexible.
- 6.It can accommodate more units in a cabinet, and it can be freely combined into different types, such as fixed type and drawer type. The same specification drawer unit can be exchanged conveniently.
- 7.The combination performance is stable and the earth continuity is good.
- 8.The device has a high continuity and reliability.
- 9.The product has passed the aseismic, salt fog and EMC electromagnetic compatibility test, and the operation is safe and reliable.

◆Technical Parameters

Sr.	Content		Unit	Value
1	Rated Operational Voltage		V	400
2	Rated Insulation Voltage		V	690
3	Rated Frequency		Hz	50/60
4	Main Bus-Bar	Rated Current	A	≤6300
		Rated short time withstand current(1S)	kA	≤100
		Rated Peak Withstand Current	kA	≤220
5	Distribution Bus	Rated Current	A	≤1300
		Rated short time withstand current(1S)	kA	≤50
		Rated Peak Withstand Current	kA	≤105
6	Frequency Withstand Voltage in 1 min of Aux Control Loop		kV	2
7	Rated Impulse Withstand Voltage		kV	8
8	Degrees of Protection		IP	IP40
9	Electrical Clearance		mm	≥10
10	Creepage Distance		mm	≥12.5
11	Overvoltage Level		—	Ⅲ /Ⅳ
12	Pollution Degree		—	3

◆Schematic diagram of structure



Incoming cabinet, Bus tie cabinet



Outgoing cabinet



Outgoing cabinet

CAGCS  
Low Voltage Withdrawable Switchgear



◆Product Summary

CAGCS low Voltage withdrawable switchgear is suitable for the low voltage distribution system in power plant, petroleum industry, chemical industry, metallurgy industry, spinning mill, high buildings, etc. It is especially used in large power plant, petrochemical system and other locations which are required high automatic and computer interface. It is serviced in the low voltage apparatus distribution devices of generator and power supply system distribution, motor central control and reactive power compensate of 3 phase AC 50/60Hz, 400V, rated current 4000A and lower.

◆Environmental Conditions

- 1.Installation Site: Indoor
- 2.Altitude: No more than 2000m.
- 3.Earthquake Intensity: No more than 8 degrees.
- 4.Ambient Temperature: No more than +40℃ and no less than –15℃.Average temperature is no more than +35℃ within 24 hours.
- 5.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 6.Installation locations: without fire, explosion danger, serious pollution, chemical corrosion and violent vibration.

◆Product Features

- 1.It can be increased the thermal capacity of adaptor parts. Also it can be effectively and evidently reduced the temperature rise of adaptor parts or additional temperature rise of cable lug and partition board.
- 2.The quantity of a single MCC panel’ s loop is up to 22 Nos., this can satisfy requirements of power plant which has high capacity of single generator, automatic motor control door (machine) set of petrochemical system and other industries.
- 3.The connection between the device and the external cable is completed in the cable compartment, and the cable can get in and out on the top or bottom. The zero sequence current transformer is placed in the cable compartment, so that the installation and maintenance are convenient.
- 4.Drawer units have enough quantity secondary adaptors (32 pairs for 1 unit and above, 20 pairs for 1/2 unit), so it can meet the requirements of the number of contacts by the computer interface and the automatic control loop.

◆Technical Parameters

Sr.	Content		Unit	Value
1	Rated Operational Voltage		V	400
2	Rated Insulation Voltage		V	690
3	Rated Frequency		Hz	50/60
4	Main Bus–Bar	Rated Current	A	≤4000
		Rated short time withstand current(1S)	kA	≤80
		Rated Peak Withstand Current	kA	≤176
5	Distribution Bus	Rated Current	A	≤1500
		Rated short time withstand current(1S)	kA	≤50
		Rated Peak Withstand Current	kA	≤105
6	Frequency Withstand Voltage in 1 min of Aux Control Loop		kV	2
7	Rated Impulse Withstand Voltage		kV	8
8	Degrees of Protection		IP	IP40
9	Electrical Clearance		mm	≥10
10	Creepage Distance		mm	≥12.5
11	Overvoltage Level		–	Ⅲ /Ⅳ
12	Pollution Degree		–	3

◆Schematic diagram of structure



Incoming cabinet, Bus tie cabinet



Outgoing cabinet



Outgoing cabinet



GCK  
Low Voltage Withdrawable Switchgear



◆Product Summary

GCK low Voltage withdrawable switchgear consists of two parts, power distribution center (PC Panel) and motor control center (MCC Panel). It is universally applied in power plant, city substations, industry and mine corporations,etc., with rated voltage 400V, max operating current 4000A and rated frequency 50/60Hz. It can be applied as power conversion distribution control of the power distribution equipment like power distribution, electromotor control, lighting, etc.

This switchgear is accordance with international standard IEC439 and national standard GB7251(low Voltage switchgear and controlgear assemblies). The main characteristics are high breaking capacity, good performance of dynamic & thermal stability, advanced and reasonable configuration, realistic electric scheme, and strong seriation and generality. All kinds of scheme units are combined arbitrarily. A cabinet has more loops to be accommodated, which has many advantages like saving area, beautiful appearance, high degrees of Protection, safety and reliability, and convenient maintenance, etc.

◆Environmental Conditions

- 1.Installation Site: Indoor
- 2.Altitude: No more than 2000m.
- 3.Earthquake Intensity: No more than 8 degrees.
- 4.Ambient Temperature: No more than +40℃ and no less than -15℃.Average temperature is no more than +35℃ within 24 hours.
- 5.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 6.Installation locations: without fire, explosion danger, serious pollution, chemical corrosion and violent vibration.

◆Product Features

- 1.The basic frame of this series of products is a combination assembly structure, All the structural components of the rack can be connected to each other through screws to form a basic frame. Then, a complete switchgear can be assembled according to the needs of the door, baffle, partition board, drawer, mounting bracket, busbar and electrical components.
- 2.The frame adopts special-shaped steel and is positioned by three dimensional plates: bolt connection without welding structure, so as to avoid welding deformation and stress, and improve installation accuracy. The installation holes of frames and components change according to modulus E=25mm.
- 3.The internal structure is galvanized, and the surface of the panel, the side plate and the panel are treated by acid washing and phosphating, and the electrostatic epoxy powder is used.
- 4.In the power center (PC) incoming cabinet, the top is the horizontal busbar area, and the lower part of the horizontal busbar is the circuit breaker room.

◆Technical Parameters

Sr.	Content		Unit	Value
1	Rated Operational Voltage		V	400
2	Rated Insulation Voltage		V	690
3	Rated Frequency		Hz	50/60
4	Main Bus-Bar	Rated Current	A	≤4000
		Rated short time withstand current(1S)	kA	≤80
		Rated Peak Withstand Current	kA	≤176
5	Distribution Bus	Rated Current	A	≤1500
		Rated short time withstand current(1S)	kA	≤50
		Rated Peak Withstand Current	kA	≤105
6	Frequency Withstand Voltage in 1 min of Aux Control Loop		kV	2
7	Rated Impulse Withstand Voltage		kV	8
8	Degrees of Protection		IP	IP40
9	Electrical Clearance		mm	≥10
10	Creepage Distance		mm	≥12.5
11	Overvoltage Level		-	III /IV
12	Pollution Degree		-	3

◆Schematic diagram of structure



Incoming cabinet, Bus tie cabinet



Outgoing cabinet



Outgoing cabinet

GGD  
Low Voltage Fixed Type Switchgear



◆Product Summary

The GGD low voltage switchgear is applied in power plant, substations, industry and mine corporations, etc., with rated voltage 400V, max operating current 4000A and rated frequency 50/60Hz. It can be applied as power conversion distribution control, distribution and control of power, lighting and power distribution, etc.

The cabinet structure of GGD type adopts the form of general cabinet, the frame is assembled by local welding of cold bending section steel, so it is firm and solid.

The parts of the general cabinet are designed according to the principle of module, and have the installation hole with 20mm as the module, and the common coefficient is high. It can make the factory realize the pre production, not only shortens the production cycle, but also improves the working efficiency.

◆Environmental Conditions

- 1.Installation Site: Indoor
- 2.Altitude: No more than 2000m.
- 3.Earthquake Intensity: No more than 8 degrees.
- 4.Ambient Temperature: No more than +40℃ and no less than -15℃.Average temperature is no more than +35℃ within 24 hours.
- 5.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 6.Installation locations: without fire, explosion danger, serious pollution, chemical corrosion and violent vibration.

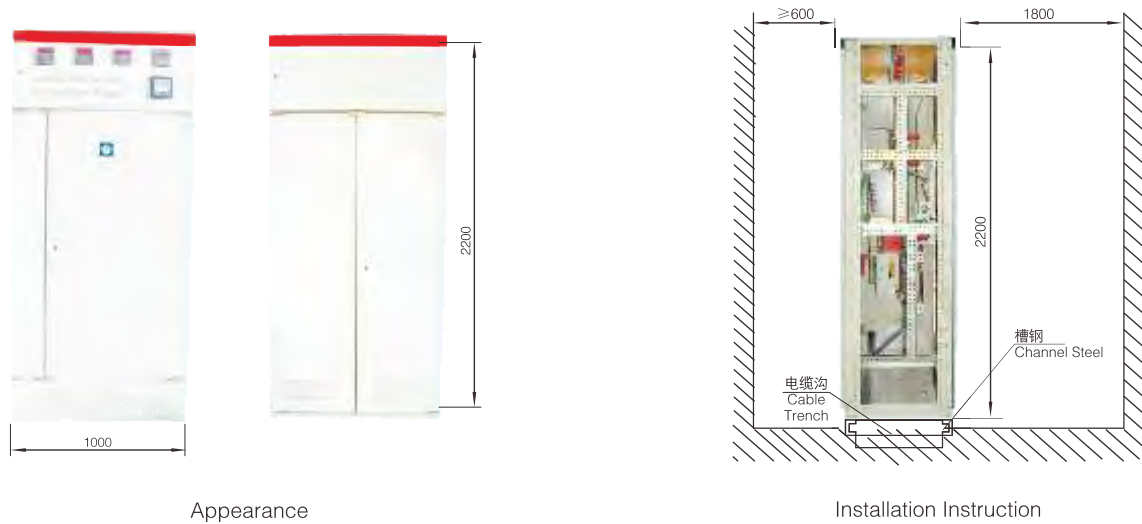
◆Product Features

- 1.The frame has sufficient strength and rigidity, Which can withstand the mechanical stress and electrodynamic force generating from installation components and short circuit, At the same time it does not affect the performance of the device because of the hoisting and transportation of the device, etc.
- 2.When the cabinet is designed, the heat dissipation in the operation of the equipment is fully taken into account. There are different number of radiating slots in the upper and lower ends, heat is going up when the electrical components in the cabinet are heating, and is discharged through the top slot, and the cold wind constantly from the bottom slot is supplied into the cabinet, the sealed cabinet body bottom forms a natural ventilation from bottom to top, which achieves the purpose of heat dissipation.
- 3. The instrument door equipped with the electrical components is connected with the frame with many annealed copper wires. The installation parts in the cabinet are connected to the frame with the knurled screws, and the whole cabinet forms a complete grounding protection circuit.
- 4.The cabinet cover can be removed if necessary, to facilitate the main bus assembly and adjustment on site. Flying rings are provided at the four comers of the cabinet top for lifting and shipping.

◆Technical Parameters

Sr.	Content		Unit	Value
1	Rated Operational Voltage		V	400
2	Rated Insulation Voltage		V	690
3	Rated Frequency		Hz	50/60
4	Main Bus-Bar	Rated Current	A	≤4000
		Rated short time withstand current(1S)	kA	≤80
		Rated Peak Withstand Current	kA	≤176
5	Distribution Bus	Rated Current	A	≤2000
		Rated short time withstand current(1S)	kA	≤50
		Rated Peak Withstand Current	kA	≤105
6	Frequency Withstand Voltage in 1 min of Aux Control Loop		kV	2
7	Rated Impulse Withstand Voltage		kV	8
8	Degrees of Protection		IP	IP40/IP30
9	Electrical Clearance		mm	≥10
10	Creepage Distance		mm	≥12.5
11	Overvoltage Level		-	Ⅲ /Ⅳ
12	Pollution Degree		-	3

◆Schematic diagram of structure



CAGWB  
Low Voltage Reactive Power Compensation Device



◆Product Summary

The CAGWB series low voltage reactive power compensation cabinet is suitable for low voltage power grid with AC 50/60Hz and rated voltage 400V, so as to improve power factor, reduce line loss and improve power quality. The intelligent controller is the core of the system, which uses switching devices to automatically switch capacitors according to the power factor of the grid, ensuring that the power grid always has high power factor.

