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⚠ The company takes science and technology innovation as the forerunner, the quality sets up the prestige, the trustworthiness seeks the development, the innovation
Constantly strive to create better results!



GUANGDONG CONYA ELECTRIC GROUP CO., LTD.



Complete equipment selection manual

GUANGDONG CONYA ELECTRIC GROUP CO., LTD.



energy
conservation



environment
protection



intelligence



science and
technology

www.conya.cn



COMPANY CULTURE

To serve as the basis, the quality of survival, technology and development;
Open innovation, Kejian, dedication, Honesty, good to seek pragmatic
customer-oriented, quality for survival, gifted victory to fine map the new.
Our pursuit is: faster, better, newer, more refined





COMPANY PROFILE



Guangdong Chuangya Electric Group Co., Ltd., formerly known as Foshan Xinya Switch Factory, was founded in 1988 and is an early established electrical equipment manufacturer in China. It is committed to helping power, industry, transportation, infrastructure and other industries to provide one-stop solutions for intelligent electrical systems. Based on over 30 years of innovation, Chuangya Group is continuously promoting the construction of intelligent power systems, providing users with safe and reliable electrical intelligent IoT products and energy efficiency system management platforms, and working together to create a digital future for the industry.

Chuangya Group is a high-tech enterprise focusing on the R&D, production, sales and service of high-low voltage intelligent distribution equipment, Bus duct, box type substation, intelligent energy storage cabinet, grid connected cabinet, transformer, high-low voltage components and intelligent power efficiency management system. Since its establishment, the company has been based on high-tech, pursuing excellent quality, continuously introducing and adopting cutting-edge equipment and technology from the world. Through the ISO9001 quality management system and 3C quality control standards, it has always fulfilled its product quality commitment. At present, the company has won multiple national patent certificates, and has

been awarded the titles of "National Little Giant", "Guangdong Specialized, Refined, and New Enterprise", "Guangdong Private Science and Technology Enterprise", and "Guangdong Contract and Credit Unit". The "Chuangya" brand has been awarded the title of "Guangdong Famous Trademark".

The company firmly puts people first and enhances its competitive advantage; Drive industry change through continuous innovation; Pursuing excellent quality, shaping brand image, adhering to the business philosophy of customer first and creating sustainable development, continuously promoting green, environmentally friendly, intelligent and reliable electrical products, and creating value for customers. The products are widely used in industries such as Southern Power Grid, State Grid, new energy sector, rail transit, power stations, schools, hospitals, real estate, and large-scale industries, and are highly praised by customers. And we have reached a deep cooperation framework with Fortune 500 companies such as ABB, GE General Electric, and Eaton in the United States, authorizing authorized cooperative manufacturers such as high and low voltage switchgear and power distribution boxes.

Never forget the original intention and forge ahead, Chuangya Group has forged exquisite quality with the spirit of craftsmanship. Keep the mission in mind, firmly adhere to the message, set sail, and create a new era in the electrical industry.



WE CARE ABOUT EVERY DETAIL

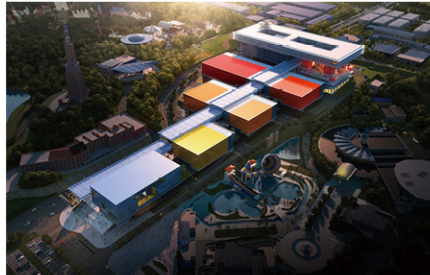
We are concerned with the details of the product, and every detail is the highest goal we are pursuing.

We are the executors of the details. The details are not our slogans. The details are the bits and pieces of our work. We don't care what we say. We only care about what we do, and we care more about how to do it better.





Some project cases



| Hunan Radio and Television Program Production Base Project

The Hunan Radio and Television Program Production Base project covers an area of about 100 acres, with a total construction area of about 220000 square meters. In addition to the studio and film and television production base, it also includes new formats such as creative workshops and audience viewing channels. The project is expected to be put into use soon. After completion, this place will become a cultural landmark that integrates program production, cultural creativity, television industry tourism, and other functions.



| Tianhe Smart City Underground Comprehensive Pipe Gallery Project

The Tianhe Smart City Underground Comprehensive Pipe Gallery Project is a national comprehensive pipe gallery pilot project. The project mainly follows the existing Keyun Road, Kexiang Road, Huaguan Road, Hengshan Road, Hengwu Road, the planned Yunxi Road, Kemulang South Road to Gaotang Road, the south extension of Gaotang Road, Software West Road, Mupi West Road, Lingcen Road, and the planned Hengqi Road, with a total length of about 19.4 kilometers, including a shield pipe gallery (outer diameter of ϕ 6.0m) of 8.6km, an open cut pipe gallery (outer frame BXH=3.7-4.6X5.9-14.4) of 10.8 kilometers, and a control center. Except for the shield tunnel gallery, all other galleries include sewage and gas.



| Foshan Line 3

Foshan Urban Rail Transit Line 3 Project starts from Shunde Port Station in the south and ends at Xianxi Campus Station of Foshan Academy of Sciences in the north, with a total length of 69.5 kilometers and 38 stations. The first section of the line that opened for operation today starts from Shunde College Station in the south and ends at Zhen'an Station in the north, covering Shunde and Chancheng districts of Foshan City. The total length is 40.7 kilometers, including 4.8 kilometers of elevated section, 0.8 kilometers of transition section, and 35.1 kilometers of underground section. There are a total of 22 stations, including 2 elevated stations and 20 underground stations. The project is designed with a speed of 100 kilometers per hour and uses a formation of 6 B-type cars.



| Foshan Line 2 Wanhua Control Center

Guangfozhao Expressway is one of the three horizontal highways in the "Three Vertical and Four Horizontal" expressway network in Zhaoqing City, with the Guangdong Expressway number being S8. The planned project starts from the terminal of Guangzhou South China Expressway Phase III, passing through Sihui Dasha, Dinghu District, Duanzhou District, Lubu Town, Deqing County, and Fengkai County in Gaoyao City, and extends westward to connect with Wuzhou Ring Expressway in Guangxi, with a total length of about 177.3 kilometers. The Guangfozhao Expressway (Zhaoqing section) project is another expressway in Zhaoqing that connects Guangfozhao and Southwest China. It is also a major measure taken by the Provincial Party Committee, Provincial Government, and Zhaoqing Municipal Party Committee and Government to accelerate the implementation of the "Planning Outline" and promote the integration of transportation in the Pearl River Delta. The completion and opening of the Guangfozhao Expressway can better build a one hour urban circle in the Pearl River Delta, forming a comprehensive transportation system with diverse and complementary functions that connects the three cities internally, the Greater Pearl River Delta externally, and the Pan Pearl River Delta.



| Lichuan Zhongcao Wind Farm

The Lichuan Zhongcao Wind Farm (34MW) project is located in the Qiyue Mountain area of Lichuan City, Hubei Province, adjacent to the first phase of the Qiyue Mountain Wind Farm of Hubei Energy Lichuan. The wind turbines are arranged alternately in the first phase of the wind farm. The total planned installed capacity of this phase is 34MW, and it is proposed to install 17 wind turbines with a single capacity of 2MW (the single capacity can be adjusted according to the actual site). At the same time, a 110kV booster station will be constructed, and the comprehensive building and some public facilities will be shared with the first phase of the wind farm.



| Fenghua Xianghe Industrial Park

The total investment of this project is 7505.16 million yuan, which will be used to invest in the construction of the Xianghe Industrial Park project. The area of this plot is 125,562.7m², The area of above ground buildings is 56,307.46 m², Located on the south side of Zhaoqing Avenue and the east side of Dading Road in Duanzhou District, Zhaoqing City, about a 5-minute drive from Fenghua Electronic Industrial Park; Simultaneously purchase the necessary venues and business qualifications for the electroplating business.



| FAW Volkswagen

FAW Volkswagen Automotive Co., Ltd. Foshan Branch was established on July 22, 2011. Its main business scope includes the production of Volkswagen and Audi ABCD series sedans, Audi V6 series engines and their assemblies, components, sales of self-produced products, and provision of after-sales services. From one product under a single brand in the early stages of its construction, FAW Volkswagen has developed into a mature domestic manufacturer covering a full range of A, B, and C passenger car models, with over 20 products under three major brands: Audi, Volkswagen, and Jetta.



| Meilan International Airport

Meilan International Airport is currently a domestic mainline airport, covering an area of 583 hectares. The flight zone level is built according to the 4E standard set by the International Civil Aviation Organization, which can meet the takeoff and landing requirements of large aircraft such as the Boeing 747-400. The runway is equipped with a world-class Class II auxiliary lighting system, a Class II instrument landing system for communication and navigation equipment, and other air traffic control and airport service facilities have also reached international advanced levels.



| Dongguan First People's Court

The First People's Court of Dongguan City was established on January 1, 2009 and is currently located in Nancheng. Its jurisdiction includes cases in 17 towns and streets (parks), including Guancheng Street, Dongcheng Street, Nancheng Street, Wanjiang Street, Daojiao Town, Hongmei Town, Wangniudun Town, Machong Town, Zhongtang Town, Gaobu Town, Shijie Town, Shipai Town, Qishi Town, Shilong Town, Chashan Town, Liaobu Town, and Songshan Lake Science and Technology Industrial Park. Its jurisdiction covers more than 50% of the towns and streets in the city.



| Foshan LEH International School

Foshan LEH International School is built through an innovative cooperation model of "mainland institutions+excellent enterprises from Hong Kong and Macao+internationally renowned universities". It mainly recruits children of foreign nationals and compatriots from Hong Kong, Macao and Taiwan. It will bring a pure international education system to students in the Guangdong Hong Kong Macao Greater Bay Area and add key public service weights to the construction of an international community in the Qicha area.

Some project cases



| Foshan Chancheng Central Hospital

Foshan Chancheng Central Hospital (abbreviated as Chanyi), established in 1958, is located in Chancheng District, the central area of Foshan, the third largest city in Guangdong Province and the hinterland of the Pearl River Delta. It is a national tertiary Grade A comprehensive hospital that integrates medical treatment, rehabilitation, scientific research, and teaching. The Zen Medicine Health City Complex project is located on the north side of Lvjing Road and the south side of Sanyou South Road, next to Shiwan Cultural Square, at the intersection of Foshan Metro Line 2 and Line 5. It covers a total area of over 30000 square meters and is the central area of Shiwan West District. In 2018, Fosun Pharma successfully won the bid for the land and constructed the Zen Medicine Health City Complex project.



| Foshan First People's Hospital

The First People's Hospital of Foshan City, Guangdong Province was founded in 1881 and has now become a non directly affiliated hospital of Sun Yat sen University. It is the largest comprehensive tertiary Grade A hospital in Foshan City and the city's medical technology guidance center. At the same time, it is a member of the International Rescue Network Asia International Emergency Rescue Center, as well as a teaching hospital, graduate teaching base, and postdoctoral training base of multiple universities and medical schools. It has extensive business cooperation with many well-known hospitals at home and abroad. The hospital covers an area of 90000 square meters and has a total construction area of 153000 square meters. More than 2600 employees and 1440 open hospital beds.



| Foshan Chancheng Greenland Financial Center

Foshan Chancheng Greenland Financial Center is located at the intersection of Jihua Road and Nanhai Avenue, two major urban centers in Foshan City. It is built on top of the subway lines 3 and 4 and is situated in the core area of Guangfo. This project is a super high-rise building, reaching a height of 220 meters with a total construction area of over 430000 square meters. With an internationally leading urban comprehensive concept, it plans six major business formats including 5A super grade office buildings, quasi grade commercial office buildings, Tianmu Commercial Street, high-end boutique residential buildings, star rated hotel style apartments, and Shopping Mall. It has commercial, business, and residential functions and is defined by the developer as a complete "urban ecological cluster".



| Jingji 100

KK100, formerly known as KingKey Financial Center, has a building area of 600000 square meters, a height of 441.8 meters, and 100 floors. It is currently the second tallest building in Shenzhen, the ninth tallest building in mainland China, and the seventeenth tallest building in the world. Located on Shennan East Road in Luohu District, Shenzhen, Guangdong Province, China, it was jointly designed by two internationally renowned architectural design companies from the UK - TFP and ARUP, and constructed by China Construction Fourth Engineering Bureau Co., Ltd. Jingji 100 is a world-class landmark under the Shenzhen real estate company Jingji Group, and also the tallest building invested and constructed by a private real estate enterprise in China. It has maintained multiple Chinese records, century records, and won multiple world-class awards.



| Poly World Trade Center

Poly World Trade Center is a comprehensive commercial project that integrates primary office, exhibition, shopping, dining and other functions, integrating various formats such as office buildings, exhibition halls, brand display halls, commercial plazas, and food cities. The project covers an area of 118613 square meters and has a total construction area of 560000 square meters. It is the largest and most complete exhibition economic complex for sale in Pazhou. This project is committed to creating a global trade hub for international level import and export exhibition enterprises, financial industry, and other well-known domestic and foreign enterprises.



Cooperative partner

ABB

Schneider
Electric
施耐德电气

EATON

GE

Nader

hager 海格电气

中国南方电网
CHINA SOUTHERN POWER GRID

SIEMENS

YUDEAN

广西电业

保利®地产

碧桂园

中国通信建设

中国神华
CHINA SHENHUA

中国一汽

茂名石化
WWW.MPCC.COM.CN

中国交建
CHINA COMMUNICATIONS CONSTRUCTION

绿地®集团

柳钢
LIU GANG

中国铁建



Enterprise purpose
Develop the enterprise wholeheartedly
Serve electricity wholeheartedly



Corporate philosophy
Honest service
Harmonious innovation



brand image
lamps and candles of
a myriad families
chuangyaDeep affection



Enterprise vision
Build a safe, reliable, green and efficient smart grid and become a
leading and widely respected enterprise



Safety concept
All accidents can be
prevented



service idea
Customer first
all-win harmony



Team concept
Loyal, clean and responsible



Enterprise purpose
Efficient work and sincere service
Selfless dedication and high-quality service



chuangya spirit
Dare to change
Be willing to contribute



development strategy
Create a world-class enterprise with lean management, fine
service, excellent performance and excellent brand



management idea
Create value
Innovation-driven
development

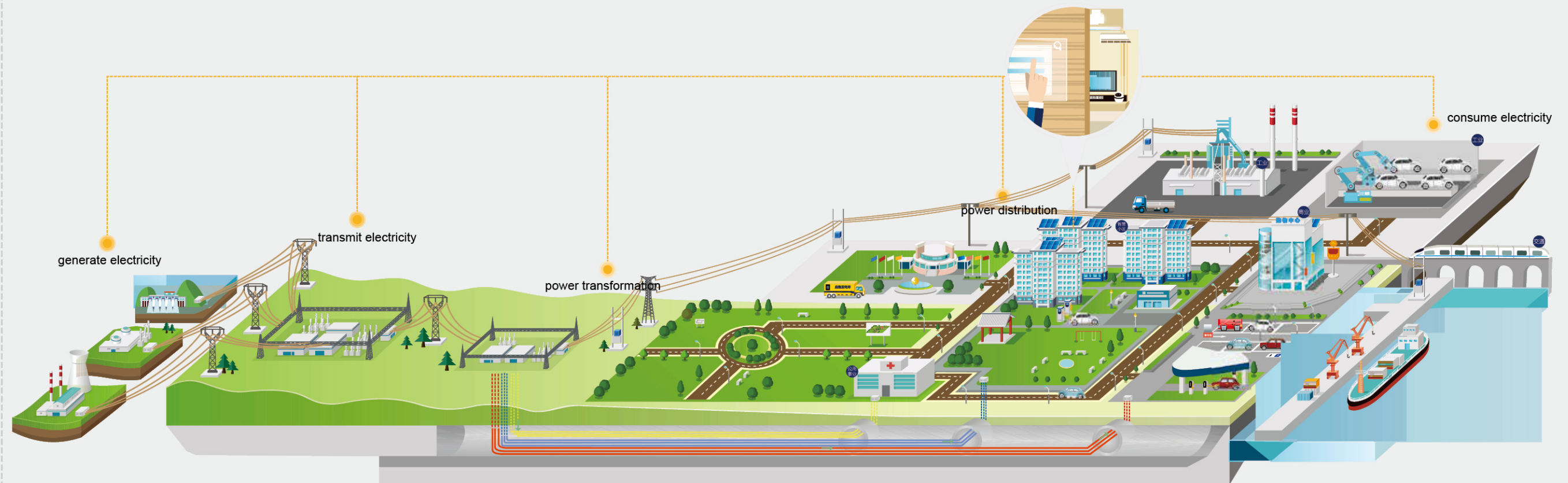


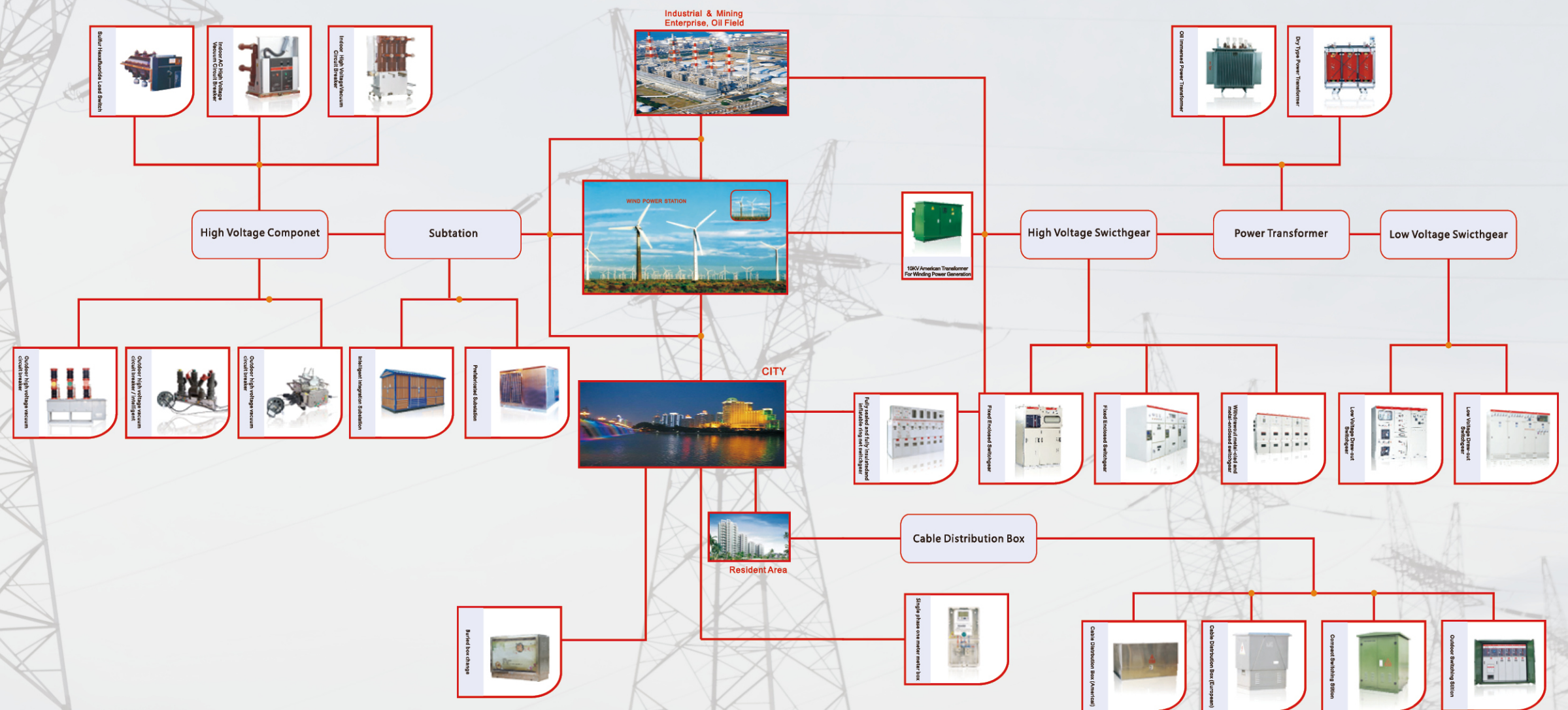
The concept of
rule of law
Know the law in your
heart Abide by the law



Behavior concept
Be honest
Behave

Electric power ecological diagram





Product catalog

A

Intelligent power management series

Energy efficiency management system	001-004
Safety monitoring system	005-006

B

New energy distribution equipment series

CYLX-PV intelligent photovoltaic DC combiner box	007-008
CYLX-AC Photovoltaic AC combiner box	009-010
CYBWX photovoltaic grid cage	011-015
CYBWG photovoltaic grid-connected cabinet	016-020
High voltage grid connected cabinet	021-022
YB □ -12/0.315~0.69 Photovoltaic Special Box Transformer (European style)	023-026
Photovoltaic booster station	027-028
ZGS13-H Combination Transformer (Photovoltaic Beauty Transformer)	029-032
BS Photovoltaic Huabian	033-035
Outdoor cabinet type energy storage system	036-037
10kV~40.5kV modular intelligent prefabricated cabin	038-040

C

Box type substation series

YB □ -12/0.4 intelligent prefabricated substation	041-046
ZBM Prefabricated Substation (American Box Transformer)	047-053
YB □ -12 Underground Landscape Box Transformer	054-055

D

Cable distribution box series

DFWK Outdoor intelligent switchgear	056-060
DFW European style cable distribution box	061-065
DTU-900 Distribution Automation Station Terminal	066-068

E

Transformer series

S11/13-10kV oil immersed transformer	069-071
SC (B) -10/11-10kV resin insulated dry-type transformer	072-074

F

High voltage switchgear series

12kV xDL F.T.N Authorized Removable AC Metal Enclosed Switchgear	075-078
P/V-12General Electric Authorized Cabinet in the United States	079-082
KYN61-40.5(Z)Armored Removable AC Metal Enclosed Switchgear	083-086
KYN28-12Armored removable enclosed switchgear	087-090
HXGN15-12Box type fixed AC metal enclosed switchgear	091-094
XGN □ -12Box type fixed AC metal enclosed switchgear	095-098
XGN-12Intelligent solid insulation cabinet	099-104
CYRM □ -12Fully enclosed and insulated inflatable ring network switchgear	105-113

G

High voltage switchgear series

MDmax® ABB Authorize digital low-voltage switchgear	114-116
xEnergy F.T.N Authorize low-voltage switchgear	117-119
MLS-VGeneral Electric Low Voltage Authorized Cabinet	120-123
GCKLow voltage withdrawable switchgear	124-127
GCSLow voltage withdrawable switchgear	128-130
MNSLow voltage withdrawable switchgear	131-135
GGDLow voltage complete switchgear	136-138
GGJLow voltage reactive power intelligent compensation device	139-142
XL-21Power distribution cabinet	143-144
JPIntegrated distribution box(compensation/control/terminal/lighting)	145-149

H

Meter box series

FPFD/SNon metallic meter box for cost control	150-155
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I

Small three box series

MDrail-E/XM/JXM ABB Authorized control box/cabinet	156-158
RB Indoor lighting box/multimedia box	159-162

INTELLIGENT POWER MANAGEMENT SERIES

Respecting promise and keeping promise,
operating in the right way,
striving for perfection, coexistence and win-win situation

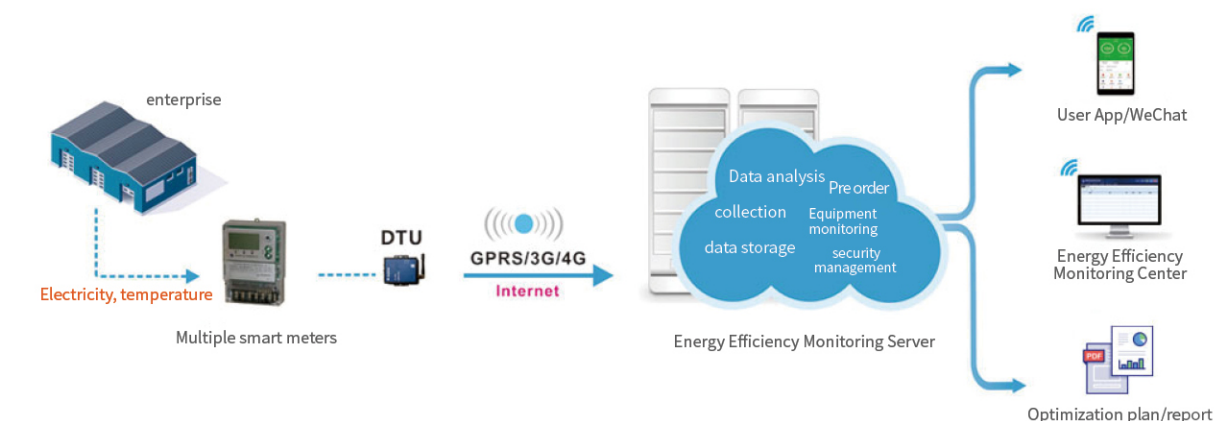
CONYA

Energy Efficiency Management System

Energy efficiency management system

Enterprise energy efficiency optimization

By collecting data on enterprise electricity (energy) consumption, real-time understanding of the enterprise's electricity (energy) situation can be achieved. By utilizing various energy efficiency optimization strategies accumulated by Eagle Vision experts over the years, various energy efficiency optimization plans can be customized for enterprises to help optimize their electricity (energy) costs



24-hour online testing

- ◆ Electronic filing
- ◆ Abnormal electricity usage warning
- ◆ Safety warning
- ◆ Energy efficiency warning
- ◆ Power quality warning
- ◆ Custom Alert
- ◆ Energy efficiency optimization plan
- ◆ Energy Efficiency Operation and Maintenance Report
- ◆ Upgrade and renovation technology plan
- ◆ Complies with curves and predictions
- ◆ Establish a system equipment ledger
- ◆ Develop equipment inspection work orders
- ◆ Develop emergency power supply plan
- ◆ Inspection and maintenance
- ◆ Monthly Security Operation and Maintenance Report
- ◆ Fault repair
- ◆ Regular testing of insulation tools and equipment
- ◆ Defect elimination
- ◆ Equipment maintenance and upkeep
- ◆ Equipment testing
- ◆ Implement measures to prevent small animals

Enterprise level power optimization solution

Professional energy efficiency data analysis, diagnosis of energy-saving space, and provision of optimization strategy recommendations:

Basic electricity cost optimization

Chuangya Energy Efficiency fully applies policy conditions and provides basic electricity cost optimization solutions to large industrial enterprises based on their actual electricity consumption situation. And provide load warning function and adjustment basis for optimization measures to customers who have applied optimization measures through online monitoring technology, ensuring that the enterprise can reasonably save electricity expenses.

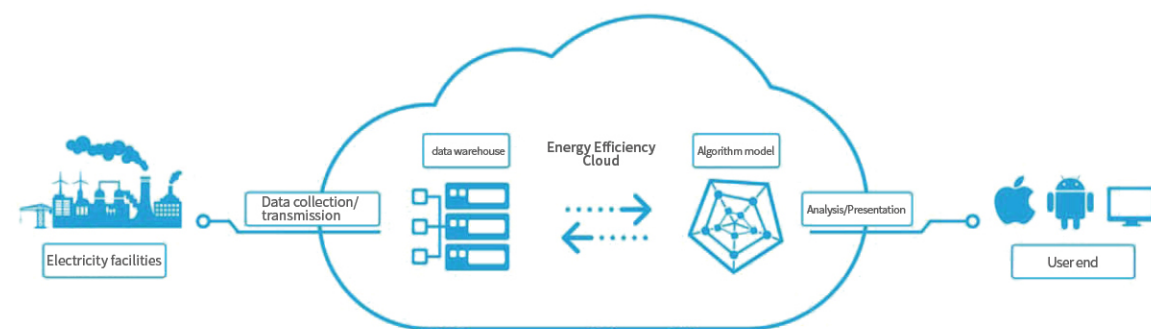
Punishment for reactive work governance

Chuangya Energy Efficiency fully applies policy conditions and provides basic electricity cost optimization solutions to large industrial enterprises based on their actual electricity consumption situation. And provide load warning function and adjustment basis for optimization measures to customers who have applied optimization measures through online monitoring technology, ensuring that the enterprise can reasonably save electricity expenses.



Enterprise Comprehensive Energy Management Platform

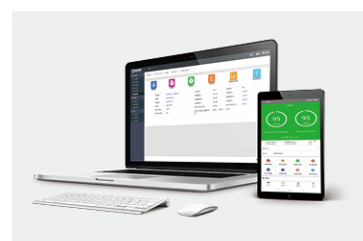
Real time electricity data monitoring, multi-dimensional energy efficiency analysis, highly visualized data, real-time electricity warning, and multi terminal support.



Open your own energy management platform

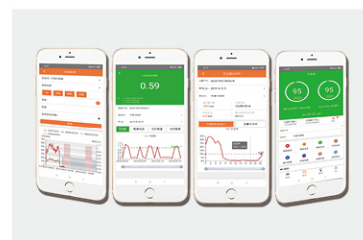
Based on our rich experience and capabilities in building power energy efficiency management systems, we provide enterprises with customizable enterprise level energy management systems,

To meet the requirements of enterprises for energy consumption warning, data visualization management, and government energy management center construction.



Real time data collection and monitoring

Real time collection of dozens of electricity consumption information, supporting automatic data supplementation for at least 30 days, and displaying real-time energy parameters in intuitive chart form.



Real time electricity warning

Real time monitoring of electricity consumption data, real-time graded alarms for various situations of exceeding electricity limits, and support personalized setting of warning rules.



Energy Efficiency Data Analysis

Through the built-in algorithm model, analyze the electricity consumption data of enterprises from multiple angles and perspectives, providing a basis and support for energy efficiency optimization.



Government interface docking

The system provides standard data interfaces and supports personalized customization to meet the requirements of government energy management center construction.

Integrated comprehensive energy efficiency management system, making your management more comfortable

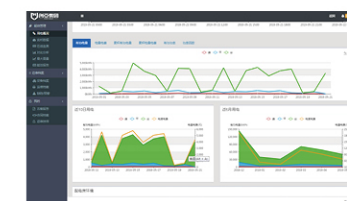
High scalability, high usability, high modularity, flexible combination, and flexible management



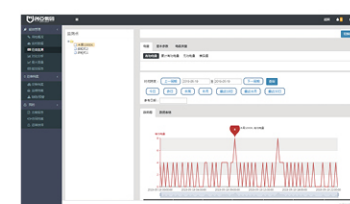
Energy analysis



Energy Efficiency Report



Electricity usage overview



Online monitoring



comparative analysis

Distribution energy efficiency operation and maintenance services

With the aim of helping customers efficiently manage their electricity usage, we provide a series of professional technical services through systematic and professional technical services, combined with advanced equipment status monitoring methods, to comprehensively implement customer distribution equipment from daily maintenance to emergency response to faults, from displaying electricity usage to optimizing strategies.



Equipment online monitoring
Real time monitoring of equipment operation and real-time warning of equipment safety



Regular manual inspection and maintenance
Daily, monthly, quarterly, and annual inspections, emergency repairs, and testing



Energy Efficiency Optimization Analysis
Equipment documentation, data library construction, energy efficiency analysis



Application of government policies
Policy acquisition, interpretation, application, and benefits

Service Process



Sign the contract



Equipment documentation



Equipment installation and debugging



Data collection and upload



Information warning



Operation and maintenance report push

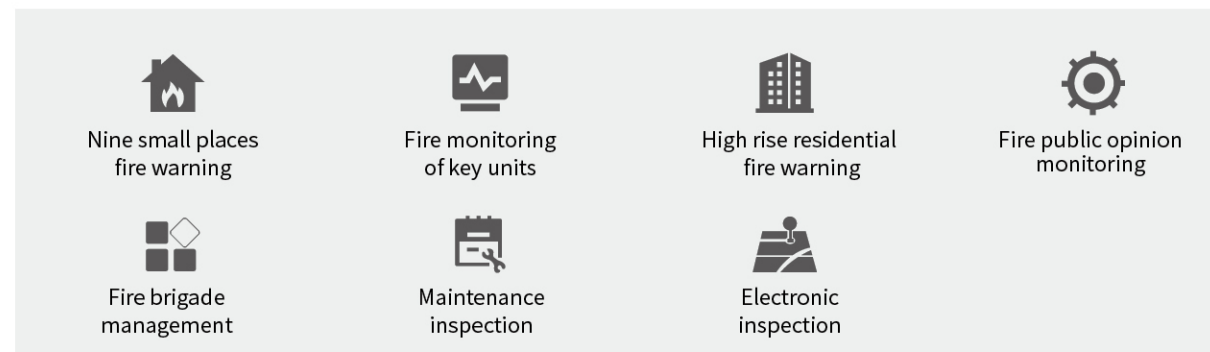
Safety monitoring system

Business system

The platform provides seven major business systems, including alarm management and operation management, for roles such as property owners, maintenance companies, and government regulatory departments.

The CY-503 series intelligent power safety monitoring system can remotely and real-time monitor important line operating parameters such as residual current, cable temperature, over line voltage, and over line current in the operating line, and design the parameters of the operating line. If the monitored line exceeds the set safety range during operation, the intelligent power signal collector will quickly send the collected information to the monitoring cloud platform through over line transmission. The platform will communicate with the user in a timely manner, accurately determine the specific location of safety hazards through GPS positioning, eliminate the danger source of fire in the bud stage, and achieve comprehensive electrical line operation safety monitoring.

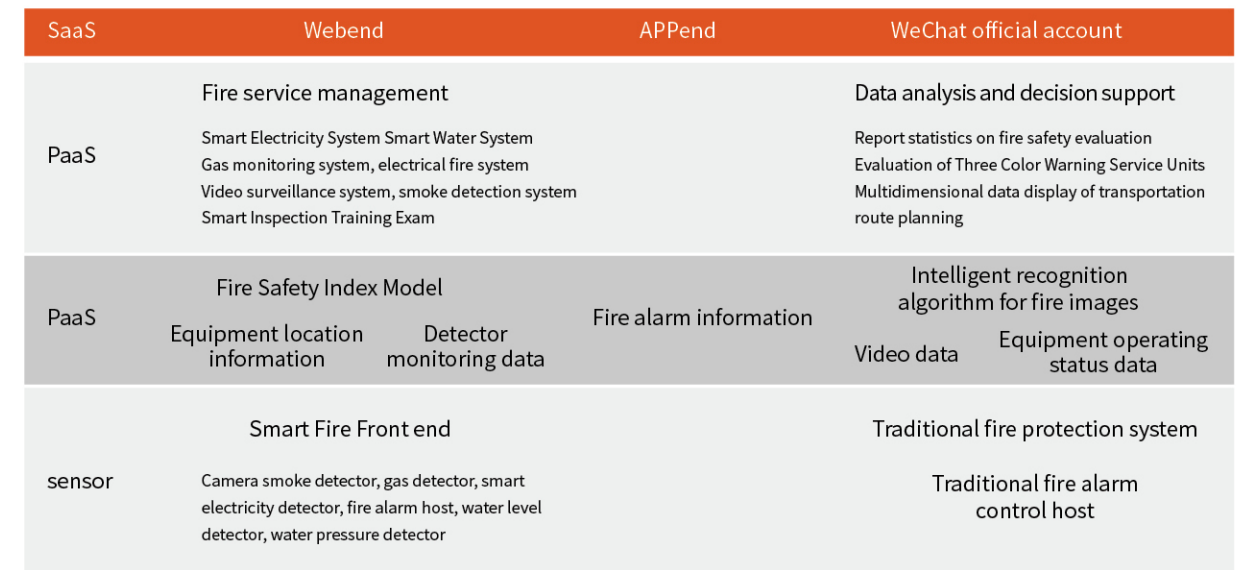
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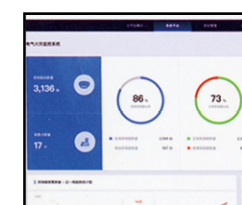
Equipment system



system architecture



system function



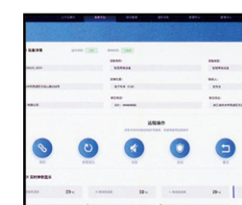
Real time monitoring

The system monitors the electrical fire operation status of networked buildings in real-time. It can automatically plot the real-time changes of residual current and temperature at monitoring points into dynamic curves, which can display the electrical fire hazard situation of monitoring points in a real and intuitive way.



Alarm push

Real time reception and monitoring of residual current, temperature changes, fault arcs, and other information in the monitoring circuit. When abnormalities occur in the monitoring circuit, it can quickly issue alarm information and accurately display the cause of the fault, and promptly identify electrical fire hazards.



Data analysis

The platform regularly collects electricity consumption data and generates testing reports. Users can log in to the platform at any time to browse and view the historical curve of a single circuit parameter to analyze the cause of the alarm.



Platform advantages

Maintenance management: Support operational equipment operation, maintenance and management services

Video surveillance: Real time monitoring of key areas, fire monitoring rooms, and other key units, and achieving safety and fire linkage

Reduce manpower: support operational equipment operation, maintenance and management services

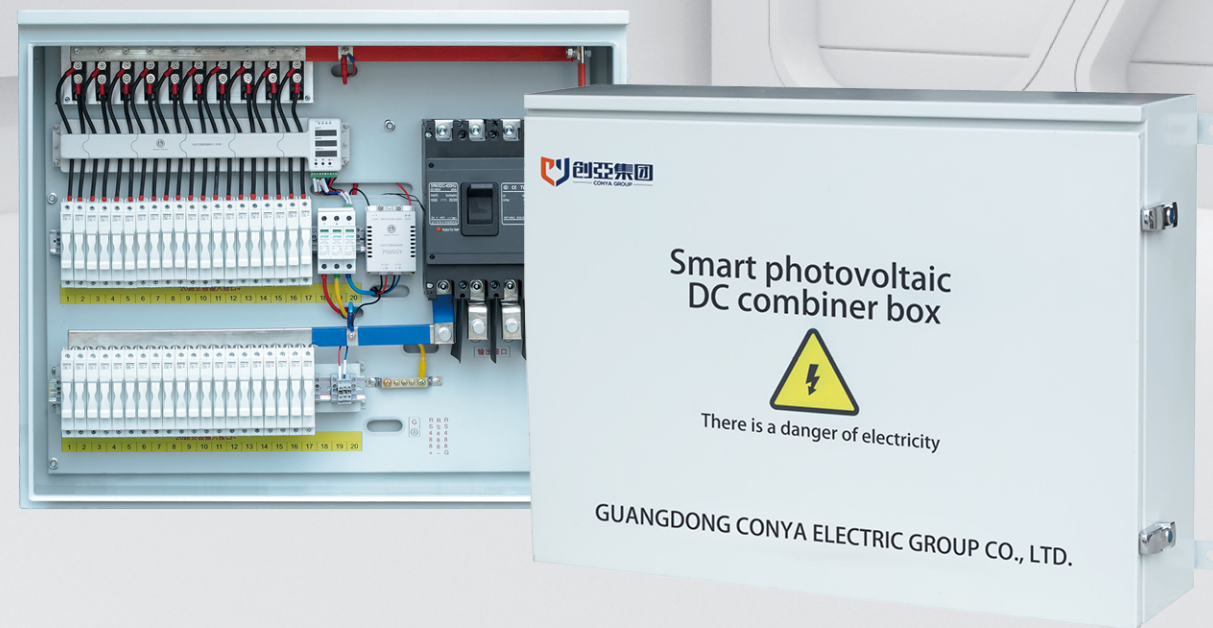
Responsibility supervision: Fully implement the fire safety responsibility subject and improve the prevention and control system

Platform warning: supports multiple alarm methods such as phone, SMS, APP push, platform push, etc

Full compatibility: Compatible with various types of fire-fighting equipment on the market and supporting mainstream brands, seamlessly integrated with the platform

CYLX-PV

Intelligent photovoltaic DC combiner box



Product Overview

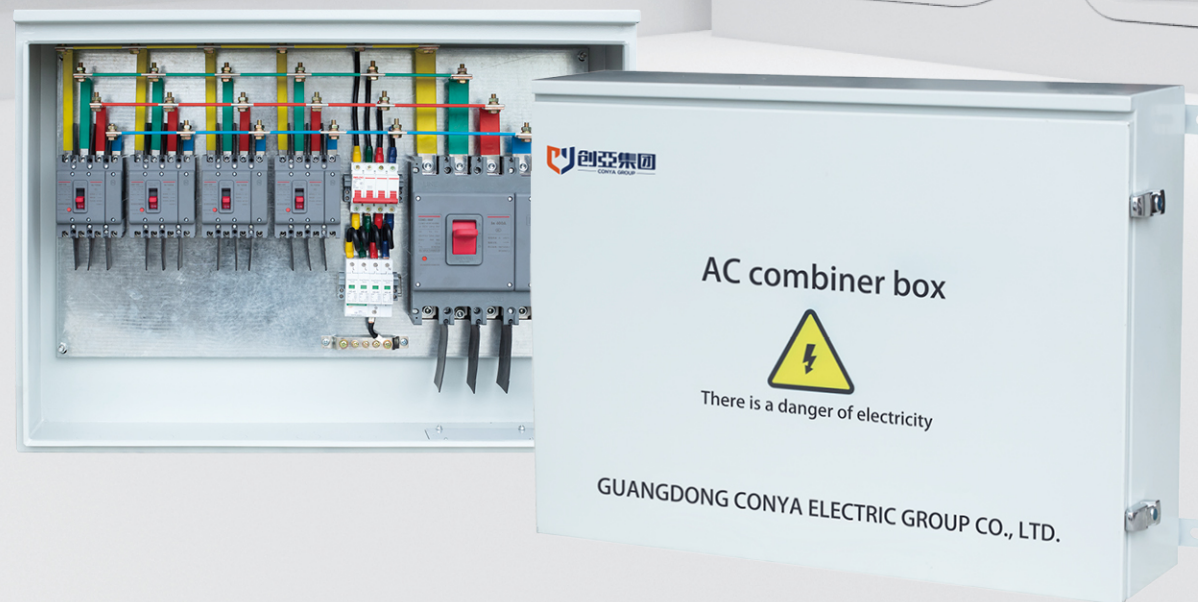
The CYLX-PV intelligent photovoltaic DC combiner box combines the DC inputs of up to 24 photovoltaic cell module strings into one or more outputs, each with a fuse, and the outputs are equipped with lightning arresters and circuit breakers, greatly simplifying the input wiring of DC distribution cabinets and inverters. Provide lightning protection, short-circuit protection, and grounding protection. The combiner box is divided into two types: intelligent and non intelligent. The intelligent DC combiner box is equipped with a combiner monitoring unit inside, which can monitor the input current of each photovoltaic cell string, summarize the output voltage, the temperature inside the box, and the status of lightning protection devices, circuit breakers, etc. The internal layout of the device is simple and clear, with neat and reasonable wiring. High reliability and easy maintenance. Outdoor wall mounted installation can adapt to various harsh environments. In addition to related core components, others can be customized according to user requirements.