◆Environmental Conditions

- 1.Installation Site: Indoor
- 2.Altitude: No more than 2000m.
- 3.Earthquake Intensity: No more than 8 degrees.
- 4.Ambient Temperature: No more than +40℃ and no less than -15℃.Average temperature is no more than +35℃ within 24 hours.
- 5.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 6.Installation locations: without fire, explosion danger, serious pollution, chemical corrosion and violent vibration.

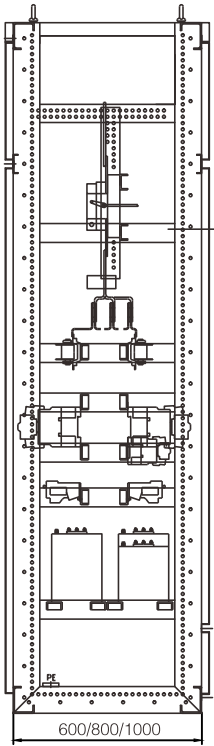
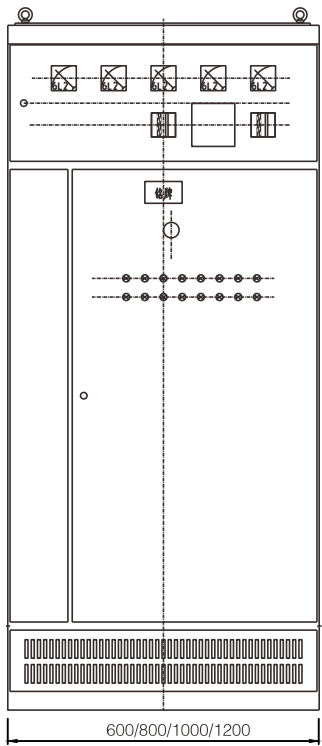
◆Product Features

- 1.The product structure is versatile and can be combined with MNS, GCK, GCS, GGD and many other low Voltage switchgears.
- 2.The compensation mode is flexible and diverse, which could be three phase compensation, single phase compensation and three phase single phase mixed compensation.
- 3.It could be connected to comprehensive automatic system with many communication ports like Rs485, GPRS, etc.
- 4.According to the operation of the power grid, various switching modes, such as AC contactor, semiconductor switch, compound switch and so on, are adopted.
- 5.Afterseries connecting the reactor, the harmonic of the power grid can be suppressed effectively and the quality of the power grid can be improved.

◆Technical Parameters

Sr.	Content	Unit	Value
1	Rated Voltage	V	400
2	Rated Insulation Voltage	V	690
3	Rated Frequency	Hz	50/60
4	Rated Capacity	kvar	60~530
5	Operating Voltage	Rated Voltage of 0.85 to 1.10 times	
6	Max. Allowable Overcurrent	1.3 times Rated Current	
7	Number of circuits controlled	4~12	
8	Switching Delay Time	0~999S Adjustable	
9	Operation Mode	Automatic, Continuous Operation	
10	Power Factor of Load Terminal	The load changes from 5 to 100%, the P.F values remains above 0.95.	

◆Schematic diagram of structure





MDmax  
Low Voltage Fixed Partition Switchgear



◆Product Summary

MDmax low voltage fixed partition switchgear is suitable for low Voltage power distribution systems such as power plants, petroleum, chemical industry, metallurgy, textile and high-rise buildings. In developed automation and requested to computer interfacing places such as large power plant, petrochemical system, etc.,it is used as power distribution, motor centralized control, reactive power compensation purposed low voltage power distribution equipment of the generating and power supplying systems with three-phase AC frequency 50/60Hz, rated voltage 400V, rated current 4000A and below.

MDmax low voltage switchgear is divided into two series: MDmax ST (drawer type) and MDmax FC (fixed partition type). It is a combined multi-functional low voltage switchgear with complete type test (referred to as TTA), which is accordance with GB7251.12 and IEC60439-1 standards.

◆Environmental Conditions

- 1.Installation Site: Indoor
- 2.Altitude: No more than 2000m.
- 3.Earthquake Intensity: No more than 8 degrees.
- 4.Ambient Temperature: No more than +40℃ and no less than -15℃.Average temperature is no more than +35℃ within 24 hours.
- 5.Relative Humidity: the average daily value is no more than 95%, the average monthly value is no more than 90%.
- 6.Installation locations: without fire, explosion danger, serious pollution, chemical corrosion and violent vibration.

◆Product Features

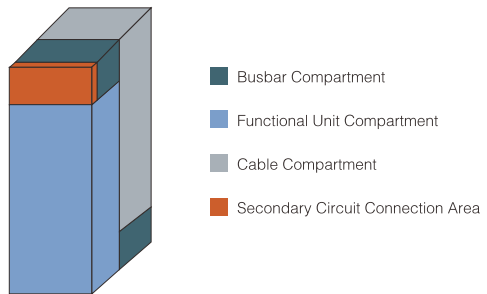
- 1.The framework adopts Double folding technology of aluminum zinc coated plate.
- 2.The top cover of the horizontal busbar area can be dismantled.
- 3.It has three functional units: drawer, movable and plug-in type.
- 4.The drawer type can load maximum 36 loops.
- 5.The three position conversion of the drawer loop can be realized without reducing the protection level
- 6.The positioning of the drawer removable part positioncan match three kinds of instructions,like sound, light and word.
- 7.The electric operation scheme of the drawer is perfect.
- 8.The whole series is standardized, the structure is versatile and the assembly is flexible.

◆Technical Parameters

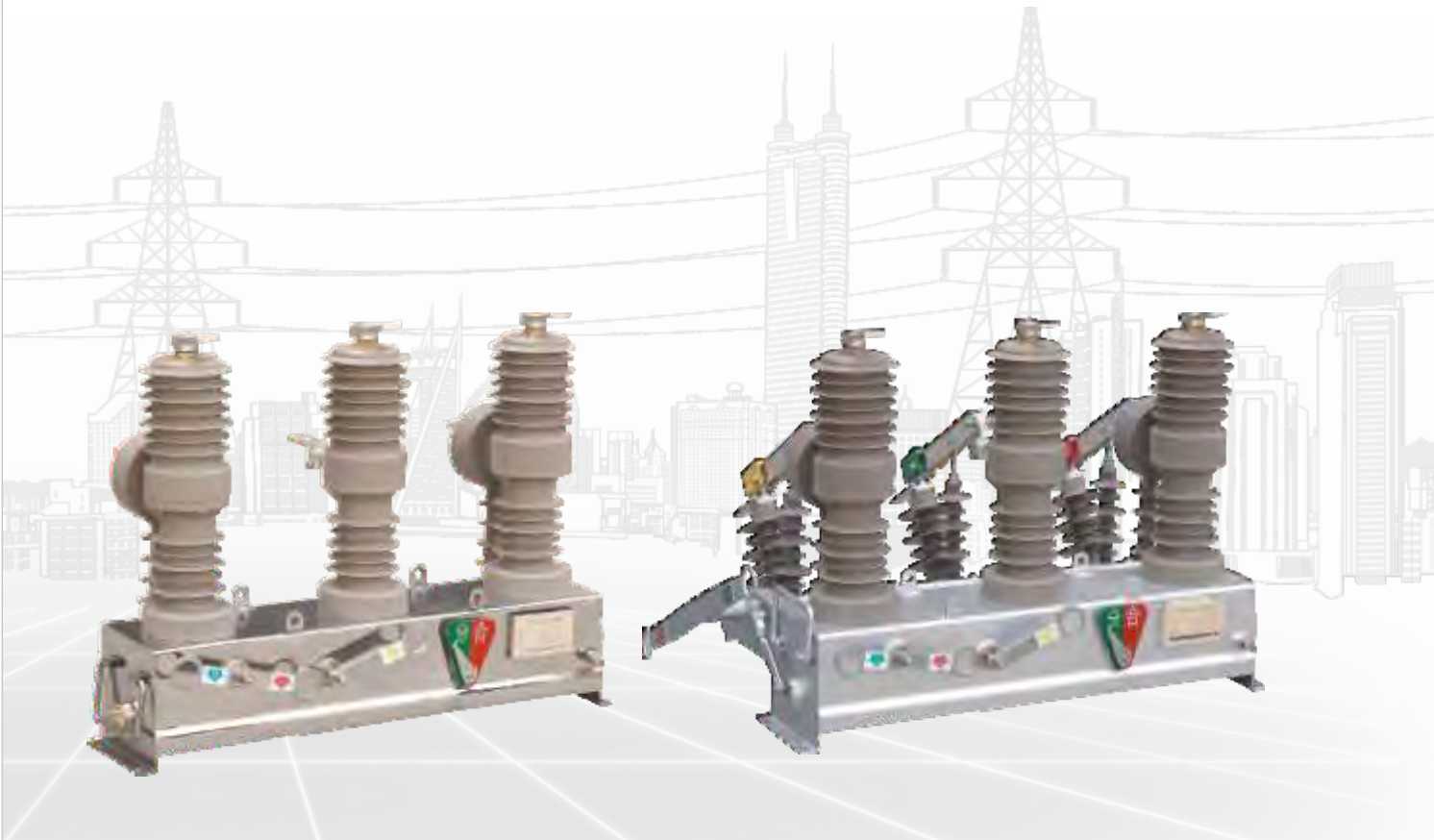
Sr.	Content		Unit	Value
1	Rated Operational Voltage		V	400
2	Rated Insulation Voltage		V	690
3	Rated Frequency		Hz	50/60
4	Main Bus-Bar	Rated Current	A	≤4000
		Rated short time withstand current(1S)	kA	≤80
		Rated Peak Withstand Current	kA	≤176
5	Distribution Bus	Rated Current	A	≤1500
		Rated short time withstand current(1S)	kA	≤50
		Rated Peak Withstand Current	kA	≤105
6	Frequency Withstand Voltage in 1 min of Aux Control Loop		kV	2
7	Rated Impulse Withstand Voltage		kV	8
8	Degrees of Protection		IP	IP40/IP30
9	Electrical Clearance		mm	≥10
10	Creepage Distance		mm	≥12.5
11	Overvoltage Level		-	Ⅲ/Ⅳ
12	Pollution Degree		-	3

◆Schematic diagram of structure

Recommended Height	2200
Recommended Width	
Fixed Structure	400/600/800/1000/1200
Drawer Structure	600
Recommended Depth	
Drawer Structure	1000/1200
movable structure	600/800/1000/1200
plug-in structure	600/800/1000/1200
standard unit height	
drawer type	200/300/400/600
movable type	150/200/300
plug-in type	150/200/300/400
Standard modulus spacing	25



ZW32-12(G)  
Outdoor Vacuum Circuit Breaker

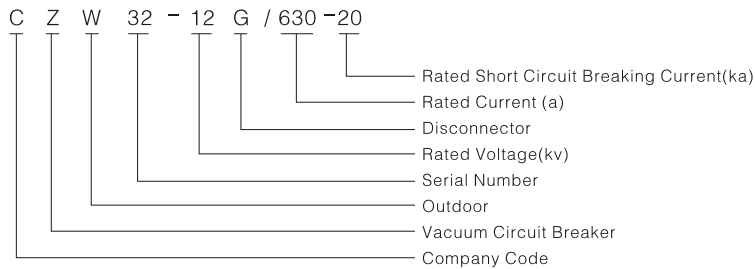


◆General Description

ZW32-12(G) series column type outdoor H.V.vacuum circuit breaker is an outdoorH.V.switch equipment with tri-phase AC 50Hz,rated voltage 12KV.it is suitable for breaking,closing load current,overload current and short-circuit current of the urban or the rural electrical power distribution system.

ZW32-12G circuit breaker isolator combination electric appliance match with isolation blade has evident fracture to increase safety.

◆Type And Meanings



◆Main Technical Parameter

Item		Unit	CZW32-12(G) /400-12.5	CZW32-12(G) /630-16	CZW32-12(G) /630-20
Rated voltage		KV	12		
Rated current		A	400	630	630
Rated short circuit breaking current		kA	12.5	16	20
Rated short circuit making current (peak)			31.5	40	50
Rated peak withstand current			31.5	40	50
Rated short time withstand current			12.5	16	20
Rated short circuit duration		S	4		
Rated insulation level	1 min power frequency withstand voltage	KV	phase to phase,to ground 42;fracture 48		
	Lightning impulse withstand voltage(peak)		phase to phase,to ground 75;fracture 85		
Rated sequence of operations			O-0.3s-CO-180s-CO		
Rated short circuit current breaking time		time	30		
Mechanical life			10000		
Rated operation voltage (opening,closing coil)		V	DC220,110;AC220		
Allowable attrition thickness of moving and fixed contact		mm	3		
Over-current release rated current			5		
Current transformer ratio			200/5 400/5 600/5		
Clearance between open contacts		mm	9±1		
Contact over travel			2±0.5		
Average opening speed		m/s	1.2±0.3		
Average closing speed			0.6±0.2		
Opening time		ms	30~60		
Closing time			20~40		
Closing bounce time			≤2		
Tri-phase opening and closing synchronous			≤2		
Each phase loop DC resistance		μ Ω	≤80		
Stored energy motor	Rated voltage	V	-220		
	Rated power	W	200		
	Stored energy time	S	≤8		
Weight		Kg	85,125(with G)		

## ◆Outline And Installation Dimensions

- 1.Upper outgoing line
- 2.Vacuum interrupter
- 3.Insulation tube
- 4.Lower outgoing line
- 5.Conductive clamp
- 6.Soft-link
- 7.Insulation lever
- 8.Contact pressure spring
- 9.Opening spring
- 10.Driving plate
- 11.Mechanism output shaf
- 12.Operating mechanism
- 13.Mechanism box
- 14.Current transformer

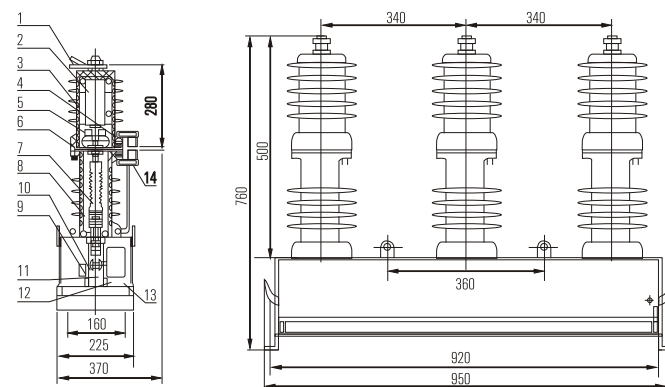


Fig.1 CZW32-12 outline dimension

- 1.Isolating operating handle
- 2.Isolating main shaft
- 3.Manual O-C handle of C.B
- 4.Energy-storage handle of C.B
- 5.O-C indication
- 6.Outer adjusting box of composite surge controller
- 7.wiring bos of C.B.
- 8.Insulation
- 9.Insulation lever
- 10.Insulation frame
- 11.Nameplate
- 12.Insulating unit
- 13.fasten copper nut
- 14.wiring plate(outgoing-line end)
- 15.current transformer
- 16.Isolating blade
- 17.wiring plate (incoming-line end)

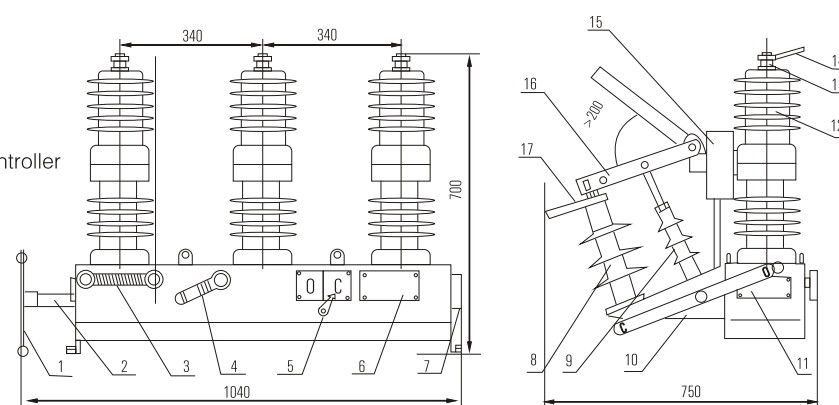


Fig.2 CZW32-12G outline dimension

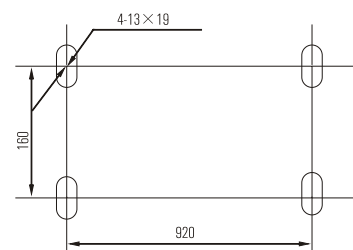
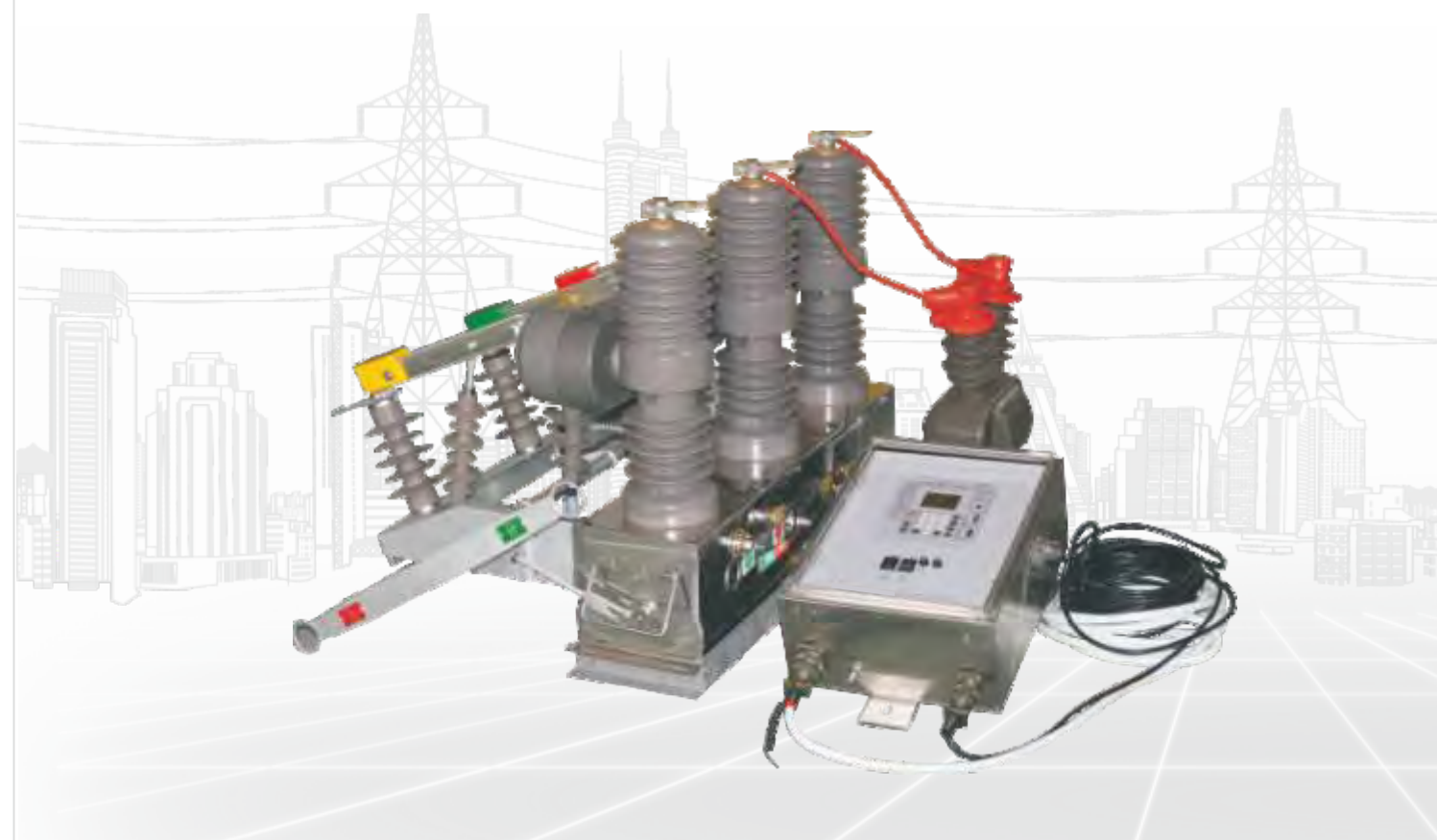


Fig.3 CZW32-12(G) installation hole dimension

## CZW32-12(G)C

### With Voltage Transformer And Recloser



## ◆Product Summary

ZW32-12C type outdoor H.V.vacuum automatic recloser is used in tri-phase distributed power system of AC 50Hz,voltage 12kV.it can automatically breaking and reclosing operation in AC lines according to preconcerted breaking and reclosing order,and then automatically restore,or lock H.V.switch equipment with control and protection function used with sectionalizer.it can realize distribution automatically without another control system.the system can rapidly subsection and isolate fault,reduce the range of power of power cut to least.it is the reasonable equipment for transforming urban and rural net,can be matched with isolating switch according to customers.

This circuit breaker should match with voltage transformer.

## ◆Type And Meanings

C	Z	W	32	-12	G	C	/630	-□	
									Rated Short Circuit Breaking Current(kA)
									Rated Current (A)
									Recloser
									Isolating Blade
									Rated Voltage(kV)
									Serial N O.
									Outdoor
									Vacuum Circuit Breaker
									Company Code



## ◆Main Technical Parameter

Item			Unit	Data
Rated voltage			KV	12
	Lightning impulse withstand voltage(peak)			75
Rated insulation level	1 min power frequency withstand voltage	Dry-type		42
		Wet-type		34
Rated current			A	200 400 630
Rated short circuit breaking current			kA	12.5 16 20
Rated operating sequence				O-0.3s-CO-180s-CO
Rated short circuit current breaking time			time	30
Rated short circuit making current (peak)			kA	50
Rated peak withstand current				50
Rated short time withstand current				12.5 16 20
Rated short circuit duration			s	4
Opening Time Under Rated Operation Voltage			ms	15~50
Closing time				25~50
Mechanical life time			time	10000
Rated Operation Voltage & Rated Control Voltage Of Auxiliary Circuit			V	~220 ~110 ~24
Energy-stored TimeUnder Rated Voltage			s	<10
CT	Ratio		A	()/5
	Capacity		VA	15
PT	Output Voltage		V	~220 ~110 ~24
	Capacity		VA	600
Over Current Adjust			A	2~10
Delay Time			ms	40~850
Fast-break Current			A	18
Remote-control Distance			m	30
Rated Input Power Of Energy-stored Motor			W	40