Electrical technical parameters

Product model	CYLX-PV24	CYLX-PV16	CYLX-PV12	CYLX-PV8
Number of input channels	17~24	13~16	8~12	8 路 following
Maximum input voltage	1500VDC			
Each input current	0~20A			
Maximum output current	250A	160A/200A	100A/125A/160A	100Afollowing
Enter waterproof terminal size	PG9/PG11/MC4			
Output waterproof terminal size	PG21~PG32	PG19~PG25	PG16~PG21	PG13.5~PG19
Monitoring module	Detect each current, bus voltage, circuit breaker status, lightning arrester status, and box temperature (optional)			
Communication method/protocol	RS485 bus/standard MODBUS-RTU protocol			
Anti reverse function	Configure modular packaging anti reverse diode (optional)			
Temperature and humidity	Working temperature: -40~+85 °C , humidity 95%, no condensation, no corrosive gas environment			
altitude	≤ 4000m			
Monitoring module power consumption	Working hours ≤ 8W			
Auxiliary power supply	Auxiliary power supply: AC85V~265V/DC24V (± 10%)/DC200V~1500V			
Cabinet material	Hot dip galvanized steel sheet/stainless steel sheet/cold-rolled steel sheet/engineering plastic			
Protection level	IP65			
Volume (width x height x depth)	850mmx500mmx200mm	800mmx500mmx180mm	720mmx500mmx180mm	630mmx500mmx180mm
weight	10~35kg			

CYLX-AC

Photovoltaic AC combiner box



Product Overview

The CYLX-AC photovoltaic AC combiner box is an important component suitable for photovoltaic string type power generation systems, which connects the string inverter with the AC distribution cabinet or step-up transformer. The incoming line of this combiner box adopts a circuit breaker input, and the output adopts a circuit breaker or load isolation switch. After the busbar is converged, it adopts secondary lightning protection. The maximum rated voltage of the system is AC690V. The protection level is IP65, which is the same as that of the string inverter. It meets the requirements of outdoor installation, and meets waterproof, dustproof, UV resistant, salt spray corrosion-resistant, etc. This product greatly simplifies the wiring between string inverters and AC distribution cabinets or step-up transformers. The internal structure of this product is simple and clear, and the wiring is neat and reasonable. High reliability and easy maintenance. Outdoor wall mounted installation can adapt to various harsh environments. In addition to standard materials and sizes, customization can be made according to user requirements.

Electrical technical parameters

Product model	CYLX-AC4	CYLX-AC6	CYLX-AC8
Number of input channels	1~4	5~6	7~8
Maximum input voltage	AC690		
Each input current	0~100A		
Maximum output current	400A	630A	800A
Rated working voltage	480VAC		
Voltage protection level	≤ 3.2kV		
Nominal flow capacity (8/20us)	20kA (optional according to customer requirements)		
Maximum current capacity (8/20us)	40kA (optional according to customer requirements)		
response time	<25ms		
Temperature and humidity	Working temperature: -40~+85 °C , humidity 95%, no condensation, no corrosive gas environment		
altitude	≤ 4000m		
Cabinet material	Hot dip galvanized steel sheet/stainless steel sheet/cold-rolled steel sheet/engineering plastic		
Box protection level	IP65		
Protection level of cable joints	IP66		
Volume (width x height x depth)	800mmx600mmx200mm	800mmx800mmx200mm	800mmx1000mmx200mm

Functional Features

The communication combiner box has a protection level of IP65 and can meet the outdoor installation requirements for wall mounted sealed cabinets:

Satisfy the simultaneous connection of multiple group inverters, each incoming line is protected by a thermal magnetic circuit breaker, and the rated voltage reaches AC690V:

The use of dedicated high-voltage lightning arresters can meet the overvoltage and lightning protection between three phases, with a working voltage of AC480V or above:

All busbars inside the box are connected using electroplated or purified busbars to reduce internal resistance and connection points;

Output is achieved through circuit breakers, load isolation switches, or fuses.

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CYBWX

Photovoltaic grid cage



Product Overview

Photovoltaic grid is a photovoltaic power station built near the user's site, which operates on the user's side for self use and surplus electricity connected to the grid; A photovoltaic grid connected distribution box designed to effectively protect the safe operation of the system, ensure the safe coordination between the inverter and the municipal power grid, improve system reliability and energy metering. This product has the characteristics of high protection level, long service life, and easy installation and operation. Its functions include isolation protection, overload protection, short circuit protection, surge grounding protection, overvoltage and undervoltage protection, reclosing after recovery, and power generation metering.

Product advantages

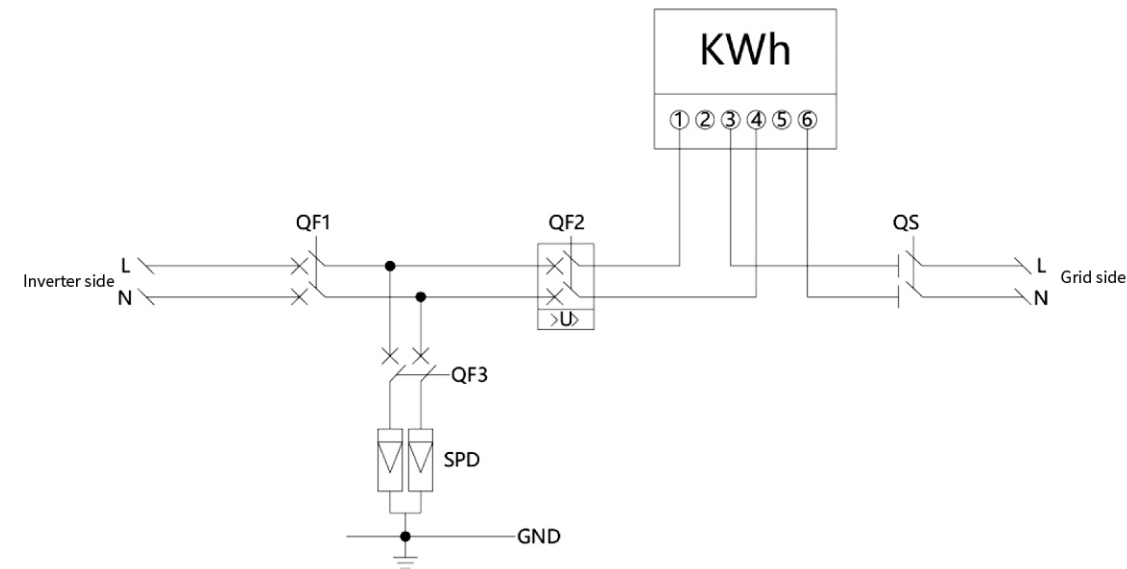
- All metal boxes are made of cold-rolled steel plates or stainless steel plates produced by Wugang, with a protection level of IP54 or above, suitable for outdoor installation
- The box adopts an upper and lower layer design, with the top layer designed as the brim of the box to prevent rainwater from entering the box during rain; The middle layer is designed as a photovoltaic metering meter, where various data on the meter can be observed through a transparent glass panel, and a sealing interface is designed on the door lock; The bottom layer is designed as a control and protection area, which facilitates maintenance and repair by maintenance personnel
- The design of the power grid inlet hole in the box can be accessed from the bottom or the side. When accessing from the side, an IP66 waterproof connector is installed to ensure the protection level of the box
- The inlet hole of the inverter in the box is designed at the bottom for easy on-site connection. The isolation switch inside the box adopts a well-known brand and has a clear break point. The designed capacity is more than 1.5 times the maximum output current of the inverter
- The box is designed with photovoltaic overvoltage and undervoltage protection devices and voltage recovery coincidence protection devices. In addition to voltage loss protection, this product can also protect against unstable grid voltage
- The box is designed with lightning surge protection, and the standard maximum discharge current of the surge protector is 40KA. In areas with frequent thunderstorms, larger lightning surge protectors can be selected, and the maximum discharge current can reach 100KA
- The box is designed with overcurrent protection circuit breakers to ensure reliable disconnection in the event of overload or short circuit in the system
- The installation board inside the box can be configured with epoxy resin insulation board according to customer requirements, and the thickness of the insulation board should be at least 5mm or more
- Anti islanding devices can be configured according to customer requirements

technical parameter

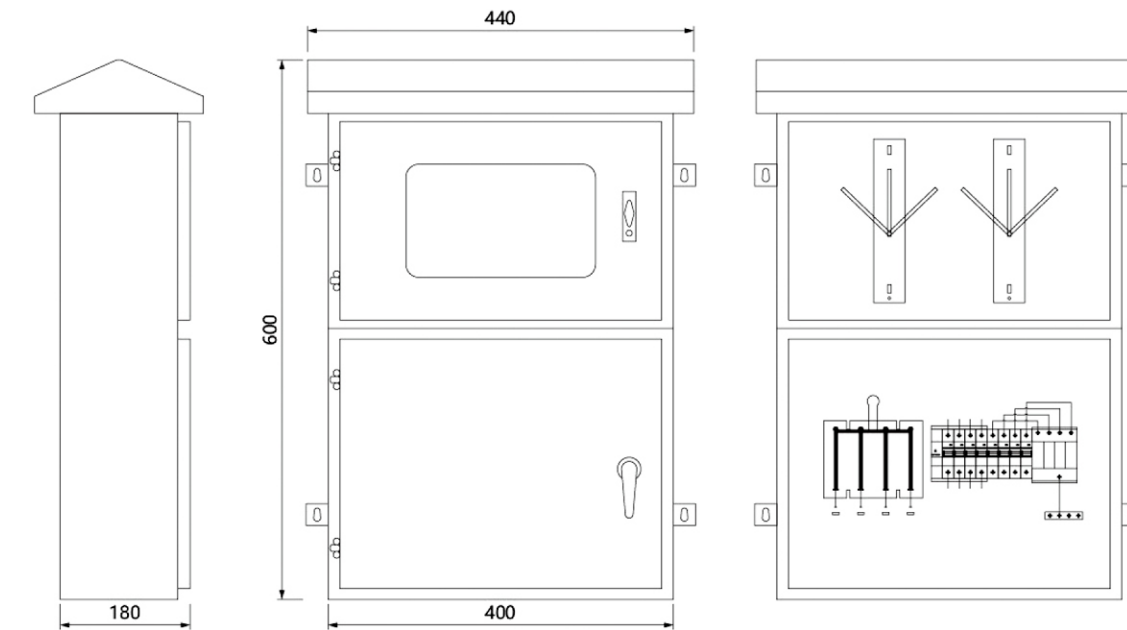
Model (CYBWX-BL)	05	10	15	30	40	50	60	90T	110T	130T
Basic parameters										
Number of input channels for inverters	1									
Output modes	1									
Rated AC voltage	220V/230V/240V		400V							
Maximum rated input current	32A	63A	32A	63A	80A	100A	125A	200A	225A	250A
Rated frequency	50HZ/60HZ									
Connection of electric energy meter										
Shell box										
Cabinet material	PC/SMC/Cold rolled steel/Stainless steel									
Protection level	IP65									
Collision protection level	IK10									
Box size	customized									
Inverter access port	M50(32.7 ~ 38mm)									
Grid access port	M50(32.7 ~ 38mm)									
Isolating switch										
Rated voltage (AC)	230V		400V							
Rated current (AC)	63A	100A	100A			200A		400A		
type	Single throw switch									
Overvoltage and undervoltage protector										
Circuit breaker type	2P		4P							
Rated voltage (AC)	230V		400V							
Maximum current (AC)	63A		80A			125A		250A		
Overvoltage protection value (phase voltage)					≥ 290V				253 ~ 300V	
Undervoltage protection value (phase voltage)					≤ 150V				154 ~ 187V	
Voltage loss protection value (phase voltage)					< 45V					
Rated frequency	50HZ/60HZ									
Communication surge protector										
Maximum operating voltage (AC)	230		400V							
Maximum discharge current (AC)	40KA									
AC circuit breaker										
Circuit breaker type	2P		4P							
Rated voltage (AC)			400V							
Rated current (AC)	32A	60A	32A	60A	80A	100A	125A	200A	225A	250A
Rated frequency	50HZ/60HZ									
Environmental parameters										
working temperature	-20°C ~+60°C									
Working humidity	99%									
Altitude	2000m (load reduction above 2000m)									
Installation method	Wall mounted installation									
Optional Features										
Communication fuse	Optional									
Overvoltage and undervoltage protector	Optional									
Communication leakage protector	Optional									

Photovoltaic grid line diagram and layout diagram

Single phase AC and net cage electrical circuit diagram

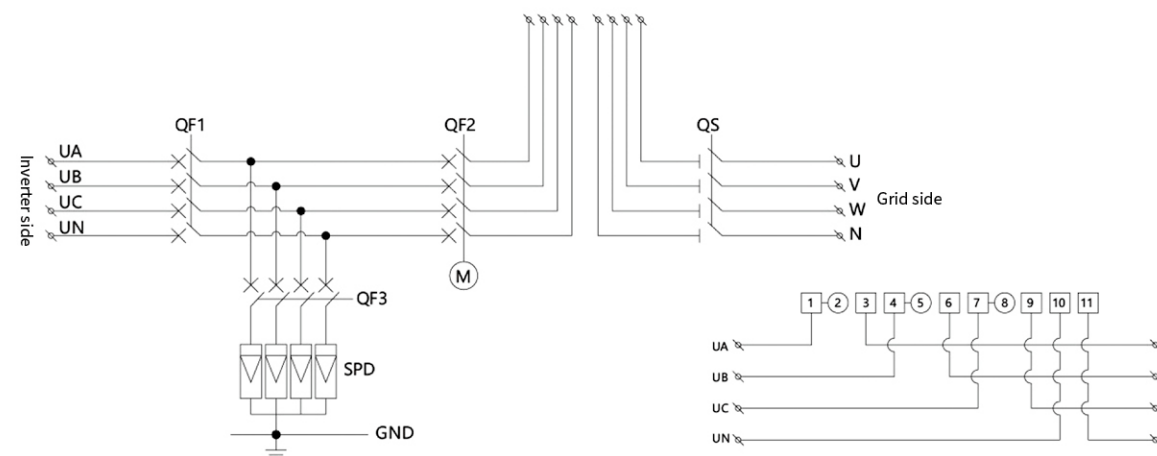


Single phase AC and grid electrical layout diagram

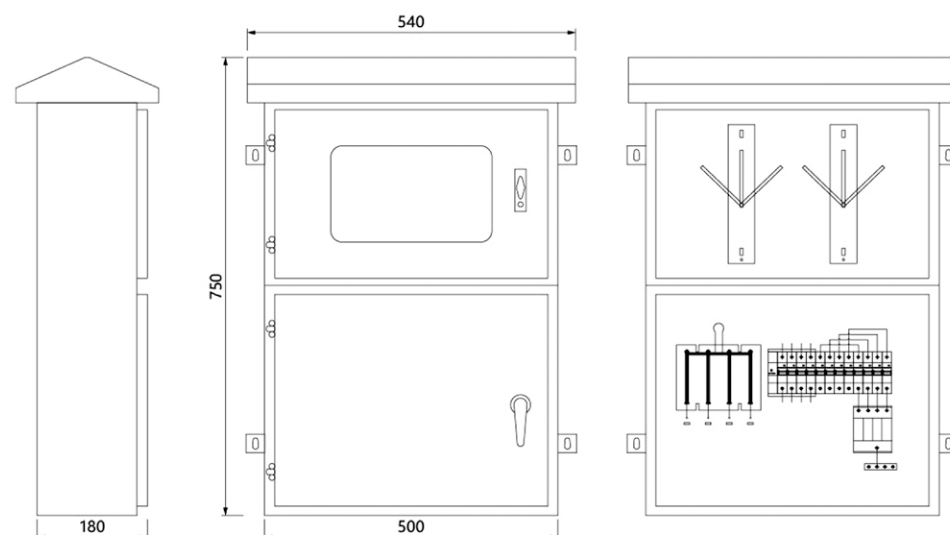


▶ Photovoltaic grid line diagram and layout diagram

Electrical Circuit Diagram for Three phase AC and Net Cage below 30kW



Electrical layout diagram of three-phase AC and net cage below 30kW



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CYBWG
Photovoltaic grid connected cabinet



Product Overview

The CYBWG photovoltaic grid connected cabinet is an important component that connects centralized inverters with step-up transformers or AC combiner boxes with step-up transformers. The incoming line of this photovoltaic grid connected cabinet adopts circuit breaker input or direct input, and the output adopts circuit breaker or load isolation switch. The busbar is connected by electroplated or purified busbar and provides secondary lightning protection. The maximum rated voltage of the system is AC690V, and the protection level is IP40 indoors and IP65 outdoors; The cables for secondary measurement and control include cables with a current greater than 2.5mm², cables with a voltage greater than 1.5mm², and cables with a control greater than 1.0mm². The measuring current transformer is a 0.5 level current transformer, and the measuring transformer is a 0.2S level current transformer. Relevant functions can also be added according to customer requirements. This product adopts professional electrical design and component selection, making the internal structure of the cabinet safe, simple, beautiful, convenient for on-site wiring and maintenance, and ensuring long-term stable operation of the equipment.

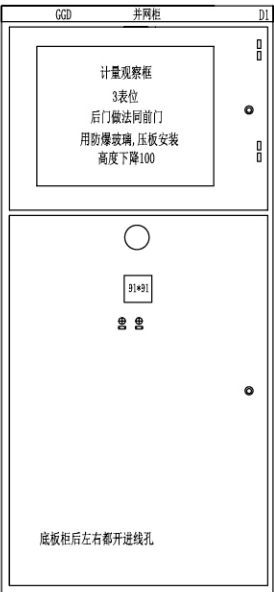
Function and Features

- Both fixed installation and plug-in designs can be used;
- Adopting the combination of circuit breakers and components from Feng Company or well-known domestic and foreign brands, the successful unit has excellent technical performance, safety and reliability;
- Can be assembled into various standard unit modules for customers to choose and assemble at will;
- Adopting isolation between regions and mutual isolation between functional unit incoming and outgoing lines effectively enhances safety protection performance;
- Combination assembly structure, all structural components of the frame are firmly connected with screws, and the frame, doors, and panels are treated with phosphating and electrostatic spraying. Non spraying parts are all galvanized and passivated. Can meet the requirements of various components and adapt to different working environments, achieving the corresponding protection level;
- The skeleton is made of high-quality steel plate and can have holes with a module of 25mm, which can be expanded for various purposes. There are two ways to enter the wire: upper and lower;
- High breaking capacity, good dynamic and thermal stability, flexible and convenient electrical scheme combination, strong practicality, and main parameters reaching international advanced level;
- Lightweight reset, high mechanical strength and assembly accuracy, beautiful appearance.

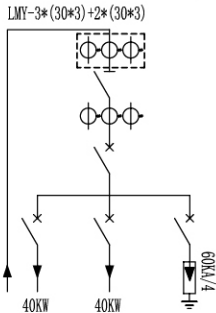
technical parameter

Product model	CYBWG
Maximum input voltage	690VAC
Rated frequency	50Hz
Maximum rated current	3150A
measured data	Three phase current, three-phase voltage, active power, apparent power, power factor, frequency, and kilowatt hour
Communication method/protocol	RS485 bus/standard MODBUS-RTU protocol
Temperature and humidity	Working temperature: -40~+85 °C , humidity 95%, no condensation, no corrosive gas environment
altitude	≤ 4000m
Cabinet material	Hot dip galvanized steel sheet/stainless steel sheet/cold-rolled steel sheet
Protection level	IP40
Volume (width x height x depth)	2260mm×800mm×600mm
Installation method	Floor standing

Scheme diagram of photovoltaic grid connected cabinet

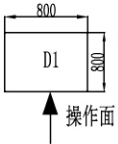


One time wiring scheme

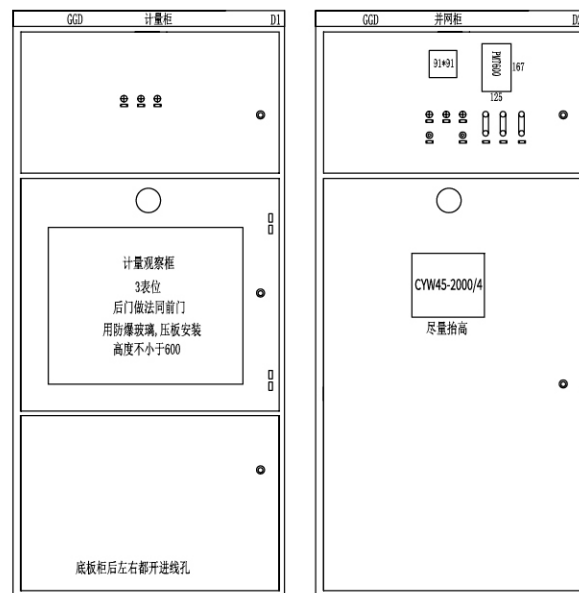


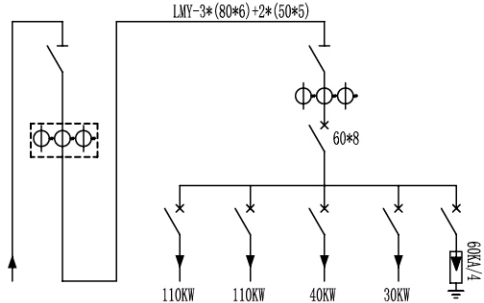
Switch cabinet number		D2		
Switch cabinet model		GGD		
Size of switchgear (width * depth * height)		800**800*2200		
Name of switchgear		Grid connected cabinet		
major equipment	Reclosing circuit breaker	250/4 200A		
	Circuit breaker	CYM1-125L/4300 100A	CYM1-125L/4300 100A	DZ47-63/4P C63A
	Current transformer	BH-0.66 200/5		
	Knife switch	HD13BX-200/41		
	Multi function table			
Factory number				

Explanation: 1. The input and output methods are cable entry and exit below
2. Reserve installation positions for measuring transformers

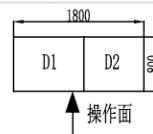


▶ Scheme diagram of photovoltaic grid connected cabinet

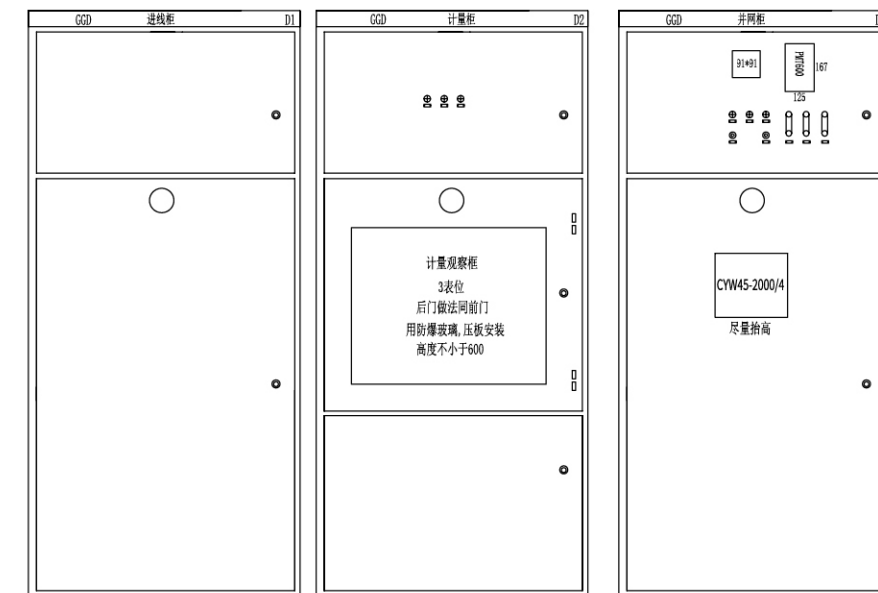


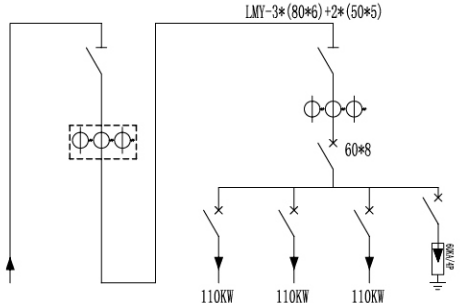
One time wiring scheme							
Switch cabinet number		D1	D2				
Switch cabinet model		GGD	GGD				
Size of switchgear (width * depth * height)		800**800*2200	1000**800*2200				
Name of switchgear		Measuring cabinet	Grid connected cabinetPV				
major equipment	Intelligent circuit breaker		CYW45-2000/4 800A 带欠压				
	Circuit breaker		CYM1-250L/4300 250A	CYM1-250L/4300 250A	CYM1-125L/4300 100A	CYM1-125L/4300 80A	DZ47-63/4P C63A
	Current transformer		BH-0.66 800/5				
	Knife switch	HD13BX-1000/41	HD13BX-1000/41				
	Multi function table						
Factory number							

Explanation: 1. The input and output methods are cable entry and exit. 2. Reserved installation positions for measuring transformers. 3 Configure UPS and anti islanding devices

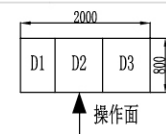


▶ Scheme diagram of photovoltaic grid connected cabinet



One time wiring scheme							
Switch cabinet number		D1	D2	D3			
Switch cabinet model		GGD	GGD	GGD			
Size of switchgear (width * depth * height)		400**800*2200	800**800*2200	800**800*2200			
Name of switchgear		Incoming cabinet	Measuring cabinet	Grid connected cabinet			
major equipment	Intelligent circuit breaker			CYW45-2000/4 1000A			
	Circuit breaker			CYM1-250L/4300 250A	CYM1-250L/4300 250A	CYM1-250L/4300 250A	DZ47-63/4P C63A
	Current transformer			BH-0.66 1000/5			
	Knife switch		HD13BX-1000/41	HD13BX-1000/41			
	Multi function table						
	Factory number						

Explanation: 1. The input and output methods are cable entry and exit. 2. Reserved installation positions for measuring transformers. 3 Configure UPS and anti islanding devices



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High voltage grid connected cabinet



Product Overview

This product complies with relevant national standards such as the "Design Specification for Photovoltaic Power Generation", "Technical Regulations for Distributed Power Source Access to Power Grid", and "3.6kV~40.5kV Switchgear and Control Equipment", and is suitable for high-voltage side access to switch station equipment (also known as high-voltage grid connected complete switchgear) for distributed and ground photovoltaic power generation.

technical parameter

project	parameter
Rated voltage	12kV、24kV、35kV
Rated current	630A、1250A、1600A、2000A、2500A、3150A
Standard Features	Overload and short circuit protection, voltage loss tripping protection, anti orphan bird protection, fault disconnection, power quality monitoring, lightning protection

YB □ -12/0.315~0.69

Photovoltaic special box transformer (European style)



Product Overview

The transformer box is divided into three parts: high voltage room, low voltage room, and transformer, which can be arranged in a "V" or "V" shape.

The inner and outer surfaces of the box are flat and free of rust, with coating peeling and collision damage. The coating layer is firm and uniform, without obvious contrast reflection.

The base of the box and all exposed metal parts are treated with anti-corrosion and anti rust measures, and coated with a durable protective layer.

The top cover of the box is equipped with a waterproof sealing cover and a square rain eave. The double-layer structure of the box top cover can prevent thermal radiation.

The design dimensions of the transformer door are matched with the size of the equipment used. The transformer door adopts an internal hinge, and all doors on the box body open outward at an angle greater than 90°.

The box is made of stainless steel plate and painted with imported automotive paint, all of which are coated with curium paint. It is smoke resistant, moisture resistant, mold resistant, and has strong outdoor weather resistance. The photovoltaic power station is located in an area with low temperature, large temperature difference, high humidity, and frequent sandstorms. The box transformer has a reasonable protective structure, dust-proof structure, and low temperature resistance, which can meet the requirements for normal and safe operation under harsh environmental conditions.

technical parameter

High voltage side rated voltage: 6kV, 12kV, 24kV, 35kV, 36.75kV, 38.5kV
Low voltage side rated voltage: 0.27kV, 0.3kV, 0.315kV, 0.4kV
Rated frequency: 50Hz
Number of phases: Three phases

Usage environment

The altitude generally does not exceed 3000m;
The ambient temperature range is -40 °C ~+85 °C ;
Installation location: Outdoor;
Anti pollution level: Level III;
Outdoor wind speed not exceeding 35m/s;
Seismic resistance: horizontal acceleration of 0.3m/s²; Vertical acceleration not exceeding 0.15m/s²;
When exceeding the normal usage environment conditions mentioned above, our company can provide personalized design according to user requirements.

Transformer capacity	High voltage combination and tapping range			connection symbol	No load loss kw	Load loss kW	Impedance%
	High voltage kV	Tap range%	Low voltage kV				
500~1600	6、12、24、35、36.75、38.5	±2×2.5	0.315、0.27、0.3、0.4	yd11,d111	According to customer requirements	According to customer requirements	6.5

▶ Technical parameters of high-voltage vacuum isolation load switch and fuse combination electrical device

project	parameter	
model	FZRN25-12D (manual and electric operation)	FZRN21C-40.5D (Manual and electric operation)
Voltage level (kV)	12	40.5
Power frequency withstand voltage (kV)	45	95
Lightning impulse voltage (KV)	75	185
Rated current (A)	Based on the fuse	Based on the fuse
Rated short-time breaking current (kA)	20/31.5	20/31.5
Mechanical lifespan	10000second	10000second

▶ Technical parameters of high-voltage oil immersed fuses

project	parameter	
model	XRNT-12	XRNT-40.5
Rated current of fuse (A)	125	40
Rated current of melt (A)	50(500kVA、630kVA) 100(1000kVA、1100kVA、1250kVA)	16(500kVA、630kVA) 31.5(1000kVA、1100kVA、1250kVA)
Short circuit breaking current of fuse (kA)	31.5	31.5
After the fuse is blown, it can be easily replaced on site		

▶ Technical parameters of high-voltage lightning arrester

project	parameter	
model	YH5WZ-17/45	YH5WZ-51/134
type	Gapless metal zinc oxide lightning arrester	Gapless metal zinc oxide lightning arrester
Rated voltage (kV)	17	51
Continuous operating voltage (A)	13.5	40.8
DC 1mA reference voltage (kW)	≥ 24	≥ 73
Nominal discharge current (peak) (kV)	≥ 10	≥ 5
Nominal discharge current, residual voltage (peak) (kV)	≤ 45	≤ 134
2ms square wave current withstand value (peak) (A)	150	600-800

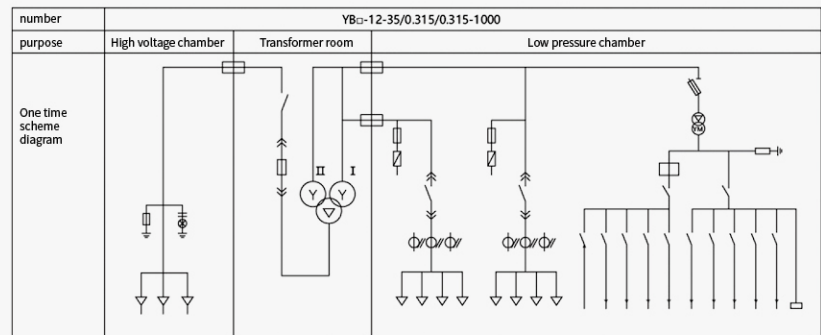
▶ Technical parameters of low-voltage frame circuit breaker

project	parameter
Rated voltage (V)	400
Rated current (A)	1250、1600、2000、2500、3200
Short time withstand current and time (kA/1s)	50

▶ Lighting maintenance transformer

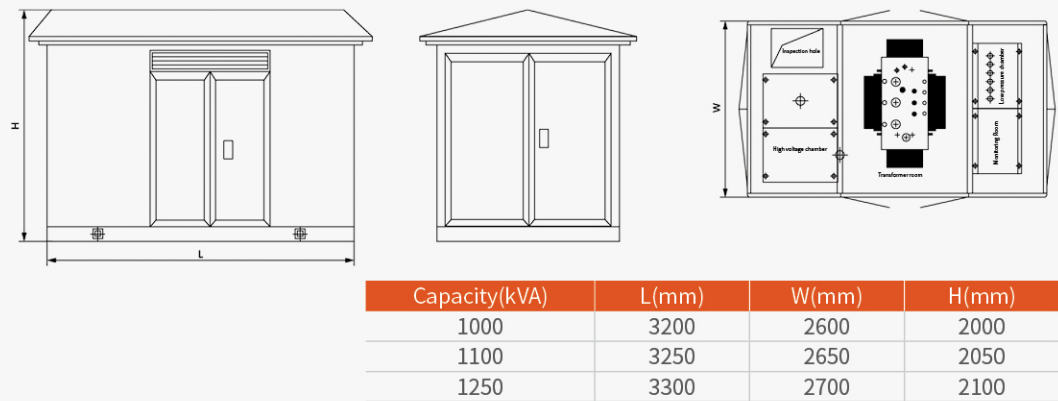
model	Rated capacity	Voltage combination		connection symbol	Number of boxes	frequency
		Yuan Bian	Vice side			
SG10-D/0.315/0.4	According to customer requirements	0.315kV	0.4kV	Dyn11	three-phase	50Hz

▶ Appearance and installation dimensions



▶ Typical Scheme Design and Appearance

Outline and dimensions of the "P" - shaped photovoltaic power generation special combination transformer (reference dimensions)





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Photovoltaic booster station



Photovoltaic booster station

▶ Product Overview

Product Overview: A 35kV photovoltaic booster station is a box type substation that converts the three-phase AC power output from a solar box type inverter station or inverter room into 35kV three-phase AC power through a boosting transformer, and locally boosts it into 35kV three-phase AC power for operation in the power grid. The photovoltaic box type boosting station has a reasonable and compact system layout, including a low-voltage incoming cabinet, a double split transformer, and a high-voltage outgoing cabinet, which are independently installed in three compartments in a "eye" or "L" shape. The station has complete functions and is easy to maintain. Remote control devices and power transformers are installed in the low-voltage compartment to achieve remote control and self power supply of the box transformer, meeting the needs of the photovoltaic power generation system.

▶ Product Features

Wind integrated ceiling, overall beautiful, high product grade.

Integrated air duct, large ventilation volume, safer and more efficient inverter operation.

Integrated box and cabinet, the modules of the box transformer are integrated with the box body, and the appearance is of high grade.

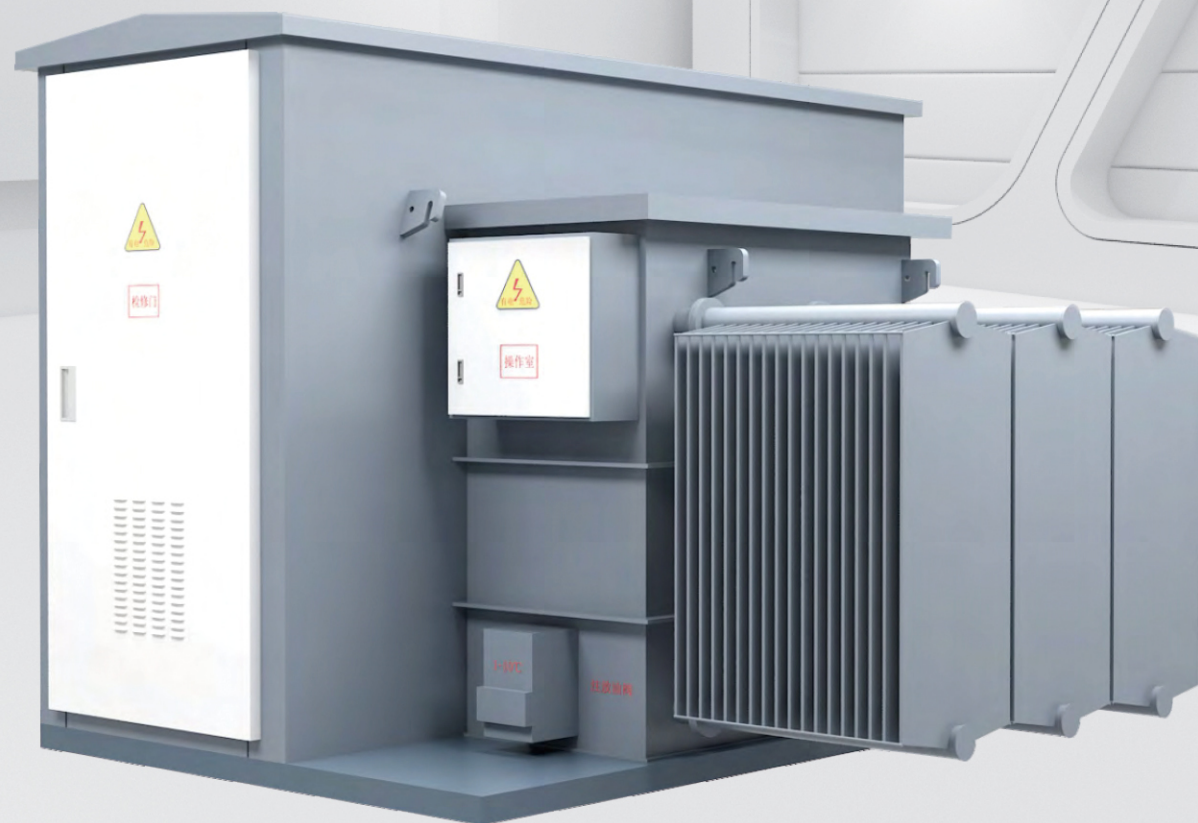
Space optimization, fully utilizing the space inside the box for easy maintenance and repair.

▶ Advantages and Characteristics

The photovoltaic booster station consists of three parts: a low-voltage incoming cabinet, a double split transformer, and a high-voltage outgoing cabinet, which are independently installed in three compartments arranged in a "eye" shape. Remote control devices and power transformers are installed in the low-voltage compartment to achieve remote control of the box transformer and self power supply of the box transformer.

ZGS13-H

Combination Transformer (Photovoltaic Beauty Transformer)



Product Overview

Combination transformer is a transformer that combines the body of the step-up transformer, switchgear, fuses, tap changers, and corresponding auxiliary equipment. The high-voltage switch and fuse are installed in the oil tank, and the overall external dimensions are small. Its structural form is similar to the box transformer introduced from the United States in the 1990s. According to the product structure and component configuration, it can be divided into two types: one is a fully insulated box type product, and the other is a common box type product with dry-type bushing for high-voltage output.

Application scope

Applied in the field of new energy, including photovoltaic power generation and wind power generation; Widely used in various places such as industrial parks, residential areas, commercial centers, and high-rise buildings.

Usage environment

Altitude: ≤ 5000 meters;

Environmental temperature: maximum temperature $+40^{\circ}\text{C}$, minimum temperature -40°C ;

Humidity: The average daily relative humidity should not exceed 95%, and the average monthly relative humidity should not exceed 90%;

Wind speed: Outdoor wind speed does not exceed 45m/s^2 ;

Seismic resistance: horizontal acceleration not exceeding 0.4m/s^2 , vertical acceleration

Speed not exceeding 0.15m/s^2 ;

Installation site inclination: not greater than 3° ;

Installation environment: The surrounding air is not significantly polluted by corrosive or flammable gases, and there is no severe vibration at the installation site;

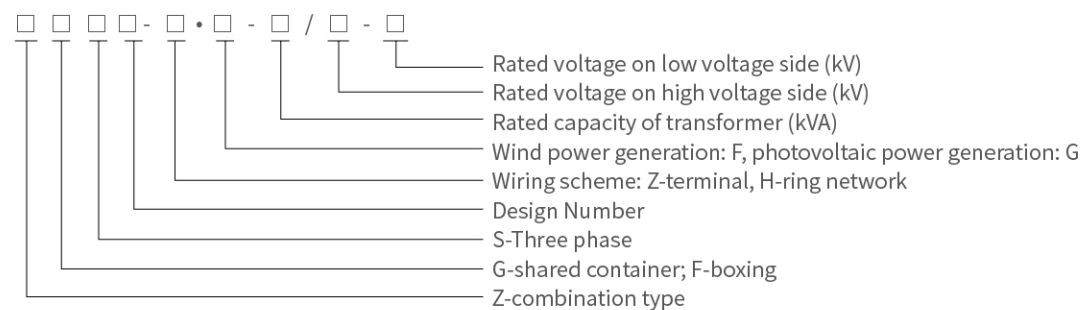
Pollution level: Level IV;

When ordering this product beyond the above conditions, you can negotiate with our company.

Product execution standards

- GB1094.1-2013 Power Transformers Part 1: General Provisions
- GB1094.2-2013 Power Transformers Part 2: Temperature Rise of Liquid Immersed Transformers
- GB/T1094.3-2017 Power Transformers Part 3: Insulation Level, Insulation Test, and External Insulation Air Gap
- GB/T1094.4-2005 Power Transformers Part 4: Guidelines for Lightning Impulse and Operating Impulse Tests of Power Transformers and Reactors
- GB1094.5-2008 Power Transformers Part 5: Short Circuit Endurance Capacity
- GB/T1094.7-2008 Power Transformers Part 7: Load Guide for Oil Immersed Power Transformers
- GB/T1094.10-2003 Power Transformers Part 10: Determination of Sound Level
- GB/T6451-2015 Technical Parameters and Requirements for Three phase Oil immersed Power Transformers
- JB/T10217-2013 Combination Transformer

Model Description



▶ Product Structure Features

- The 12kV and 40.5kV side outgoing lines of the fully insulated box type combined transformer adopt prefabricated connectors for fully insulated cables and touchable plug-in lightning arresters. The entire product has no exposed high-voltage live parts, with a high protection level and reliable safety;
- Fully insulated split box combination transformer, with the transformer and high-voltage components placed in two independent boxes. It not only solves the problem of oil pollution to transformers, but also enables separate maintenance of high-voltage components and transformers;
- 12kV products are protected by plug-in fuses and backup protection fuses; The 40.5kV product adopts plug-in full range protection fuse protection;
- No leakage, each box undergoes a 50kPa/12 hour sealing test to ensure that the fuel tank is sealed without leakage;
- The high voltage adopts a dry-type bushing outgoing common box combination transformer, which is easy to connect and can achieve multiple incoming and outgoing line circuits with low cost;
- The equipment casing is sprayed with strict coating technology and coated with anti ultraviolet topcoat, which has strong outdoor weather resistance;
- Adopting a compact "V" - shaped structure with a small footprint, occupying less than two-thirds of the pre installed substation;
- Reliable operation, the transformer adopts dual fuse protection. The plug-in fuse uses a dual sensitive fuse for protection against overload and low voltage faults in transformers. Backup protection fuses are used for the protection of transformer body faults. Two level full range protection transformer;
- The transformer body adopts a common box structure, and the high and low voltage bushings adopt side outgoing lines, which is convenient for direct connection with high and low voltage electrical appliances. The plug-in fuse is placed on top of the transformer body, effectively reducing installation space. The heat sink is installed on both sides of the transformer body, with good heat dissipation effect;
- Safe and environmentally friendly, fully sealed and insulated structure, able to adapt to the anti-corrosion requirements of harsh areas such as high altitude and heavy salt spray.