## ◆Outline And Installation Dimensions

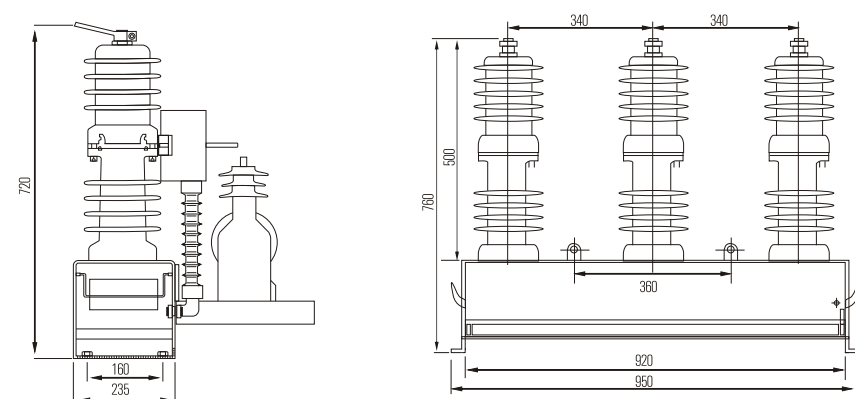


Fig.1 CZW32-12C outlinedimension

## ◆Outline And Installation Dimensions

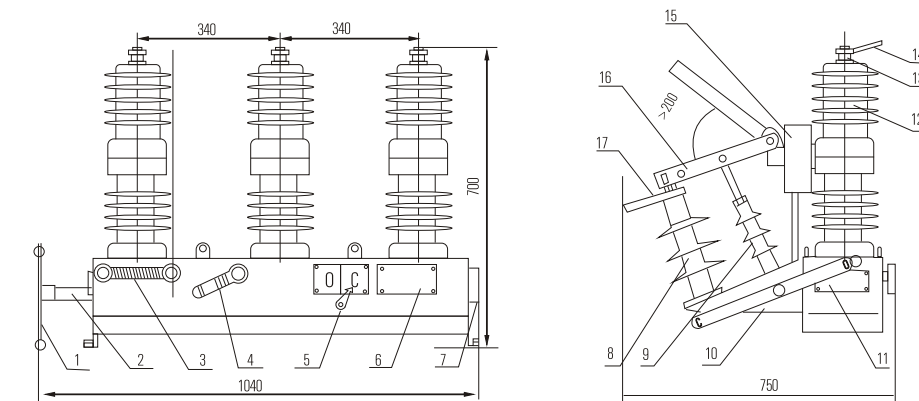


Fig.2 CZW32-12GC outline dimension

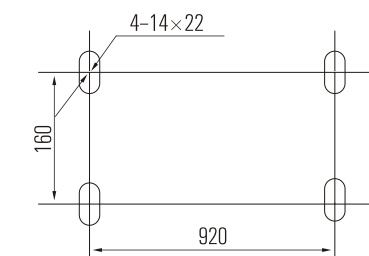
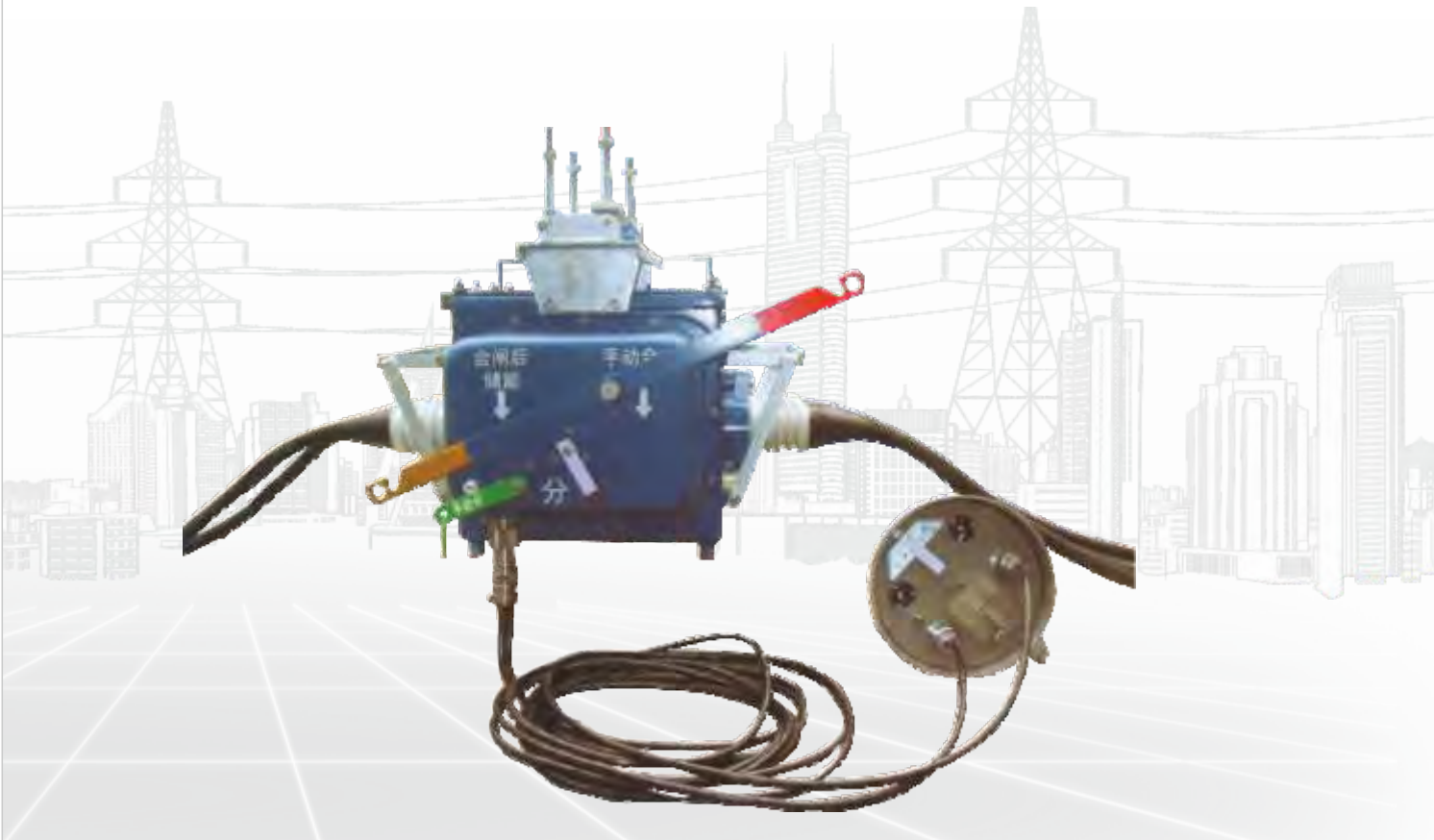


Fig.3 CZW32-12(G)C installation hole dimension

- 1.Isolating operating handle
- 2.Isolating main shaft
- 3.Manual O-C handle of C.B
- 4.Energy-storage handle of C.B
- 5.O-C indication
- 6.Outer adjusting box of composite surge controller
- 7.Wiring bos of C.B.
- 8.Insulation
- 9.Insulation lever
- 10.Insulation frame
- 11.Nameplate
- 12.Insulating unit
- 13.Fasten copper nut
- 14.Wiring plate(outgoing-line end)
- 15.Current transformer
- 16.Isolating blade
- 17.Wiring plate (incoming-line end)

CZW28-12F  
Outdoor Boundary Load Break Switch

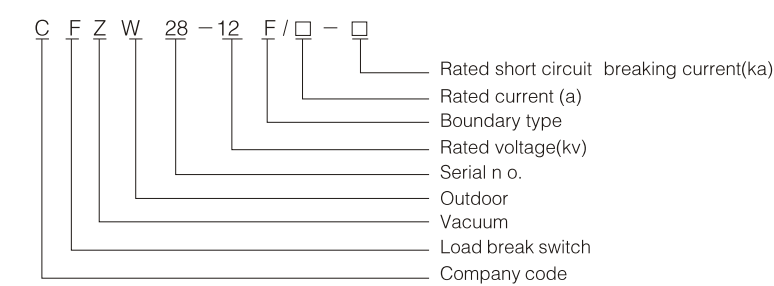


◆General Description

On the 12kV feeding line,when the error happened at one tributary line of the T type link users,normally it will cause the main line or adjacent users power cut accident,the investing make known this kind of accident takes 20%–30% or higher percentage in all power distribution accident,the result is enlarged power cutting scope and cause responsibility disputation.

Mounted a user boundary load break switch(also name watchdog)at the above T–type connecting point is the ideal solution to the above accident.

◆Type And Meanings



◆Main Function Characteristic

Automatically cut single phase earthing fault:when users tributary linecause single phase earthing fault,the boundary switch will open automatically,other distribution line users of the substation and feeding line will be without influence;isolation interphase short circuit fault automatically.

When the tributary line cause interphase short–circuit fault,boundary switch will open at once after out–wire protection tripping.after the substation reclose,fault line is isolated passively,other distribution users in feeding line resume power supply rapidly(equal to a transient fault).

Quick localization of fault:the tributary line fault cause boundary switch protection action,only the accident user cause power cut and by itself report the dault information,the power company could dispatch wor ker to live investigation;if the boundary switch match with communication,the power company could dispatch worker to live investigation;if the boundary switch match with communication module,it could transmit message to electricity management center.

Monitoring users load,boundary switch could configure wired or wireless communication enclosure to monitor data and transmit ro electricity management center,make the achievement of real–time data monitoring of users load in long distance.

Function of network running,it could be used in network lines;function of measurement,monitor voltage,current,frequency and quantity of electricity of lines,and transmit to management center in long distance.Function of harmonic analyzing,to supply reliable basis for pollution administration of electricity net afterwards.

◆Condition Of Using Envirment

- a.Altitude:≤2000m
- b.relative humidity: ≤90%(25 °C)
- c.Max.wind speed: ≤25m/s
- d.ambient temperature:–40 °C~85°C
- e.Max.day temperature gap:25 °C
- f.Max.ice–covering thickness:10mm

a.Switch body

Item	Unit	CFZW28–12F
Rated voltage	KV	12
Power frequency withstand voltage(phase to phase,to earth/fracture)	KV	42/48
Lighting impulse withstand voltage(phase to phase,to earth/fracture)	KV	75/85(peak)
Rated current	A	630
Rated short time withstand current	KA	16
Rated thermal stability current	s	2
Rated short circuit making current (peak)	KA	40
Rated dynamic stability current(peak)	KA	40
Rated cable charged breaking time	A	20
Rated switching no–load transformer induction current	A	< 5
Mechanical life time	time	10000

b.controller

Item	CZW28-12F
Input operation voltage	AC220 ± 20%
Input operation voltage frequency	50Hz
Output voltage(opening)	DC220V,DC48V
Inter-phase short circuit protection current setting value	0.2 , 0.4 , 0.6 , 0.8 , 1.0, A5 section switching
Earthing protection zero-order current setting value	10~200mA 20 sectionswitching , differential 10mA
Earthing protection time setting value	0,0.2 , 0.4 , 0.6 , 0.8 , 1.0 S6 sectionswitching
Setting value error	± 5%
Insulation impedance(outer terminal to earth input terminal,to outputterminal)	> 100M Ω/DC500V
P.F.withstand voltage(outer terminal to earth input terminal,to output terminal)	2000V/1min
Impulse withstand voltage(outer terminal to earth input terminal,to output terminal)	5000V,1.2/50 μ each 3 time of plus and minus

◆Outline And Installation Dimensions

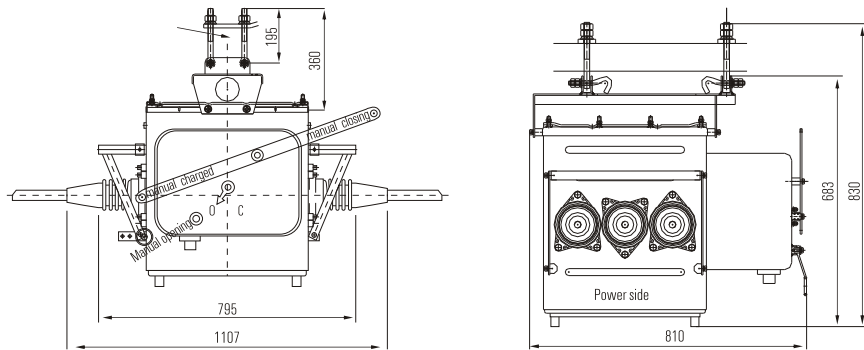
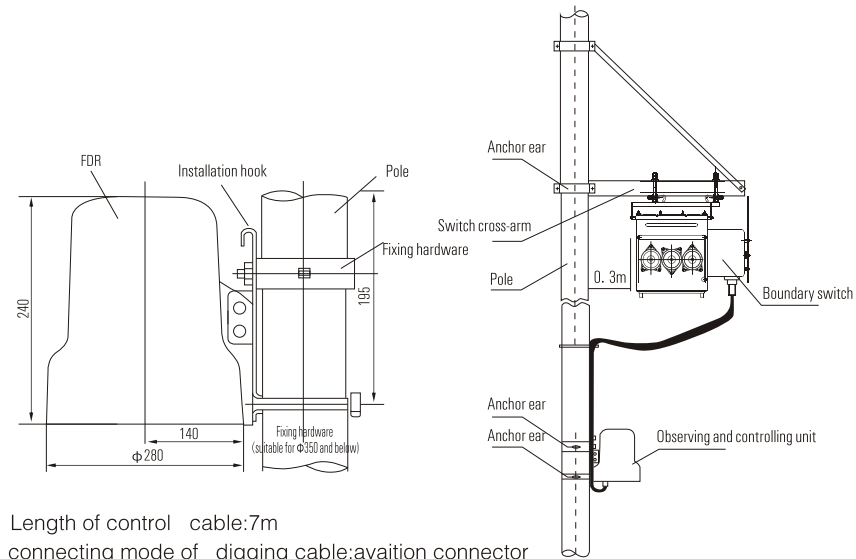


fig. 1 boundary switch outline dimension (current transformer and zero-order transformer provided as per users requirements)