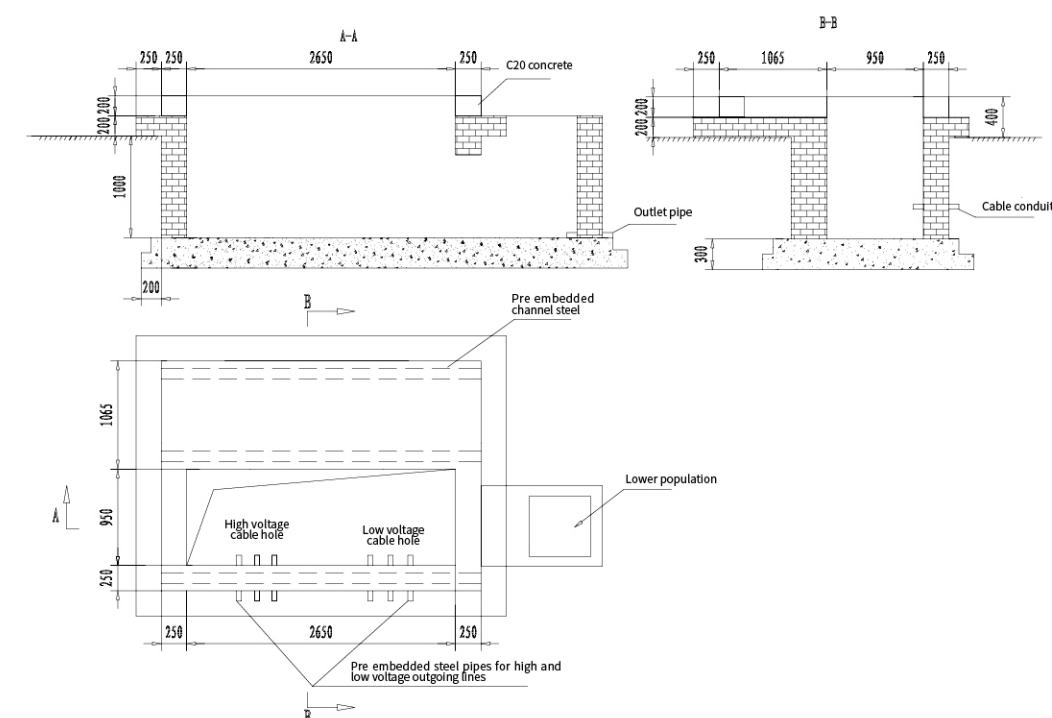


▶ Main technical parameters

Rated capacity (kVA)	Voltage combination			connection symbol	No load loss (W)	Load loss (W)	No load current (%)	Short circuit impedance %	
	high pressurekV	low pressurekV	Tap range						
630	35 36 36.75 37 38.5	0.4 0.5 0.54 0.6 0.63 0.69 0.8 0.95 1.14	±2×2.5%	Dy11 [photovoltaic] Yd11 [photovoltaic] Dyn11 [Wind power] Dy11y11 [photovoltaic] Yd11d11 [photovoltaic]	830	7860	0.65	6.5	
800					980	9400	0.65		
1000					1150	11500	0.65		
1250					1400	13900	0.60		
1600					1690	16600	0.60		
2000					1990	19700	0.55		
2200					2145	21080	0.55		
2500					2360	23200	0.55		
2750					2535	25000	0.55		
2800					2570	25260	0.55		
2900					2650	26000	0.55		
3150					2810	28800	0.55		
3300					2910	29825	0.50		7.0
3400					2976	30500	0.50		
3500					3041	31170	0.50		
3600					3106	31835	0.50		

Note: New energy products need to be negotiated and resolved according to specific user requirements.

▶ Installation foundation diagram



NEW ENERGY DISTRIBUTION EQUIPMENT SERIES

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BS
Photovoltaic Huabian



Product Overview

Huabian is designed by countrymen based on the excellent heat dissipation performance of Meibian and the perfect protection function of European transformer and optimized the compact structure, which solves the problems of lack of protection of Meibian and poor heat dissipation of European transformer. The current market promotion prospects.

Features of Huabian products

- Huabian is divided into three parts: high-voltage room, low-voltage room, and transformer, arranged in an "L" or "V" shape;
- Huabian transformers can only use oil immersed transformers and cannot use dry-type transformers;
- The transformer body and heat dissipation fins of Huabian are both open and exposed outside the box, with good heat dissipation effect. All other live compartments are sealed in independent compartments, and each compartment is separated into independent compartments by partitions. A lower manhole is also provided inside the box for easy installation and maintenance;
- The box body is made of cold-rolled steel plate or stainless steel plate, with smooth inner and outer surfaces, no rust, coating peeling or collision damage, a firm and uniform coating layer, and no obvious contrast reflection;
- The top cover of the box is equipped with a rainproof sealing cover and a rainproof eave, and the double-layer structure of the box top cover can prevent thermal radiation;

Main technical parameters

Rated capacity (kVA)	High voltage/low voltage	630~8000	
Voltage (kV)	Rated voltage on the high voltage side	35(36、36.75、 37、 38.5)	
	Maximum operating voltage of the system	40.5	
	Rated voltage on the low voltage side	For wind power generation	0.69(0.95、 1.14)
		For photovoltaic power generation	0.48、 0.5、 0.54、 0.6(0.63、 0.8)
Rated insulation level (kV)	High voltage switch side power frequency withstand voltage	95	
	Transformer body power frequency withstand voltage	85	
	Peak impulse withstand voltage	200	
	Low voltage side power frequency withstand voltage of transformer	5	
Connecting groups	For wind power generation	Dyn11	
	For photovoltaic power generation	Dy11 或 Yd11;1Dy11y11 或 Yd11d11	
Protection level	tank	IP68	
	High and low pressure chambers	IP54	
	After the high-voltage chamber door is opened	IP3X	
Rated rating rate (Hz)	50/60		
Number of phases	three-phase		

Note: New energy products need to be negotiated and resolved according to specific user requirements.

Main component parameters

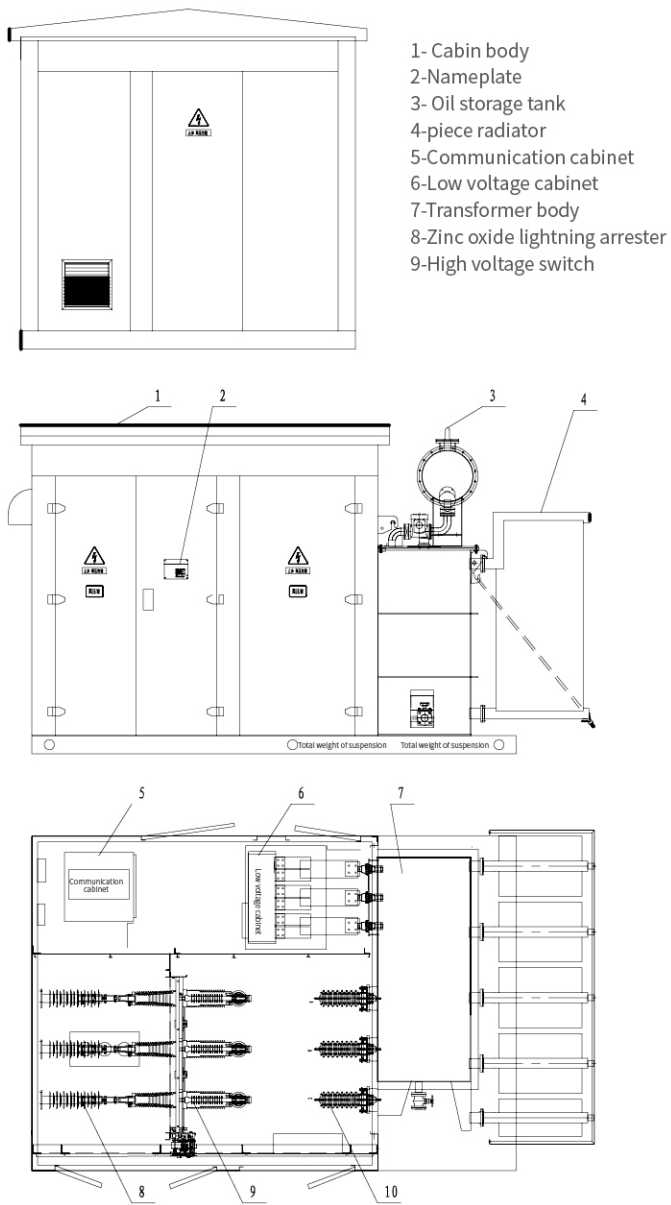
35kV voltage level							
Lib ref	Rated voltage (kV)	Rated current (A)	Power frequency withstand voltage phase/fracture (kV)	Lightning impulse withstand voltage (kV)	Short time withstand current time (kA/s)	Short circuit peak withstand current (kA)	Mechanical lifespan (times)
Vacuum load switch (or vacuum circuit breaker)	40.5	630 1250	95 /115	185/215	20/4 25/4 31.5/4	50 63 80	10000
Current limiting fuse (not available for circuit breakers)	40.5	16、20、25、 31.5、40、 50、63、80、 100	95	185	额定最大开断电流 (kA): 31.5		

10kV voltage level

Lib ref	Rated voltage (kV)	Rated current (A)	Power frequency withstand voltage phase/fracture (kV)	Lightning impulse withstand voltage (kV)	Short time withstand current time (kA/s)	Short circuit peak withstand current (kA)	Mechanical lifespan (times)
Vacuum load switch (or vacuum circuit breaker)	12	630 1250	42	75/85	20/4	50	10000
Current limiting fuse (not available for circuit breakers)	12	16、20、25、31.5、40、50、63、100、160、200	42	75	Rated maximum breaking current (kA): 50		

▶

Outline dimension diagram



NEW ENERGY DISTRIBUTION EQUIPMENT SERIES

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Outdoor cabinet type energy storage system



Product Features

Safe and reliable

- ◇ Support multiple battery inputs to improve battery cycle life;
- ◇ High frequency switch, low current ripple and high voltage quality;

Friendly and flexible

- ◇ Support parallel system scalability up to MW level;

Intelligent and efficient

- ◇ Built in EMS function to improve energy efficiency management;
- ◇ New IGBT module, high-efficiency conversion;

Rich configuration

- ◇ Can integrate ventilation system;
- ◇ Integrate multiple boost systems;

technical parameter

technical parameter	SC1000A-MV35	SC1260A-MV35	SC2000A-MV35	SC2500A-MV35
direct				
Battery voltage range (V)	500-900			
Communication (grid connection)				
Maximum apparent power (kVA)	1100	1386	2200	2750
Rated output power (kW)	1000	1260	2000	2500
Rated voltage (kV)	35			
Voltage range (kV)	38.5±2×2.5%(6、10、22)Optional			
Rated current (A)	16.5	20.8	33	41.2
Maximum output current (A)	18.1	22.9	36.3	45.4
Rated frequency (Hz)	50/60			
Frequency range (Hz)	45-55/55-65			
THDi	< 3%			
power factor	1 lead~1 lag (adjustable)			
Communication format	3W+PE			
Conventional data				
Maximum efficiency	98%			
Protection level	IP54			
Noise (dB)	< 75			
ambient temperature	-30℃ ~55℃			
Cooling method	Temperature controlled forced air cooling			
relative humidity	0~95% non condensing			
Altitude	5000m (derating above 3000m)			
Dimensions W * D * H (mm)	4300*2438*2591	4300*2438*2591	6058*2438*2591	6058*2438*2591
Weight (kg)	4500		8000	
Isolation transformer	nothing			
Shutdown self consumption (W)	< 20		< 40	
step-up transformer	Manual (default)/Automatic (optional)			



CONYA GROUP

NEW ENERGY DISTRIBUTION EQUIPMENT SERIES

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10kV~40.5kV
Modular intelligent prefabricated cabin



Product Overview

Provide a fully modular assembly solution for substations, reducing the footprint by 30% and shortening the system design, installation, and commissioning cycle by 70%; Adopting all metal prefabricated cabins and equipped with intelligent environmental control systems, it can be applied to complex climate and geographical environments such as high temperature, high humidity, and sandstorms; Support eCloud energy cloud platform access, provide remote health diagnosis, fault analysis, maintenance guidance and other functions, realize unmanned operation of substations and full lifecycle management of equipment; Reliable operation and quality assurance.

technical parameter

Step up stations in new energy fields such as wind power, photovoltaic power, offshore wind power, and distributed photovoltaic power
10kV~40.5kV substation in the power grid
Large scale industrial and mining enterprises' self use substations

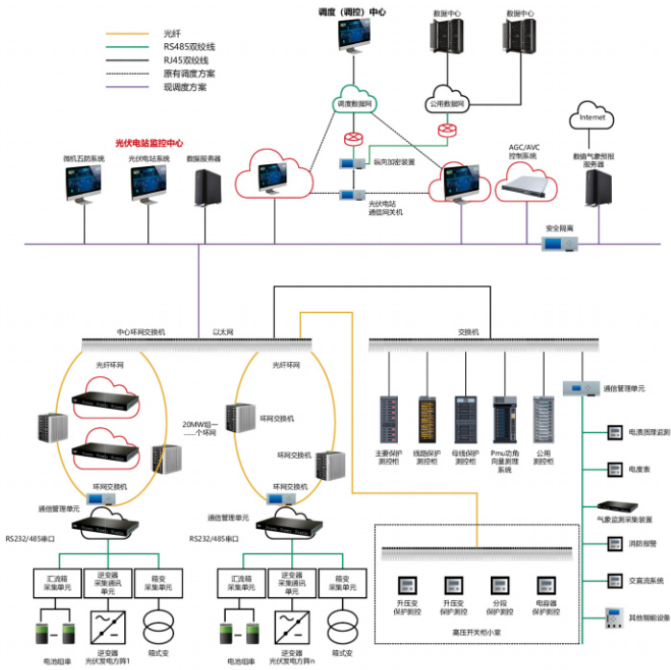
Usage environment

The ambient temperature range is -40 °C ~+85 °C ;
Installation location: Outdoor;
The altitude generally does not exceed 3000m;
Anti pollution level: Level III;
Outdoor wind speed not exceeding 35m/s;
Seismic resistance: horizontal acceleration of 0.3m/s²;
Vertical acceleration not exceeding 0.15m/s²;
When exceeding the normal usage environment conditions mentioned above, our company can provide personalized design according to user requirements.

Comparison between Modular Intelligent Prefabricated Cabin and Traditional Substation

project	Conventional outdoor substation	Prefabricated cabin type substation
area covered	About 3000 square meters	About 2000 square meters
Construction period	About 3-4 months	The entire site is pre installed as a whole, with all equipment prefabricated in the factory and installed on site. The construction period is short, 1-2 months
Cable usage	Equipment is arranged in a scattered manner, with a large amount of primary and secondary cables used	Equipment is highly integrated and arranged, reducing electrical distance and saving about 30% of cables
Environmental requirements	High environmental requirements, such as sandstorms and condensation, pose significant hazards to equipment in harsh environments	Adopting a fully metal cabin design, with an IP54 protection level and equipped with a comprehensive HVAC system, it can prevent sandstorms, condensation, and enhance equipment reliability
Construction and management costs	There are many buildings and high construction costs; The equipment is provided by different manufacturers, resulting in high coordination and management costs	Prefabricated design eliminates buildings throughout the entire site, resulting in low construction costs; All equipment is provided by our company and responsible for all installation and commissioning work, with low management costs
Operation and maintenance expenses	Open design, greatly affected by environmental factors, high operating and maintenance costs	Closed design, basically unaffected by external conditions such as environment, low operation and maintenance costs

Network topology diagram of centralized photovoltaic power station



Typical technical solutions and product configurations

Serial number	Main equipment name	Basic configuration
one	monitoring system	
1	Backend monitoring system	Including monitoring host/monitor/speaker and configuration of various software, etc
2	Five prevention monitoring system	Includes a set of five prevention software, locks, etc
two	monitoring system	
1	Remote communication screen	Including remote control devices, intelligent interface devices, time synchronization devices, etc
2	Public measurement and control screen	Including public measurement and control devices, power quality monitoring devices, network switches, etc
3	Synchronous phasor measurement screen	Including phasor measurement and control devices, etc
4	Busbar protection screen	Including busbar protection devices, etc
5	Safety automatic device screen	Including frequency voltage splitting device, anti islanding protection device, etc
6	Optical power prediction screen	Including optical power prediction services, reverse isolation devices, etc
7	Active and reactive power control screen	Including AGC/AVC device system and firewall, etc
8	Fault recording screen	Including fault recording devices, etc
three	Power supply screen	
1	Dual power AC input screen	Including ATS and 0.5 level electricity meter
2	Communication feeder screen	Including feeder switches, etc
3	DC charging screen	According to specific configuration
4	DC feeder screen	Including feeder switches, etc
5	Battery screen	80AH\100AH
6	UPS power supply screen	3kVA
four	Communication screen	
1	Scheduling data screen	Access routers, access switches, vertical encryption authentication devices, hardware firewalls, IDS intrusion detection equipment, etc
2	Network communication cabinet	SDH equipment, PCM equipment, etc
3	Integrated distribution frame screen	Configure corresponding ODF, etc
4	Electric energy harvesting terminal	Installed inside the measuring cabinet
five	Distributed installation	
1	Fiber optic differential protection measurement and control device	According to the specific configuration of the item
2	Line protection measurement and control device	According to the specific configuration of the item
3	SVG protection measurement and control device	According to the specific configuration of the item
4	Station transformer protection and measurement device	According to the specific configuration of the item
5	Power quality monitoring device	According to the specific configuration of the item
6	Intelligent electricity meter	According to the specific configuration of the item
six	Photovoltaic plant area	
1	Photovoltaic plant area	According to the specific configuration of the item
seven	Video surveillance	
1	Video monitoring system	Including cameras, video servers, displays, etc
eight	fire alarm system	
1	fire alarm system	Including smoke detection probe, manual alarm, sound and light alarm, fire alarm host, etc

BOX TYPE SUBSTATION SERIES

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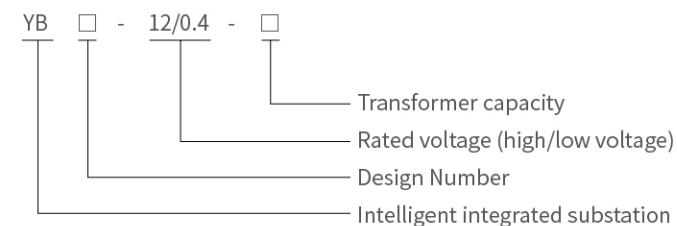
Intelligent prefabricated substation



Product Overview

Widely used in urban power grid renovation, residential communities, high-rise buildings, industrial and mining areas, hotels, shopping malls, airports, railways, oil fields, docks, highways, and temporary electrical facilities both inside and outside the house.

Model meaning



Function and Features

- ◇ High voltage switchgear, transformers, and low-voltage switchgear are integrated into one, with strong completeness;
- ◇ Complete high and low voltage protection, safe and reliable operation, and simple maintenance;
- ◇ Small footprint, low investment, short production cycle, and convenient mobility;
- ◇ Flexible and diverse wiring schemes;
- ◇ Unique structure: The unique honeycomb structure double-layer (composite board) shell is firm, insulated, ventilated, beautiful, and has a high level of protection. The shell materials include stainless steel and aluminum alloy
- ◇ Cold rolled steel plate and color steel plate are optional;
- ◇ Diverse types: universal, villa, compact, and other styles;
- ◇ The high-voltage ring main unit can be equipped with a network automation terminal (FTU) to achieve reliable detection of short circuits and single-phase grounding faults, with the "four remote" function, which facilitates the upgrade of distribution network automation.

Normal usage conditions

- ◇ Altitude not exceeding 1000m;
- ◇ Environmental temperature: -25 °C ~+40 °C ;
- ◇ Relative humidity: daily average not exceeding 95%, monthly average not exceeding 90%;
- ◇ Installation location: A place without fire, explosion hazards, conductive dust, corrosive chemical gases, and severe vibrations. If the above conditions are exceeded, users can negotiate with our company.

transformer

Intelligent integrated substations use low loss, oil immersed, fully sealed S9, S10, S11 series transformers, or environmentally friendly dry-type transformers with resin insulation or NOMEX paper insulation. The bottom can be equipped with a small car, and the transformer can be easily accessed.

High voltage side

Intelligent integrated substations generally use a combination of load switches and fuses for high voltage protection. After one phase of the fuse is blown, the three phases are interlocked and tripped. The load switch can be selected from compressed air, vacuum, sulfur hexafluoride and other types, and can be equipped with an electric operating mechanism to achieve automation upgrade; The fuse is a high-voltage current limiting fuse with an impactor, which operates reliably and has a large breaking capacity. The main technical parameters are shown in the table below. For transformers above 800kVA, vacuum circuit breakers such as QCE4, QCE2, and QCE1 can be used for protection.

Low voltage side

The low-voltage side main switch adopts universal or intelligent circuit breakers for selective protection; The outgoing switch adopts a new type of plastic shell switch with small volume, short arcing, and up to 30 circuits; Intelligent automatic tracking reactive power compensation device, with two switching modes for users to choose from: contactor and non-contact.

Execution standards

- ◇ This product meets the following standards:
- ◇ GB/T17467-1998 《High voltage/low voltage prefabricated substations》
- ◇ DL/T537-93 《Technical Conditions for Ordering 6-35kV Box type Substations》

Technical parameters of load switch

Serial number	name	Company	FKN12-12 Load switch	FZN25-12 Vacuum load switch
1	Rated voltage	kV		10
2	Maximum operating voltage	kV		12
3	Rated frequency	Hz		50
4	Rated current	A		630
5	Rated breaking load current	A		630
6	Thermal stability current (effective value)	kA/S	20/2	20/4
7	Dynamic stable current	kA	50	50
8	Short circuit closing current (peak value)	kA	50	50
9	Number of full load disconnections	second	20	10000
10	Mechanical lifespan	second	2000	10000
11	1-minute power frequency withstand voltage (phase to phase and ground)	kV	42	42
12	Lightning impulse voltage (relative and to ground)	kV	75	75

Technical parameters of load switch

Serial number		Rated voltage (kV)	Disconnect current (A)	Disconnect current (kA)	Rated current of melt (A)
UK model	Domestic models				
SDL※J		12	40	31.5	6.3 10 16 20 25 31.5 40
SFJ※J	XRNT-12	12	100	31.5	50 63 71 80 100
SKL※J		12	125	31.5	125

*Note: It is determined by whether the impactor is installed, where N is without a striker and A is with a striker.

Serial number	Release form	Rated current of release A	On-off capability kA(AC380V)
DW15-630	Thermoelectromagnetic or electronic type	315,400,630	40
DW15-1000		630,800,1000	50
DW15-1600		1600	50
DW15-2500		1600,2000,2500	60
CW1-2000	intelligent	630,800,1000,1250,1600,2000	65(80)
CW1-3200		2000,2500,3200	100

Installation, use and maintenance

In addition to the regulations required by the power department for installation, acceptance, handover testing, operation, and maintenance of intelligent integrated substations, the following matters should be noted:

Users should carefully inspect the goods according to relevant regulations when receiving them. For products that are not installed immediately, they should be stored in appropriate places according to normal usage conditions.

The product should be lifted from the bottom using a specialized lifting device, as shown in Figure 1.

The product is horizontally placed on a pre made foundation, and then the gap between the product base and the foundation is sealed with cement mortar to prevent rainwater from entering the cable room. The high and low voltage cables are connected through the bottom sealing plate of the high and low voltage rooms.

After the product is installed in place, reliable grounding should be done; The two main grounding terminals on the channel steel of the power station base

The neutral point and shell of the transformer, as well as the lower pile head of the lightning arrester, should be grounded separately by the installation department. All grounding devices should share a common grounding device, with a grounding resistance of less than 4 ohms,

There should be no less than two grounding leads from the grounding grid to this product.

After installation or maintenance, the product should undergo the following inspections and tests before being put into operation:

- ◇ Is the substation clean;
- ◇ Is the operating mechanism flexible;
- ◇ Is the on/off of the main electrical appliances flexible and reliable;
- ◇ Whether the on/off of electrical auxiliary contacts is reliable and accurate;
- ◇ Whether the meter and relay actions are accurate and correct;
- ◇ Whether the transformation ratio and wiring polarity of instruments and transformers are correct;
- ◇ Are all electrical installation nuts tightened and installed securely and reliably;
- ◇ Is the busbar connection good, and are the supporting insulators and clamps installed reliably;
- ◇ Does the setting value of the electrical appliance meet the requirements, and is the specification of the fuse core correct
- ◇ Whether the contacts of the main circuit and auxiliary circuit meet the requirements of the electrical schematic diagram.

Maintenance

- ◇ All components in the product are maintained according to their respective technical requirements:
 - ◇ If the selected transformer is oil immersed, oil sample analysis and inspection should be conducted at least once a year according to regulations;
 - ◇ The high-voltage side switchgear in operation should be checked for contact condition and the degree of loss of the arc extinguishing device after 20 loaded or 2000 unloaded opening and closing operations. If any abnormalities are found, they should be repaired or replaced in a timely manner.
 - ◇ After the automatic tripping of low-voltage switchgear, the cause of the tripping should be checked and analyzed. After the fault is eliminated, it can be put back into operation;
 - ◇ Lightning arresters should undergo a preventive test once a year before the arrival of thunderstorm season;
- *The product comes with a packing list, certificate of conformity, installation and use instructions, electrical wiring diagram, instructions for the main components and equipment used in this product, key operation tools, and spare parts provided according to the agreement.

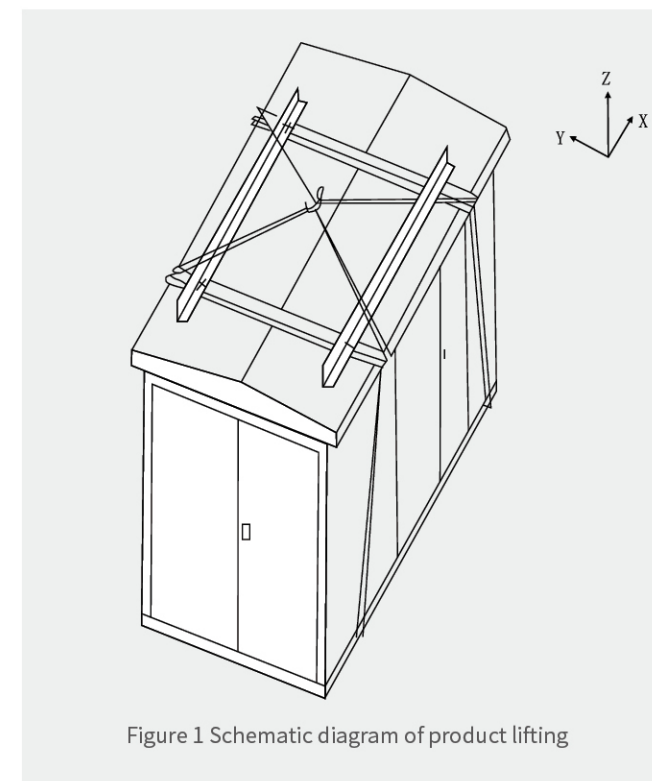
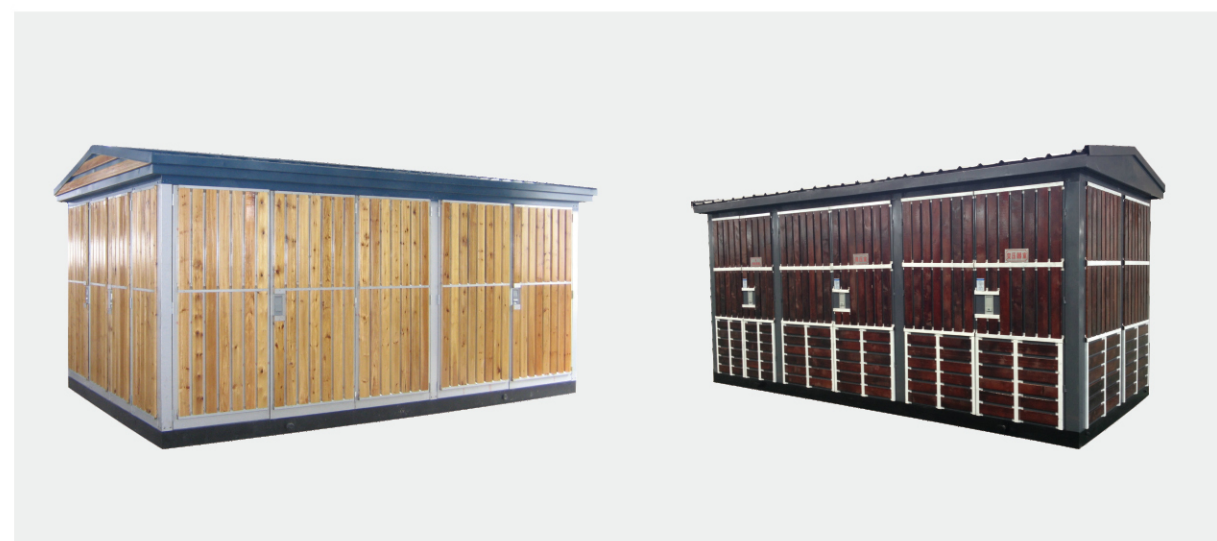


Figure 1 Schematic diagram of product lifting





BOX TYPE SUBSTATION SERIES

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ZBM

Prefabricated Substation (American Box Transformer)

**ZBM**

Prefabricated Substation (American Box Transformer)

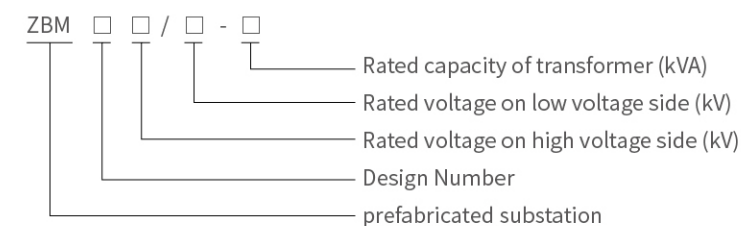
Product Overview

This product is developed by absorbing the latest advanced technology from abroad and combining it with the actual situation in China. The entire product has the characteristics of small size, easy installation and maintenance, low noise, low loss, anti-theft, strong overload capacity, and full protection. Suitable for new residential areas, green belts, parks, stations, hotels, construction sites, airports, and other places.

The ZBM series American prefabricated box type substation is suitable for use in 10kV ring network power supply, dual power supply or terminal power supply systems as a substation, metering, compensation control and protection device.

This product complies with the following standards: GB/T17467-1998 "High Voltage and Low Voltage Prefabricated Substations", DL/T537-93 "Technical Conditions for Ordering 6-35kV Box type Substations"

Model meaning



Function and Features

- ◇ Fully insulated, fully sealed, maintenance free, and reliable to ensure personal safety;
Compact structure, with a volume only 1/3-1/5 of the same capacity European transformer, and low height;
- ◇ A split box structure can be used to avoid oil pollution in the transformer oil tank;
- The high-voltage side adopts dual fuse full range protection, greatly reducing costs;
- ◇ It can be used for both ring network and terminal, and the cable head can be urgently plugged and unplugged when the load current is 200A;
- The box is made of honeycomb double layered composite board, which has the functions of insulation and heat dissipation;
Install an electronic phase loss protector on the low voltage side, which can quickly disconnect the main switch when abnormal voltage occurs in the system;
- High voltage oil immersed load switches or SF6 load switches can be electrically upgraded, laying the foundation for achieving distribution network automation.
- ◇ Adopt oil immersed S9 or S11 series transformers with better performance.

Normal usage conditions

- ◇ Altitude not exceeding 1000m;
- ◇ Environmental temperature: -35 °C ~+40 °C ;
Relative humidity: daily average not exceeding 95%, monthly average not exceeding 90%;
- Installation location: A place without fire, explosion hazards, chemical corrosive gases, and good ventilation, with a ground inclination angle of no more than 3 ° .

▶ Main technical parameters

Serial number	name		Company	Four position ring network load switch	Two position load switch
1	Rated current		A	630	315
2	Rated short-circuit closing current		kA	31.5	31.5
3	Rated short-time withstand current		kA	12.5	12.5
4	Rated short-time endurance time		s	2	2
5	Mechanical lifespan		second	2000	2000
6	Lightning impulse tolerance	Alternating to ground	kV	75	75
7	Voltage peak full wave	Isolation fracture	kV	85	85
8	1-minute power frequency withstand voltage	Alternating to ground	kV	42	42
9		Isolation fracture	kV	48	48
10	Rated peak withstand current			31.5	31.5

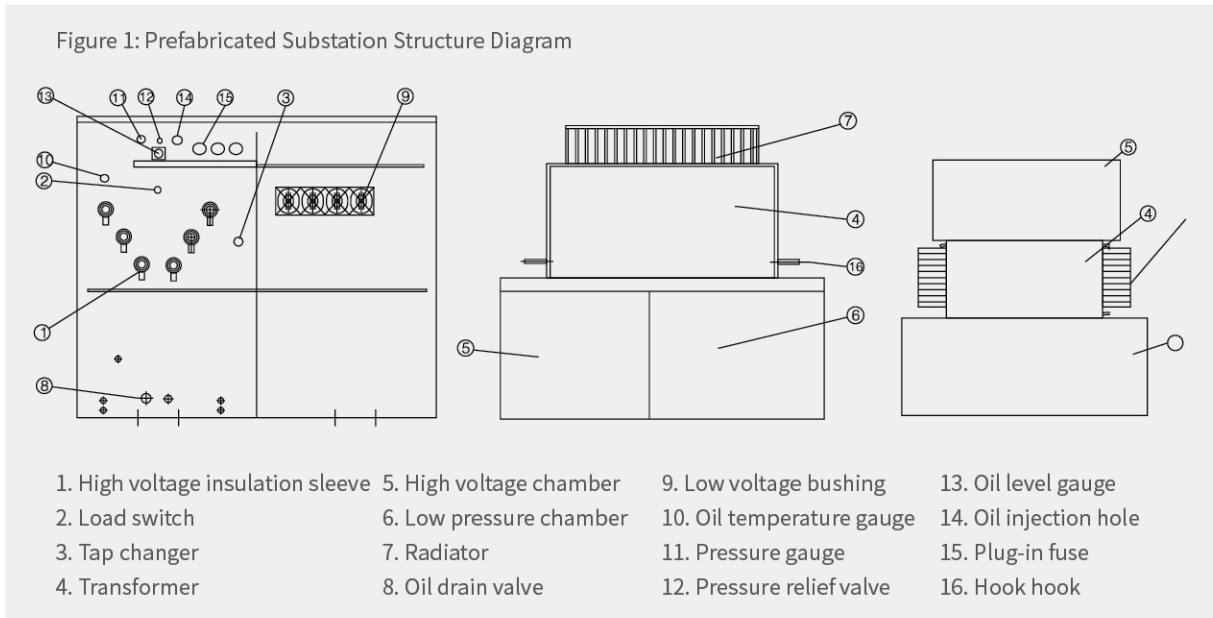
Technical parameters of fuses (recommended configuration table for our company's oil immersed fuses)

The high-voltage side of the American box type transformer is provided with full range protection by connecting backup protection fuses and plug-in fuses in series, with a simple principle and economic reliability; The backup protection fuse is an oil immersed high-voltage current limiting fuse with a large breaking capacity, which only operates when there is an internal fault in the transformer. The plug-in fuse is equipped with a dual sensitive fuse, which can provide dual protection for current and temperature. After the dual sensitive fuse is blown, the fuse core can be easily replaced on site.

Serial number	Three phase transformer capacity (kVA)	Primary voltage of transformer (10kV)	
		XRNT rated current (A)	PRNT1 overload protection rated current (A)
1	30	10	6
2	50	16	8
3	80	16	10
4	100	20	15
5	125	25	15
6	160	31.5	25
7	200	40	25
8	250	50	40
9	315	63	40
10	400	63	40
11	500	80	50
12	630	100	50、65
13	800	125	65
14	1250	160	100
15	1600	200	140

▶ Box variable structure

The product box structure consists of three parts: high pressure interval, low pressure interval, and oil tank interval. The high-voltage interval includes high-voltage cable accessories, load switches, no-load tap changers, plug-in fuses, pressure relief valves, oil level gauges, oil temperature gauges, and oil drain valves. The low-voltage interval includes low-voltage bushings, low-voltage meters, circuit breakers, and capacitor compensation. The transformer winding and iron core, radiator, high-voltage load switch, and fuse are all located within the oil tank interval. According to the requirements of the plan, the transformer structure can be designed in a "V" or "V" shape as shown in the following figure.



▶ Operating instructions

Operation of load switch:

There are three types of oil immersed load switches used in American box type substations, including two position, four position T-shaped, and four position V-shaped, depending on the functions they achieve. You can choose one of them, The three types of operations are as follows:

The four position V-shaped load switch is shown in Figure 2. The power plate structure is a "V" - shaped structure, as indicated by the black part in the figure. "I" and "II" in the figure represent the incoming and outgoing lines of the ring network power supply, while "T" represents the high-voltage incoming line of the transformer connected through a backup fuse and an inserted fuse. The ring network load switch switches the network with load. The four working states of the load switch:

1. When in the "I-II-T" position, the "I" and "II" networks are connected, and the transformer is energized; (The substation plays a role in the ring network)
2. When in the "I-T" position, the "I" network is connected to the transformer; (Starting and ending of substation)
3. When in the "II-T" position, the "II" network is connected to the transformer; (Starting and ending of substation)
4. When in the "O" position, both the "I" and "II" networks are disconnected from the transformer; (All are not charged)

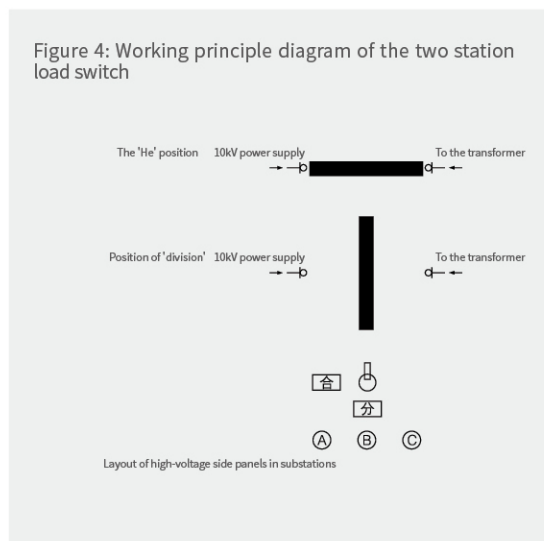
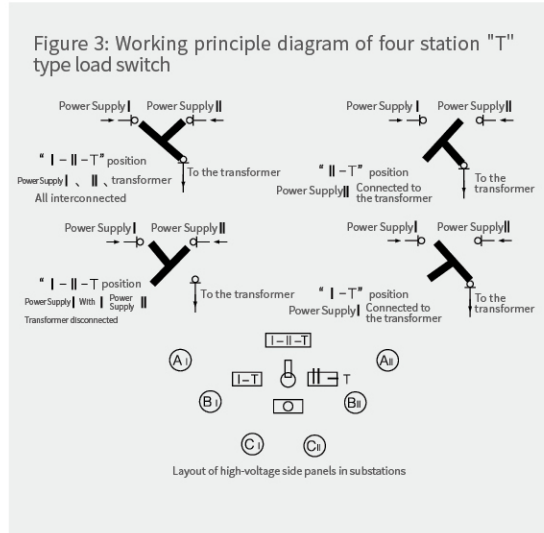
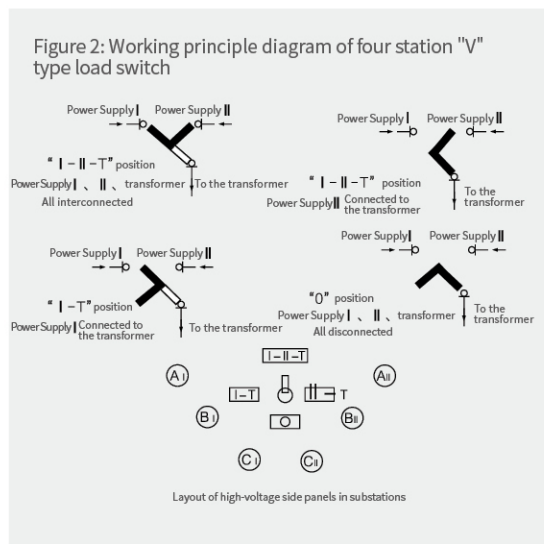
Insert the dedicated operating handle into the load switch shaft and rotate it clockwise or counterclockwise by about 130 °. Each time the load switch is operated, the power plate rotates one gear. Example of switch operation: Change from power supply "I" to power supply "II".

- a. Insert the dedicated operating handle into the switch shaft;
- b. Rotate the switch clockwise once, and at this time, the "V" shaped blade of the switch is in the "I-II-T" position;
- c. Rotate clockwise again, and the "V" blade will be between "II-T" to supply power to "II"; Operation completed.

Operation method two:

- a. Insert the dedicated operating handle into the switch shaft;
- b. Rotate the switch counterclockwise once, and the "V" - shaped blade of the switch will be in the "O" position;
- c. Rotate counterclockwise again, and the "V" blade will be between "II-T" to supply power to "II"; Operation completed.

Both of the above methods can be used to complete the conversion from power source "I" to power source "II", but the second method is safer and more reasonable. After the power supply "I" is cut off, it will not be powered back on, and if the power supply "II" fails, it will not cause the fault to close. If method one is adopted, dual power supply will occur. When power supply "I" is switched to power supply "II", if the power supply phase is different or other reasons cause a fault.



The working principle of the four station ring network type load switch (T-shaped) is shown in Figure 3, and the principle and operation are the same as the "V" type.

Two station terminal load switch

The structural diagram is shown in Figure 4, where "I" is connected to the high-voltage incoming terminal. When operating, the user inserts the dedicated operating handle into the load switch shaft and rotates it counterclockwise by "90°" to turn the load switch to the "off" position. The terminal load switch only cuts off the transformer branch in the terminal power supply mode or works when replacing the plug-in fuse core. Therefore, the terminal load switch only has two positions, open and close, and due to its small size and low operating force, it is very convenient to use and operate. To reduce oil pollution in the fuel tank, it is recommended that users disconnect the low-voltage main switch or outlet switch before operating the load switch to cut off the low-voltage side load.