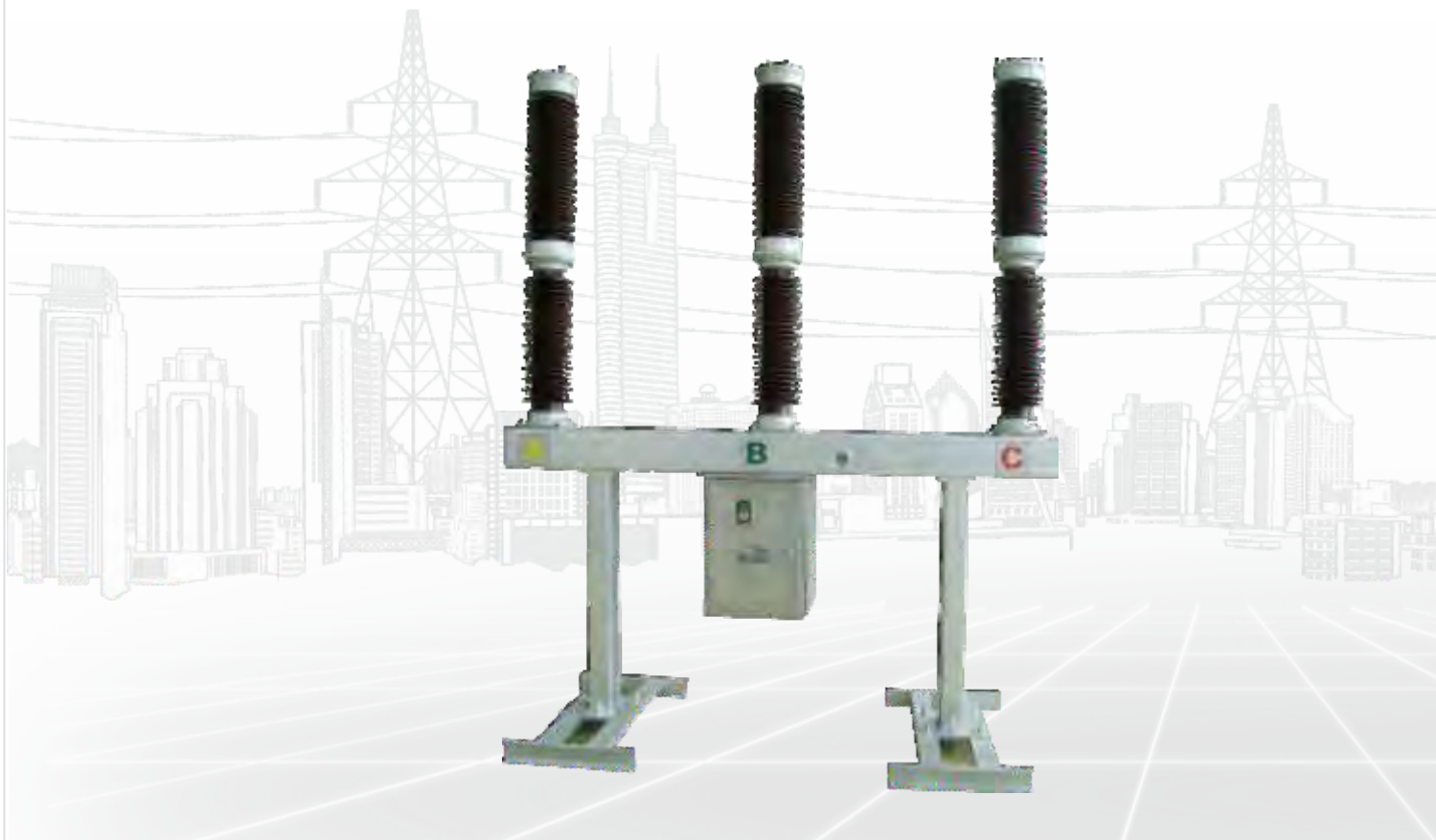


Length of control cable: 7m  
connecting mode of digging cable: aviation connector

fig. 2 controller outline dimension

fig. 3 pole-installation drawing

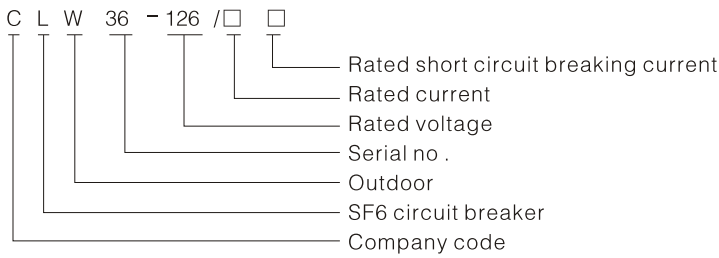
CLW36-126  
Outdoor Self-evolving H.V. SF6 Circuit Breaker



◆General Description

This product is used to control and protect circuit in 126kv and AC 50Hz power system. It could also be used to connect circuit breaker.

◆Type And Meanings





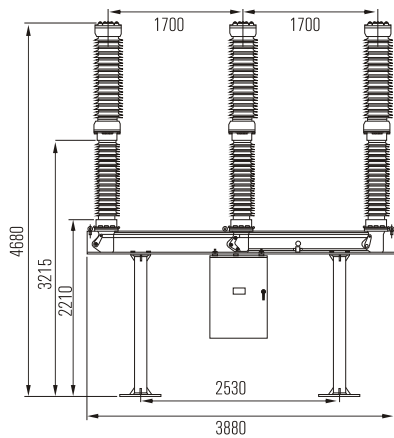
◆Product Feature

- a. Excellent breaking performance of arc-extinguish chamber;
- b. Reliable spring operating mechanism;
- c. Safe and reliable operation;
- d. Less maintenance;
- e. High insulation level;
- f. Good shock resistance and anticorrosion capacity.

◆Main Technical Parameter

Item	Unit	Data
Altitude	M	1000,2000,3000
Ambient temperature	℃	-30~+40
Rated voltage	KV	72.5 126 256
Rated current	A	2500 3150
Rated frequency	Hz	50
Rated short-circuit breaking current	KA	31.5 40
Rated short circuit making current	KA	80 100
Rated short time withstand current	KA	31.5 40
Rated peak withstand current	KA	80 100
Rated power frequency withstand voltage	KV	to earth:230 fracture:230+73*(reverse pressurization)
Rated lighting impulse withstand voltage	KV	to earth:550 farcture:550+103*(reverse pressurization)
Rated short circuit current duration	s	4
Rated out-of step breaking current	A	8 10
Line fault breaking current		90% 75% 60%
Rated cable charged making current	A	31.5
Rated operating sequence		O-0.3s-CO-180s-CO
SF6 gas pressure(20 ℃ gauge pressure)	Mpa	0.6
Mechanical life time	time	6000
Control circuit voltage	V	DC110 or 220
Creepage distance	mm/kV	25 31
Weight	kg	1500

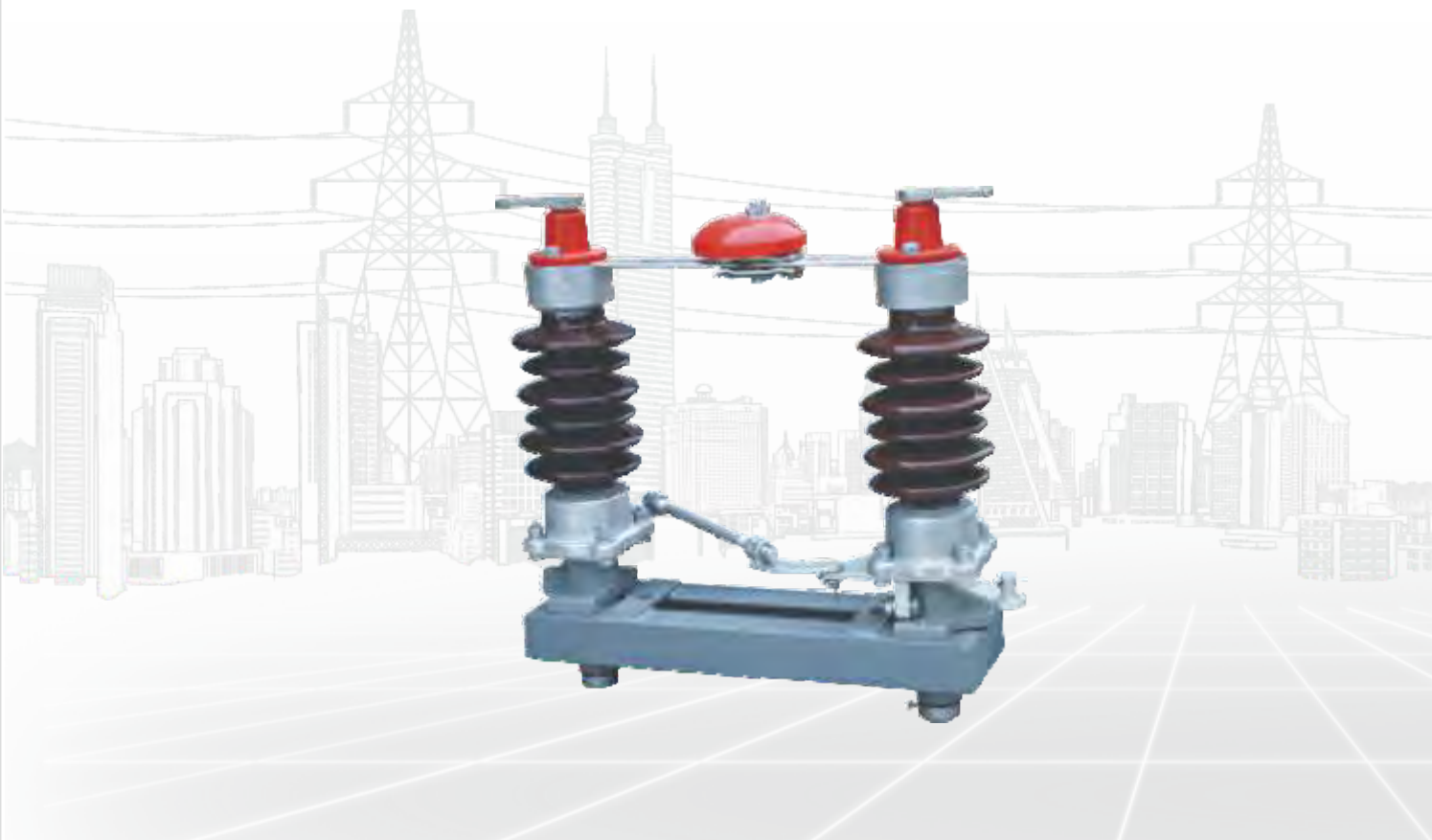
◆Outline And Installation Dimensions



Foundation installation hole

CLW36-126 SF6 circuit breaker typical drawing

CGW4  
Outdoor AC H.V. Disconnecting Siwtch

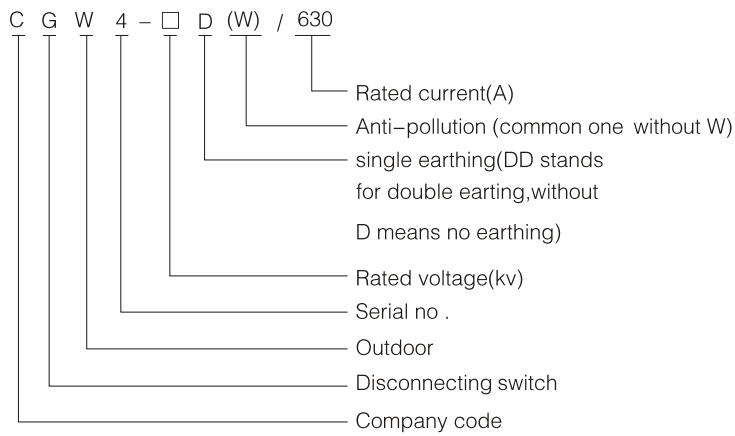


◆General Description

This product is unipolar equipped with Cs11 type and CS8-6D type manual operation mechanism.it could also unit three ratios to an inter linkage three ratios pattern through connecting rod.CS17 could be used in disconnect switch with double earthing gears,being equipped with the mechanisms which you need.