Cable head

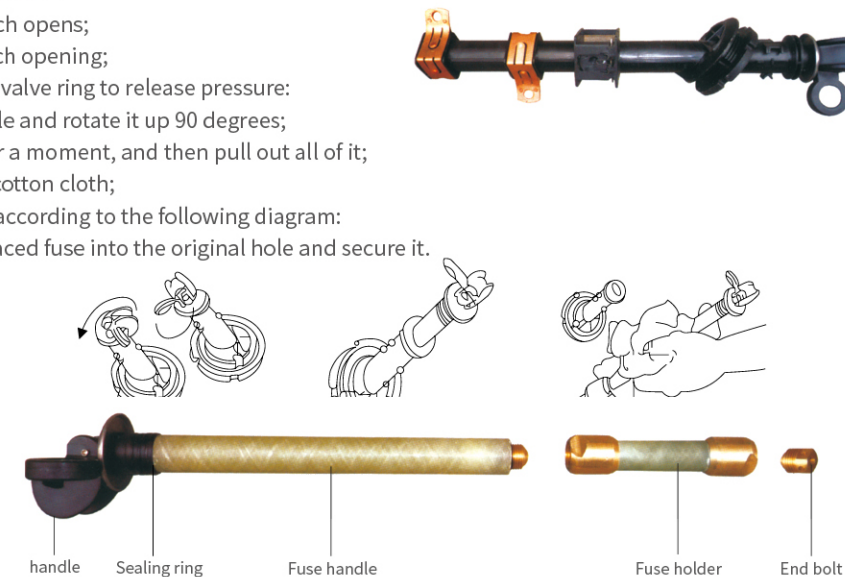
a. The high voltage incoming and outgoing lines of the 12kV prefabricated substation adopt cable incoming and outgoing lines, and the high voltage power supply is led to the outside of the oil tank by epoxy poured insulation sleeves. In order to facilitate the manufacturer's testing and user acceptance testing, the insulation sleeves themselves have the ability to withstand power frequency withstand voltage and lightning impulse withstand voltage.

b. Select elbow or T-shaped cable heads that match the cable cross-section, clean the inner and outer surfaces as well as the insulation sleeve surface with anhydrous ethanol, apply a small amount of 7501 vacuum silicone grease on the sleeve surface, and install them according to the special installation specifications for cable work areas. The installation of cable heads can be found in the accompanying manual.

Replacement of plug-in fuses Plug in fuse is a component with an externally replaceable fuse core. When replacing, first pull the button of the pressure relief valve on the upper fuel tank to balance the pressure inside and outside the tank. To ensure the safety of operators and equipment, plug-in fuses are inserted and removed when not under load. Therefore, the low-voltage switch is first turned off to cut off all the load on the low-voltage side. Then, the load switch is switched to the power and transformer disconnect position using the operating handle. Then, the handle on the fuse holder is loosened using the operating handle, and rotated about 90 degrees to eliminate the adhesion between the sealing gasket and the outer wall. The fuse melt is pulled out diagonally upwards by 70-80mm, and left for a few seconds until some oil on the melt flows off before pulling out the melt to prevent oil droplets from falling on other components outside the oil tank; Wipe the surface of the melt clean with a clean cotton cloth, and then replace the melt core. When replacing, be sure to pay attention to the parameters indicated on the melt core. Different parameters cannot be substituted. The replacement steps are shown in the figure. After replacing the fuse core, insert the melt firmly into the fuse support. When turning the handle on the melt to the locked position, ensure that the gasket is tightly attached to the fuse support and the handle is fastened to the protrusion to ensure that the substation is fully sealed and does not allow moisture to enter. Then close the high voltage load switch and low voltage switch again, and power supply can be restored at this time. Because the substation is a three-phase system, whether it is a backup protection fuse or a plug-in fuse, when one phase fuse melts, the three-phase fuse generally needs to be replaced unless it can be determined that only one phase fuse has passed the fault current.

Steps for replacing plug-in fuses

1. Low voltage main switch opens;
2. High voltage load switch opening;
3. Pull the pressure relief valve ring to release pressure;
4. Hook the operating hole and rotate it up 90 degrees;
5. Lift up 100mm, stop for a moment, and then pull out all of it;
6. Wipe dry with a clean cotton cloth;
7. Replace the melt core according to the following diagram:
8. Quickly insert the replaced fuse into the original hole and secure it.



Substation Cable Entry and Exit Civil Engineering Drawing (ZBM)

Technical requirements:

For dimensions, please refer to the actual dimensions of the combination:

The concrete foundation should have a smooth surface, and the combined substation should be fixed to the foundation using pressure plates;

The type of grounding strip and cable fixing bracket can be determined according to the actual situation;

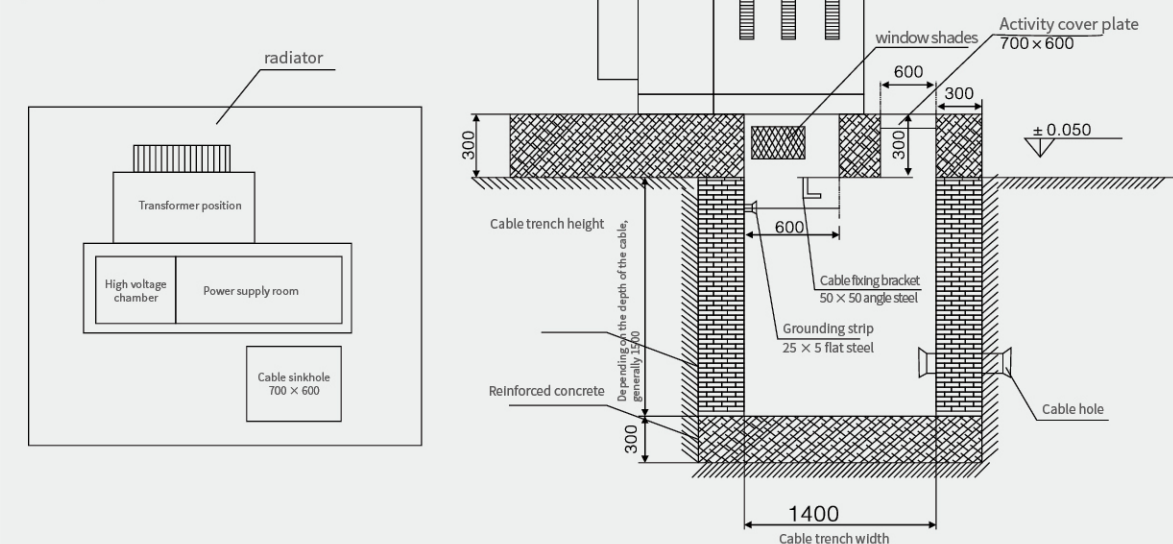
Cable fixing brackets and grounding bars should be pre embedded;

The position of the cable holes for incoming and outgoing lines depends on the specific situation;

After the installation of the combination transformer, there must be a gap of no less than 1.5m on the front of the switch to facilitate operation;

The grounding grid can be made of 12 galvanized round steel or 40 × 4 galvanized flat copper,

The grounding resistance should meet the requirements of the power department.





BOX TYPE SUBSTATION SERIES

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YB □ -12

Underground landscape box type transformer



Product Overview

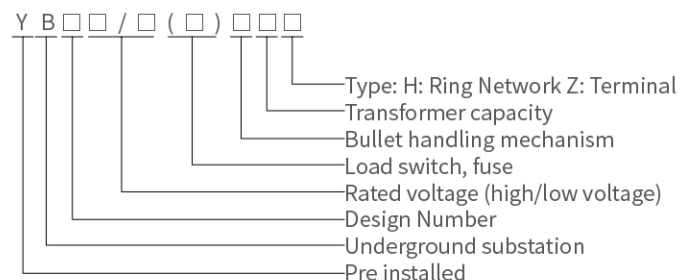
China's urban construction is entering the stage of urban beauty aimed at improving the streetscape of the city. Advanced cities have successively launched pedestrian commercial streets, leisure centers, and boutique areas that are close to international standards. The requirements for the renovation and landscape of box type substations occupying roads are increasingly high.

YB □ -12 pre installed underground box transformer is a product of our company's advocacy for green electricity and optimization of urban environment. We have learned advanced foreign technologies, integrated modern urban ecological design concepts, and gradually buried the transformer underground for installation.

Underground transformer, also known as underground transformer, is a compact type of substation equipment that places transformers, high-voltage load switches, fuses, etc. in a dry oil tank. It is called an underground combination transformer in China. It is installed in a pit, does not occupy surface space, and can operate submerged in water for a period of time. Suitable for urban residential areas, industrial parks, urban transportation arteries, and other urban power distribution networks. The use of underground transformers can save the land area of urban distribution facilities and improve urban land utilization efficiency. However, isolated underground transformers have not solved the problem of low voltage configuration, so their promotion in China has been greatly affected.

Our company has carefully crafted a new generation of underground distribution equipment, a pre installed underground box transformer, using advanced technology. This product consists of an underground combination transformer, an outdoor low-voltage cabinet, a lightbox type low-voltage protection shell, and a prefabricated underground combination transformer foundation. It is a complete set of underground transformer and distribution equipment pre assembled in the factory. It can also add lightbox type cable branch boxes and lamp box type high-voltage metering according to user needs, providing a complete solution for 10kV distribution. The pre installed underground box transformer provided provides a new and reliable technical equipment for the underground transformation of urban power grids, which is advantageous for power grid transformation in areas with limited land and housing resources due to environmental constraints. A new type of power product mainly used to replace traditional civil construction forms such as substations, European style box transformers, and American style box transformers, to achieve substation and distribution functions.

Model meaning



Normal usage conditions

- ◇ Altitude: not exceeding 1000m;
- ◇ Environmental temperature: Maximum temperature: +40 °C; Minimum temperature: -45 °C; Maximum monthly average temperature: +30 °C; Maximum annual average temperature: +20 °C;
- ◇ Installation environment: No explosive, corrosive liquids, gases, or dust, no severe vibration or impact in the installation site, and allows partial or complete immersion in water for a certain period of time;
- ◇ Ground acceleration caused by earthquakes; Horizontal direction less than 3m/s²; Vertical direction less than 1.5m/s²;
- ◇ The waveform of the power supply voltage is approximately a sine wave;
- ◇ Symmetry of three-phase power supply: For three-phase underground transformers, the three-phase power supply voltage should be roughly symmetrical.

Function and Features

Underground transformers have the characteristics of corrosion resistance, waterproofing, low temperature rise, low noise, easy installation, and maintenance free; It is a typical energy-saving product.

The fuel tank is made of low-alloy structural steel, which has excellent comprehensive mechanical properties, welding injection energy, and low-temperature toughness. The box body adopts hot spray zinc technology supplemented by spray coating treatment, with strong corrosion resistance.

Adopting a fully sealed structure, the exposed parts of the high and low voltage terminals are isolated from the environment by imported sealing waterproof materials. When installing a local buried transformer, it should be placed in a pit. Even when the pit is flooded or submerged, the transformer can still operate safely, resist floods, and effectively improve the reliability of the power supply system.

Adopting a unique heat sink structure ensures the heat dissipation and rust prevention capabilities of the heat sink.

The protective shell of the low-voltage cabinet adopts a patented outdoor light box type protective shell. The two sides of the light box type shell can be equipped with all-weather advertising boards, and it uses small-sized, green and energy-saving LED light-emitting components.

The foundation of the underground transformer is a prefabricated structure, which can be flexibly prefabricated with different materials according to customer requirements.

CABLE DISTRIBUTION BOX SERIES

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DFWK

Outdoor intelligent switchgear



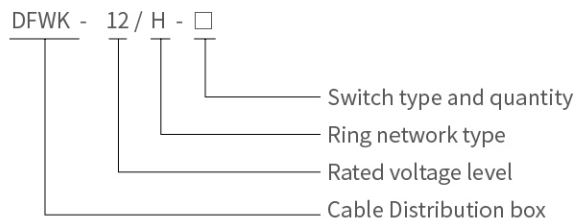
▶ purpose

The DFWK-12 series outdoor ring main unit is an inflatable outdoor ring main unit developed and produced by the company based on the characteristics of distribution networks in various regions of China and the actual situation of cable transformation in urban distribution networks, with international standards.

The DFWK-12 series outdoor ring main unit adopts the CYRM-12 series SF6 fully sealed and fully insulated ring main switchgear, which has the advantages of modularity, scalability, full insulation, full sealing, safety and reliability, and maintenance free. It is suitable for any harsh environment and is widely used in industrial parks, residential areas, streets, airports, various buildings, bustling commercial centers and other places.

The DFWK-12 series outdoor ring main unit has standard voltage levels of 12kV and 24kV, and can expand the automation function of the distribution network, realizing the intelligence of the ring main unit and making the power grid stronger and smarter.

▶ Model meaning



▶ Normal usage conditions

- ◆ Environmental temperature: maximum temperature+50 °C , minimum temperature -40 °C ,maximumdailyaveragetemperature not exceeding 35 °C ;
 - ◆ Relative humidity: daily average not exceeding 95%, monthly average not exceeding 90%;
 - ◆ Wind speed: not exceeding 35m/s;
 - ◆ Pollution level: Level III;
 - ◆ Earthquake intensity: 8 degrees;
 - ◆ Ground inclination: not greater than 3 degrees;
 - ◆ Installation location: Installed in a place without fire, explosion, or severe vibration, with good ventilation and no corrosive gases.
- Special conditions
- ◆ When the equipment is installed at an altitude of over 1000 meters, special attention should be paid so that the company can adjust the SF6 pressure during manufacturing.
 - ◆ If special harsh conditions are involved, please be sure to consult the company.

▶ Product Features

High security
All live parts are enclosed in SF6 gas boxes to achieve full sealing and insulation;
Equipped with mechanical interlocking that meets the five prevention requirements to prevent the occurrence of misoperation;
The incoming and outgoing cables adopt a fully insulated, fully sealed, and touchable connection method to ensure maximum personal safety;
The box is equipped with an air pressure monitoring device to achieve real-time monitoring of air pressure during operation;
There is an explosion-proof pressure relief device located below the gas box, which has passed the internal combustion arc test conducted by authoritative institutions.

Flexible plan

The entry and exit methods are flexible, allowing for left, right, and bottom entry (exit);
Flexible combination method, allowing for arbitrary combinations between all units and unlimited expansion;
Adopting a built-in busbar expansion method, fully meeting the requirements of usability, economy, and aesthetics;
The design scheme is flexible and can meet the on-site requirements of users.

Compact and reasonable structure

All unit modules have the same size (except for the metering module), and the compact size does not affect the convenience of construction.

Economic viability

Maintenance free; Small footprint and high cost-effectiveness; The service life exceeds 30 years.

Widely used

The stainless steel plate of the air box is fully automatic TIG sealed and welded by a robot, with a protection level of IP67. It can be installed in damp, dusty, salt polluted, mining and any air polluted place without taking special preventive measures.

Intelligentization

We can provide electric operating devices and distribution automation terminal equipment to achieve intelligent switch devices with "four remote" functions, meeting all the requirements of the smart grid for such devices.

▶ technical parameter

entry name		Company	C-Load switch unit		
			C-Load switch unit	F-Combination electrical unit	V-Circuit breaker unit
Rated voltage		KV	12/24	12/24	12/24
Rated frequency		Hz	50	50	50
Rated current		A	630	125	630
Rated transfer current		A		1750	
Rated insulation level	1-minute power frequency withstand voltage (phase to ground)	Alternating and relative to each other Between fracture surfaces	KV	42/65	
			KV	48/79	
	Lightning impulse voltage	Alternating and relative to each other	KV	75/125	
			KV	85/145	
Rated short-circuit breaking current		KV	20	315	20
Rated short-circuit closing current		kA	50	80	50
Rated short-circuit closing current (grounding switch)		kA	50		50
Rated short-time withstand current	Main circuit	kA	20	20	20
	Grounding switch	kA	20	20	20
Rated short-time duration	Main circuit	s	4		4
	Grounding switch	s	4	4	4
Rated peak withstand current	Main circuit	kA	50		50
	Grounding switch	kA	50	50	50
Internal arc test (internal combustion arc test)		A	630	20kA/0.5s	630
Rated closed-loop breaking current		A	630	Restricted by fuses	630
Rated Active load breaking current		A	10	Restricted by fuses	25
Rated cable charging breaking current		second	5000	17.4	3000
Mechanical lifespan	Load/isolation switch	second	3000	5000	3000
	Grounding switch	second		3000	10000
	Vacuum circuit breaker	Mpa			
SF6 gas pressure (absolute pressure at 20 °C)				0.035	
Annual leakage rate				≤ 0.025%/year	
Protection level of gas box and fuse barrel				IP67	
Cabinet and shell protection level				IP4X	

Product reference standards

GB 1984-2003	High voltage AC circuit breaker
GB 1985-2005	High voltage AC isolation switch and grounding switch
GB 3804-2004	3.6kV~40.5kV High Voltage AC Load Switch (IEC60265)
GB 16926-2009	AC high-voltage load switch fuse combination (IEC 60420)
GB 3906-2006	306kV~40.5kV AC metal enclosed switchgear and control equipment (IEC 62271)
GB/T11022-2011	Common Technical Requirements for High Voltage Switchgear and Control Equipment Standards (IEC 60694)
GB/T11023	Test method for sealing sulfur hexafluoride gas in high-voltage switchgear
GB 4208-2008	Degrees of Protection Provided by Enclosures (IEC 60529)
DL/T404	3.6kV~40.5kV AC metal enclosed switchgear and control equipment
DL/T 728-2000	Technical Guidelines for Ordering Gas Insulated Metal Enclosed Switchgear
Q/CSG 10012	Technical Guidelines for Urban Distribution Networks of China Southern Power Grid
State Grid Corporation of China Material Procurement Standard - General Technical Specification for 12kV and 24kV Ring Main Unit Product Reference Standard	

product mix

① Outer shell of outdoor ring main unit

The outer shell is made of stainless steel ($\geq 2.0\text{mm}$), SMC, GRC and other materials, which can be customized according to user requirements. The door opening method is flexible, and the door gap has waterproof rubber strips, making the overall protection level reach IP4X, meeting the requirements of outdoor environments.

③ Gas box of switch unit

The gas box is made of 304 stainless steel (3.0mm) and welded by a fully automatic robotic arm. It can withstand the pressure of SF₆ gas inside the box and has a protection level of IP67. The gas box is subjected to leak detection, drying, and inflation through helium mass spectrometry vacuum leak detection equipment, ensuring the sealing of the box.

② Barometer

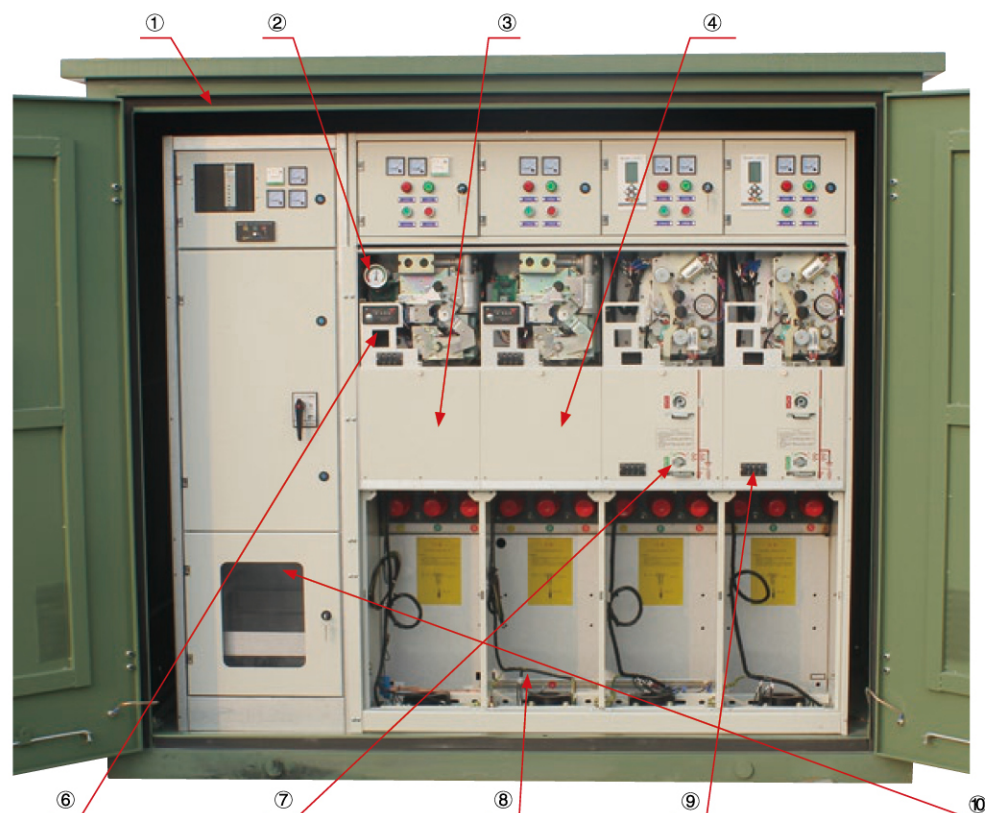
Used for real-time monitoring of SF₆ gas pressure inside the gas tank, and can be equipped with dry contacts to alarm when the gas pressure is too low or too high.

④ Load switch cabinet

Adopting a three position load switch to reduce the volume of the cabinet; Use SF₆ gas to extinguish the arc and improve the reliability of equipment operation.

⑤ Communication control cabinet

Used for installing communication equipment such as DTU switches and optical transceivers.



⑥ Fault indicator

Used to detect short circuits and grounding faults in power lines, facilitating fault location and providing a basis for future distribution automation.

⑦ Grounding switch

Used for maintenance.

⑧

Used to observe the operation of the cable room and provide convenience for operation and maintenance.

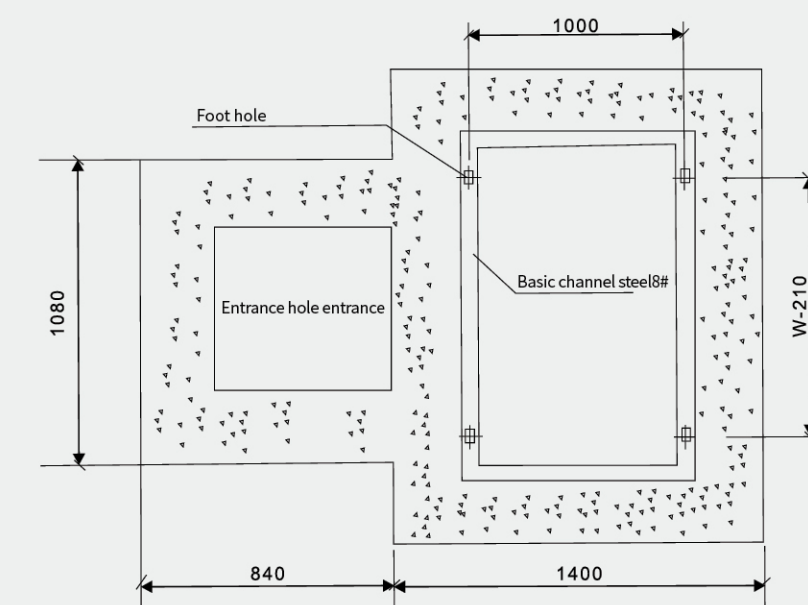
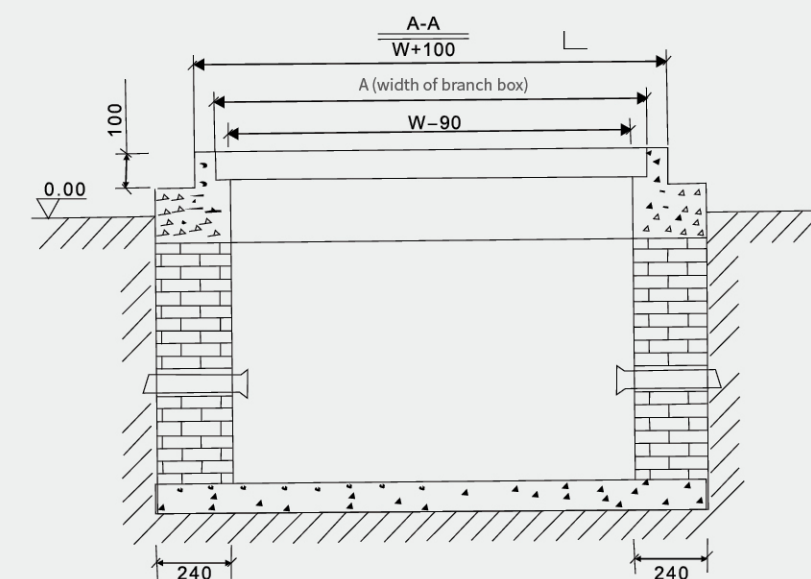
⑨ Electric display

Used to indicate the live status of the circuit cable and leave a phase hole for use with a dedicated phase detector.

⑩ PT and automation cabinet

Used for installing PT and distribution automation terminal devices. Made of stainless steel, it is connected to the closing unit with a fully sealed and insulated plug-in head.

Foundation diagram of cable junction box



CABLE DISTRIBUTION BOX SERIES

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DFW

European style cable distribution box

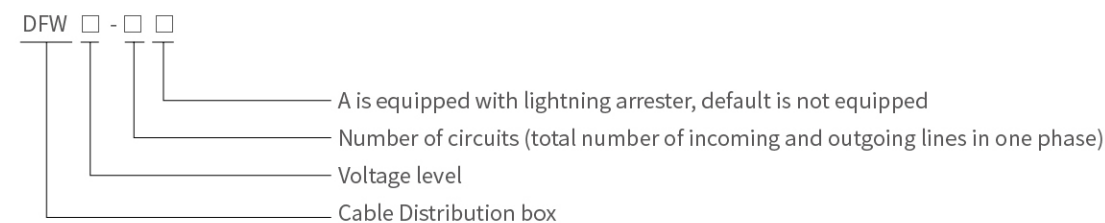


summary

European style cable distribution box is a cable engineering equipment widely used in power distribution network systems in recent years. Its main features are bidirectional opening of doors, use of docking sleeves as connecting busbars, and significant advantages such as small length, clear cable arrangement, and no need for large-span crossing of three core cables. The cable connectors used comply with DIN47636 standard.

Generally, bolt fixed cable joints with a rated current of 630A are used.

Model meaning



Normal operating environment

Environmental temperature: Maximum temperature: +40 °C , minimum temperature: -30 °C

Wind speed: equivalent to 34m/s (not greater than 700Pa)

Humidity: The average daily relative humidity should not exceed 95%, and the average monthly relative humidity should not exceed 95%

Seismic resistance: horizontal acceleration not exceeding 0.4m/s², vertical acceleration not exceeding 0.15m/s²

Installation site inclination: not greater than 3 °

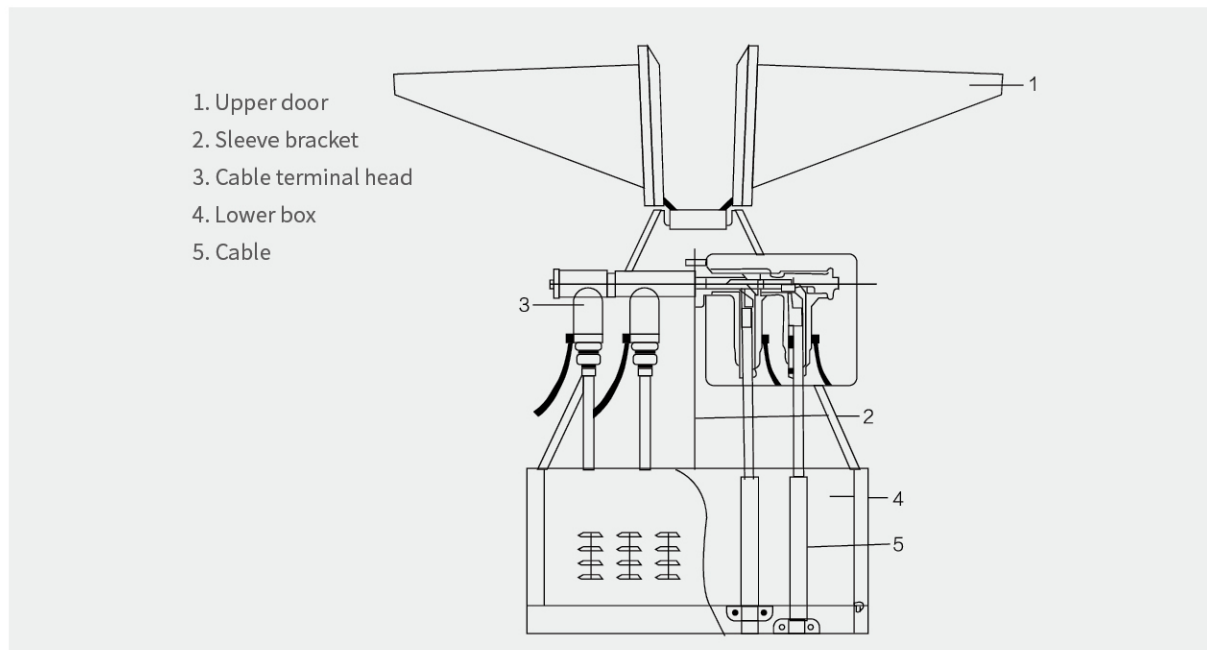
Installation environment: The surrounding air should not be significantly polluted by corrosive, flammable gases, water vapor, etc., and the installation site should not experience severe vibrations.

When ordering this product beyond the above conditions, please consult with our company.

technical parameter

Rated voltage	12kV
Rated current	630A
Dynamic stable current	50kA/0.3s
Thermal stability current	20kA/3s
1-minute power frequency withstand voltage	42kV
15 minute DC withstand voltage	52kV
Lightning impulse withstand voltage	105kV
Box protection level	IP33

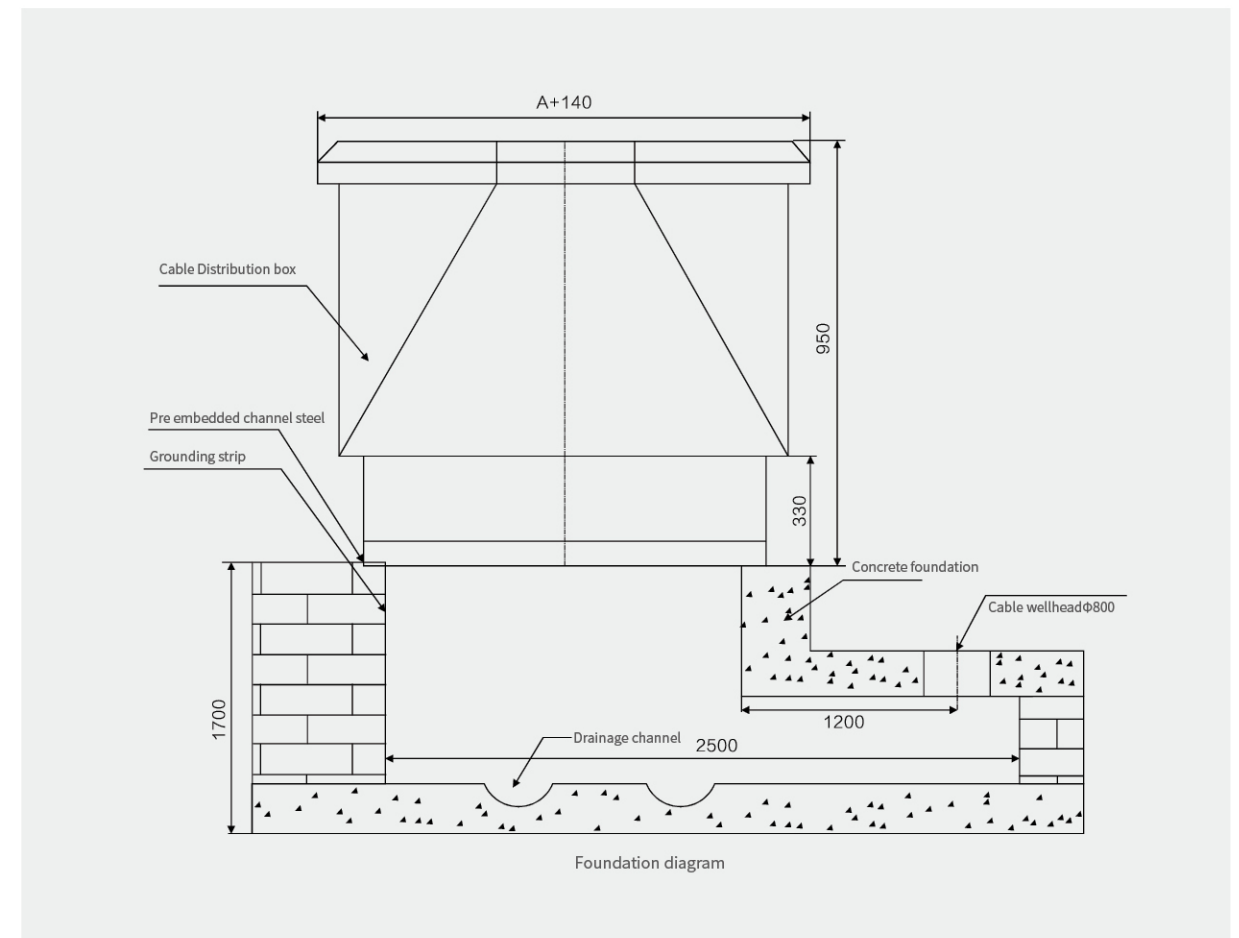
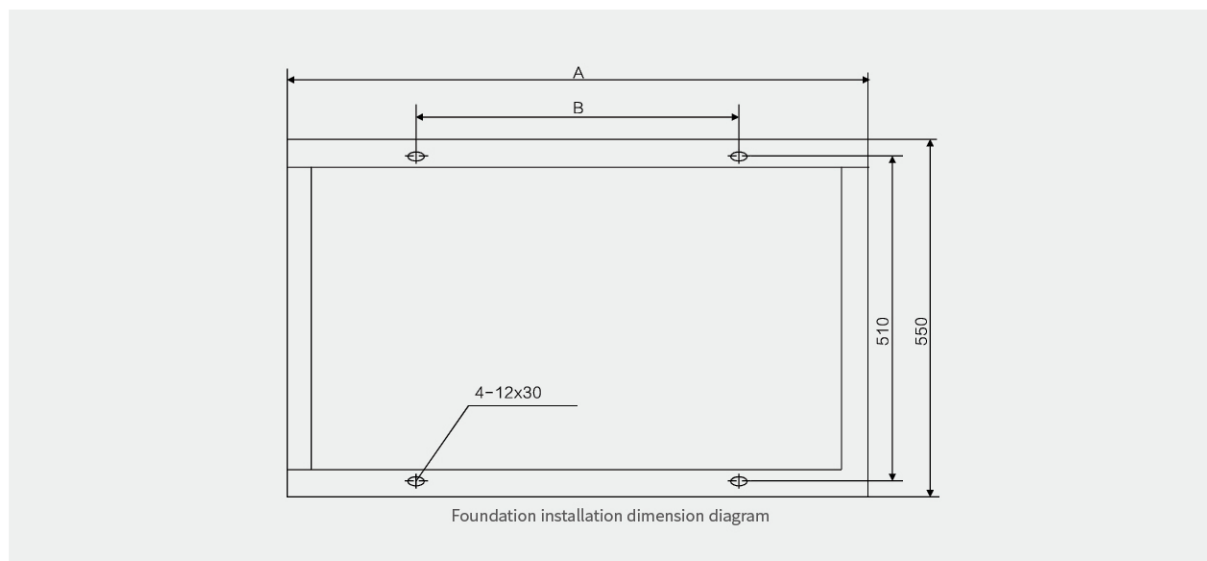
► Structural description



The DFW-12 series cable junction box is designed for outdoor use, with a fully sealed structure, full insulation, dust-proof, moisture-proof, flood resistant, corrosion-resistant, and strong environmental adaptability. The cabinet protection level reaches IP33. The cable joint bracket is made of stainless steel material, and the shell is made of stainless steel plate or cold-rolled plate spray painted.

The cable joint bracket is located at the upper part of the junction box, used to support the conduit, which is used to fix the cable joint. If it is equipped with a lightning arrester, the arrester is installed at the end of the cable joint. In addition, short-circuit fault indicators and live displays are also installed in the distribution box. All live parts of the main circuit inside the box are insulated with prefabricated plug-in cable terminals. The cable partition is located at the bottom of the box, with cable fixing clips and grounding terminals. The box layout is reasonable, the volume is small, the structure is compact, the appearance is beautiful and generous, the installation is simple, and maintenance is free.

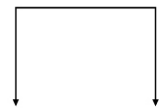
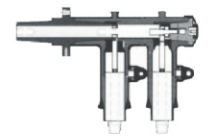
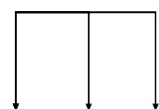
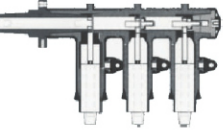
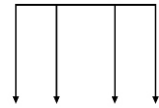
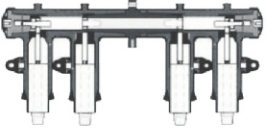
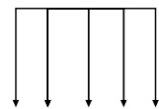
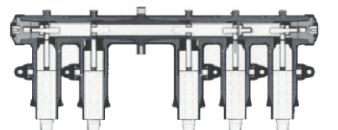
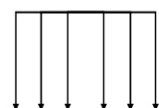
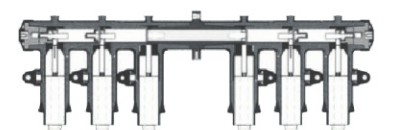
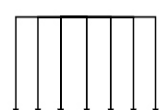
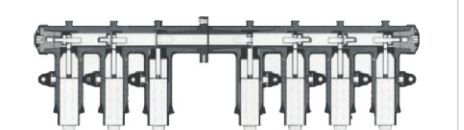
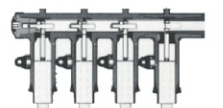
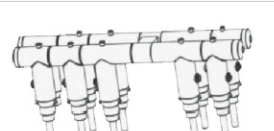
► Foundation diagram of European cable junction box



Recommended parameter values:

Number of branches	2	3	4	5	6	7
A	580	700	820	940	1060	1180
B	180	300	420	540	660	780

▶ Ordering Information (Box Configuration Plan)

Specification and model	Wiring scheme	Internal arrangement	External dimensions
DFW12-2			520x540x950
DFW12-3			250x540x950
DFW12-4			740x540x950
DFW12-5			840x540x950
DFW12-6			940x550x950
DFW12-7			1040x550x950
DFW12-8			1140x650x1000
DFW12-9			940x650x1000

CABLE DISTRIBUTION BOX SERIES

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DTU-900
Distribution automation station terminal



▶ purpose

The DFW-12 series cable junction box is designed for outdoor use, with a fully sealed structure, full insulation, dust-proof, moisture-proof, flood resistant, corrosion-resistant, and strong environmental adaptability. The cabinet protection level reaches IP33. The cable joint bracket is made of stainless steel material, and the shell is made of stainless steel plate or cold-rolled plate spray painted.

The cable joint bracket is located at the upper part of the junction box, used to support the conduit, which is used to fix the cable joint. If it is equipped with a lightning arrester, the arrester is installed at the end of the cable joint. In addition, short-circuit fault indicators and live displays are also installed in the distribution box. All live parts of the main circuit inside the box are insulated with prefabricated plug-in cable terminals. The cable partition is located at the bottom of the box, with cable fixing clips and grounding terminals. The box layout is reasonable, the volume is small, the structure is compact, the appearance is beautiful and generous, the installation is simple, and maintenance is free.

▶ Product Features

The DTU-900 three remote distribution automation terminal device uses a high-performance 32-bit microprocessor as the hardware development platform and efficient embedded real-time operation as the software development platform. It has the following distinct technical characteristics:

◆ Unified core public platform

Platform: A unified embedded software and hardware combination platform (with a self-developed 32-bit motherboard CPU, a hardware platform with a clock speed of up to 240MHz and large information processing capacity, and a software platform for embedded multitasking real-time operating systems),

Supports high-speed Ethernet bus and CAN bus, with a large interface capacity.

◇ Storage: Large capacity FLASH and RAM can record the sequence of events such as location, accident remote signaling, displacement, SOE, and extreme value data for local storage, with a time of not less than one month. It supports historical data supplementation and uploading.

Diversified configuration of communication methods and protocols

◇ It has 4 RS232/RS485 interfaces, baud rates of 300-115200bps, 2 Ethernet ports, and supports multiple protocols such as 101 and 104.

◇ Hardware configuration: Independent communication management module, hardware configuration supports primary and backup swapping, redundant design.

Software configuration: Supports multiple communication methods and protocols, and can communicate with multiple master stations of different levels simultaneously.

◆ Flexible configuration of remote signaling, remote control, and telemetry

◇ Truly modular design, the three remote function modules are standardized and universal, and any damage to any module does not affect the operation of other modules and systems.

The number of three remote points is within the maximum capacity range of the measurement and control unit, and the three remote function modules can be expanded as needed. The number of three remote points exceeds the maximum capacity range of the measurement and control unit, and functional modules can be expanded through the expansion bus.

Intelligent power management

Real time monitoring of power supply, AC power loss and battery undervoltage alarm.

Battery online management, supporting manual, automatic, and remote activation.

◇ Battery charging and discharging protection, automatically cuts off battery power supply when below the discharge cut-off point.

◇ It can provide multiple working power sources for terminals, communication equipment, remote signaling, and remote control, with output short circuit protection. Support the connection of lead-acid batteries and lithium batteries.

◆ Maintenance aspect

Adopting a large LCD Chinese display, menu style interface, keyboard operation, providing a good human-computer interaction environment (optional).

Provide various indicator lights to indicate the operating status.

Provide remote and local maintenance interfaces, allowing operators to perform maintenance locally or remotely from the main station.

◆ Environmental aspect

◇ Suitable for harsh environments, working temperature -40 °C ~+70 °C, anti magnetic, moisture-proof, and shockproof. Electromagnetic compatibility can meet the requirements of level 4 or above, and can adapt to strong electromagnetic environments.

▶ performance index

◆ Work environment

◇ Temperature: -40 °C to +70 °C to ensure normal operation;

◇ Maximum rate of change in ambient temperature: 1 °C /min;

◇ Humidity: 5% to 100%;

◇ Maximum absolute humidity: 35g/m³;

◇ The atmospheric pressure ranges from 70 to 106 kPa.

◆ Mechanical performance

◇ Chassis protection performance: The protection level shall not be lower than the IP64 level requirement specified in GB/T4208;

◇ Industrial grade products: temperature range (-40 °C ~+70 °C), anti magnetic, anti shock, anti moisture, anti lightning, anti dust, anti corrosion;

◇ Wall mounted or cabinet mounted installation, easy to expand.

▶ Main technical parameters

◆ Rated data

◇ Working power supply: AC220V, dual channel tolerance ± 20%

◇ Remote signaling voltage: DC24V;

◇ Rated frequency: 50Hz, tolerance ± 5%

◆ Power consumption

◇ AC voltage: <0.5VA/phase;

◇ AC current: <0.5VA/phase;

◇ Power consumption of the whole machine: ≤ 18VA in non communication state ≤ 40VA in communication state

◆ Overload capacity

◇ AC voltage: 2 times rated voltage: continuous operation;

◇ AC current: 2 times rated current: continuous operation;

◇ 10 times rated current: 10 seconds.

◇ 20 times rated current: 1 second.

▶ Dielectric Strength

◆ Insulation resistance

The insulation resistance between the input and output circuits of the terminal unit to ground and between each circuit shall not be less than 10M Ω (tested under normal conditions) and 5M Ω (tested under humid and hot conditions).

◆ Insulation strength

The terminal unit power supply, AC input and output circuits, and output relay normally open contacts can withstand an AC withstand voltage test with a rated power of 50Hz and an effective value of 2.0kV (rated insulation voltage greater than 63V)/0.5 kV (rated insulation voltage less than or equal to 63V) for 1 minute, without breakdown or flashover.

◆ Impact withstand voltage

The terminal unit power supply, input and output circuits are subjected to a short-term impulse voltage of 5kV (rated insulation voltage greater than 63V)/1.0 kV (rated insulation voltage less than or equal to 63V) standard lightning wave between ground and each circuit.

TRANSFORMER SERIES

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S11/13-10kV
Oil immersed transformer

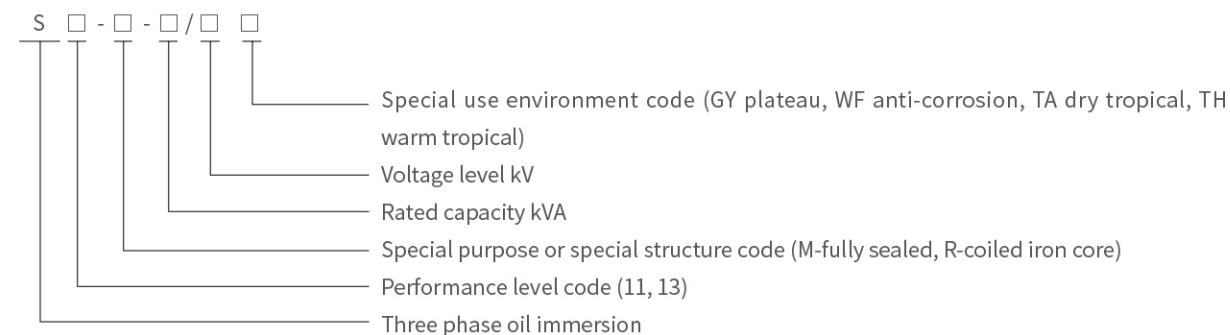


summary

The three-phase oil immersed distribution transformer produced by our company adopts a new insulation structure on the body, which improves the ability to resist short circuits; All materials are made of oxygen free copper wire and adopt a multi-layer cylindrical structure; All fasteners are treated with special anti loosening measures.

The product has the characteristics of high efficiency and low loss, which can save a lot of electricity consumption and operating costs, and has significant social benefits. The iron core is made of high-quality cold-rolled silicon steel sheets; High voltage winding is a new technology product promoted by the country.

Model meaning



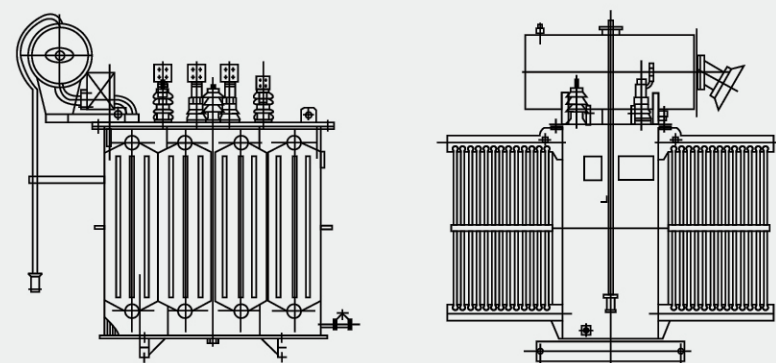
Main technical parameters

30kVA~2500kVA three-phase double winding non excited voltage regulating distribution transformer

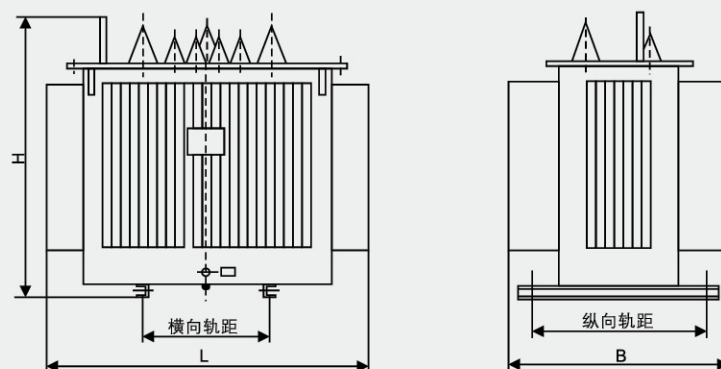
rated capacity (kVA)	Voltage combination and tap range			Connection group grade	Loss (kW)		Empty load electric current (%)	short circuit impedance (%)	Weight (kg)			Dimensions (mm) Length (L) x Width (W) x Height (H)		Track gauge longitudinal /transverse
	high pressure (kV)	High voltage division Range of acceptance%	low pressure (kV)		Empty load	load			Body weight	Oil weight	Total weight	Fully sealed	Not fully sealed	
30	6 6.3 10 11	±5 ±2×2.5	0.4	Dyn11 Yzn11 Yyn0	0.10	0.63/0.60	2.3	4.0	150	750	340	730×780×930	950×720×1000	400/400
50					0.13	0.91/0.87	2.0		220	950	440	800×750×965	1020×700×1035	400/400
63					0.15	1.09/1.04	1.9		260	110	490	820×780×970	1140×740×1040	400/400
80					0.18	1.31/1.25	1.9		300	120	580	840×800×1000	1060×720×1070	400/400
100					0.20	1.58/1.50	1.8		350	120	660	850×840×1010	1105×760×1110	450/400
125					0.24	1.89/1.80	1.7		400	130	700	860×900×1080	1120×800×1150	550/550
160					0.27	2.31/2.20	1.6		480	160	840	1220×840×1100	1440×760×1290	550/550
200					0.34	2.73/2.60	1.5		560	170	920	1250×860×1150	1470×780×1350	550/550
250					0.40	3.20/3.05	1.4		640	180	1040	1260×850×1220	1480×780×1420	550/550
315					0.48	3.83/365	1.4		800	200	1220	1340×900×1200	1560×840×1400	550/550
400					0.57	4.52/4.30	1.3		980	240	1460	1380×900×1260	1600×840×1520	550/550
500					0.68	5.41/5.15	1.2		1130	280	1710	1520×1000×1330	1740×960×1590	660/660
630				Dyn11 Yzn0	0.81	6.20	1.1	4.5	1350	330	2050	1580×1040×1270	1900×1040×1600	660/660
800					0.98	7.50	1.0		1610	400	2460	1650×1160×1400	1970×1160×1730	820/820
1000					1.15	10.30	1.0		1690	450	3680	1750×1240×1460	2070×1240×1970	820/820
1250					1.36	12.00	0.9		1910	500	3050	1800×1240×1550	2100×1240×1870	820/820
1600					1.64	14.50	0.8		2330	590	3800	1830×1800×1930	1830×1800×1930	820/820
2000					2.05	17.50	0.6		2750	780	4660	1950×1900×2080	1950×1900×2080	820/820
2500					2.50	21.00	0.6		3350	920	5440	2060×1930×2130	2160×1930×2130	1070/1070

Note 1: The load loss values above the diagonal line in the table apply to the Dyn11 or Yzn11 connection group, while the load loss values below the diagonal line apply to the Yyn0 connection group.

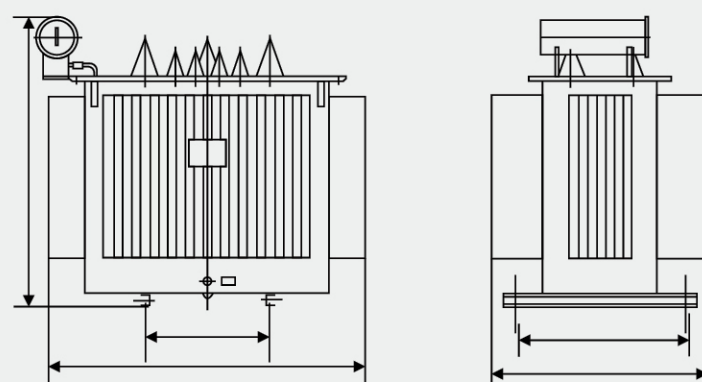
▶ Appearance and installation dimensions



Fully sealed (with capsule) sheet type transformer Non fully sealed sheet type transformer



Fully sealed corrugated transformer

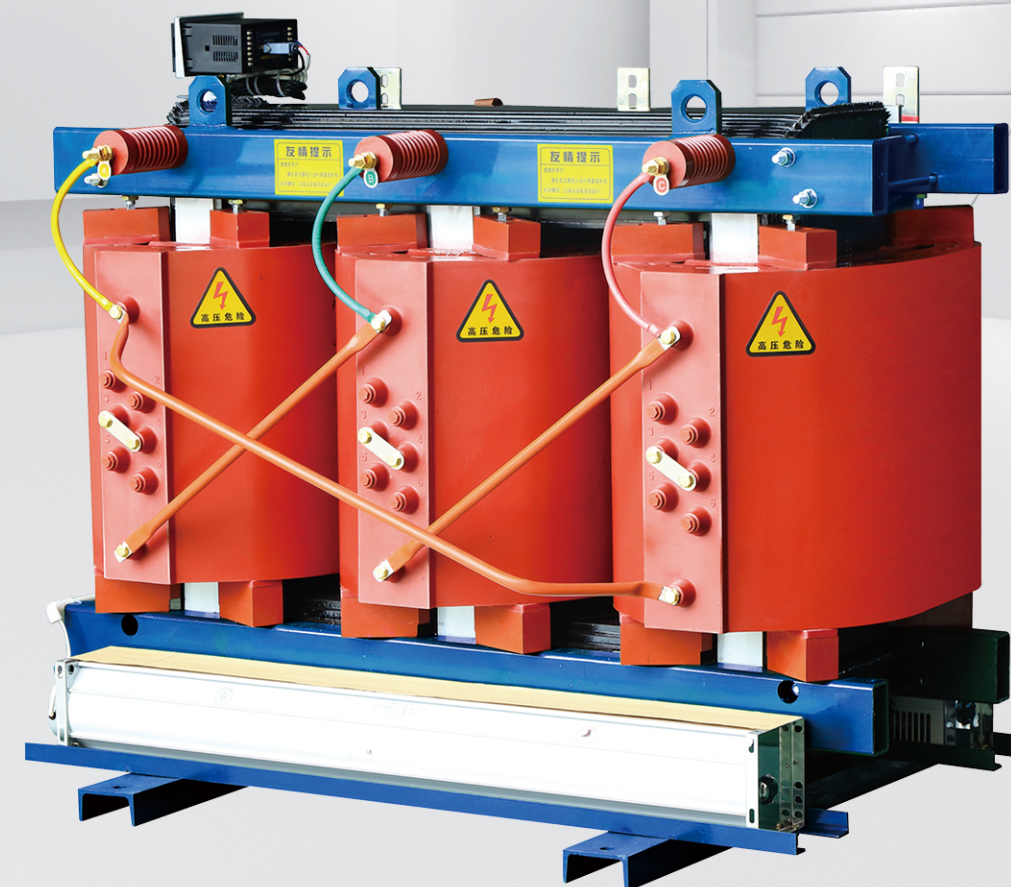


Non fully sealed corrugated transformer

TRANSFORMER SERIES

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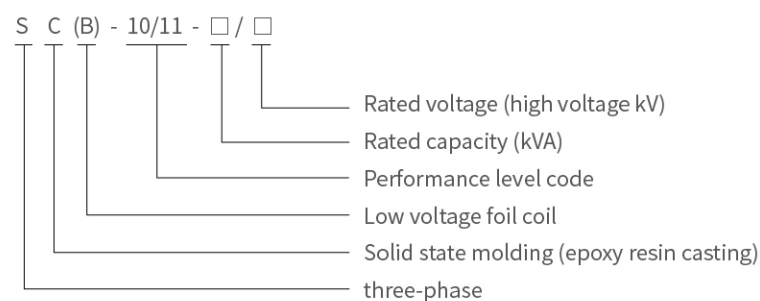
SC(B)-10/11-10kV
Resin insulated dry-type transformer



summary

Resin insulated dry-type transformers are our company's introduction of foreign technology and independent development of SC10, SCB10 series, as well as SC11, SCB11 series with filler thin insulated dry-type transformers. Due to the coil being encapsulated by epoxy resin, it is flame retardant, fire-resistant, explosion-proof, maintenance free, pollution-free, small in size, and can be directly installed in load centers. At the same time, the scientific and reasonable design and pouring process result in smaller partial discharge, low noise, and strong heat dissipation capacity of the product. It can operate for a long time under 140% rated load under forced air cooling conditions, and is equipped with an intelligent temperature controller with fault alarm, overtemperature alarm, overtemperature trip, and black gate functions. It is connected to the computer through RS485 serial interface for centralized monitoring and control. Due to the above characteristics of our dry-type transformers, they are widely used in power transmission and transformation systems, such as hotels, restaurants, airports, high-rise buildings, commercial centers, residential areas and other important places, as well as in harsh environments such as subways, smelting power plants, ships, and offshore drilling platforms.

Model meaning



core

The iron core is made of imported cold-rolled silicon steel sheets, with a fully inclined joint structure. The core column is tied with F-grade non-woven adhesive tape, and the surface of the iron core is encapsulated with epoxy resin to reduce no-load loss, no-load current, and iron core noise. The clamping and fastening parts are specially surface treated to further improve the appearance quality of the product.

High voltage winding

The high-voltage winding is vacuum cast with epoxy resin with fillers, greatly reducing the local discharge and improving the electrical strength of the coil. The inner and outer walls of the winding are filled with glass fiber mesh plates, enhancing the mechanical strength of the coil and improving the product's ability to resist sudden short circuits. The coil never cracks.

Low voltage winding

The low-voltage winding adopts a foil structure, which solves the problem of axial helix angle when using wire winding and makes the safety box more balanced. At the same time, the coil adopts axial cooling air ducts to enhance heat dissipation capability, and DMD epoxy resin pre impregnated cloth is used between the winding layers, which is cured and formed as a whole.

manufacturing process

The coil is wound on a high-precision winding machine, and the low-voltage winding adopts a foil winding structure. When the transformer capacity is large, there is a ventilation duct. After the winding is completed, vacuum drying is carried out, and the entire pouring and curing process is completely operated according to the process requirements. All processes need to be strictly monitored and adjusted according to the situation. The precision manufacturing process of pouring ensures that the coil has no bubbles or voids, resulting in high-quality operation of the transformer.

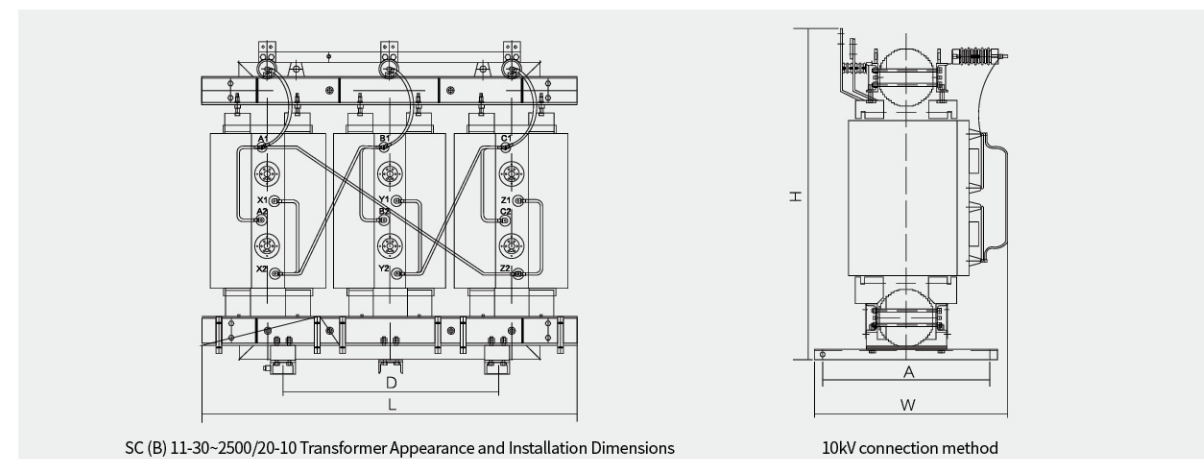
Temperature control system and air cooling system

The cross flow top blowing cooling fan is adopted, which has the characteristics of low noise, high air pressure, and beautiful appearance, enhancing the overload capacity of the transformer. The temperature control adopts an intelligent temperature controller, improving the safety and reliability of the transformer operation.

Technical parameters of SC (B) -10/11-10kV series resin insulated dry-type transformer

Rated capacity (kVA)	Voltage combination (kV)	Connection method	loss(kW)		No load current (%)	Impedance voltage (%)	Insulation level	weight (kg)
			Empty load	load(12°C)				
10	high pressure 11 10.5 10 6.3 6 low pressure 0.4	Dyn11 or Yyno	0.150	0.325	4.5	4	F/F	130
20			0.185	0.630	4.0			170
30			0.215	0.750	3.2			330
50			0.305	1.055	2.8			380
63			0.370	1.280	2.7			440
80			0.415	1.460	2.6			510
100			0.450	1.665	2.4			590
125			0.530	1.955	2.2			650
160			0.610	2.250	2.2			780
200			0.700	2.675	2.0			930
250			0.810	2.920	2.0			1040
315			0.990	3.670	1.8			1180
400			1.100	4.220	1.8			1450
500			1.305	5.170	1.8			1630
630			1.510	6.220	1.6	6		1900
630			1.460	6.310	1.6			1900
800			1.710	7.360	1.6			2290
1000			1.990	8.600	1.4			2700
1250			2.350	10.26	1.4			3130
1600			2.755	12.42	1.4			3740
2000			3.735	15.30	1.2			4150
2500			4.500	18.18	1.2			4810
3150			5.780	23.70	1.0	8		5800
4000			6.700	28.50	1.0			7100

Appearance and installation dimensions





HIGH VOLTAGE SWITCHGEAR SERIES

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12kV xDL

EATON Authorized Removable AC Metal Enclosed Switchgear



12kV xDL
EATON Authorized Removable AC Metal Enclosed Switchgear

summary

XDL movable AC metal enclosed switchgear (hereinafter referred to as switchgear) is the latest generation of indoor complete distribution equipment for three-phase AC 50Hz, 7.2-12kV single busbar segmented system developed and produced by the company. It is mainly used in power plants, substations, industrial and mining enterprises, and high-rise buildings for receiving and distributing electrical energy, and has functions such as controlling, protecting, and detecting circuits.

Eaton Electrical W-VACi, E-VAC, and VCP-W type withdrawable vacuum circuit breakers are installed inside the switchgear. The switchgear adopts modular design. The overall cabinet type consists of a low-voltage room, a circuit breaker room, and a maintenance room forming the front cabinet, and a busbar room and a cable room forming the rear cabinet. It can be assembled separately for easy mass production and maintenance. The complete set of equipment meets the requirements of China's power grid for medium voltage switchgear, and is suitable for "five protections" and full door closing operation, with special performance requirements of full sealing, full isolation, full insulation, and full working conditions.

The following features enable users to perform maintenance free or minimal maintenance on the equipment:

The arc extinguishing chamber is made of ceramic shell, with a vacuum degree of $\leq 10^{-6}$ Pa and a guaranteed working life of 25 years.

The spring operating mechanism requires minimal maintenance.

After opening the back door of the switchgear, the cable terminals and current transformers can be decorated.

We use standard components and have stock available to meet the needs of our customers.

Safe and reliable switchgear

Completely metal armored and fully enclosed

Each compartment inside the switchgear is separated into its own independent compartments

Quick closing grounding switch is used for grounding and artificial short circuit

Reliable five prevention interlocking can effectively prevent misoperation and accidental entry into live compartments

The operation of all equipment, including the opening and closing of circuit breakers, the insertion or removal of circuit breaker handcars,

The opening and operation of the grounding switch can/should also be carried out with the door panel closed

Through the observation window in front of the door, it is easy to observe the position, opening and closing, and energy storage status of the circuit breaker

The enlarged circuit breaker chamber pressure relief channel improves the heat dissipation effect and enhances safety

According to customer requirements, it is convenient to use pre maintenance or post maintenance methods

According to the International Electrotechnical Commission standard IEC60298 and Chinese standards GB3906 and DL404, it has passed various type tests conducted by the National High Voltage Apparatus Quality Supervision and Inspection Center

Adopting measures of large climbing distance and composite insulation, it has high technical performance



W-VACi circuit breaker



E-VAC circuit breaker



VCP-W circuit breaker

HIGH VOLTAGE SWITCHGEAR SERIES

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P/V-12

General Electric Authorized Cabinet in the United States



summary

P/V-12 AC metal enclosed switchgear is used for single bus or single bus segmented systems with a nominal system voltage of 3-10kV and a rated frequency of 50Hz. It is an indoor distribution equipment that receives and distributes electrical energy, and implements control, protection, and monitoring functions for the circuit.

Compliant with standards

GB3906	3.6kV~40.5kV AC metal enclosed switchgear and control equipment
GB/T11022	Common technical requirements for high voltage switchgear and control equipment standards
DL/T404	Technical Specifications for Ordering Indoor AC High Voltage Switchgear
IEC62271-200	AC metal enclosed switchgear and control equipment with rated voltage above 1kV and below 52kV

Normal usage conditions

◇ Environmental temperature: The ambient air temperature does not exceed 40 °C , and the average value measured within 24 hours does not exceed 35 °C , with a minimum ambient air temperature of -15 °C ;

◇ Environmental humidity:

The average relative humidity measured within 24 hours shall not exceed 95%; ①

The average value of water vapor pressure measured within 24 hours shall not exceed 2.2Kpa;

The average monthly relative humidity does not exceed 90%;

The average monthly water vapor pressure shall not exceed 1.8Kpa.

◇ Altitude not exceeding 1000m; ②

The seismic intensity shall not exceed 8 degrees;

The surrounding air is not significantly polluted by dust, smoke, corrosive or flammable gases, steam or salt spray;

Severity under condensation and pollution operation: According to Level 1 regulations in GB3906.

Note: When the relative humidity is greater than 70%, the heater should be turned on to prevent condensation.

② The manufacturing plant can provide products for use in areas with an altitude of 3000m or below according to user needs

③ When the environmental conditions are different from the above, it should be resolved through negotiation between the user and the manufacturer.

Main technical parameters

name		Company	25~50kA
Rated voltage		kV	3.6, 7.2, 12
Rated insulation level	1-minute rated short-time power frequency withstand voltage	kV	42
	Rated lightning impulse withstand voltage (peak)	kV	75
Rated frequency		Hz	50
Rated current of main busbar		A	630, 1250, 1600, 2000, 2500, 3150, 4000
Rated current of branch busbar		A	630, 1250, 1600, 2000, 2500, 3150, 4000(强制风冷)
Rated short-time withstand current (4s)		kA	25, 31.5, 40, 50
Rated peak withstand current		kA	63, 80, 125, 135
Protection level			Shell IP4X, circuit breaker room door open IP2X

Height dimension (a)		mm	2200
Width dimension (b)	Rated current of branch busbar $\leq 1250A$	mm	650, 800
	$1250A < \text{rated current of branch busbar} \leq 2000A$		mm
	Rated current of branch busbar $> 2000A$		1000
Frame depth dimension (c)		mm	1400

*When the cable is going in and out, add a 200mm back cabinet. When the busbar is in and out, add a 350-500mm back cabinet.
The weight of the equipment depends on the component configuration (such as circuit breaker specifications, current transformers, voltage transformers, etc., as shown in the table below)

	Circuit breaker scheme	PT scheme	other
Weight (kg)	900~1300	800~1000	850~1450

▶ Product Features

- Cabinet core
 - The arc extinguishing chamber of the vacuum circuit breaker is integrally cast in epoxy resin, and the pole structure is sturdy and reliable;
 - Adopting a miniaturized and high-performance vacuum arc extinguishing chamber with outstanding performance, and applying longitudinal rotating magnetic field arc extinguishing technology, the interception value is small and the breaking performance is extremely stable;
 - Can eliminate the influence of dust and moisture on the insulation ability of the arc extinguishing chamber;
 - Suitable for different climatic conditions;
 - Solid insulation method, no SF6 gas, environmentally friendly.
- Cabinet design

Independently grounded, isolated busbar room, handcart room, cable room, low-voltage room, and secondary non line channel ensure safer operation and maintenance, and more reliable signal transmission function
- Cabinet material

The outer shell of the switchgear is made of high-quality steel plates that are bent and assembled with bolts, providing safer cabinet protection and a more aesthetically pleasing appearance.
- Cabinet structure

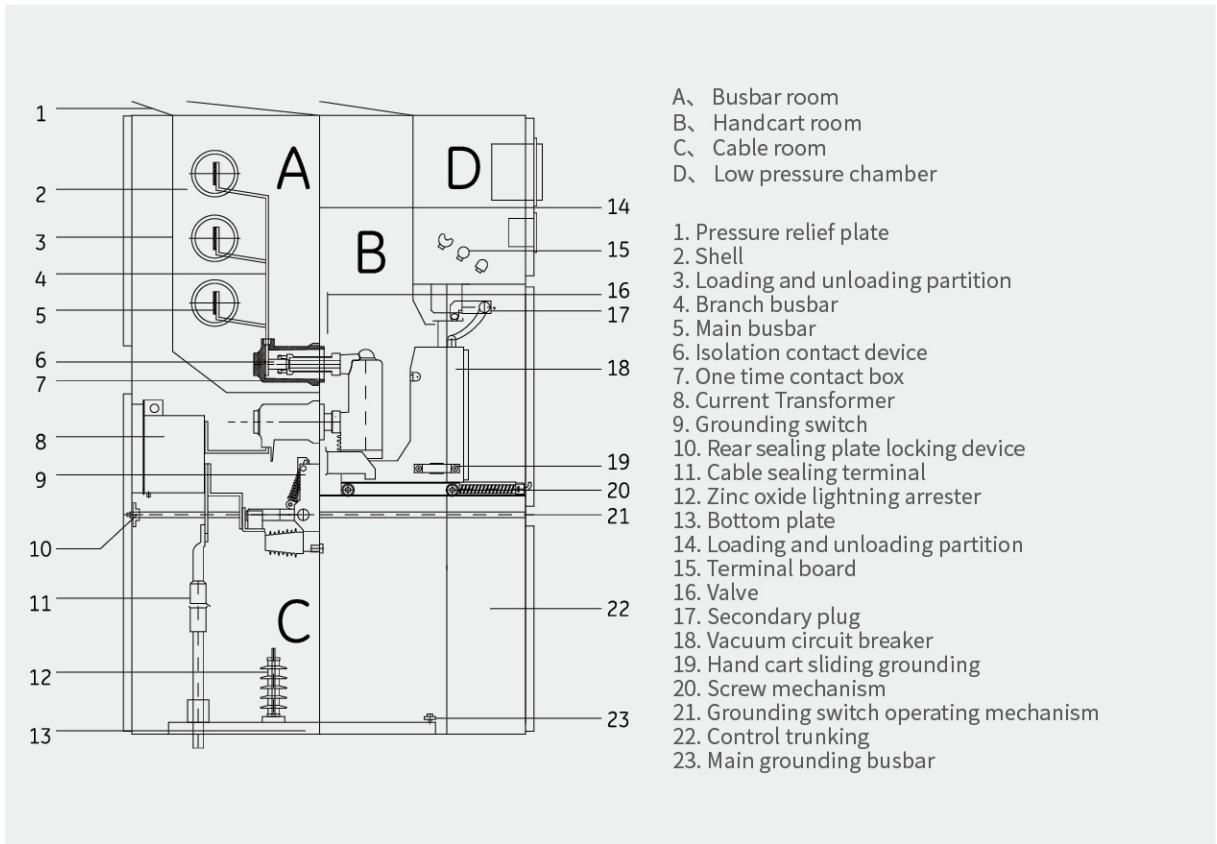
The protection level of the shell reaches IP4X
Comprehensive and reliable mechanical protection operation locking and pressure release device
Safer device operation mode
More comprehensive operator protection
- Extractable parts

The withdrawable part can be divided into circuit breaker handcart, voltage transformer handcart, isolation handcart, metering handcart, etc. according to its purpose. Handcarts of the same type and specification have uniform height and depth dimensions, and can be interchanged. Each contact arm installed on each phase pole is equipped with a spring contact, and the handcart is equipped with positioning devices for isolation/testing and working positions inside the cabinet. Ensure that the handcart is in the specific position mentioned above before proceeding with the corresponding operation. The mobile handcart must meet the interlocking conditions. Before moving, the circuit breaker should be disconnected and a good grounding method should be used to ensure that the circuit breaker is reliably grounded from the working position to the testing position.
- More advanced operating mechanisms

Single modular structure, electrical connection using plug-in method;

Universal institutional design, high degree of standardization;
The operating mechanism is easy to assemble and disassemble, and convenient for maintenance;
The mechanism cam directly drives the spindle, reducing intermediate links, increasing efficiency, and lowering energy consumption;
The number of components in the mechanism is small, only about 80 parts are needed, and the reliability is high;
Extremely low maintenance requirements;
The institution comes with a manual energy storage handle, making operation more convenient and easy.
7. More convenient maintenance
To meet customers' demand for cost savings with high reliability, the vacuum arc extinguishing chamber of the circuit breaker is integrated with epoxy resin, which is sturdy and reliable; The circuit breaker adopts a single modular mechanism, with a small number of components, high precision of components, and reliable operation.

▶ Basic structural sectional view of P/V-12 type incoming or outgoing cabinet



▶ product mix

Handcart room

The front middle of the cabinet is the handcart compartment, which is equipped with specific handcart rails for the handcart to slide and work inside the rails. The handcart can move between the isolation/testing position and the working position. There is a static contact seat and a metal made protective valve that can move up and down on the rear wall of the handcart compartment. During the process of moving the handcart from the isolation/testing position to the working position, the valve can automatically open, and the moving contact can be smoothly inserted into the stationary contact seat to connect the moving and stationary contacts. When the handcart is moved to the isolation/testing position, the protective valve descends to cover the static contact, isolating the static contact and ensuring that the operator does not touch the live body. The handcart should be operated with the door of the switchgear closed. The position of the handcart can be seen through the observation window on the door, as well as the on/off button, circuit breaker on/off status indicator, and operating mechanism spring energy storage and release status indicator on the circuit breaker panel.

Low pressure chamber

The low voltage chamber is located in the upper front of the switchgear. The front door of the low-voltage room can be equipped with secondary equipment such as measuring instruments, operation switches, buttons, and relays. Leave small busbar crossing holes on the low voltage chamber side panel for construction purposes.

Cable room

The lower part of the cabinet is the cable room, which can be equipped with current transformers, grounding switches, and lightning arresters. After removing the rear cover, construction personnel can enter the switchgear from behind to install cables. Indoor cable connection conductors are installed, which can simultaneously connect 1-3 cables. The bottom plate of the cable room is made of detachable steel plate and equipped with cable fixing clamps and variable diameter sealing rings. In addition, there are panel type security electric heaters installed in the handcart room and cable room to prevent condensation during high environmental humidity.

Busbar room

The upper rear part of the cabinet is the main busbar room, and the busbar can be led from one switchgear to another. At the point where the busbar passes through the switchgear, partitions and sleeves are used to provide fixation and support, while also preventing the spread of fault arcs to adjacent cabinets. The branch busbar is connected to the main busbar and the static contact box through bolts. When there are special needs from users and engineering, all busbars can be covered with heat shrinkable insulation sleeves, and the busbar joints can also be covered with insulation covers.

Anti misoperation locking device

This switchgear has a reliable locking position, providing reliable safety protection for operators and equipment. Its functions are as follows:

- Only when the grounding switch is in the open position (the rear sealing plate cannot be opened), can the handcart be moved from the isolation/testing position to the working position;
- The handcart can only move inside the cabinet when the circuit breaker is in the open position;
- When the grounding switch is in the closed position (the rear sealing plate can be opened), the handcart cannot be moved from the isolation/testing position to the working position;
- When the rear sealing plate is opened, the grounding switch cannot be disconnected;
- The grounding switch can only be closed when the handcart is in the isolation/testing position or outside the cabinet;
- When the handcart is in the working position, the secondary plug is locked and cannot be removed;
- The circuit breaker can only perform opening and closing operations when the circuit breaker handcart is in the isolation/testing position or working position;
- All doors belonging to high-voltage compartments are equipped with locks and must be opened or closed using specialized tools.

Note: It is allowed to use suggestive or mandatory high-voltage live display devices to monitor the live status of the power supply.



HIGH VOLTAGE SWITCHGEAR SERIES

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KYN61-40.5(Z)

Armored Removable AC Metal Enclosed Switchgear

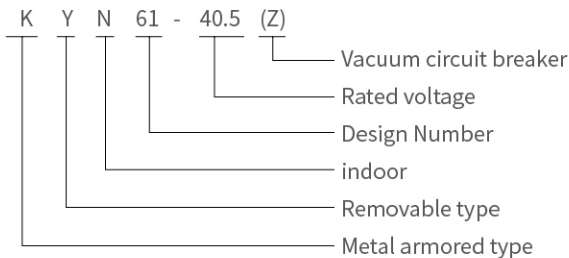


summary

KYN61-40.5 (Z) armored movable AC metal enclosed switchgear (hereinafter referred to as the switchgear) is an indoor complete set of distribution equipment with three-phase AC 50Hz and rated voltage of 40.5kV. Used as a power plant, substation, and industrial and mining enterprise to receive and distribute electrical energy. It plays a role in controlling, protecting, and detecting circuits, and can also be used in places with frequent operations.

This switchgear complies with standards such as GB/T11022-1999, GB3906-1991, and DL404-1997.

Model meaning



Normal usage conditions

- ◇ Surrounding air temperature: maximum temperature+40 °C , minimum temperature -15 °C .
- ◇ Relative humidity: Daily average relative humidity: ≤ 95%,
- ◇ The daily average water vapor pressure shall not exceed 2.2kPa;
- ◇ Monthly average relative humidity: ≤ 90%,
- ◇ The monthly average water vapor pressure shall not exceed 1.8kPa;
- ◇ Altitude: below 1000m.
- ◇ Seismic intensity: not exceeding 8 degrees.
- ◇ The surrounding air should not be significantly polluted by corrosive or flammable gases, water vapor, etc.
- ◇ No places with severe vibrations.
- ◇ When used beyond the normal conditions specified in GB3906, the user and the manufacturer shall negotiate

main features

- ◇ The cabinet structure adopts an assembled type, and the circuit breaker adopts a handcart floor standing structure;
- ◇ Equipped with a brand new composite insulation vacuum circuit breaker, with the characteristics of good interchangeability and easy replacement;
- ◇ The handcart frame is equipped with a screw nut propulsion mechanism, which can easily move the handcart and prevent damage to the propulsion structure due to misoperation;
- ◇ All operations can be performed with the cabinet door closed;
- ◇ The interlocking between the main switch, handcart, and switch cabinet door adopts a mandatory mechanical locking method to meet the "five prevention" function;
- ◇ The cable room has ample space and can connect multiple cables;
- ◇ Quick grounding switch is used for grounding and circuit short circuit;
- ◇ The protection level of the shell is IP3X, and when the handcart door is open, the protection level is IP2X;
- ◇ The product complies with GB3906-1991, DL404-1997, and adopts the international IEC-298 standard as a reference.

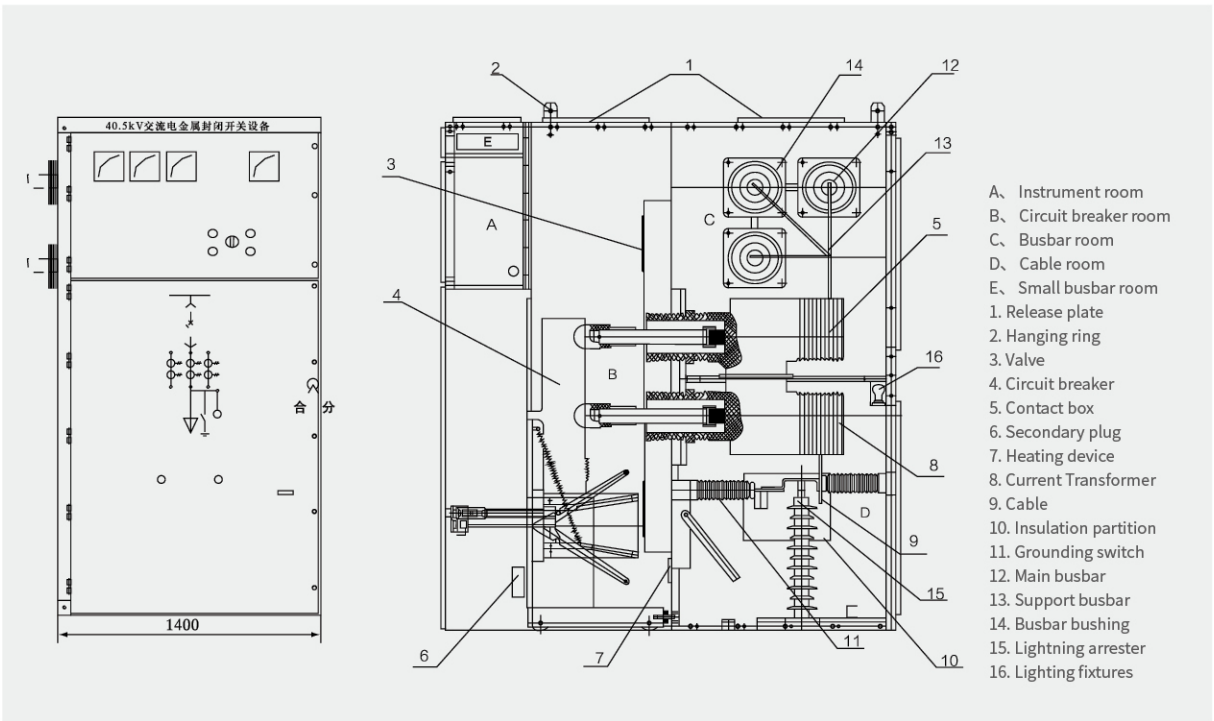
Main technical parameters of vacuum switchgear

name	Company	numerical value
Rated voltage	kV	40.5
Rated current	A	1250 1600 2000
Rated frequency	Hz	50
Rated short-time withstand current	kA	20 25 31.5
Rated peak withstand current	kA	50 63 80
Rated power frequency withstand voltage	kV	95/1min
Rated lightning impulse withstand voltage	kV	185
Rated short-circuit duration	s	4
Protection level		IP3X

External dimensions

		(mm)
height		2650
width	Rated current 1600A and below	1400
depth	Cable inlet and outlet lines	2870
	Overhead incoming and outgoing lines	2950

Equipment structure diagram



► Technical solution legend

There are 24 commonly used typical wiring schemes for switchgear, which can meet the needs of users for cable entry and exit, overhead entry and exit, communication and measurement, protection, etc. If there are different requirements from other existing schemes, please consult with the manufacturer.

Scheme Number		01	02	03	04
A circuit diagram					
Main components	Rated current	1250, 1600, 2000			
	Circuit breaker ZN85-40.5	1	1	1	1
	Current Transformer LDBJ8 (9) -35		1	2	3
	Grounding switch JN22-40.5/31.5	1	1	1	1
purpose		Overhead outgoing line	Overhead outgoing line	Overhead outgoing line	Overhead outgoing line

Scheme Number		05	06	07	08
A circuit diagram					
Main components	Rated current	1250, 1600, 2000			
	Circuit breaker ZN85-40.5	1	1	1	1
	Current Transformer LDBJ8 (9) -35		1	2	3
	Grounding switch JN22-40.5/31.5	1	1	1	1
purpose		Cable outgoing line	Cable outgoing line	Cable outgoing line	Cable outgoing line

HIGH VOLTAGE SWITCHGEAR SERIES

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KYN28-12
Armored removable enclosed switchgear



summary

KYN28-12 indoor AC metal armored mid mounted switchgear. It is suitable for three-phase AC power systems with a rated voltage of 12kV and a rated frequency of 50Hz, used for receiving and distributing electrical energy, and for controlling, protecting, and monitoring circuits.

Compliant with standards:

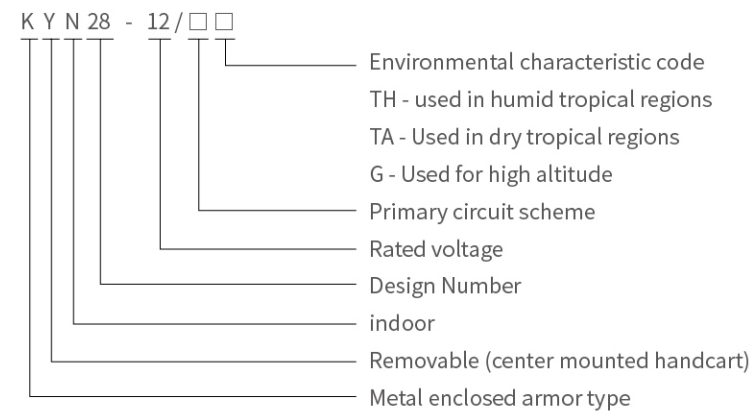
GB3906-2006 "3.6~40.5kV AC Metal Enclosed Switchgear and Control Equipment"

GB11022-89 General Technical Conditions for High Voltage Switchgear

IEC298 (1990) "AC metal enclosed switchgear and control gear with rated voltage above 1kV and below 50kV"

DL404-97 Technical Conditions for Ordering Indoor AC High Voltage Switchgear

Model meaning



Function and Features

The switchgear is designed according to the armored metal enclosed switchgear in GB3906-91. The overall structure consists of two main parts: a cabinet and a center mounted withdrawable component (i.e. handcart) (see figure). The cabinet is divided into four separate compartments, with a protection level of IP4X for the outer shell. When the doors between each compartment and the circuit breaker compartment are opened, the protection level is IP2X. Having overhead incoming and outgoing lines, cable incoming and outgoing lines, and other functional schemes, arranged and combined to form a complete distribution system device. This switchgear can be installed, debugged, and maintained from the front, so it can be back-to-back, arranged in double, and installed against the wall, improving the safety, flexibility, and reducing the footprint of the switchgear.