This disconnect switch is with reasonable switch structure,smooth operation,easy installation,big clearance between open contact knives,safe and reliable insulation.it could be used unipolar or three ratio.according to demands,it could be used earth-free,one-side earthing or two-side earthing.

◆Type And Meanings



◆Main Technical Parameter

Item		Unit	CGW 4-12	CGW 4-40.5	CGW 4-72.5	CGW 4-126	CGW 4-126G	CGW 4-145
Rated voltage		KV	12	40.5	72.5	126	126	145
Rated current		A	200 400 630 1000 1250	630 1000 2000 2500	630 1250 2000 2500	630 1250 2000 2500	630 1250	630 1250 2000 2500
Rated short time withstand current(effective value)		KA	16 20 25	20 31.5 40(46)	20 31.5 40(46)	20 31.5 40(46)	20 31.5	20 31.5 40(46)
Rated peak withstand current (effective value)		KA	40 50 63	50 80 100(104)	50 80 100(104)	50 80 100(104)	50 80	50 80 100(104)
I min p.f. Withstand voltage(effective value)	To earth	KV	42	80	140	185(230)	185	275
	Fracture		48	90	160	210(265)	210	315
Rated lightning impulse withstand voltage (peak)	To earth	KV	75	185	325	450(550)	450	650
	Fracture		85	215	375	520(530)	550	750
Wiring side horizontal force		N	250	490(735)	735	735	735	980
Single pole weight		Kg	60	80	200	240	240	300
Note						Altitude 2000m	suitable for 110kv altitude 4000m	

◆Outline And Installation Dimensions

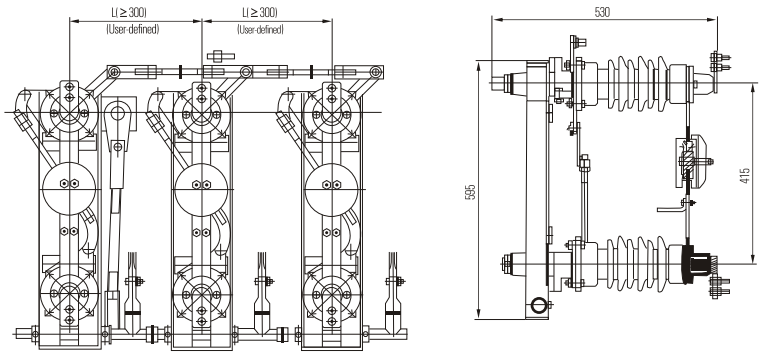


Fig.1 CGW4-12D/630 tri-pole assembly drawing

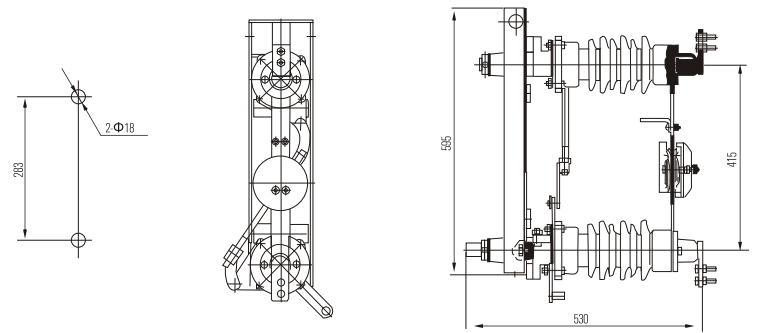


fig.2 CGW4-12D/630 single pole disconnecting switch

- 1.connection plate
- 2.conductive circuit
- 3.insulation support
- 4.connection lever
- 5.underframe

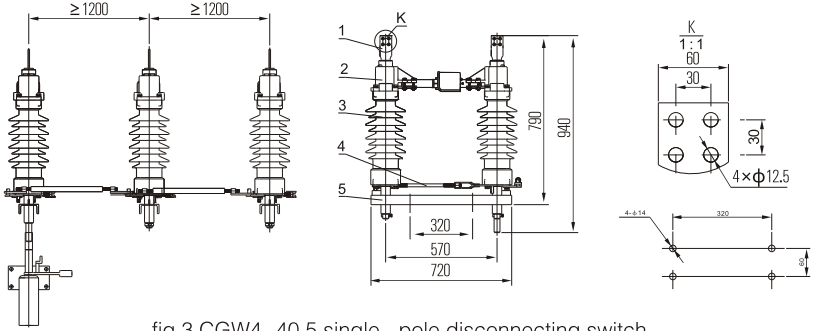
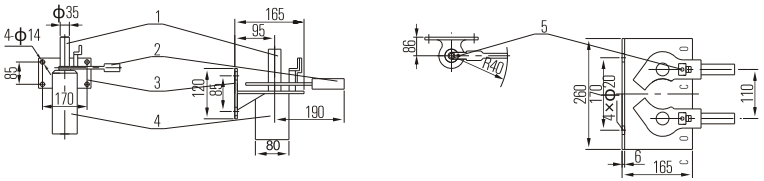


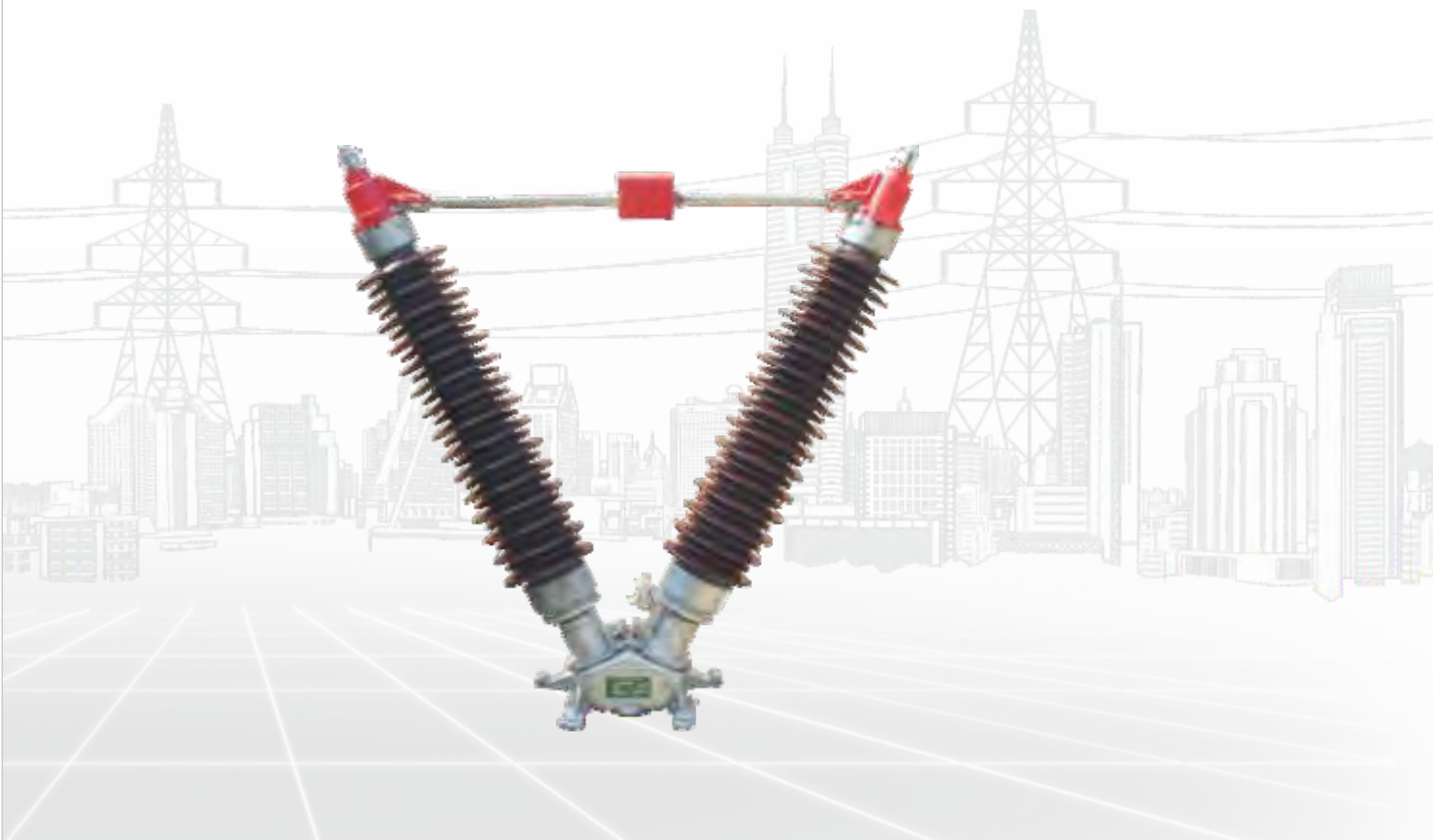
fig.3 CGW4-40.5 single pole disconnecting switch

- 1.mechanism rotating shaft
- 2.handle
- 3.base
- 4.cover
- 5.location units



CS11 manual operation mechanism CS8-6D manual operation mechanism  
fig.4 CGW4-40.5 outdoor high voltage AC disconnecting switch manual operation mechanism

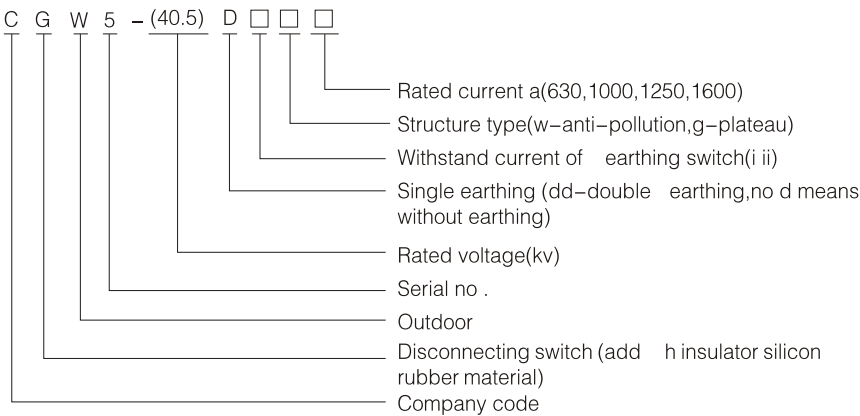
CGW5  
Outdoor Disconnecting switch



◆General Description

CGW5 outdoor disconnect switch is an outdoor H.V.Circuit electric appliance in AC 50Hz, rated voltage 40.5kV, 72.5kV and 126kV. It can be used for H.V. Circuit making under no-load condition and electric-disconnecting in inspection of H.V. Generator, appliances as circuit breaker and live H.V. Wire. Also, it can be used to make small capacitance or inductive current.