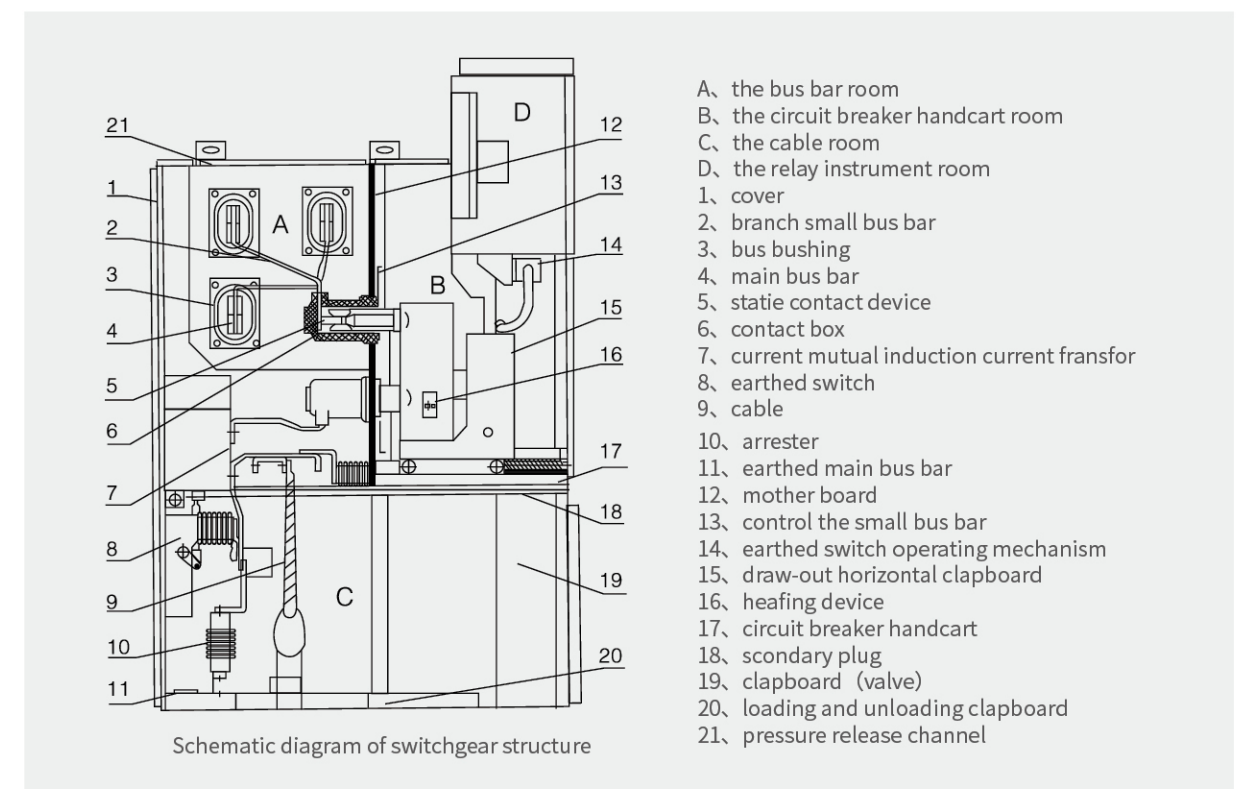
Main technical parameters of vacuum circuit breaker

project		Company	numerical value
Rated voltage		kV	3.6、7.2、12
Rated frequency		Hz	50
Rated current of circuit breaker		A	630、1250、1600、2000、2500、3150
Rated current of switchgear		A	630、1250、1600、2000、2500、3150
Rated short-time withstand current (4S)		kA	16,20,25,31.5,40,50
Rated peak withstand current (peak)		kA	40,50,63,80,100,125
Rated short-circuit breaking current		kA	16,20,25,31.5,40,50
Rated short-circuit closing current (peak)		kA	40,50,63,80,100,125
Rated insulation level	1-minute power frequency withstand voltage	kV	24、32、42
	Lightning impulse withstand voltage	kV	40、60、75
Protection level		The shell is IP4X, and when the compartment and circuit breaker room doors are opened, it is IP2X.	

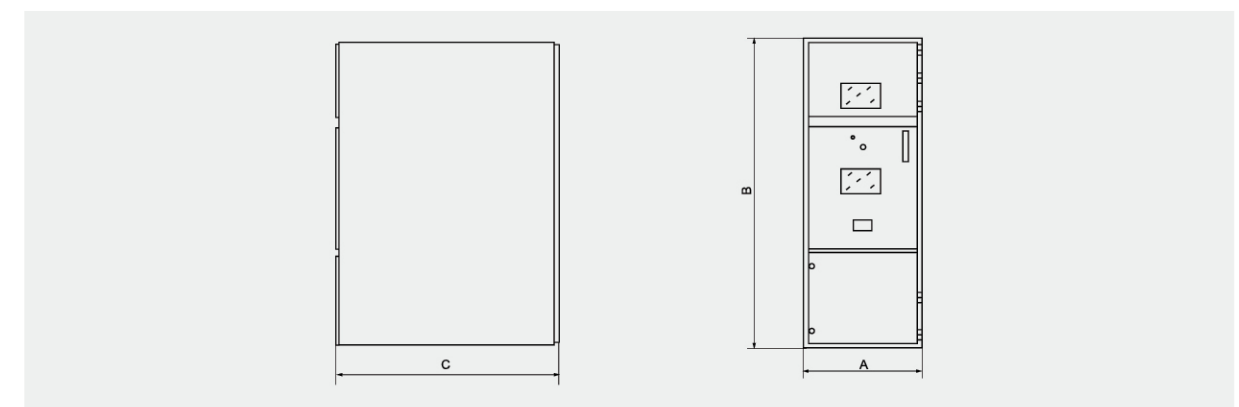
Normal usage conditions

- ◇ Surrounding air temperature: maximum temperature+40℃. The minimum temperature is -15℃.
- ◇ Relative humidity: Daily average relative humidity: ≤ 95%; The daily average water vapor pressure shall not exceed 2.2KPa; Monthly average relative humidity: ≤ 90%; The monthly average steam pressure shall not exceed 1.8KPa;
- ◇ Altitude: below 1000m.
- ◇ Seismic intensity: not exceeding 8 degrees.
- ◇ The surrounding air should not be significantly polluted by corrosive or flammable gases, water vapor, etc.
- ◇ No places with severe vibrations.
- ◇ When used beyond the normal conditions specified in GB3906, the user and our company shall negotiate.

Schematic diagram of switchgear structure



Installation size



Cabinet width A	Cabinet depth B	L1	L2	L3	L4
800	1500 cable	530	630	150	490
800	1660 aerial	530	630	310	650
800	1500 cable	730	830	150	490
1000	1660 aerial	730	830	310	650

height		2300
width	Rated current 1250A and below	800
	Rated current 1600A and above	1000
depth	Cable inlet and outlet lines	1500
	Overhead incoming and outgoing lines	1660

Technical solution legend

Scheme Number		01	02	03	04	05	06
A circuit diagram							
Cabinet size (width x depth x height)		800x 1500x2300 1000	800x 1500x2300 1000	800x 1500x2300 1000	800x 1500x2300 1000	800x 1500x2300 1000	800x 1500x2300 1000
Main electrical components	Rated current (A)	630~3150					
	Vacuum circuit breaker (ZN63A or VD4)	1	1	1	1	1	1
	Current Transformer LZZBJ9 Series	2	2	2	3	3	3
	Grounding switch JN15		1	1		1	1
	Lightning arrester HY5W			3			3
Circuit name		Power receiving and feeding	Power receiving and feeding	Power receiving and feeding	Power receiving and feeding	Power receiving and feeding	Power receiving and feeding
remarks		1. Rated current of 1600A and above, cabinet width of 1000mm. 2. The rated current of the prototype switchgear at an altitude of 3000m~4000m is 1250A, and the cabinet width is 1000mm.					

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HXGN15-12

Box type fixed AC metal enclosed switchgear



summary

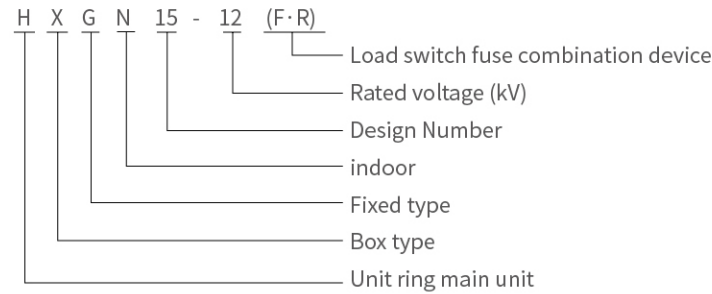
The HXGN15-12 type modular AC metal enclosed ring network switchgear (hereinafter referred to as the ring network cabinet) is a new generation of high-voltage electrical products that we have independently designed and developed in accordance with the requirements of domestic agricultural power and urban network transformation, by introducing advanced foreign technology. All technical performance indicators comply with IEC62271-200:2003 and GB3906 standards.

The main switch, operating mechanism, and components of the ring main unit are made of ABB original parts or domestically assembled SFL-12/24 switchgear using imported components. ABB original HAD/US SF6 can also be installed according to user needs. Circuit breaker or VD4-S vacuum circuit breaker. Its operation mode is divided into two types: dynamic and electric.

The cabinet is processed by CNC machine and riveted, with a protection level of IP3X, and has reliable mechanical interlocking and anti misoperation functions. This product has the characteristics of small size, light weight, beautiful appearance, easy operation, long life, high parameters, no pollution, and minimal maintenance.

HXGN15-12 type modular AC metal enclosed ring network switchgear is suitable for receiving and distributing electrical energy in 50Hz, 12kV power networks. The main switch inside the cabinet is SF6 switch.

Model meaning



Main technical parameters of vacuum circuit breaker

Serial number	name	Company	numerical value
1	Rated voltage	kV	12
2	Rated frequency	Hz	50
3	Rated current of main busbar/maximum rated current of fuse	A	630, 125
4	Rated short-time withstand current of main circuit and grounding circuit	kA/s	20, 3
5	Rated peak withstand current of main circuit and grounding circuit	kA	50
6	Rated short-circuit closing current of main circuit and grounding circuit	kA	50
7	Full capacity breaking number of load switch	次	100
8	Circuit breaker breaking current	kA	31.5, 40
9	Rated closed-loop breaking current	A	630
10	Rated transfer current	A	1600
11	Mechanical lifespan	次	2000
12	1-minute power frequency withstand voltage (peak) relative to ground/isolation fracture	kV	42, 48
13	Lightning impulse withstand voltage (peak value) phase to phase, ground/isolation fracture	kV	75, 85
14	Secondary circuit 1-minute power frequency withstand voltage	kV	2
15	Protection level		IP3X

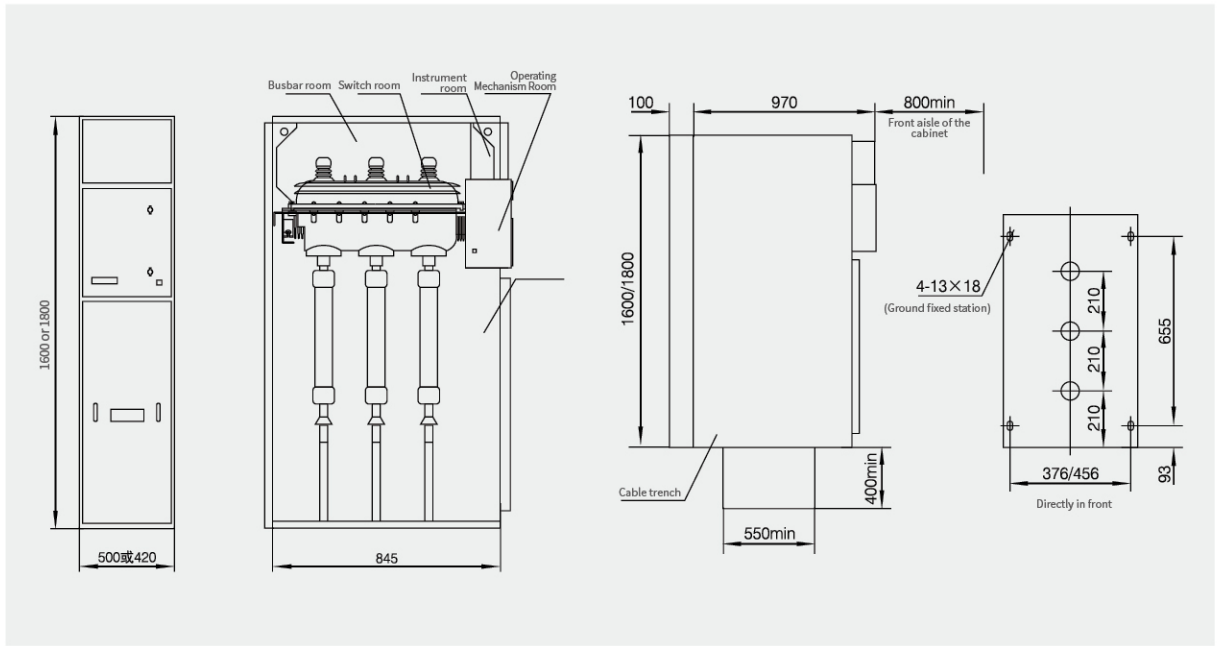
Reference Table for Fuse Selection

work Voltage KV	Rated capacity of transformer															
	50	75	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000
3	25	25	40	40	63	63	63	80	100	100	160					
5	16	16	25	25	40	40	63	63	63	80	100	100	160			
6	16	10	25	25	25	40	40	63	63	63	80	100	100	160		
10	10	10	16	16	25	25	25	40	40	63	63	63	80	100	100	
12	10	10	16	16	16	25		25	40	40	63	63	63	80	100	
15	10	10	16	16	16	16	25	25	25	40	40	63	63	63	100	
20	10	10	10	10	16	16	16	25	25	25	40	40	63	63	63	80
24	10	10	10	10	16	16	16	15	25	25	25	40	40	63	63	63

technical data

Rated voltage	Company	12	17.5	24
Impact withstand voltage	KV	75	95	125
One minute power frequency withstand voltage		42	55	65
Rated current	A	630	630	630
Closing capacity	KA	50	50	40
Thermal stability current	KA/S	20/3	-	-
Breaking capacity	A	1700	-	-
Maximum fuse	A	125	-	-
Polar distance	mm	210	210	210

External dimensions



Technical solution legend

Scheme Number		01	01-1	01-2	01-3
A circuit diagram					
Main electrical components	purpose	Entry and exit lines	Entry and exit lines	Entry and exit lines	Entry and exit lines (right or left)
	Load switch FLN36-12D	1	1	1	1
	Fuse				
	Current Transformer LZZJ2-12		1 ~ 3		
	High voltage live display device DXN6-T	1	1	1	1
	Surge arrester HY5WZ or HY5WS			3	
Width X Depth X Height (mm)		420/500x845x1600/1800			

Scheme Number		02	02-1	02-2
A circuit diagram				
Main electrical components	purpose	Protecting transformers	Protecting transformers	Protecting transformers
	Combination appliance FLN36-12D	1	1	1
	Fuse	S □ LAJ	S □ LAJ	S □ LAJ
	Current Transformer LZZJ2-12		1 ~ 3	
	High voltage live display device DXN6-T	1	1	1
	Lightning arrester			HY5WZ
	Grounding switch	1	1	1
Width X Depth X Height (mm)		500x845x1600/1800	500x845x1600/1800	500x845x1600/1800

HIGH VOLTAGE SWITCHGEAR SERIES

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XGN □ -12

Box type fixed AC metal enclosed switchgear



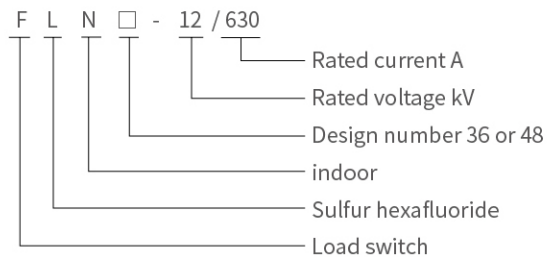
summary

The XGN □ -12 series AC metal ring network switchgear is a compact and expandable metalenclosedringnetworks witchgear suitable for distribution automation, which uses FLN □ -12 SF6 load switch as the main switch and adopts air insulation throughout the cabinet. It has the characteristics of simple structure, flexible operation, reliable interlocking, and easy installation. We can provide satisfactory technical solutions for various application scenarios and user requirements.

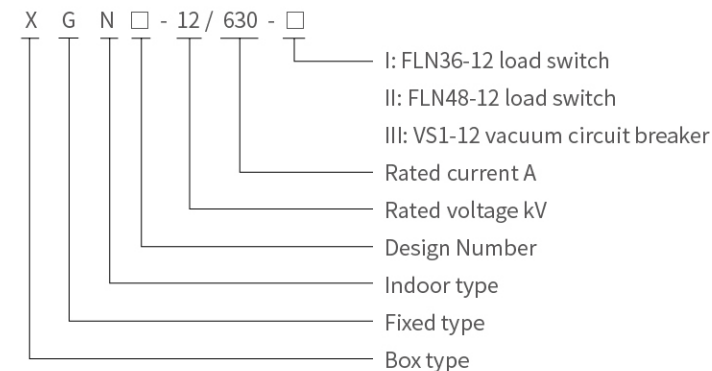
The main switch of XGN □ -12 series AC metal ring network switchgear is selected from FLN36-12 type produced by our company or SFG type SF6 load switch produced by ABB company. It can also be equipped with VS1 type, VD4/S type, ISM type vacuum circuit breaker or HD4/S5 type SF6 circuit breaker according to user needs. Load switches and circuit breakers can be operated manually or electrically, and with the optional electric operating mechanism, PT, CT, FTU, and communication devices, distribution automation functions can be achieved.

Model meaning

SF6 load switch



Unit type switchgear



Normal usage conditions

- Altitude: not exceeding 1000m;
- Environmental temperature: Maximum temperature: +40°C ; Minimum temperature: -35°C ;
- Environmental humidity: daily average not exceeding 95%; Monthly average not exceeding 90%;
- Seismic resistance: Level 8;
- There are no explosive or corrosive gases in the surrounding air, and there are no severe vibrations or impacts in the installation site.

Reference standards

GB/T 191	Packaging and storage pictorial markings (ISO 780-1997. MOD)
GB 1985-2004	High voltage AC isolating switch (IEC 62271-102:2002, MOD)
GB 3804-2004	3.6kV~40.5kV High Voltage AC Load Switch (IE060265-1:1998, MDO)
GB 3906-1991	3-35kV AC metal enclosed switchgear (neq IEC 60298:1990)
GB 4208-1993	Protection level of enclosure (IP code) (eqv IEC 60529:1989)
GB/T 5582-1993	External insulation pollution level of high-voltage power equipment (eqv IEC 507:1991)
GB/T 6388	Transport package shipping mark
GB 9969.1	General Principles of Industrial Product User Manual
GB/T11022-1999	Common Technical Requirements for High Voltage Switchgear and Control Equipment Standards (eqv IEC 60694:1996)
GB/T11023-1989	Test method for sealing sulfur hexafluoride gas in high-voltage switchgear
GB/T 13384	General Technical Conditions for Packaging of Mechanical and Electrical Products
GB/T 14436	General Principles of Industrial Product Assurance Documents
GB 16926-1997	AC high voltage load switch fuse combination (eqv IEC 60420:1990)
JB/T 8754-1998	Method for Model Compilation of High Voltage Switchgear
DL/T 404-1997	Technical Conditions for Ordering Indoor AC High Voltage Switchgear (neq IEC 60298:1981)

Main technical parameters of vacuum circuit breaker

Serial number	project	Company	Load switch cabinet	Combination electrical cabinet	Circuit breaker cabinet
01	Rated voltage	kV	12	12	12
02	Rated frequency	Hz	50/60	50/60	50/60
03	Rated current	A			
04	Main busbar	A	630	630	630
05	Branch main busbar	A	630	125(Depending on the rated current of the fuse)	630
06	Rated insulation level	kV			
07	Power frequency withstand voltage (phase to phase and relative to ground)	kV	42	42	42
08	Power frequency withstand voltage (between fracture surfaces)	kV	48	48	48
09	Power frequency withstand voltage (control and auxiliary circuits)	kV	2	2	2
10	Lightning impulse withstand voltage (phase to phase and relative to ground)	kV	75	75	75
11	Lightning impulse withstand voltage (between ports)	kV	85	85	85
12	Rated short-time withstand current (r.m.s)	KA			
13	Main circuit	KA	20/3S	-	25/2S
14	Grounding circuit	KA	20/2S	-	25/2S
15	Rated peak withstand current (peak)	KA	50	80	63
16	Rated short-circuit closing current (peak)	KA	50		
17	Rated short-circuit breaking current	KA	-	31.5	25
18	Rated transfer current	A	-	1700	-
19	Rated Active load breaking current	A	630	-	-
20	Rated closed-loop breaking current	A	630	-	630
21	Rated cable charging breaking current	A	10	-	15
22	Protection level	second	IP3X	IP3X	IP3X
23	Mechanical lifespan				
24	Load switch		5000	5000	10000
25	Grounding switch		2000	2000	2000

▶ Structure and basic components of circuit breaker cabinet

Basic structure

The XGN □ -12 circuit breaker cabinet is mainly used for the incoming cabinet of the main or backup power supply in the ring network power supply system, as well as the intermediate section cabinet of the dual power supply system. Among them, VS1 type, VD4/S type, ISM vacuum circuit breaker or HD4/S SF6 circuit breaker can be selected, with slightly different external dimensions. The circuit breaker cabinet consists of the instrument room, busbar room, load (isolation) switch room, circuit breaker room, and cable room from top to bottom. It can be configured with CT, PT, lightning arrester, grounding switch, and relay protection device according to user needs, and has reliable "five prevention" interlocking function.

The operating mechanism of VS1 vacuum circuit breaker is spring energy storage type, which can be operated by AC or DC or manually. It is currently the most widely used domestic vacuum circuit breaker. Its dominant electrical circuit and operating mechanism are designed as a whole, with stable quality and reliable performance. Composite insulation for the main electrical circuit, with a small volume. It can be installed in a handcart or fixed manner. Corresponding to the rated current specification of 630A, the rated short-circuit breaking current reaches 25kA.

VD4/S-type vacuum circuit breaker or HD4/S-type SF6 circuit breaker is specially designed by ABB in Italy for ring main switchgear. Its breaking capacity is sufficient to cope with various states, including normal switching equipment or branch network operation, as well as breaking short-circuit current in special circumstances. These two types of circuit breakers, A, B, and C, are arranged vertically in three phases, easy to install, small in size, and light in weight. The rated short-circuit breaking current reaches 25kA.

The German ISM permanent magnet mechanism vacuum circuit breaker is designed specifically for the installation of 10kV ring network cabinets, and is a high-tech product with the latest technology level of high-voltage switches in the 21st century. Its permanent magnet operating mechanism is an electromagnetic device with electronic control, online detection components, and permanent magnet retention.

Basic components

(A) The upper unit includes:

*Three station SF6 load switch * Operating mechanism with mechanical position indicator device * Interlocking device * Integrated low-voltage chamber * Relay protection device * Bus chamber shell * Busbar

(B) Central unit, including

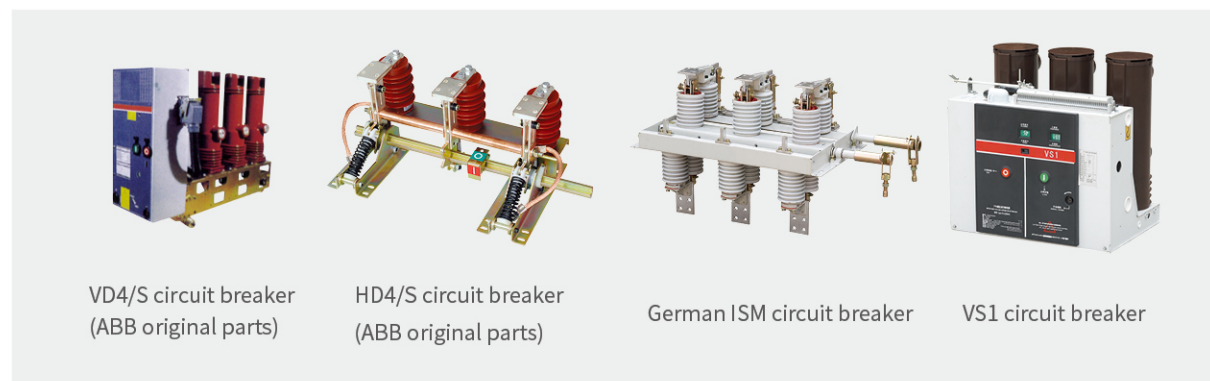
*Circuit breaker room * VS1 type or VD4/S type, ISM type vacuum circuit breaker or HD4/S type SF6 circuit breaker

(C) Lower unit, including

*Grounding busbar * Cable compartment shell * Cable compartment bottom plate with cable support components

optional components

*Integrated live display or portable live display insertion interface * Auxiliary contacts at various positions: 2NO+2NC * SF6 gas pressure monitor with alarm contacts (SF6 load switch) * Current transformer * Voltage transformer * Lightning arrester * Electric operating mechanism (SF6 load switch) * Bottom grounding switch * Short circuit grounding fault indicator * Cold shrink indoor cable terminal



HIGH VOLTAGE SWITCHGEAR SERIES

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XGN-12

Intelligent solid insulation cabinet



► summary

The XGN-12 series solid insulated enclosed ring network switchgear is a type of solid insulated vacuum switchgear that is fully insulated, fully sealed, and maintenance free. All high-voltage live parts are cast with epoxy resin material with excellent insulation performance, organically combining the vacuum arc extinguishing chamber, main electrical circuit, insulation support, etc. into a whole, and the functional units are connected through fully insulated solid busbar. Therefore, the entire switchgear is not affected by the external environment, ensuring the reliability of equipment operation and the safety of operators.

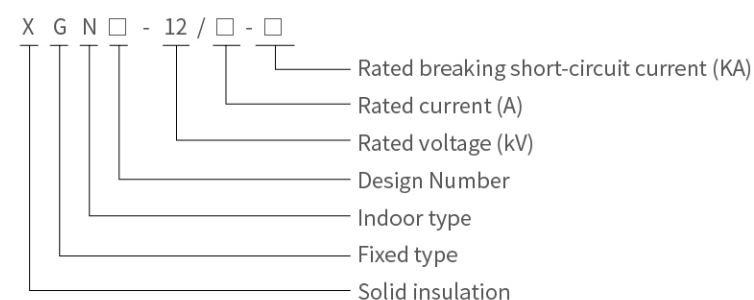
This ring main unit has the characteristics of simple structure, flexible operation, reliable interlocking, and easy installation. It is suitable for 50Hz, 12 kV power systems and widely used in industrial and civil cable ring networks and distribution network terminal projects. It is used for the reception and distribution of electrical energy, especially for urban residential distribution, small substations, switch stations, cable branch boxes, box type substations, industrial and mining enterprises, shopping malls, airports, subways, wind power generation, hospitals, sports stadiums, railways, tunnels and other places.

Due to its advantages of full insulation, full sealing, and full shielding, this product is particularly suitable for use in harsh environments such as high altitude, high temperature, humid heat, severe cold, and severe pollution.

► Product classification

According to the type of switch, it is divided into load switch with grounding assembly (referred to as C module), load switch without grounding assembly (referred to as CB module), circuit breaker with grounding assembly (referred to as V module), circuit breaker without grounding assembly (referred to as VB module), circuit breaker interconnection switch (referred to as VZ module), load switch+fuse combination switch assembly (referred to as F module), and isolation switch assembly (referred to as G module).

► Model meaning



► Usage conditions

- ◇ Environmental temperature: -45 °C ~+45 °C
- ◇ Humidity: Maximum average relative humidity, daily average ≤ 95%, monthly average ≤ 90%
- ◇ Altitude: ≤ 4000 meters
- ◇ Seismic resistance: 8 degrees
- ◇ Protection level: IP67 for live body sealing, IP67 for fuse barrel, IP3X for switchgear enclosure

► Function and Features

environment protection

The materials used in product manufacturing are all non-toxic and harmless substances, and no toxic or harmful substances are emitted during use. The materials can be recycled and reused after their life cycle, which determines the environmental friendliness of their use.

Fully insulated, fully sealed, and fully shielded epoxy resin switch housing and fuse housing (epoxy resin has excellent electrical, mechanical, and thermal properties, and has been used in electrical equipment for a long time, achieving good performance. The switch housing and fuse housing are formed using epoxy resin APG technology. The insulation housing is a key component of solid insulated switches, which is both an insulation part and a load-bearing part. It is required to meet technical requirements such as heat resistance, weather resistance, cracking resistance, high mechanical strength, and good insulation strength. The housing has a large volume, many embedded parts, and various shapes, making it difficult to manufacture. Our company has many years of experience in designing and manufacturing insulation parts, and strives to ensure high-quality mass production of this component from cylinder design, material formula, and process flow. According to the user's requirements, Requirement: Can provide a cylinder with external shielding grounding that can be touched

Maintenance free:

The solid insulation indoor AC high-voltage vacuum switchgear is in a fully sealed state except for the operating mechanism, which can avoid cleaning and maintenance and reduce the cost of operation and maintenance.

Security:

Due to the use of shielding measures on touchable parts, the occurrence of personal electric shock accidents has been eliminated, improving safety and usability. A complete interlocking system, with clear and visible three-phase isolation fractures, avoids the occurrence of misoperation accidents. The application of SF6 gas has been completely eliminated, avoiding explosion accidents caused by insufficient gas pressure leading to a decrease in insulation performance and arc extinguishing ability of SF6 ring main units. Strengthen the inter phase isolation structure to prevent the expansion or triggering of explosion accidents due to inter phase or multi circuit short circuits. Adopting a vacuum arc extinguishing chamber with explosion-proof performance, the switch sleeve provides further protection for the switch. The auxiliary grounding switch of the load switch fuse combination device is sealed in the fuse barrel with a vacuum switch tube.

Operability:

The isolation switch and grounding switch only have one operating handle, so there is no need to identify or worry about errors. When the circuit breaker is running, the operating handle of the isolation switch and grounding switch cannot be operated, and the operating procedure is clear at a glance. Anyone with a little knowledge of electricians can operate it, and complex technical training is carried out in a disorderly manner. This makes the operation exceptionally simple and prevents operational errors from occurring.

Intelligence:

The switchgear is equipped with intelligent interfaces and sensor installation positions, which can meet the requirements of the smart grid after configuring intelligent equipment.

Diverse operating mechanisms:

The switch can be equipped with two operating mechanisms: spring and permanent magnet, making it convenient for users to choose.

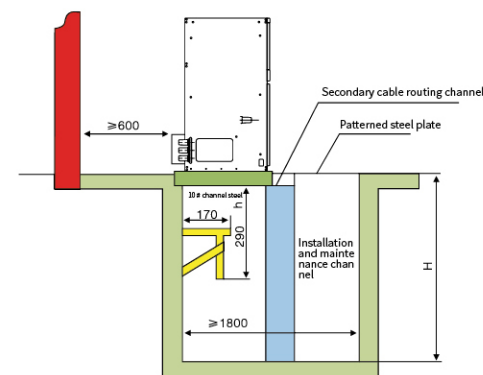
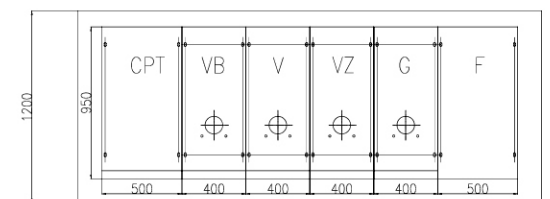
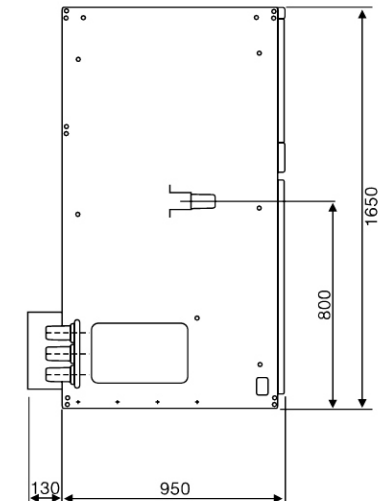
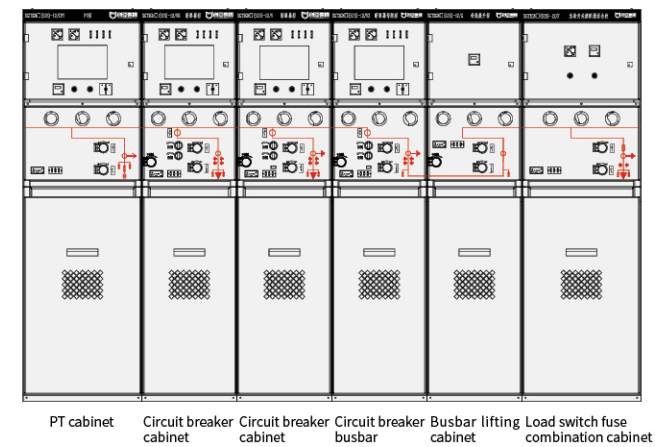
► Compliant with standards

- ◇ Q/GDW 730-2012 "Technical Conditions for 12kV Solid Insulated Ring Main Unit"
- ◇ GB1984 "AC High Voltage Circuit Breakers"
- ◇ GB3804 3.6kV-40kV AC High Voltage Load Switches
- ◇ GB1958 "AC High Voltage Isolation Switches and Grounding Switches"
- ◇ GB4208 "IP Code for Degrees of Protection Provided by Enclosures"
- ◇ GB 16926 High voltage AC load switch fuse combination electrical apparatus
- ◇ GB/T15166.2 High voltage AC fuse group Part 2: Current limiting fuse circuit
- ◇ GB/T7354 "Partial Discharge Measurement"
- ◇ GB/T11022 Common Technical Conditions for High Voltage Switchgear and Control Equipment Standards
- ◇ GB3906 "3.6-40.5KV AC Metal Enclosed Switchgear and Control Equipment"

▶ Main technical parameters

project	Company	parameter	project	Company	parameter
routine			Rated short-circuit closing current	kA	50(63)
Rated voltage	kV	12	Rated short-time withstand current	kA/S	20/4(25/4)
Rated frequency	HZ	50	Mechanical lifespan of circuit breaker	second	20000
Power frequency withstand voltage	kV/min	42/48	Electrical lifespan of circuit breaker	second	E2
Lightning impulse voltage	kV	75/85	Rated operating sequence		0-0.3s-CO-180s-CO
Duration of arc ignition	s	≥ 0.5	partial discharge	PC	≤ 5
Protection level of primary components (excluding measuring cabinets)		IP67	Load switch fuse combination electrical unit		
Cabinet protection level		IP4X	Rated current (maximum)	A	200
Protection level between compartments		IP2X	Rated short-circuit breaking current	kA	31.5
Operating power supply voltage	V	DC24、48、110、220 AC110、220	Rated short-circuit closing current	kA	80
Busbar system			partial discharge	PC	3150
Rated current	A	630(1250)	Isolating switch		
Rated short-time withstand current	kA/s	20/4(25/4)	Rated current	A	630/1250
Rated peak withstand current	kA	50(63)	Rated short-time withstand current	kA	20/25
Rated peak withstand current	kA	50	Rated short-time duration	s	4
Load switch unit			Rated peak withstand current	kA	50/63
Rated current	A	630	Mechanical lifespan	second	3000
Rated short-circuit closing current	kA	50	Grounding switch		
Rated short-time withstand current	kA/s	20/4	Rated current	A	630/1250
Mechanical lifespan of load switch	second		Rated short-time withstand current	kA	20/25
Electrical lifespan of load switch	second	E3	Rated short-time duration	S	4
partial discharge	PC	≤ 5	Rated peak withstand current	kA	50/63
Circuit breaker unit			Rated short-circuit closing current (peak)	kA	50
Rated current	A	630(1250)	Rated short-circuit closing current times	second	2
Rated short-circuit breaking current	kA	20(25)	Mechanical lifespan	second	3000

▶ External dimensions



- Note:
1. The bottom of the concrete cushion layer should be compacted with plain soil;
 2. If the total length of the switchgear does not exceed 2 meters, no pillars need to be added. However, if the total length of the switchgear exceeds 2 meters, pillars need to be added every 2 meters of span;
 3. The space above 600 meters behind the cabinet in the picture is the pressure relief channel for the switchgear, so a set of switchgear needs to be equipped with protective barriers at both ends behind the cabinet;
 4. The H in the figure is determined based on the maximum cable bending radius.

▶ Transportation and storage

The packaged ring network units can be transported by electric forklifts or cranes, and the ring network units are equipped with lifting rings for lifting during transportation. The rope used for hoisting should not be shorter than 2 meters. The ring network unit should be placed in a dry, ventilated, and dust-free place before installation on site. If covered with plastic bags, the bottom should be open for ventilation.

▶ Usage and maintenance

- a. Pre use inspection: Before use, the environmental network unit must undergo the following inspections for personal and equipment safety
- Check if the main circuit and grounding circuit are connected correctly.
 - Check whether the mechanical interlocking is correct and reliable.
 - Check whether the operation of load switches and grounding switches in the ring network unit is flexible and correct.
 - Check whether the connection of high-voltage cables is correct and reliable.

b. Run

- ◆ The ring network unit should be put into operation according to the prescribed operating sequence.

c. Maintenance: This device is based on the following advantages and does not require daily maintenance

- ◆ All live parts are installed inside epoxy resin insulated cylinders.
 - ◆ All operating mechanism components placed outside the epoxy resin insulation cylinder have been electroplated.
 - ◆ The spindle is supported by a copper shaft sleeve, which can work continuously and effectively without lubricant.
- Attention: If there is a malfunction in the ring network unit, do not attempt to use drilling machines, cutting machines, or other tools to open the ring network unit for repair. These operations are only the responsibility of our company personnel.

▶ Random files and attachments

When the product leaves the factory, the following materials and attachments are randomly provided:

- ◆ Product Installation and Use Manual
- ◆ Product factory test report
- ◆ Product Qualification Certificate
- ◆ Packing list
- ◆ Operating handle
- ◆ Other attachments



HIGH VOLTAGE SWITCHGEAR SERIES

Respecting promise and keeping promise,
operating in the right way,
striving for perfection, coexistence and win-win situation

CYRM □ -12

Fully enclosed and insulated inflatable ring network switchgear

summary

The CYRM □ -12 series ring main switch cabinet is a SF6 gas insulated metal common box enclosed switchgear, which can be composed of modules such as load switch unit, load switch fuse combination unit, vacuum circuit breaker unit, and busbar incoming unit. Adopting a series of advanced technologies and materials, it has excellent electrical and mechanical properties, is less affected by the environment and climate, has a small size, is easy to install, is easy to operate, does not require maintenance, and has flexible combination methods. Clear and intuitive design ensures simple and direct operation. The feeder has a large wiring capacity and is suitable for various wiring systems.

Unit definition

Unit code	significance
C	Standard single tube load switch unit
F	Load switch fuse combination electrical unit
V	Circuit breaker unit
D	Cable entry unit (without switch)
+	Busbar side bushing
-	Busbar top bushing
SL	Mother unit
M	Measurement unit
PT	PT unit
1K2(4)	Load switch unit with double conduit outgoing line

Product Features

Operational safety:

We can provide users with special security protection through the following security measures:

Integrated three station load switch

The circuit breaker adopts a load switch instead of an isolation switch, which is safer and more reliable. The fully enclosed design on the primary side provides protection against accidental contact and meets the five prevention requirements. The mechanical interlocking live display can provide live indication for incoming and outgoing lines. The operation is reliable. The fully enclosed design seals all 10kV switches and busbars in a 3mm stainless steel welded gas box; Equipped with silicone rubber cable plugs, the cable head is fully insulated and sealed, so as not to be affected by external environmental factors such as dust, moisture, and small animals. The spring energy storage operating mechanism can be manually or electrically operated to simulate the wiring diagram and provide switch position indication. The cabinet is made of galvanized sheet, with surface electrostatic spraying to enhance corrosion resistance. The pressure gauge monitors the safe pressure range of SF6 gas inside the box.

Economy:

Maintenance free

Highly reliable

The service life can reach 20 years

Flexible plan:

Multiple entry methods, capable of achieving left, right, up, or forward lines

Multiple combination methods, allowing for arbitrary combinations between units

By using insulated busbars, it is possible to achieve front and rear parallel cabinets or left and right parallel cabinets

Flexible design scheme

Widely used:

The feeder line has a large capacity and occupies a small area, making it suitable for various application needs.

Performance indicators

SF6 gas pressure	Absolute pressure of 1.4 bar at 20 °C	Normal operating environment conditions		
Annual gas leakage rate	0.2% per year	maximum temperature	40°C	
Protection level	IP67	Minimum temperature	-40°C	
Thickness of stainless steel in the air chamber	3.0mm	Maximum average relative humidity	≤ 95%	
		Altitude	≤ 2000rice	
a bus or bus bar		Meet the standards		
Busbar inside the switchgear	400mm²Cu	GB/T11022	GB3906	GB1985
Grounding busbar of switchgear	150mm²Cu	GB16926	GB38041	GB1984
colour		GB3309		
Front panel of switchgear	RAL7012	IEC60056	IEC60129	IEC60265
Side panel and cable compartment front cover plate	RAL7035	IEC60298	IEC60420	IEC60694

Auxiliary equipment parameters

project		C module	F module	V module		CB module	
		Load switch	Combination appliance	vacuum switch	Isolation/grounding switch	Vacuum circuit breaker	Isolation/grounding switch
Rated voltage	kV	12	12	12	12	12	12
Rated frequency	Hz	50	50	50	50	50	50
Power frequency withstand voltage (phase to phase/port)	kV	42/48	42/48	42/48	42/48	42/48	42/48
Lightning impulse withstand voltage	kV	75/85	75/85	75/85	75/85	75/85	75/85
Rated current	A	630	notes	630		1250/630	
Rated closed-loop breaking current	A	630					
Rated cable charging breaking current	A	135/135					
Rated short-circuit closing current (peak)		50	80				
Rated peak withstand current	kA	50					
Rated short-time withstand current	kA/3s	20					
Rated short-circuit breaking current	kA		31.5	20		25	25
Rated transfer current	A		1750				
Maximum current of equipped fuse	A	-	125				
Circuit resistance	Ω	≤ 300	≤ 600				
Mechanical lifespan	second	5000	3000	5000	2000	5000	5000

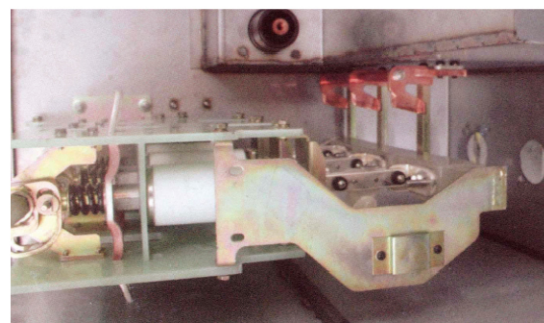
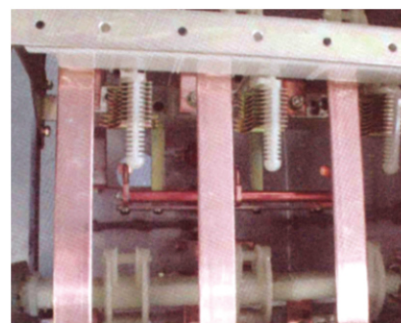
注：(1) 取决于熔断器的电流额定值。

Design Description

The CYRM □ -12 gas insulated fully enclosed ring network switchgear is installed on a galvanized sheet frame, with the switch unit inside an SF6 gas box made of corrosion-resistant and non-magnetic 3mm thick stainless steel plate. SF6 gas tank is a "sealed pressure system" that can operate for 20 years under normal working conditions. The pressure of SF6 gas during normal operation is 0.015-0.04MPa. The gas box is equipped with a pressure release device, which ensures that gas can be released from the bottom or rear when the pressure is too high.

▶ Switching unit

The load switch adopts a coaxial rotating double break method, which cooperates with the sliding plate through the same operating hole for functional operation. Therefore, the switch can only be in one of the three states of "closing, opening, and grounding" at any time, completely avoiding misoperation.



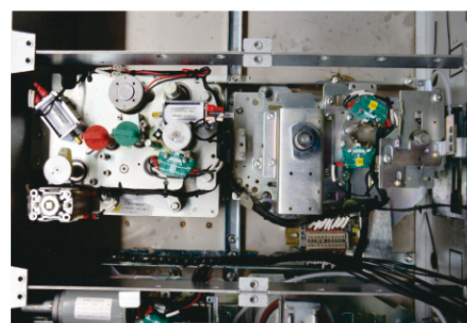
▶ Pressure relief device

The pressure release device is separated from the cable room by a metal plate. If the pressure inside the gas box is too high, the explosion-proof diaphragm inside the device will rupture to release the pressure.

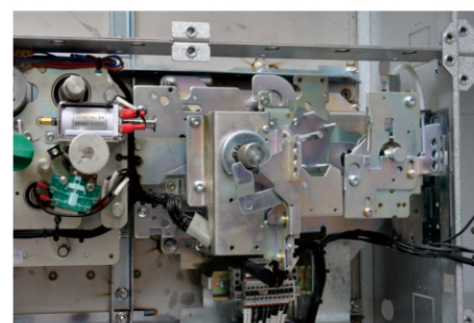


▶ Operating mechanism

The operating mechanism of the switch is installed at the front of the air box and has undergone special processing to prevent rust and corrosion. It is convenient for manual operation and maintenance and easy to achieve electric operation. The operating mechanism can be a spring mechanism or a permanent magnet operating mechanism.



Spring operating mechanism



Permanent magnet operating mechanism

▶ A cable room and cable connection method that truly meets the needs

The cable connection room has a large space, and the conduit is designed in a standard style to achieve compatibility with all European standard cable plugs. Under normal circumstances, each load switch unit can be connected to 1-3 outgoing lines, while special design units can be connected to 4-6 outgoing lines. The vacuum circuit breaker unit can be connected to 1-2 outgoing lines.

Choose international standard universal specification sleeves (in accordance with DIN47636 standard or American standard) to facilitate users in selecting corresponding cable accessories. The T-shaped front and rear cable plugs are used for connection, and the European style bolt is tightened step by step. The connection between the front plug and the sleeve is made with M16 bolts. The cable connection method can also use ordinary terminal blocks and heat shrink tubing.



▶ Lightning arrester connection

The load switch unit can be equipped with a T-shaped rear plug-in silicone rubber fully sealed metal zinc oxide lightning arrester. When there are many cable circuits and space is not enough, a π -shaped rear plug-in lightning arrester can be used.



▶ Fuse

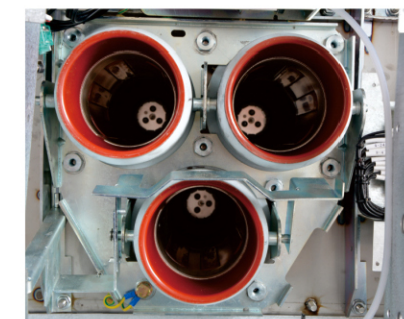
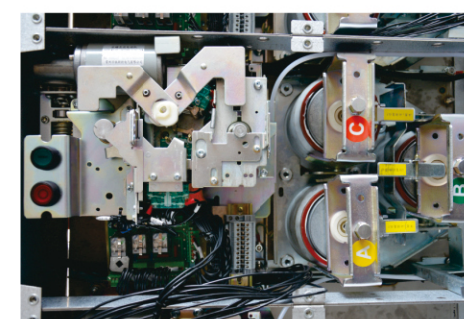
CYRM □ -12 gas fully insulated and fully enclosed ring network switchgear fuse replacement is direct and easy. The fuse is placed inside the insulation tube, which is located inside the SF6 metal gas box. This design has the following advantages:

The fuse cover and sealing device are located at the weakest part of the electric field.

◆ No conductive substance can attach to the fuse component.

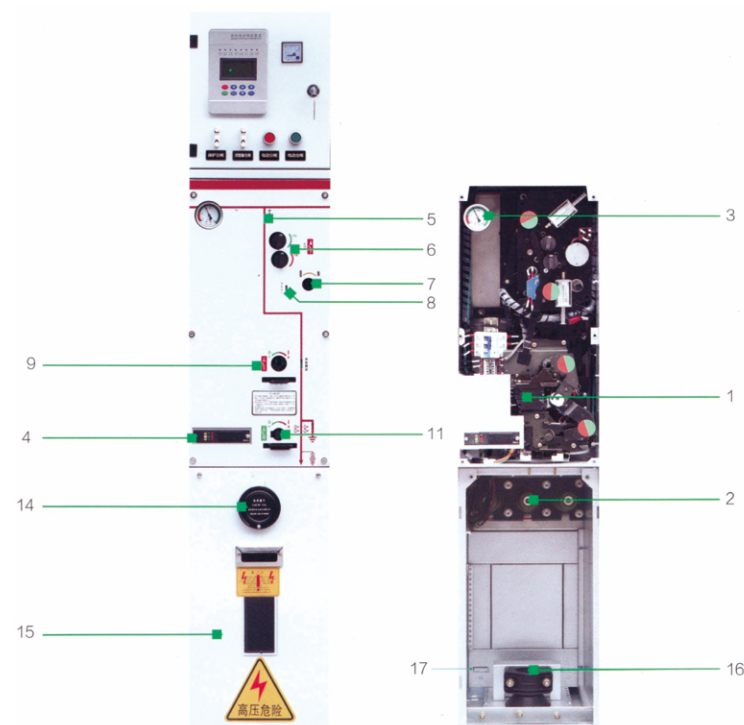
The part in SF6 gas is completely protected.

The fuse cover does not require additional insulation spring energy storage operating mechanism and linkage tripping device to ensure that the load switch's three phases automatically disconnect when any phase of the fuse is blown.



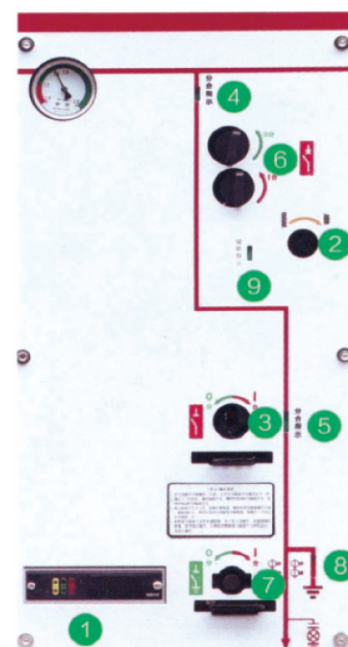
▶ CYRM □ -12-V switch panel indication

1. SF6 switch gas box
2. Switch incoming conduit
3. SF6 pressure gauge
4. Electric display
5. Switch position indication
6. Main switch on/off knob
7. Circuit breaker energy storage operation hole
8. Energy storage location indication
9. Isolation switch operation hole
10. Isolation position indication
11. Grounding switch operating hole
12. Circuit breaker operating mechanism
13. Isolation grounding operating mechanism
14. Cable compartment observation window
15. Cable compartment door
16. Cable clamp
17. Grounding busbar



▶ CYRM □ -12-V series switch panel indication

- ① Electric display
- ② Main switch operation hole (operation sequence: clockwise needle closing/counterclockwise opening)
- ③ Grounding switch operating hole (operating sequence: clockwise needle closing/counterclockwise opening)
- ④ Opening and closing position indication (closing display in red/opening display in white)
- ⑤ Grounding position indication
- ⑥ Position of load switch padlock
- ⑦ Grounding switch padlock position



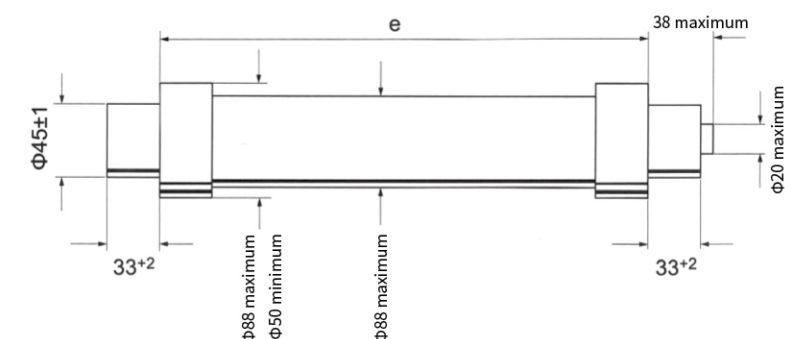
▶ Attachment Overview

14. Dedicated parallel cabinet busbar with fully insulated and sealed structure
15. Fuse

Users can configure according to their own needs, or our company can recommend and provide configurations based on applicable standards. Our company recommends using HVHRC fuses, which are backup fuses with temperature protection devices to prevent equipment damage caused by abnormal overheating inside the fuse barrel. Please indicate the rated capacity, working voltage, and rated current of the transformer and fuse when ordering.

16. Protection relay
- Adopting digital self-powered multifunctional time overcurrent protection relay. Compact design, strong environmental adaptability, in compliance with standards VDE0435-303, IEC60225, VDE0843.

- ◆ No need for external power supply
- ◆ Built in security protection operation mode
- ◆ Wide setting range, simple operation steps
- ◆ Using microprocessors to process signals and achieve high-precision parameter measurement
- ◆ Adopting internal self detection (watchdog) design, reliable operation
- ◆ Optional protection function
- Fixed time overcurrent protection (DMT)
- ◆ Inverse Time Overcurrent Protection (IDMT)
- ◆ Optional inverse time curve:
 - General inverse time limit
 - Very inverse time limit
 - Extreme inverse time limit



Dedicated parallel cabinet busbar



Fuse

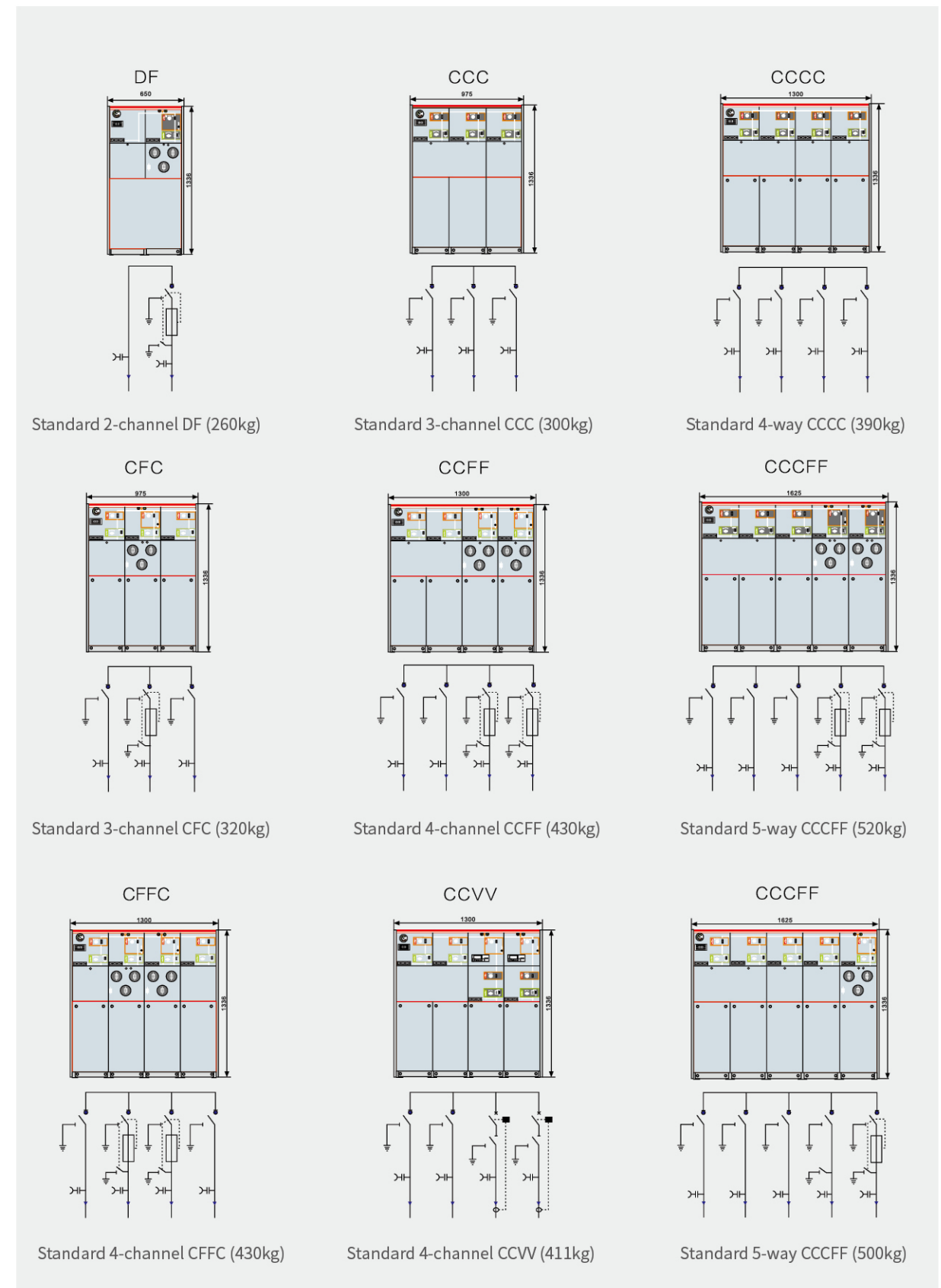
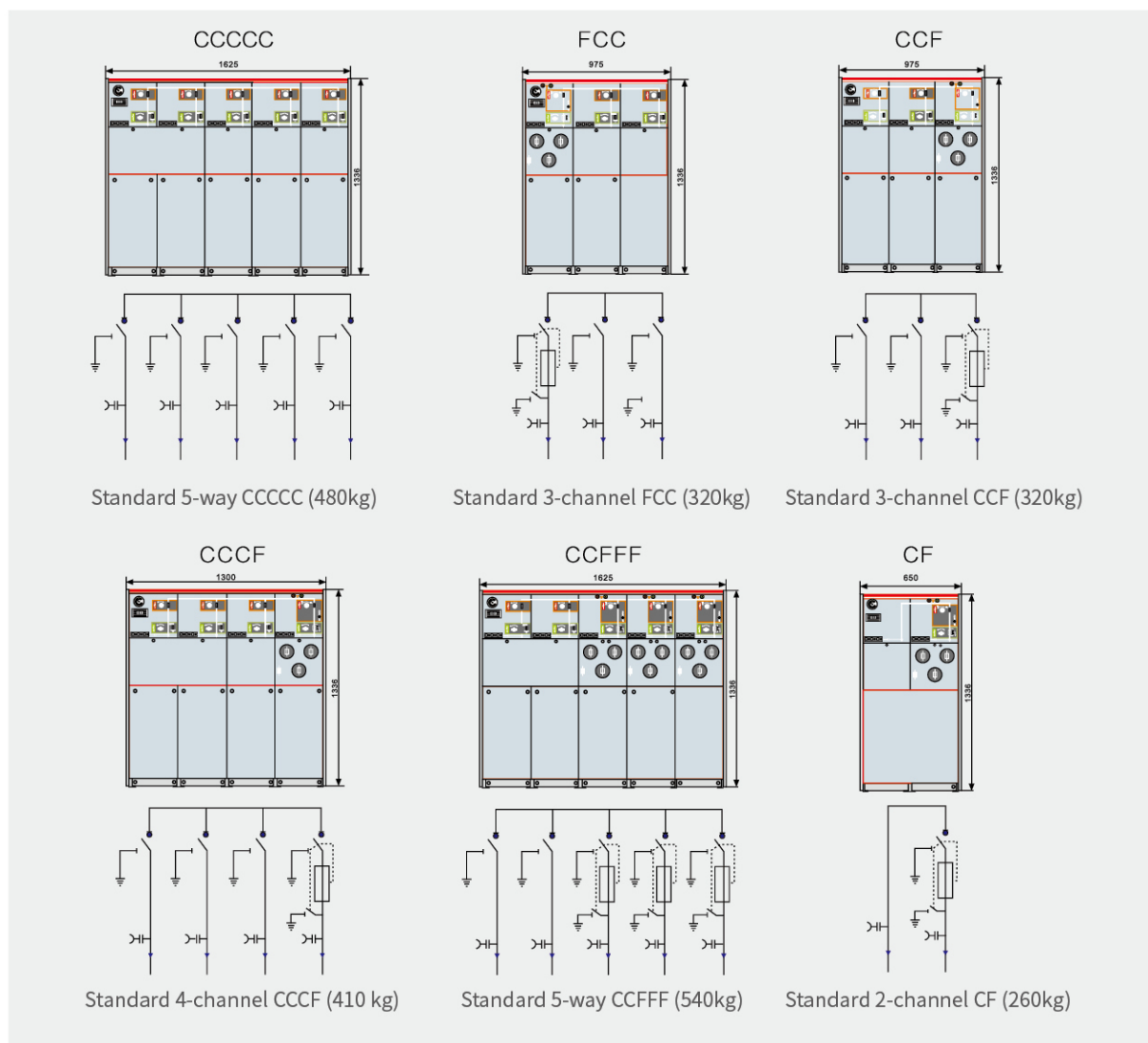


protection relay

▶ A cable room and cable connection that truly meets the needs

We provide the following fifteen types of packaging combinations
Each module of CYRM □ -12 non expandable standard combination unit cabinets has the following configurations

- ◆ D cabinet lifting module
- Standard configuration and characteristics of cable connection module without grounding knife
- ◆ C cabinet load switch module
- Standard configuration and characteristics in the "load switch module"
- ◆ Horizontal block of load switch fuse combination in cabinet F
- Standard configuration and characteristics of "load switch fuse combination electrical module"
- ◆ Vacuum switch horizontal block for cabinet V
- Standard configuration and characteristics of vacuum switch module
- ◆ Capacitive voltage indicator for incoming conduit
- ◆ Install a pressure gauge for monitoring SF6 density in each gas chamber
- ◆ Lifting ears used for hoisting
- ◆ Operating handle
- ◆ Optional
- Electric operating mechanism
- Cable short circuit and ground fault indicator
- Current transformers and meters
- Remote monitoring and grounding fault indicator



LOW VOLTAGE SWITCHGEAR SERIES

Respecting promise and keeping promise,
operating in the right way,
striving for perfection, coexistence and win-win situation

MDmax®
ABB Authorize digital low-voltage switchgear



summary

The MDmax series low-voltage switchgear has various structural forms, including ST series, FC series, ProC series, etc. At present, the ST type low-voltage switchgear is widely used in China's domestic power system. It is a combination type multifunctional low-voltage switchgear that has undergone complete type testing (TTA) and complies with GB/T7251.1/12-2013 and IEC61439-1/2. The electrical and mechanical design adopts modular principles, and by selecting standard components and components, it can meet the requirements for compactness, diversity, and flexibility of the cabinet assembly scheme.

technical standard

MDmaxST is a combination type multifunctional low-voltage switchgear that has undergone complete type testing (TTA) and complies with GB/T7251.1/12-2013 and IEC61439-1/2 standards.

Product Features

- It has three functional units: drawer type, fixed partition type, and movable type. The three functional units can be independently assembled into cabinets or mixed into cabinets
- The top cover of the horizontal busbar area can be disassembled
- Drawer style structure, capable of accommodating up to 36 circuits, with a vertical bus current of up to 2500A
- The intelligent drawer can achieve three position conversion without reducing the protection level
- A comprehensive drawer style electric control circuit solution.

Working and environmental conditions

MDmax ST low-voltage switchgear is suitable for indoor installation of electrical equipment.

ambient temperature

Short term maximum temperature: +40 °C

24-hour maximum average temperature: +35 °C

Minimum temperature: -5 °C

When the equipment is used in temperatures higher than the above mentioned environment, it should be operated at reduced capacity.

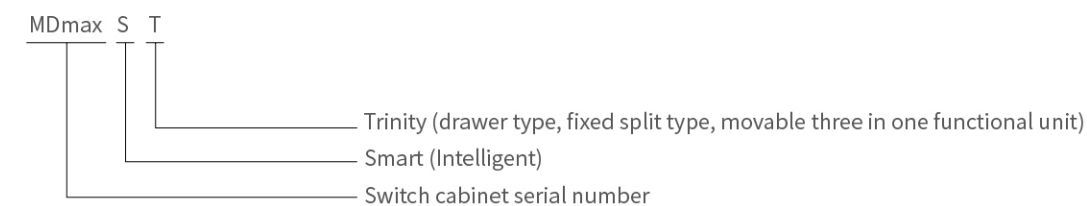
environment condition

During normal operation, the climate and environment shall comply with the provisions of GB/T7251.1-2013 and IEC61439-1. The relative humidity of the surrounding environment is 50% at 40 °C .

The indoor installation location of the switchgear should meet the requirements of the corresponding standards. In situations where condensation may occur, ventilation or heating measures will be taken in the switchgear to prevent condensation.

If the switchgear is installed above an altitude of 2000 meters, the equipment should be operated at a corresponding reduced capacity.

Model Description

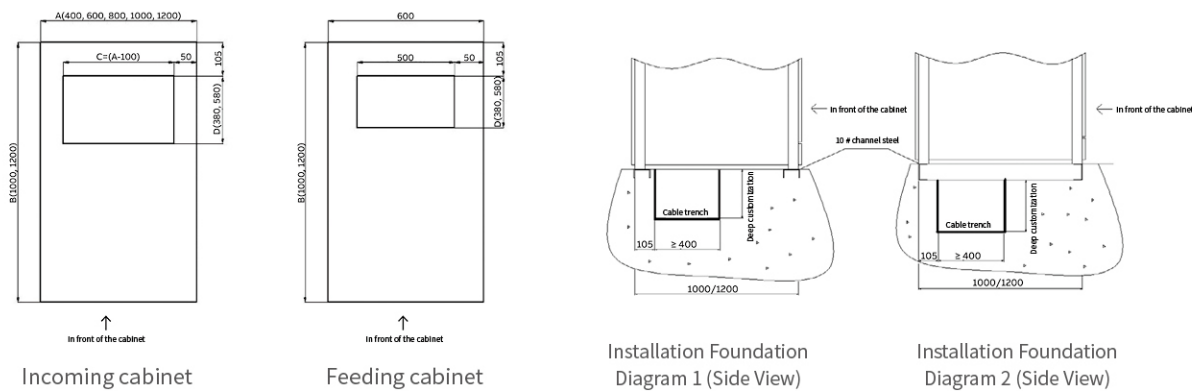


MDmax ST Technical Data

standard	Assembled switchgear (TTA) that has passed type testing(TTA)			GB/T7251.1, IEC61439-1, EN61439-1, EN61439.1, DIN_VDE0660, The500partBS5486, UTE63-410	
Electrical parameters	Rated voltage	Rated working voltage		400V/690VAC, 3P, 750VDC	
		Rated insulation voltage		690V/1000VAC, 3P, 1500VDC	
		Rated pulse withstand voltage-Uimp		6/8/12kV	
		Overvoltage level		II/III/IV	
		class of pollution		3	
	Rated current	Rated frequency		Up to 60Hz	
		Main busbar	Rated current_ I_e	Up to 6300A	
			Rated peak withstand current_ I_{pk}	Up to 220kA	
			Rated short-time withstand current_ I_w	Up to 100kA	
		Distribution busbar	Rated current_ I_e	Up to 3200A (fixed split type) Up to 2500A (drawer style)	
			Rated peak withstand current_ I_{pk}	Up to 220kA	
			Rated short-time withstand current_ I_w	Up to 85kA	
Structural characteristics	size		Cabinet and supporting components		DIN41488
		modulus		U=8E, E=25mm in accordance with DIN43660	
		height		2200 millimeters	
		width		400/600/800/1000, 1200mm	
	Internal Separation	depth		800/1000, 1200mm	
		Internal compartment separation		To Form 4	
		Surface protection	skeleton		Aluminum zinc coating
			Small compartment partition and installation plate		Aluminum zinc coating
	Shell		Electric paint bright gray RAL7035 color code		
	Plastic parts	No CFC, flame retardant		IEC 60707	
Halogen free, self extinguishing		DIN VDE0304 Part 3			

Installation dimension diagram

Cable room opening diagram
If the site is for cable or wire entry and exit, holes (square or circular) need to be drilled on the bottom (top) plate. The opening size is shown in Figure 3 and Figure 4 (both in mm).



LOW VOLTAGE SWITCHGEAR SERIES

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xEnergy
EAT·N Authorize low-voltage switchgear



summary

XEnergy is a low-voltage switchgear equipment that meets the GB7251 standard and integrates high performance and high reliability. It has a maximum current range of 6300A and has passed national mandatory testing certification. The full range of switchgear equipment provides a complete solution, covering low-voltage application fields such as power systems, data centers, industrial and mining enterprises, petrochemicals, commercial buildings, airports

Advanced technology, rich experience, and reliable quality

The xEnergy system embodies Eaton's over a hundred years of experience in low-voltage system design and manufacturing. It is precisely with these rich experiences and professional knowledge that xEnergy has been developed. The xEnergy low-voltage switchgear platform adopts top quality switch and distribution component brands, such as Culter Hammer, Westinghouse, and Holec
Traditional brands such as MEM and Moeller fully guarantee the high performance and reliability of xEnergy switchgear.

Service advantages

- A complete set of customized services for customers, from product consulting, engineering services to comprehensive project management;
- Modular products, easy to install and design, and streamlined workshop operations, with short delivery times;
- A comprehensive and responsive after-sales service team. If there is a fault notification, the after-sales service personnel will respond within 8 hours and arrive at the scene for repair services within 12 hours;
- The warehouse has a certain amount of commonly used components on hand for a long time, which can meet customers' needs for spare parts at any time.

Performance and advantages

- reliability
- Meets the requirements of national standard GB7251.1;
 - The entire series of products have undergone type testing certification (third-party certification), and the main type tests include:
 - Temperature rise limit verification
 - Short circuit withstand strength verification
 - Dielectric performance verification
 - Verification of electrical clearance and creepage distance
 - Validity verification of protection circuit
 - Mechanical operation verification
 - Protection level verification
 - Original factory manufacturing, certified with ISO900014000 quality.
 - The system uses high-quality Eaton components to ensure optimal operation.

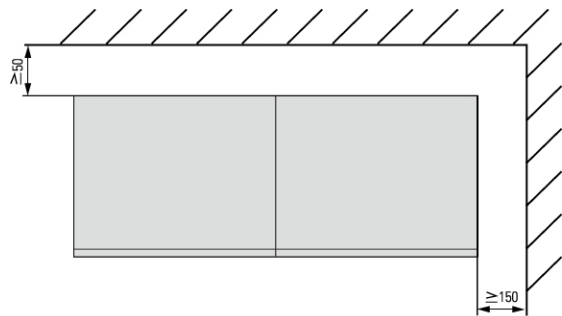
- Security
- The rated current of the main busbar can reach up to 6300A, and the rated short-time withstand current of the main busbar can reach up to 100kA/s. The xEnergy switchgear is in a leading position in the market;
 - The interlocking mechanism ensures the personal safety of operators, and the switchgear can only open the cabinet door or extract drawers when in the disconnected position.
 - When the drawer is pulled out, the protection level of the distribution busbar is IP2X. Optional automatic valves can also be installed to prevent arc splashing when drawers are pulled out;
 - Eaton's optional arc fault protection system ARCON can be installed®, ARMS functionality provides the highest level of security for personnel and systems;
 - Busbars, functional units, and terminals are isolated from each other, and xEnergy adopts a 3b/4b internal separation form to fully ensure the safety of maintenance personnel and prevent the spread of accidents.

- flexibility
- Modular design allows drawers of the same unit to be interchanged in different positions, and column supports can be universal, saving assembly time and costs;
 - The switch cabinet uses special Ω profiles, which have higher strength, more beautiful appearance, are easy to install, and can be produced in large quantities;
 - Less space occupation, compact structure, can install up to 36 circuits, with the highest installation and usage density;
 - The switchgear is easy to expand and upgrade, and can be expanded to both sides when needed. When the requirements for switchgear change, the switchgear can be upgraded;
 - Flexible all-round entry and exit methods, with incoming lines capable of side entry, upper entry, and lower entry, and outgoing lines capable of side exit and back exit.

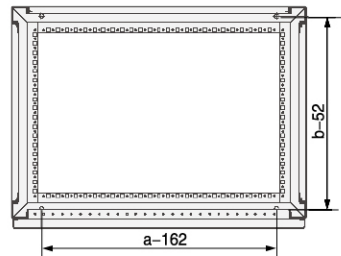
xEnergyElectrical parameters of switchgear

project	Company	Parameter values
Compliant with standards		GB 7251.1
ambient temperature	degree	-5 degrees Celsius to +40 degrees Celsius
Rated insulation voltage	V	1000V
Rated working voltage	V	400V/690V(1000V)
Rated frequency	Hz	50Hz
Rated current of main busbar	A	Up to 6300A
Rated short-time withstand current of main busbar	kA	Up to 100kA (1S)
Rated peak withstand current of main busbar	kA	Up to 220kA
Rated current of distribution busbar (vertical busbar)	A	Up to 1800A
Protection level		IP4X/ IP55*
Internal Separation Form		Form1 to Form4b
Form of distribution system		TN-C, TN-C-S, TN-S, TT, IT
Material group		IIIa
Overvoltage category		III or IV
Cabinet size	mm	Cabinet height: 2200
		Cabinet depth: 60080010001200
		Cabinet width: 600/650/800/1000/1200/1400
Appearance color		RAL7035 (please inquire for other colors)

xEnergyInstallation dimensions of switchgear

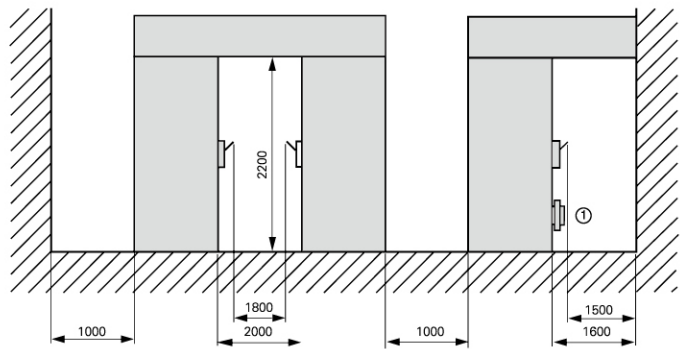


Top view of switchgear base



Installation dimensions: Width a-162
Depth b-52
Installation hole: 4- Φ 12
Width a: 600650800100012001400
Depth b: 60080010001200

Operation and maintenance space



LOW VOLTAGE SWITCHGEAR SERIES

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MLS-V

General Electric Low Voltage Authorized Cabinet



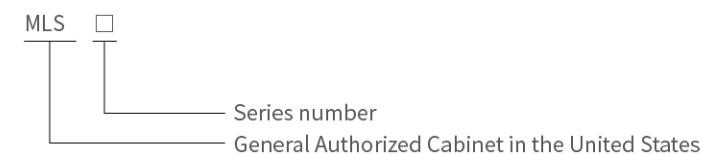
► purpose

MLS-V General Electric Low Voltage Authorized Cabinet is a low-voltage switchgear assembled by factory using standard modules (FBA), suitable for use in power distribution systems with AC 50 (60) Hz, rated working voltage $\leq 400\text{V}$, rated working current 5000A and below, as an energy distribution, conversion, control, and reactive power compensation device.

The product complies with GB7251.1, JB/T9661, IEC60439-1, and BS EN60439-1 standards.

The product has ASTA test reports and certificates.

► Model meaning



► Normal usage conditions

- ◇ The ambient air temperature shall not exceed $+40^\circ\text{C}$, not be lower than -5°C , and the average temperature within 24 hours shall not exceed $+35^\circ\text{C}$.
- ◇ Atmospheric conditions: The air is clean, with a relative humidity of no more than 50% at a maximum temperature of $+40^\circ\text{C}$, and a higher relative humidity is allowed at lower temperatures. For example, it is 90% at $+20^\circ\text{C}$, but considering the possibility of occasional moderate condensation due to temperature changes.
- ◇ The temperature range between -25°C and $+55^\circ\text{C}$ is suitable for transportation and storage processes, and it is allowed to reach $+70^\circ\text{C}$ within a short period of time (≤ 24 hours).
- ◇ The altitude shall not exceed 2000 meters.
- ◇ Environmental pollution level: defined as level 3 according to GB7251.1.
- ◇ If certain electrical components cannot meet the above working conditions, the manufacturer and the user shall negotiate a solution.
- ◇ When the usage conditions do not match the above working conditions, the user shall raise the issue with the manufacturer and negotiate a solution.

► Main electrical performance

Rated working voltage V	Main circuit	$\leq \text{AC } 400\text{V}$
	Auxiliary circuit	$\leq \text{AC } 380\text{V}, \leq \text{DC } 220\text{V}$
Rated insulation voltage V	Main circuit	AC 690V
Rated impulse withstand voltage (1.2/50 μs) kV	Main circuit	6、8
Rated working current (at IP4X) * A	Main busbar	$\leq 5000, \leq 3600$ (MLS double-sided cabinet)
	Vertical busbar	790, 1000, 1250, 1600 (withdrawable), ≤ 2500 (plug-in MCCB)
Rated short-time withstand current kA/1 second	Main busbar	50、65、80、100
	Vertical busbar	50、65、80、90
Rated peak withstand current kA/0.1 seconds	Main busbar	105、143、176、220
	Vertical busbar	105、143、176、198

*When the protection level is IP55, the rated working current of the main busbar is $\leq 2500\text{A}$.

structure characteristics

The cabinet frame structure is made of high-quality cold-rolled steel plates or aluminum zinc coated steel plates bent, with E=25mm modular holes as the minimum basic unit. Self tapping locking screws are used to assemble various cabinet shaped structures and functional units.

The area inside the cabinet is divided into horizontal busbar room, vertical busbar room (MCC cabinet), functional unit room, and outgoing terminal room, with compartment forms of 3 or 4 and meeting the protection requirements of IP2X. The locations of each region are shown in Figure 1 and Figure 2.

According to the purpose of the switchgear, the product structure is divided into:

a) PC cabinet - incoming line and power center (Figure 1a, Figure 2a)

b) MCC Cabinet - Motor Control Center (Figure 1b, Figure 2b)

c) Reactive power compensation cabinet

The dimensions of the cabinet structure are shown in Figure 1, Figure 2, and the table below

Height (H) mm	Width (W) mm	Depth (D) mm	remarks
2200	300	1000	Mother Union Transfer Cabinet (MLS-600)
2200	400	1000	PC cabinet
2200	500	1000	
2200	600	1000	
2200	800	1000	
2200	1000	1000	PC and reactive power compensation cabinet
2200	1200	1000	
2200	1000	1000(600)	MCC cabinet (MLS)
2200	600	1000	MCC cabinet (MLS-600)

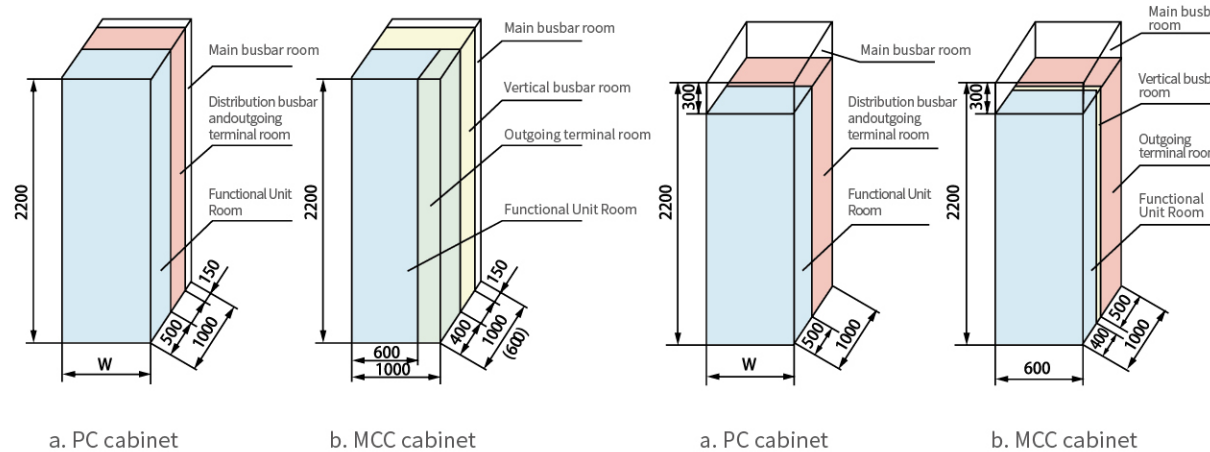


Figure 1MLS structure

Figure 2MLS-600 Structure

Shell protection level

MLS type: IP3X (standard type) IP31、IP4X、IP41、IP43*、IP5X*、IP54*、IP55*。

MLS-600 type: IP3X (standard type) IP31、IP4X、IP41。

When the drawer is connected, tested, and the main switch is in the closed or open position, its shell protection meets the requirements of product selection.

When the drawer is in the separated position, its shell protection level is IP2XD.

When the drawer is in the removed position, the protection level between the compartment and hazardous live parts is IPXXB.

*Due to the high level of protection, it is necessary to consider reducing the capacity! And the cabinet depth must be 1000mm, and consult with the manufacturer.

Installation method

The product feet can be fixed by welding or 4-M16 bolts (see Figure 13), and the cabinet screens are connected by 8-M8 hexagonal bolts.

MLS is installed against the wall, but it is recommended that the distance from the back of the cabinet to the wall be ≥ 300 mm (see Figures 13 and 14).

MLS-600 is a wall mounted installation, requiring a distance of ≥ 800 mm from the wall behind the cabinet (see Figures 13 and 14).

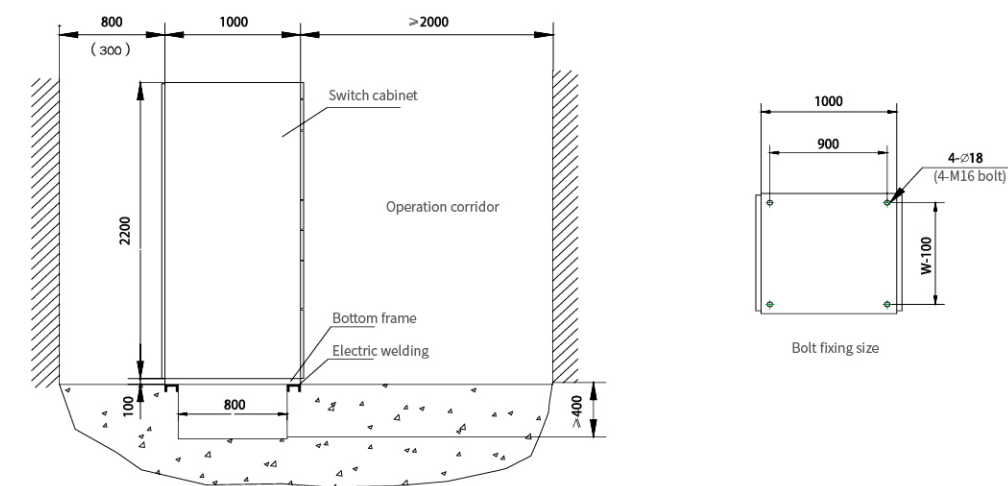


Figure 13 Installation Diagram

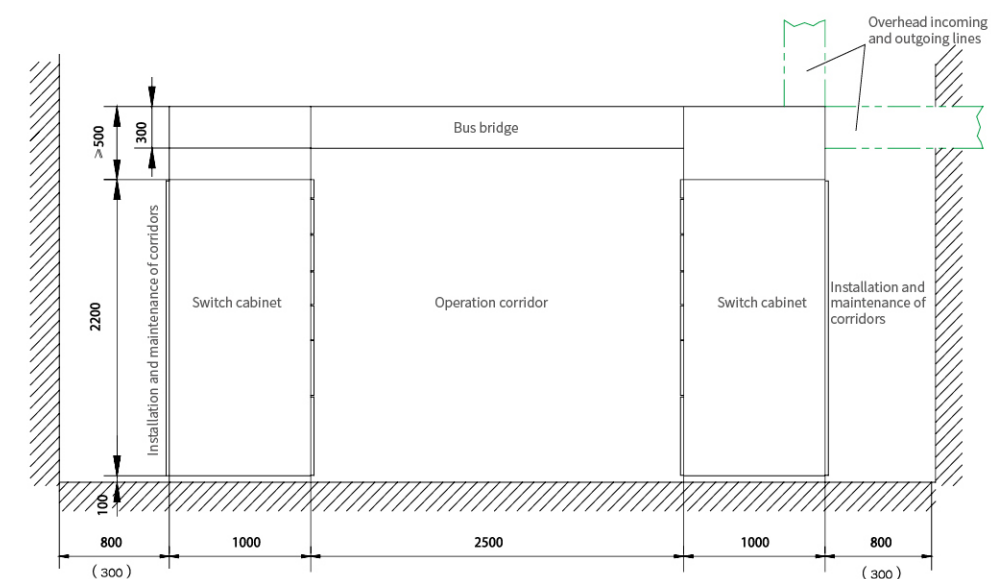


Figure 14 Schematic diagram of overhead incoming line and busbar bridge installation

LOW VOLTAGE SWITCHGEAR SERIES

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GCK

Low voltage withdrawable switchgear



▶ purpose

GCK low-voltage withdrawable switchgear is widely used in power plants, metallurgy and steel rolling, petrochemicals, light industry and textiles, ports, terminals, buildings, hotels and other places as an AC three-phase four wire or five wire system, voltage 380V, 660V, frequency 50Hz, rated current 5000A and below power supply system for distribution and centralized control of electric motors.