◆Type And Meanings



◆Main Technical Parameter

Classes	type	Single one weighth (kg)	Rated voltage (kV)	Rated current (A)	Disconnecting switch		Earthing switch				Earthing Kinds
					Peak Withstand Current(ka)	Short time Withstand Current(ka)	Peak withstand Current(ka)		Short time Withstand Current(ka)		
							I type	II type	I type	II type	
Common type (anti-pollution type)	CGW5-40.5/	92	40.5	630	50	20 (4s)	50	80	20 (4s)	31.5 (4s)	No earthing, single earthing, double earthing
	CGW5-40.5 DI-II/	94		1000							
				1250							
				1600							

◆Structure Characteristics

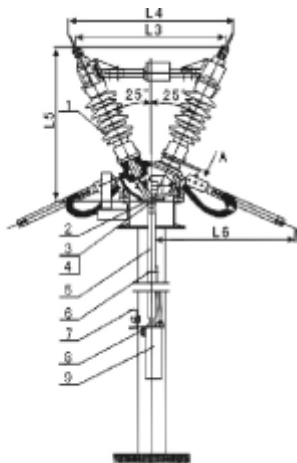
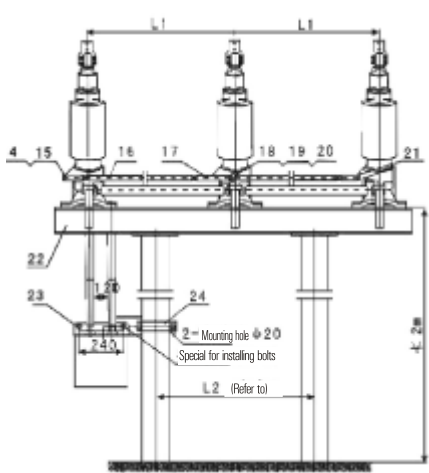
Each unipolar equipment is fitted in a base with two post insulators, shaping a V with intersection 50. The main structures are as follows: base, post insulator, terminal base, contact, earthing switch, earthing static contact and cable terminal. This switch is sorted by earthing-free, single earthing and double earthing. There is a mechanical interlocking between main principal axis and earthing switch. It is equipped with an auxiliary switch. It has manual and automatic operation ways.

◆Features

- a. making current freely, turning flexibility due to rolling bearing, which leading to operational labor saving.
- b. it is transmitted by bevel gear to make the two pillars making current consistently.
- c. the opening and closing brake has limited switch to ensure the contactors at the best position. Meanwhile, the handle will be buckled by lock ring after operation.
- d. big clearance between open contacts, sufficient insulating and disconnecting fracture to ensure the operation safety.
- e. it has earthing-free, single earthing and double earthing. There is a reliable mechanical interlocking between principal axis and earthing to ensure safety. Users can choose the earthing way accordingly.
- f. operation mechanism can be installed under either pole according to users. The operating effects are the same.

◆Dimensions Shown In Fig.1 Tri-pole Linkage Installation In Fig.2

- 1. CGW5 type single-pole disconnect switch ontology
- 2. universal joint
- 3. pin
- 4. cottor pin 320
- 5. water gas pipeline
- 6. clamping ring
- 7. channel steel
- 8. pin
- 9. CS17 manual operation mechanism
- 10. Hex nut M12
- 11. Flat washer 12
- 12. spring washer 12
- 13. Hex bolt M1220
- 14. Support
- 15. pin
- 16. water gas pipeline
- 17. connecting rod welding
- 18. Nut M16





◆Outline And Installation Dimensions

- 19.Spring washer
- 20.Screw
- 21.joint
- 22.channel steel (self prepared by users)
- 23.channel steel 10(for reference self prepared by users)
- 24.beam clamp (self prepared by users)
- 25.water gas pipeline(diameter of 40mm, self prepared by users)
- 26.angle 63 63 6(220MM)
- 27.angle 63 63 6(180MM)

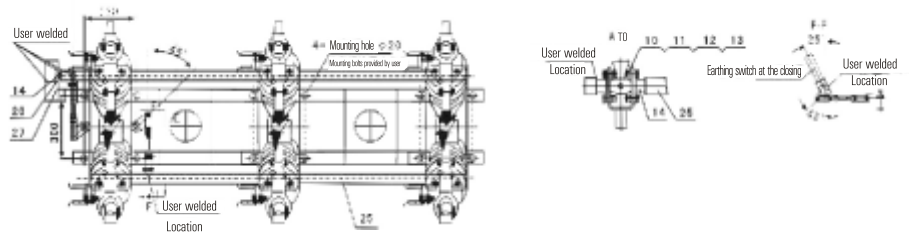


Fig.1 CGW5-40.5D/630 tri-pole disconnecting switch

Type	Rated voltage (kv)	L1(mm)	L2(mm)	L3(mm)	L4(mm)	L5(mm)	L6(mm)
CGW5-40.5	40.5	~1200	~1600	~830	~1000	~900	~700

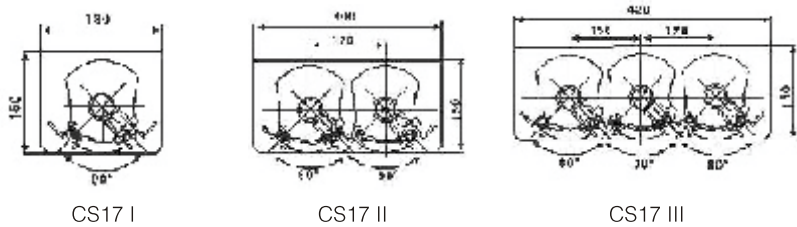


fig.2 CGW5-40.5 disconnecting switch operating mechanism tri-pole linkage installation drawing

CS17 I manual operation mechanism (no earthing)  
CS17 II manual operation mechanism(single earthing)  
CS17 III manual operation mechanism (double earthing)

- Main knife handles at the closing position
- ⊕ Main knife handles at the opening position
- ⊕ Earthing switch at the closing position
- ⊕ Earthing switch at the opening position



12kV-15kV

Type	Rated voltage (kV)	Rated current (A)	Breaking current (A)	Impulse voltage (BIL)	Power-frequency withstand voltage	Leakage distance (mm)	Weight (kG)	Dimensions (cm)
HV-1	15	100	10000	110	40	250	7.3	38.5x34.5 x10.5
	15	200	12000	110	40	250	7.3	



15kV-27kV

Type	Rated voltage (kV)	Rated current (A)	Breaking current (A)	Impulse voltage (BIL)	Power-frequency withstand voltage	Leakage distance (mm)	Weight (kG)	Dimensions (cm)
HV-7	15	100	10000	125	45	350	8.5	48x34.5 x10.5
	15	200	12000	125	45	350	8.5	



24kV-27kV

Type	Rated voltage (kV)	Rated current (A)	Breaking current (A)	Impulse voltage (BIL)	Power-frequency withstand voltage	Leakage distance (mm)	Weight (kG)	Dimensions (cm)
HV-13	24	100	8000	150	65	540	12	49x35 x14
	24	200	10000	150	65	540	12	



27kV-33kV

Type	Rated voltage (kV)	Rated current (A)	Breaking current (A)	Impulse voltage (BIL)	Power-frequency withstand voltage	Leakage distance (mm)	Weight (kG)	Dimensions (cm)
HV-21	30	100	6000	170	70	700	15	56x38 x14.5
	30	200	8000	170	70	700	15	



33kV-36kV

Type	Rated voltage (kV)	Rated current (A)	Breaking current	Impulse voltage (BIL)	Power-frequency withstand voltage	Leakage distance (mm)	Weight (kG)	Dimensions (cm)
HV-22	33	100	10000	170	70	720	15.5	57x38 x14.5
	33	200	12000	170	70	720	15.5	



12kV–15kV

Type	Rated voltage (kV)	Rated current (A)	Breaking current (A)	Impulse voltage (BIL)	Power–frequency withstand voltage	Leakage distance (mm)
HV–26	12–15	100	10000	110	40	380
	12–15	200	12000	110	40	380



24kV–27kV

Type	Rated voltage (kV)	Rated current (A)	Breaking current (A)	Impulse voltage (BIL)	Power–frequency withstand voltage	Leakage distance (mm)
HV–29	24–27	100	6000	150	65	650
	24–27	200	8000	150	65	650



27kV–33kV

Type	Rated voltage (kV)	Rated current (A)	Breaking current (A)	Impulse voltage (BIL)	Power–frequency withstand voltage	Leakage distance (mm)
HV–32	27–33	100	6000	170	70	620
	27–33	200	8000	170	70	620



30kV–33kV

Type	Rated voltage (kV)	Rated current (A)	Breaking current (A)	Impulse voltage (BIL)	Power–frequency withstand voltage	Leakage distance (mm)
HV–33	30–33	100	6000	170	70	680
	30–33	200	8000	170	70	680



36kV–38kV

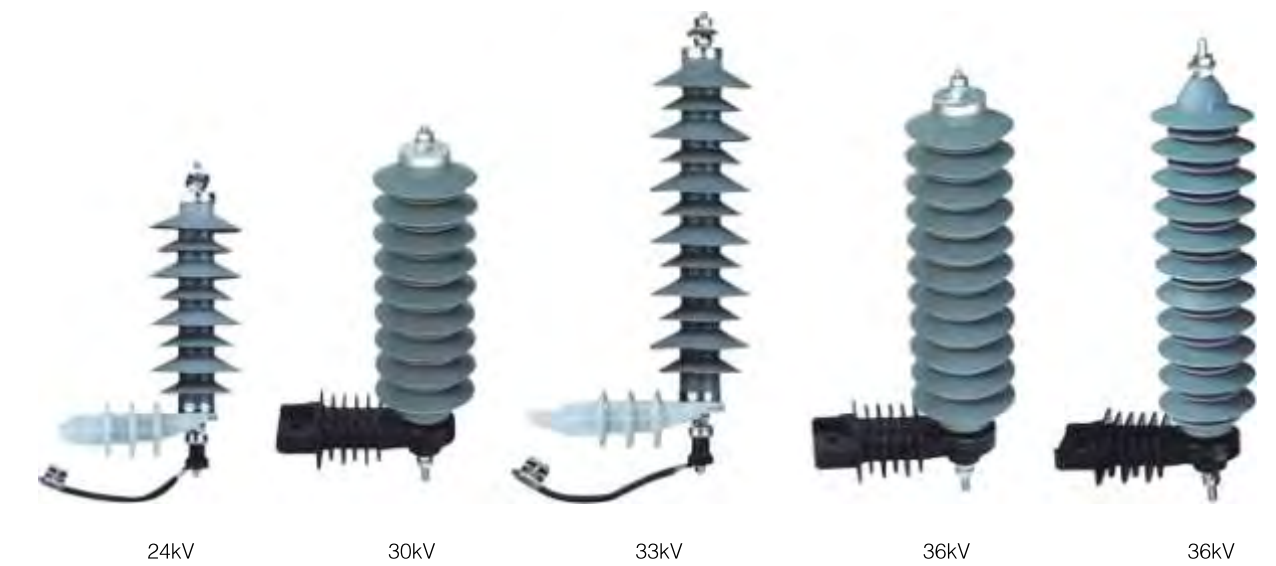
Type	Rated voltage (kV)	Rated current (A)	Breaking current (A)	Impulse voltage (BIL)	Power–frequency withstand voltage	Leakage distance (mm)
HV–34	36–38	100	6000	180	75	820
	36–38	200	8000	180	75	820

◆Polymeric Housed Metal-oxide Surge Arrester Without Gaps  
Nominal Discharge Current 5kA(3–36kV)



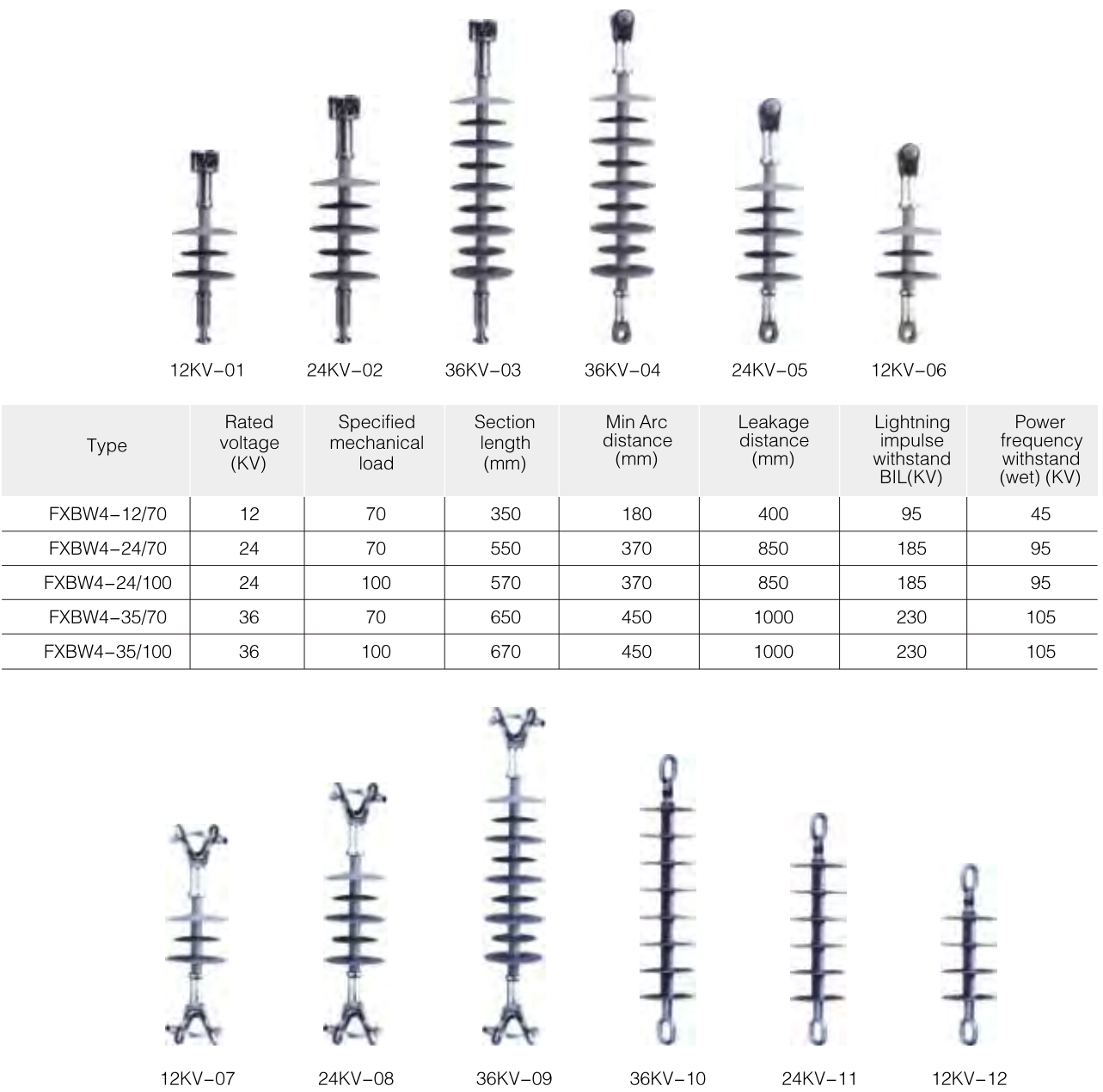
Type	MOA Rated voltage	MCOV	Current impulse Residual Voltage			2ms Rectangular current impulse withstand	4/10 μ s High current impulse withstand
			1/4 μ s Lightning current impulse	8/20 μ s Lightning current impulse	30/60 μ s Switching current impulse		
	kV(rms)	kV(rms)	kV(crest)	kV(crest)	kV(crest)	A(crest)	kA(crest)
CA5W–3	3	2.55	11.3	9	8.9	150	65
CA5W–6	6	5.1	22.6	18	16.8	150	65
CA5W–9	9	7.65	33.7	27	23.8	150	65
CA5W–10	10	8.4	36	30	23	150	65
CA5W–11	11	9.4	40	33	30	150	65
CA5W–12	12	10.2	42.2	36	27	150	65
CA5W–15	15	12.7	51	45	38.5	150	65
CA5W–18	18	15.3	61.5	54	46.2	150	65
CA5W–21	21	17.0	71.8	63	54.2	150	65
CA5W–24	24	19.5	82	72	62	150	65
CA5W–27	27	22.0	92	81	69.8	150	65
CA5W–30	30	24.4	102	90	79	150	65
CA5W–33	33	27.5	112	99	86.7	150	65
CA5W–36	36	29.0	123	108	92.4	150	65

◆Polymeric Housed Metal-oxide Surge Arrester Without GAPS Nominal Discharge Current 10kA(3-36kV)



Type	MOA Rated voltage	MCOV	Current impulse residual voltage			2ms Rectangular current impulse withstand	4/10 μ s High current impulse withstand
			1/4 μ s Lightning current impulse	8/20 μ s Lightning current impulse	30/60 μ s Switching current impulse		
	kV(rms)	kV(rms)	kV(crest)	kV(crest)	kV(crest)	A(crest)	kA(crest)
CA10W-3	3	2.55	11.3	9	8.9	250	100
CA10W-6	6	5.1	22.6	18	16.8	250	100
CA10W-9	9	7.65	33.7	27	23.8	250	100
CA10W-10	10	8.4	36	30	23	250	100
CA10W-11	11	9.4	40	33	30	250	100
CA10W-12	12	10.2	42.2	36	27	250	100
CA10W-15	15	12.7	51	45	38.5	250	100
CA10W-18	18	15.3	61.5	54	46.2	250	100
CA10W-21	21	17.0	71.8	63	54.2	250	100
CA10W-24	24	19.5	82	72	62	250	100
CA10W-27	27	22.0	92	81	69.8	250	100
CA10W-30	30	24.4	102	90	79	250	100
CA10W-33	33	27.5	112	99	86.7	250	100
CA10W-36	36	29.0	123	108	92.4	250	100

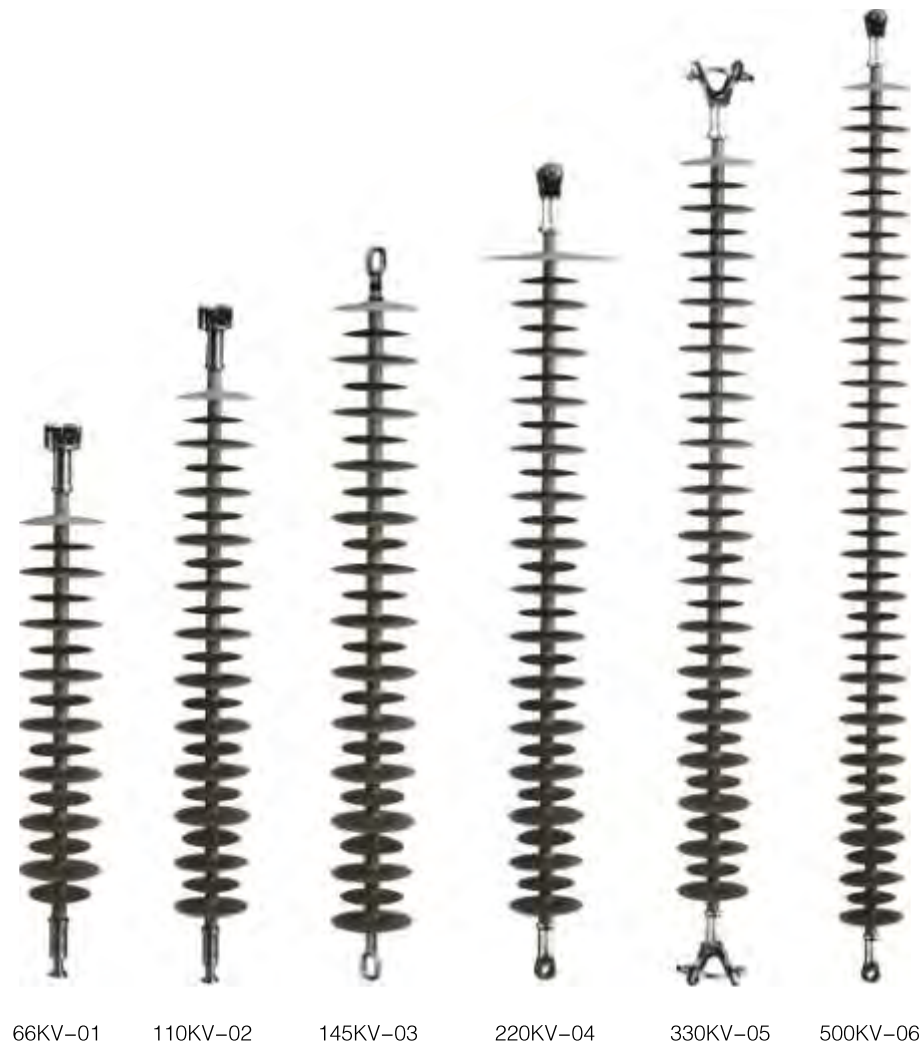
◆Long Rod Suspension Composite Insulator



Type	Rated voltage (KV)	Specified mechanical load	Section length (mm)	Min Arc distance (mm)	Leakage distance (mm)	Lightning impulse withstand BIL(KV)	Power frequency withstand (wet) (KV)
FXBW4-12/70	12	70	350	180	400	95	45
FXBW4-24/70	24	70	550	370	850	185	95
FXBW4-24/100	24	100	570	370	850	185	95
FXBW4-35/70	36	70	650	450	1000	230	105
FXBW4-35/100	36	100	670	450	1000	230	105



◆Long Rod Suspension Composite Insulator



Type	Rated voltage (KV)	Specified mechanical load	Section length (mm)	Min Arc distance (mm)	Leakage distance (mm)	Lightning impulse withstand BIL(KV)	Power frequency withstand (wet) (KV)
FPBW4-66/70	66	70	900	710	1980	410	185
FPBW4-66/100	66	100	940	710	1980	410	185
FPBW4-110/100	110	100	1240	1000	3315	550	230
FPBW4-145/120	145	120	1480	1240	4123	725	355
FPBW4-220/100	220	100	2240	1900	6300	1000	395
FPBW4-220/160	220	160	2240	1900	6300	100	395
FPBW4-330/100	330	100	2990	2600	9075	1425	570
FPBW4-330/160	330	160	2990	2600	9075	1425	570
FPBW4-500/160	500	160	4080	3730	12750	2250	740

◆Pin Composite Insulator



Type	Rated voltage (KV)	Specified mechanical load	Section length (mm)	Min Arc distance (mm)	Leakage distance (mm)	Lightning impulse withstand BIL(KV)	Power frequency withstand (wet) (KV)
FZSW-12/4	12	4	215	290	100/90	75	42
FZSW-24/8	24	8	400	750	142	150	65
FZSW-36/6	36	6	450	946	148/118	185	95
FZSW-66/6	66	6	760	1886	160/130	410	185
FZSW-66/8	66	8	760	2010	220/190	410	185
FZSW-110/10	110	10	1220	3530	220/190	500	230
FZSW-220/10	220	10	2440	7060	220/190	1000	395

◆Pin Composite Insulator



12KV-01      24KV-02      36KV-03      66KV-04      110KV-05      220KV-06

Type	Rated voltage (KV)	Specified mechanical load	Section length (mm)	Min Arc distance (mm)	Leakage distance (mm)	Lightning impulse withstand BIL(KV)	Power frequency withstand (wet) (KV)
FZSW-12/4	12	4	215	290	100/90	75	42
FZSW-24/8	24	8	400	750	142	150	65
FZSW-36/6	36	6	450	946	148/118	185	95
FZSW-66/6	66	6	760	1886	160/130	410	185
FZSW-66/8	66	8	760	2010	220/190	410	185
FZSW-110/10	110	10	1220	3530	220/190	500	230
FZSW-220/10	220	10	2440	7060	220/190	1000	395

Oversea Projects

series no.	customer	series no.	customer
1	Russia's 50,000-ton Rebar Line	8	Xiangshan Hydropower Station in Vietnam.
2	65t Refining Furnace Dust Removal System Project in Russia	9	Vietnam WIZARD Power Equipment Co. Ltd.
3	The British CE FCO Motor Control Equipment Co., Ltd	10	The Central Processing Station in Arais, Pakistan.
4	The British C HALO N Electronic Co., Ltd	11	Tajikistan Electric Power Rehabilitation Project.
5	France ES Construction Power Distribution Equipment Co. Ltd.	12	Israel HAR-ZION Electronics Co. Ltd.
6	Uzbekistan natural gas pipeline project	13	Iran KAVE H Electrical Appliance Co. Ltd.
7	Kazakhstan ArcelorMittal Temirtau	14	Syria HGH Engineering Construction Co. Ltd.