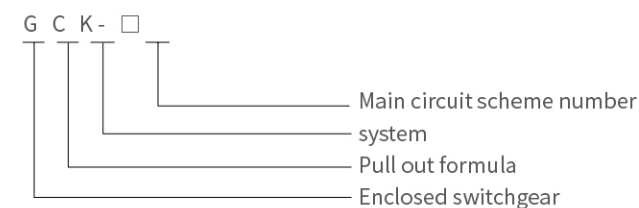
GCK is an advanced low-voltage switchgear that has undergone comprehensive type testing and obtained CCC certification. It is assembled and designed to meet the following standards:

National standard GB7251.1-2005 "Low voltage switchgear"

International standard IEC60439.1-1992 "Low voltage switchgear and control gear assemblies"



▶ Model meaning



▶ Normal usage conditions

- ◆ The ambient air temperature should not exceed +40 °C, not be lower than -5 °C, and the average temperature within 24 hours should not exceed +35 °C;
- ◆ The relative temperature should not exceed 50% at a maximum temperature of +40 °C, and higher relative temperatures are allowed at lower temperatures, such as 90% at +20 °C;
- ◆ Clean air, no corrosive or explosive gases, no conductive or insulating dust;
- ◆ In situations where there is no significant shaking or impact vibration, it should be installed vertically with an inclination of no more than 5 degrees;
- ◆ Altitude not exceeding 2000 meters;
- ◆ The switchgear is suitable for transportation and storage at temperatures ranging from -25 °C to +55 °C, and within a short period of time (not exceeding 24 hours), it should not exceed +70 °C;
- ◆ When users cannot meet the above conditions, they should negotiate with the manufacturer.

▶ Main technical parameters

- ◆ Rated insulation voltage 660V/1000V
- ◆ Rated working voltage 400V/660V
- ◆ Rated operating voltage of auxiliary circuit: AC 380V, 220V, DC 110V, 220V
- ◆ Rated current of busbar: 1000A, 1250A, 1600A, 2000A, 2500A, 3200A, 4000A, 5000A
- ◆ Rated short-time withstand current of busbar: 50kA, 80kA (effective value) for 1 second
- ◆ Rated peak withstand current of busbar: 105kA/0.1s, 140kA/0.1s, 176kA/0.1s
- ◆ Rated current of branch busbar: 630A, 1000A, 1250A, 1600A
- ◆ Rated short-time withstand current of branch busbar: 30kA, 50kA (effective value) for 1 second
- ◆ Rated peak withstand current of branch busbar: 63kA, 105kA/0.1s
- ◆ Shell protection level: IP30, IP40
- ◆ Busbar settings: three-phase four wire system, three-phase five wire system
- ◆ Operation mode: local, remote, automatic

Classification of switchgear

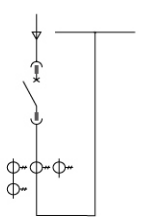
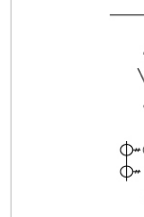
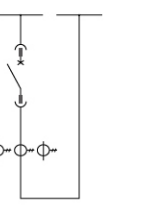
◆ Power receiving cabinet ◆ Busbar connection cabinet ◆ Feeding cabinet ◆ Motor control cabinet ◆ Power switching cabinet ◆ Power factor compensation cabinet

Structural characteristics

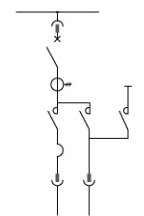
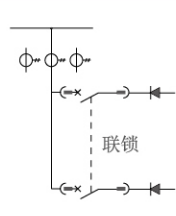
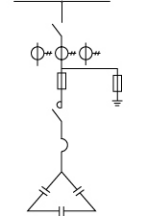
The basic cabinet frame of GCK is a combination assembly structure, and all structural components of the cabinet frame are galvanized, sprayed, and connected to each other by screws to form the basic cabinet frame. After adding doors, baffles, partitions, drawers, installation brackets, busbars, and electrical components as needed, they are assembled into a complete control center cabinet. The structure of this cabinet has the following characteristics:

- ◆ Cabinet rack
 - ◇ The cabinet frame is assembled using C-shaped profiles, and the cabinet frame parts and specialized matching parts are supplied by our company to ensure the accuracy and quality of the cabinet body.
 - ◇ The molding dimensions, opening dimensions, and equipment spacing of the components are modularized (modulus E=20mm, the same below).
 - ◇ The internal structural components are treated with galvanizing.
 - ◇ The top cover of the cabinet is detachable, and the four corners of the cabinet top are equipped with lifting rings for lifting and shipping.
 - ◇ The cabinet rack is divided into three mutually isolated sections: busbar room, functional unit room, and cable room, which can prevent the spread of accidents.
- ◆ Functional unit (drawer section)
 - ◇ The height module of the drawer unit is 200mm, divided into five size series: 1/2 unit, 1 unit, 1.5 unit, 2 unit, and 3 unit. The rated current of the unit circuit is 630 A or below.
 - (See the above picture for the appearance).
 - ◇ Each MCC cabinet can install up to 9 drawers with 1 unit or 18 drawers with 1/2 unit.
 - ◇ The operating mechanism is mechanically interlocked with the drawer, and the drawer cannot be pulled out when the main switch is in the closed position.
 - ◇ The operating mechanism of the drawer can be locked in the closed or open position with a padlock, allowing for safe maintenance of electrical equipment.
 - ◇ The back of the functional unit has a main circuit inlet and outlet plug and an auxiliary circuit secondary plug.
 - ◇ The functional unit compartments are separated by metal partitions.
 - ◇ The drawer unit adopts a rotating pushing mechanism with three position function, making operation simple and reliable.
 - ◇ The GCK drawer pushing mechanism adopts a spiral trajectory movement along the positioning element to achieve the pushing and pulling out of the functional unit. During the pushing and pulling out process of the functional unit, it realizes three position display and mechanical interlocking, and is equipped with a micro switch. Electrical interlocking can be performed when testing the position.

Technical solution legend

Scheme Number	01	02	03	04	05	06	07
Main Circuit Scheme Diagram							
purpose	Cable power supply				Mother Union		
Rated current (A)	630~1600	2000~3150	630~1600	2000~150	630~1600	2000~3150	
Main electrical components	Circuit breaker	DW45~1000~3200					
	Current transformer	LMK-0.66 □ /5					
Cabinet width (mm)	800	1000	800	1000	800	1000(1200)	
Chamber height (mm)	1800	1800	1800	1800	1800	1800	
explain	When the rated current exceeds 3150A, the user should consult with the manufacturer.						

Technical solution legend

Scheme Number	16	17	18	19	20
Main Circuit Scheme Diagram					
purpose	Y △ - Motor control			Power switch	
Main electrical components				DW45-1000	
				DW45-2000	
	Circuit breaker	CM1-100	CM1-100	CM1-225	
	Contactor	B9~B45	B45~B85	B105~B170	
	Thermal relay	T16~T45	T45~T105	*T16	
	Current transformer	LMK-0.66	LMK-0.66	LMK-0.66	LMK-0.66
Cabinet width (mm)	600	600	600	600(800)	
Chamber height (mm)	300	400	600	1800	
Chamber height (mm)	≤ 11kW	≤ 37kW	≤ 75kW		
explain	According to the number of circuits in each cabinet, the selection of electrical appliances should consider the heating capacity and use current transformers for secondary protection.			Automatic or manual switching of electrical interlocking	
purpose	6-way power compensation		8-way power compensation	10-way power compensation	
Main electrical components	Knife melting switch	QSA400	QSA400	QSA400	QSA400(630)
	Fuse	NT00	NT00	NT00	NT00
	Contactor	CJ19C	CJ19C	CJ19C	CJ19C
	capacitor	BSMJ-0.415-20-3	BSMJ-0.415-20-3	BSMJ-0.415-20-3	BSMJ-0.415-20-3
	Reactive power compensator	JKGF	JKGF	JKGF	JKGF
	Current transformer	LMK-0.66	LMK-0.66	LMK-0.66	LMK-0.66
	Lightning arrester	FYS-0.22	FYS-0.22	FYS-0.22	FYS-0.22
Cabinet width (mm)	600	800	800	800	800(1000)
Chamber height (mm)	1800	1800	1800	1800	1800
explain	When used for auxiliary cabinets, cancel the reactive power compensator and automatically switch to the main cabinet control.				

LOW VOLTAGE SWITCHGEAR SERIES

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GCS

Low voltage withdrawable switchgear

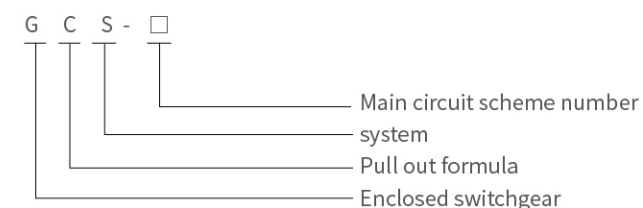


purpose

GCS type low-voltage withdrawable switchgear is suitable for distribution systems in industries such as power plants, petroleum, chemical, metallurgical, textile, and high-rise buildings. In places with high automation levels such as large power plants and petrochemical systems that require computer interfaces, this low-voltage complete distribution device is used for power distribution, motor centralized control, and reactive power compensation in power generation and supply systems with three-phase AC frequency of 50 (60) Hz, rated operating voltage of 400V, 660V, and rated current of 5000A or below.

The design of the device complies with the following standards: IEC439-1 "Low voltage switchgear and control equipment" GB7251 "Low voltage switchgear".

Model meaning



Normal usage conditions

- ◇ The ambient air temperature shall not exceed +40°C, not be lower than -5°C, and the average temperature within 24 hours shall not exceed +35°C. When exceeded, it is necessary to reduce the capacity and operate according to the actual situation;
- ◇ Indoor use, the altitude of the usage location shall not exceed 2000m;
- ◇ The relative humidity of the surrounding air should not exceed 50% at a maximum temperature of +40°C, and a higher relative humidity is allowed at lower temperatures, such as 90% at +20°C. Consideration should be given to the possibility of accidental condensation due to temperature changes;
- ◇ When installing the device, the inclination with respect to the vertical plane shall not exceed 5°, and the entire cabinet row shall be relatively flat (in accordance with GBJ232-82 standard);
- ◇ The device should be installed in a place where there is no severe vibration and impact, and where there is insufficient corrosion to the electrical components;
- ◇ When users have special requirements, they can negotiate with the manufacturer to resolve them.

Main technical parameters

Basic technical parameters are shown in Table 1

Serial number	name		parameter
1	Rated voltage of main circuit (V)		Exchange 400/660
2	Rated voltage of auxiliary circuit		AC 220, 380 (400), DC 110, 220
3	Rated frequency (Hz)		50(60)
4	Rated insulation voltage (V)		660
5	Rated current (A)	Horizontal busbar	≤ 5000
	Rated current (A)	Vertical busbar (MCC)	1000
6	Rated short-time withstand current of busbar (KA/1s)		50, 80
7	Rated peak withstand current of busbar (KA/0.1s)		105, 176
8	Power frequency test voltage (V/1min)	Main circuit	2500
		Auxiliary circuit	2000
9	a bus or bus bar	Three-phase four wire system	A.B.C.PEN
		Three phase five wire system	A.B.C.PE.N
10	Protection level		IP30. IP40

◆ Main circuit scheme

The main circuit scheme of GCS cabinet consists of 32 sets of 118 specifications, excluding schemes and specifications derived from changes in control and protection of auxiliary circuits. Including the needs of power generation, supply, and other power users, the rated working current is 5000A, suitable for selection of distribution transformers of 2500kVA and below. In addition, a capacitor compensation cabinet was designed to meet the needs of improving power factor for power supply and consumption, and a reactor cabinet was designed to meet the needs of comprehensive investment.

◆ Auxiliary circuit scheme

The GCS auxiliary circuit diagram book has a total of 120 auxiliary circuit schemes, divided into two volumes. The first volume of "AC Operation Part" has a total of 63 schemes, while the second volume of "DC Operation Part" has a total of 57 schemes. The auxiliary circuit scheme for the DC operation part is mainly used for low-voltage plant (station) systems in power plant substations. Suitable for low-voltage plant systems of 200MW and below and 300MW and above capacity units, general control methods for working (standby) power supply incoming lines, power supply feeders, and motor feeders.

The auxiliary solution for communication and operation is mainly used for the low-voltage system of substations in factories, mines, enterprises, and high-rise buildings. There are 6 combination schemes suitable for dual power operation control. And it is equipped with control circuits for operating electrical interlocking, backup automatic switching, automatic recovery, etc., which can be directly adopted in engineering design.

A complete cabinet consisting of drawer units with DC control power supply of 220V or 110V and AC control power supply of 380V or 220V. The 220V control power supply is sourced from the public control power supply provided by the dedicated control transformer in this cabinet. The public control power supply uses an ungrounded method to control the transformer, leaving a 24V power supply for use when weak current signal lights are required.

The installation location of the electricity meter, the method of introducing voltage signals, and other installation and usage requirements are detailed in the "Compilation Instructions" of the auxiliary circuit diagram.

◆ Main busbar

To improve the dynamic and thermal stability of the busbar and improve the temperature rise of the contact surface, all equipment adopts TMY-T2 series hard copper bars, which are plated with tin along the entire length or can be plated with tin along the entire length

Silver copper busbar.

◇ Horizontal and vertical busbars are installed separately in the busbar isolation room inside the cabinet.

◇ The neutral grounding busbar adopts hard copper bars. Connect the horizontal neutral grounding wire (PEN) or the grounding+neutral wire (PE+N).

◆ Selection of electrical components

GCS cabinet mainly adopts electrical components with advanced technology and high performance stability index value, which can be mass produced domestically with imported technology.

◇ Main switch

For power supply incoming and feeder switches of 630A and above, the main selection is the DW45 series, but DW48 series, AE series, 3WE or ME series can also be used. If necessary, imported M series or F series can also be used.

◇ For feeders and motor control switches below 630A, plastic shell switches such as TG series, CM1 series, NM series, CDM series, TG30 series, etc. are mainly selected.

◇ To improve the dynamic stability of the main circuit, GCS series dedicated combination busbar clamps and insulation supports have been designed. They are made of high-strength, flame-retardant synthetic materials thermoplastic molding, with high insulation strength, good self extinguishing performance, and unique structure.

◇ To reduce the temperature rise of the partition board, connectors, and cable heads of functional units, GCS cabinet specific adapters have been designed with large capacity and reduced temperature rise.

◇ When the design department selects new electrical components with better performance and more advanced technology according to user needs, the GCS series cabinet has good universality and will not cause manufacturing and installation difficulties due to updating electrical components.

size(mm)				
Cabinet height (H)	2200			
Cabinet width (D)	400	600	800	1000
Cabinet depth (W)	800 1000	800 1000	600 800 1000	600 800 1000

Serial number	name		Allowable deviation(mm)
1	verticality		3.3
2	Horizontal degree	Top of adjacent cabinets	2
		Top of the cabinet in a row	5
3	Unevenness	Adjacent cabinet edges	1
		Beside the cabinet in a row	5
4	Cabinet seam		2

LOW VOLTAGE SWITCHGEAR SERIES

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MNS

Low voltage withdrawable switchgear

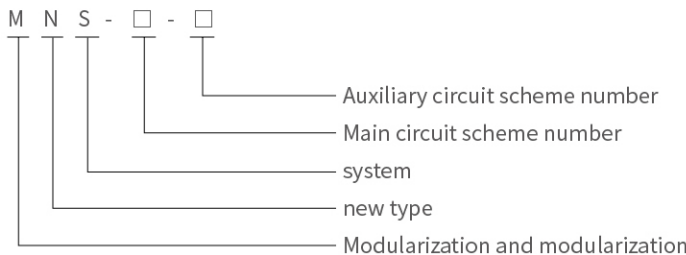


summary

The MNS low-voltage withdrawable switchgear (hereinafter referred to as the switchgear) is developed by our company with reference to the MNS series low-voltage switchgear of ABB in Switzerland and comprehensive improvements. It is currently one of the more advanced low-voltage withdrawable switchgear equipment in China. This product is composed of standardized and series of modules, and the drawers have reliable mechanical interlocking devices, making it safer and more reliable for users to use.

This switchgear is suitable for three-phase five wire power supply systems with AC 50 (60) Hz, rated working voltage of 400V, 660V, rated current of 5000A and below. It can be used in power plants, substations, industrial and mining enterprises, buildings, hotels, airports, docks, and communication centers such as broadcasting and television to control power generation, transmission and distribution, energy conversion, and energy consumption equipment. The main busbar is compensated for reactive power through a capacitor compensation cabinet. Compliant with national standards: GB7251.1 "Low voltage switchgear" IEC60439 "Low voltage switchgear and control equipment"

Model meaning



Normal usage conditions

- ◆ The ambient air temperature shall not exceed +40 °C, not be lower than -5 °C, and the average temperature within 24 hours shall not exceed +35 °C.
- ◆ The relative humidity of the surrounding air does not exceed 50% at a maximum temperature of +40 °C, and there is a higher relative humidity at lower temperatures, such as 90% at +20 °C. However, considering the possibility of occasional moderate condensation due to temperature changes.
- ◆ For indoor use, the altitude of the usage location shall not exceed 2000m.
- ◆ It should be installed in a place without severe vibration and impact, and where electrical components are not corroded.

Main technical parameters

Serial number	name	GB7251.1-2005 Low Voltage Switchgear and Control Equipment (TTA)	
		IEC60439 "Low Voltage Switchgear and Control Equipment"	
1	Overvoltage category		
2	class of pollution	3	
3	Rated working voltage (Ue) (V)	400/660	
4	Rated insulation voltage (Ui) (V)	660/1000	
5	Rated frequency (Hz)	50(60)	
6	Rated current	≤ 5000A	
7	Horizontal busbar	Rated short-time withstand current (Icw) (kA)	50,65,80 (1s effective value)
8		Rated peak withstand current (Ipk) (kA)	105140176 (maximum value in 0.1s)
9	Vertical busbar	Rated maximum working current	≤ 1000A
10		Rated short-time withstand current	50kA
11		Rated peak withstand current	105kA
12	Shell protection level	IP30 IP40 (special instructions)	

structure characteristics

This switchgear is more in line with China's national conditions due to the introduction of advanced technology from Swiss ABB and technological improvements made on its original basis. The cabinet is composed of various cabinet frame structures and drawer units that meet various needs through connectors made of 25mm modulus C-shaped profiles. High strength flame-retardant engineering plastic components are used in the MCC cabinet to make its safety performance more reliable. In addition, foreign functional boards are modified and combined with a modulus of 200mm, which is more conducive to the design requirements of PC cabinet and MCC cabinet mixed cabinets. The extraction unit and cabinet have reliable interlocking devices to prevent load tripping when the switch is powered on, improving its safety. In addition, the cabinet is generally assembled with cold-rolled steel plates after passivation treatment, or aluminum zinc coated steel plates can be used according to different user needs.

- ◆ Type of switchgear
 - ◇ Power supply and busbar cabinet
- Using various types of frame type circuit breakers from both domestic and international sources, such as RMW1, CW1, NA1, DW45, CDW7, MT, E series circuit breakers, as the main switch, to achieve power receiving or bus coupling functions.
- ◇ Power Center Cabinet (PC)
 - We use various types of cabinet mounted circuit breakers from both domestic and international sources, such as DW45, NA1, CDW7MT, and E series circuit breakers, for power distribution.
- ◇ Motor Control Center (MCC)
 - Assembled from drawers of various sizes, the main switches of each circuit adopt high breaking capacity plastic case circuit breakers or rotary load switches with fuses.
- ◇ Reactive power compensation cabinet
- ◆ Cabinet Introduction
 - ◇ Basic dimensions of cabinet body
 - Power receiving cabinet and contact cabinet

	Main busbar adapter cabinet	Power receiving cabinet and contact cabinet
Height (mm)	2200	2200
Width (mm)	400	600 800 1000
Depth (mm)	800 1000	800 1000
remarks		



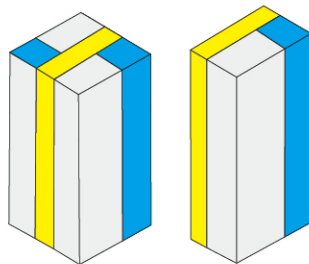
24E

Power Center (PC) Cabinet

	2Taiwan circuit breaker	3Taiwan circuit breaker
Height (mm)	2200	2200
Width (mm)	800 1000	800 1000
Depth (mm)	800 1000	800 1000
remarks	DW45-2000 and similar circuit breakers with low download traffic and small volume	DW45-2000 and similar circuit breakers with low download traffic and small volume

Motor Control Center (MCC) Cabinet and Capacitor Compensation Cabinet

	MCC 柜			Capacitor compensation cabinet
Height (mm)	2200			2200
Width (mm)	600	800	1000	600 800 1000
Depth (mm)	1000 800	1000 800	1000 800 600	800 1000 600



Busbar area Wire area Electrical area

◇ Cabinet partition design

The MNS cabinet can be composed of single-sided or double-sided operation cabinets as needed, and each cabinet is fixedly divided into three small compartments. That is, the main busbar room, electrical room, and cable room. (See Figure 2 for details)

◇ Security protection system

Each cabinet is equipped with a flame-retardant high-density polyurethane plastic functional board or an electroplated partition installed between the main busbar room and the electrical room. Its function is to effectively prevent accidents caused by arcing and short circuits between the switch components due to faults, making operation safer.

There are galvanized metal bottom plates with ventilation holes between the upper and lower drawers, which provide strong isolation between adjacent circuits.

Various plastic components are used inside the cabinet to support the live parts, which are required to be halogen-free and have CTI300 level anti leakage performance.

There is an independent PE grounding system and N neutral conductor inside the cabinet, both of which run through the entire device. Each circuit can be connected to the nearest grounding or neutral point. The installation of the entire busbar system is shown in Figure 3. The frame structural components are connected by self tapping screws, which have high grounding reliability. (See Figure 3 for details)

◆ Busbar system

The horizontal busbar of the switchgear is arranged in the horizontal busbar isolation room of the switchgear, which can be placed at the back or top of the cabinet. The horizontal busbar in the cabinet of the rear outlet structure is placed at the top of the cabinet. The distribution busbar (vertical busbar) is assembled in a flame-retardant plastic functional board, which can prevent discharge caused by electric arc and prevent human contact. It is connected to the main busbar through connectors.

◆ Electrical and mechanical interlocking of drawers

The drawer unit has a reliable mechanical interlocking device, which is controlled by an operating handle and has obvious opening, closing, testing, extraction, and isolation positions. To enhance security measures, a padlock can be added after positioning the joystick, up to a maximum of three locks can be added.

◆ Rear outgoing switchgear structure

The outgoing line behind the cabinet can reduce the width of the switchgear arrangement. The main busbar of the rear outgoing switchgear is horizontally installed at the top of the switchgear, and the rear half of the cabinet is the cable compartment. The incoming and outgoing cables are connected in the cable compartment behind the cabinet. The front of the switchgear is a device compartment, which houses the functional units of the switchgear. The system design moves the cable compartment on the side of the switchgear to the rear half cabinet, greatly reducing the arrangement width of the switchgear to further meet the requirements of substation spatial layout.

The feeder cabinet is 600mm wide and 1000mm deep, with an independent busbar compartment at the top, isolated from the device compartment. The effective installation height of the front device compartment is 72E (E=25mm), which is isolated from the rear cable compartment by a multifunctional board, fully utilizing the installation space of the switchgear. The structure is compact and the unit configuration is flexible. The cable room at the back is equipped with a door for easy installation and maintenance. Refer to Figure 4 for the appearance.

The width of the incoming cabinet is determined based on the frame current of the incoming unit, with recommended widths of 400, 600, 800, and 1000mm, and a cabinet depth of 1000mm.

Table 1

Main busbar adapter	project		Allowable deviation (mm)
1	verticality		3.3
2	Horizontal degree	Top of adjacent cabinets	2
		Top of the cabinet in a row	5
3	Unevenness	Adjacent cabinet edges	1
		Beside the cabinet in a row	2
4	Cabinet seam		2

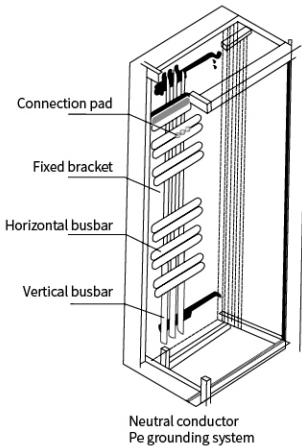


Figure 2 Schematic diagram of cabinet

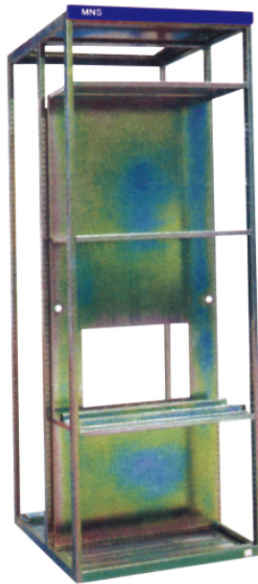
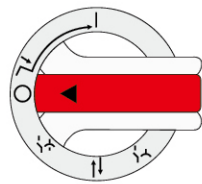
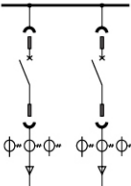
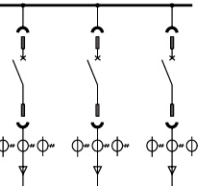
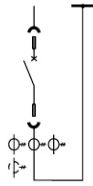
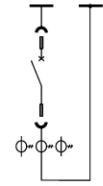
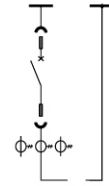


Figure 3 MNS Bus System

Schematic diagram of 8E/2 and 8E/4 operation switch functions



► Technical solution legend

Scheme Number		01	02	03		04		05	06	07	08	09	10
One time plan													
Cabinet width		24E	32E	40E		40E		24E	32E	24E	24E	32E	24E
Equipment room height		72E	72E	72E		72E		72E	72E	72E	72E	72E	72E
Main electrical components	Maximum operating current	2000A	4000A	2×1600A		2×1000A		2000A	4000A	2000A	3150A	4000A	4000A
	Model and specifications					quantity							
	MT, CM1 and other types of circuit breakers	1	1	2		3		1	1	1	1	1	
	LN and BH type current transformers	3	3	3×2		3×3		3(4)	3(4)	3	3	3	
	purpose	Cable inlet and outlet lines						Cabinet top incoming and outgoing lines (cable or busbar bridge)				liaison	

Scheme Number	11	12	13	14	15	16	17	18	19	20	21	22
One time plan												
Cabinet width	32E	32E	32E	40E	40E	40E	40E	40E	40E	40E	40E	40E
Equipment room height	72E	72E	72E	8E/4	8E/2	8E	16E	24E	8E	16E	24E	32E
Maximum operating current	2500A	3150A	4000A	32A	63A	250A	400A	500A	250A	400A	630A	800A
Main electrical components	quantity											
	Model and specifications	CM1, NS and other types of circuit breakers										
	C45, C65, DZ47 and other circuit breakers			1	1	1	1	1	1	1	1	1
	LN and BH type current transformers	3	3	3 (with user provided)	1	3or1	3or1	3or1	3or1	3	3	3
purpose		metering	Used in conjunction with Plan 10		feed				liaison			

LOW VOLTAGE SWITCHGEAR SERIES

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GGD

Low voltage complete switchgear



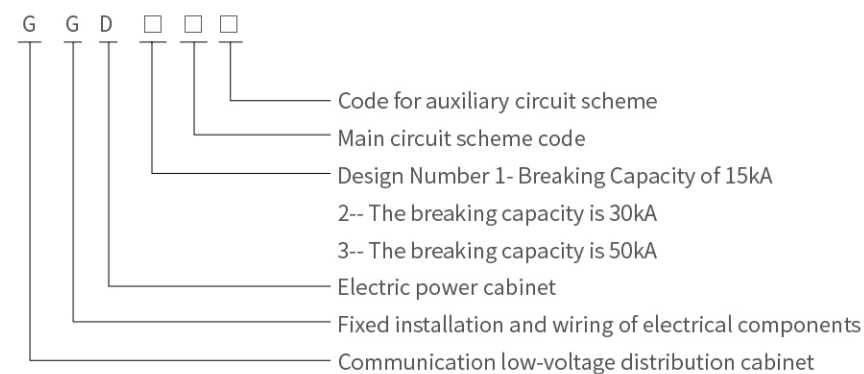
summary

GGD type AC low-voltage distribution cabinet is suitable for power plants, substations, industrial and mining enterprises and other power users' AC 50Hz, rated working voltage 380V, rated working current 5000A distribution systems. It is used for power conversion, distribution and control of power, lighting and distribution equipment.

The product has the characteristics of high breaking capacity, good dynamic and thermal stability, flexible electrical scheme, convenient combination, strong practicality, novel structure, and high protection level. Can be used as a replacement product for low-voltage switchgear.

The GGD type AC low-voltage distribution cabinet complies with standards such as IEC439 "Low voltage switchgear and control equipment" and GB7251 "Low voltage switchgear".

Model meaning



Normal operating environment

- ◆ The ambient air temperature should not exceed +40 °C and should not be lower than -5 °C. The average temperature within 24 hours shall not exceed +35 °C.
- ◆ For indoor installation and use, the altitude of the usage location shall not exceed 2000m.
- ◆ The relative humidity of the surrounding air should not exceed 50% at a maximum temperature of +40 °C, and a higher relative humidity is allowed at lower temperatures. (For example, 90% at +20 °C) should take into account the possibility of occasional condensation due to temperature changes.
- ◆ During equipment installation, the inclination with respect to the vertical plane should not exceed 5%.
- ◆ The equipment should be installed in a place without severe vibration and impact, as well as in a place where electrical components are not corroded.
- ◆ When users have special requirements, negotiate with the manufacturer to resolve them.

Electrical performance

Basic electrical parameters

model	Rated voltage (V)	Rated current (A)	Rated short-circuit breaking current (kA)	Rated short-time withstand current (1S) (kA)	Rated peak withstand current (kA)
GGD1	380	A 1000	15	15	30
GGD1	380	B 600(630)	15	15	30
GGD1	380	C 400	15	15	30
GGD2	380	A 1500(1600)	30	30	63
GGD2	380	B 1000	30	30	63
GGD2	380	C 600	30	30	63
GGD3	380	A 3200	50	50	105
GGD3	380	B 2500	50	50	105
GGD3	380	C 2000	50	50	105

▶ Appearance and installation dimensions

Product code	A	B	C	D
GGD06	600	600	450	556
GGD06A	600	800	450	756
GGD008	800	600	650	556
GGD08A	800	800	650	756
GGD10	1000	600	850	556
GGD10A	1000	800	850	756
GGD12	1200	600	1050	556
GGD12A	1200	800	1050	756

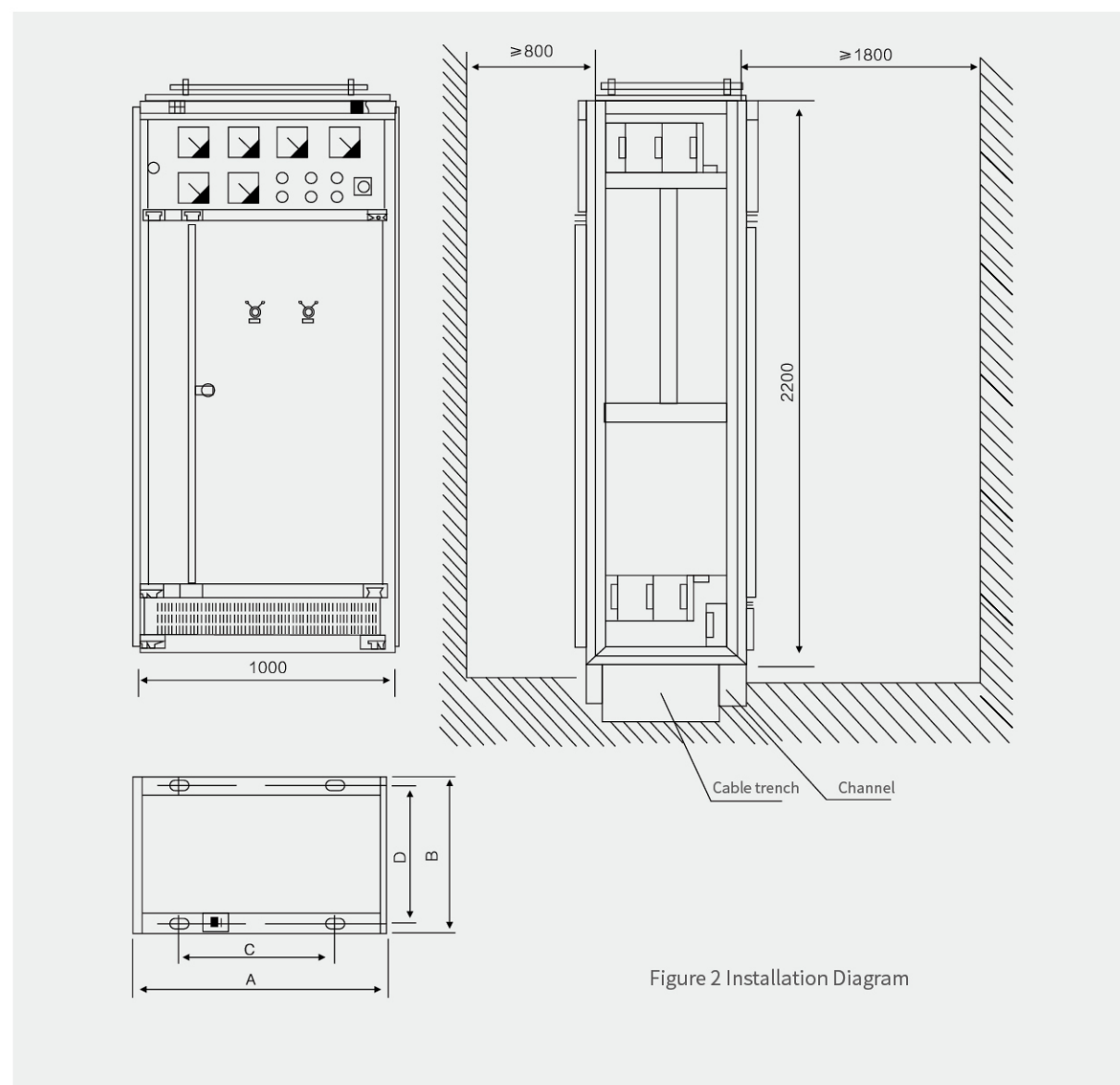


Figure 2 Installation Diagram

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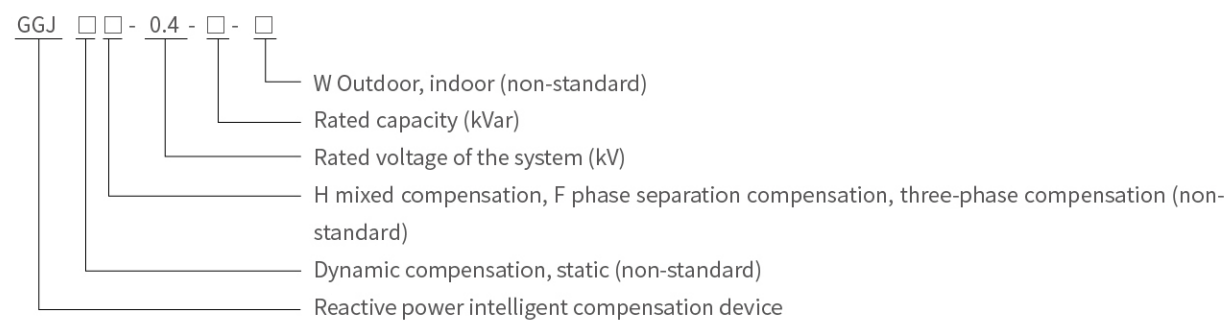
GGJ
Low voltage reactive power
intelligent compensation device



summary

The GGJ low-voltage reactive power intelligent compensation device adopts computer-aided design (CAD), introduces microcomputer control, and implements intelligent tracking compensation for reactive power. Its structure is reasonable, technology is advanced, and it is widely used in low-voltage power grids to improve power factor, reduce reactive power loss, and improve power supply quality. It is a new generation of energy-saving products. Dedicated to reactive power compensation for 130-600kVA three-phase transformers.

Model meaning



Environmental conditions for use

- ◆ Altitude: $\leq 2000\text{m}$;
- ◆ Environmental temperature: -20°C to $+45^{\circ}\text{C}$;
- ◆ Relative humidity: $\leq 90\%$ at 20°C ;
- ◆ Installation environment: No harmful gases and vapors, no conductive or explosive dust particles, and no severe mold.

main features

- ◆ Controlled by an intelligent controller, it has complete functions, reliable performance, and automatic compensation method. It can increase the power factor to 0.9 or above
- ◆ Real time display of power factor of the power grid, display range: lag (0.00-0.99), lead (0.00-0.99):
- ◆ It has multiple comprehensive protection functions such as overvoltage, subharmonic, overcompensation, system fault, phase loss, overload, etc;
- ◆ Remembering the set parameters, the system will not lose the parameters after a power outage. After the power grid returns to normal, it will automatically enter the operating state without the need for personnel to be on duty
- ◆ According to the load balance of the power grid, phase separation compensation or mixed compensation can be adopted;
- ◆ Strong anti-interference ability, able to withstand 2000V interference pulses directly input from the power grid, higher than national professional standards.

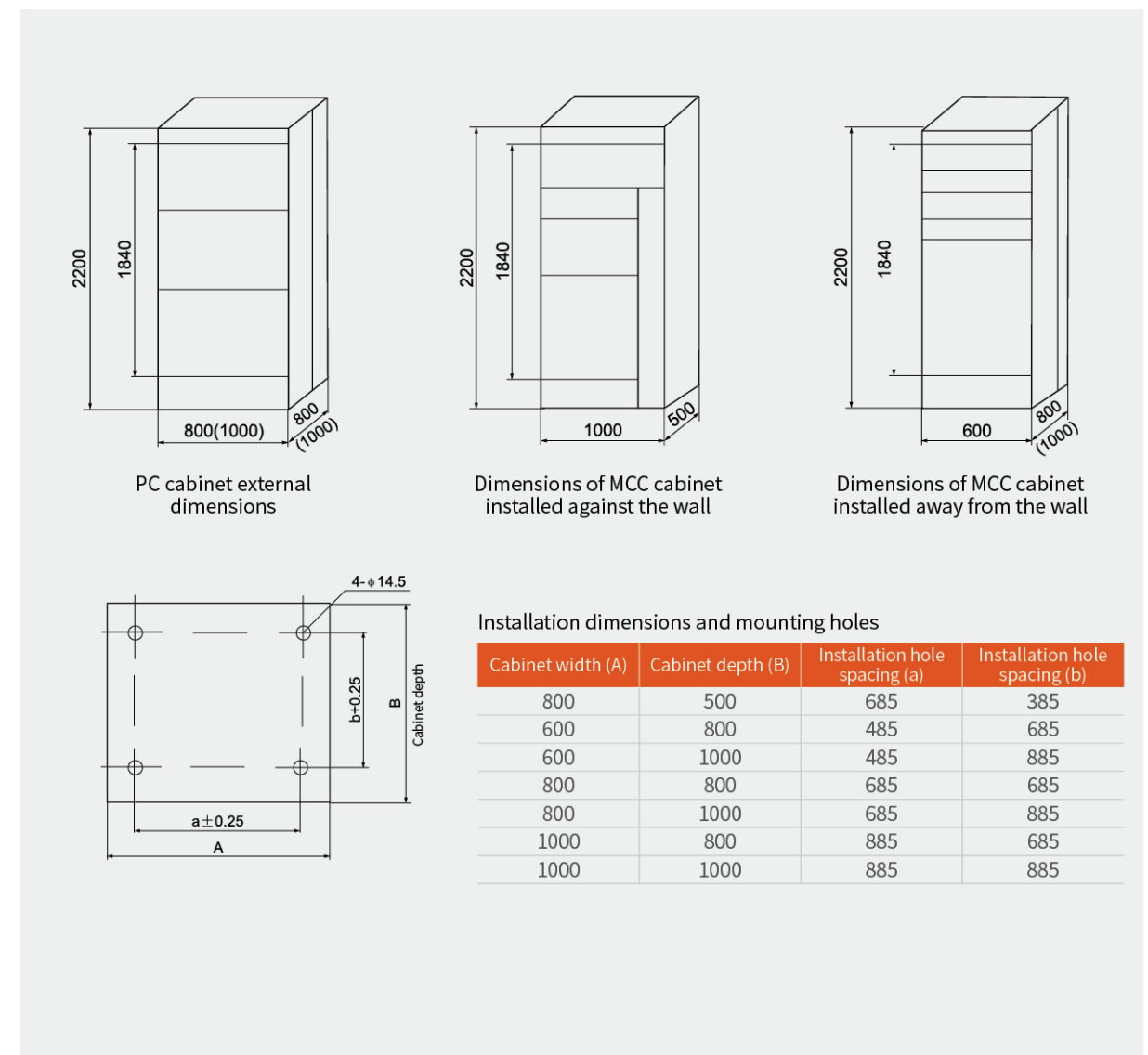
Main technical parameters

- ◆ Rated voltage: 0.38-0.66kV;
- ◆ Rated frequency: 50Hz;
- ◆ Rated capacity: 1-600kVar;
- ◆ Applicable voltage range: (0.85-1.1) times the rated voltage;
- ◆ Maximum allowable current: 1.3 times the rated current;
- ◆ Control circuit: 1-16 circuits;
- ◆ Switching time: 1-150S/time, adjustable;
- ◆ Working mode: automatic, continuous operation.

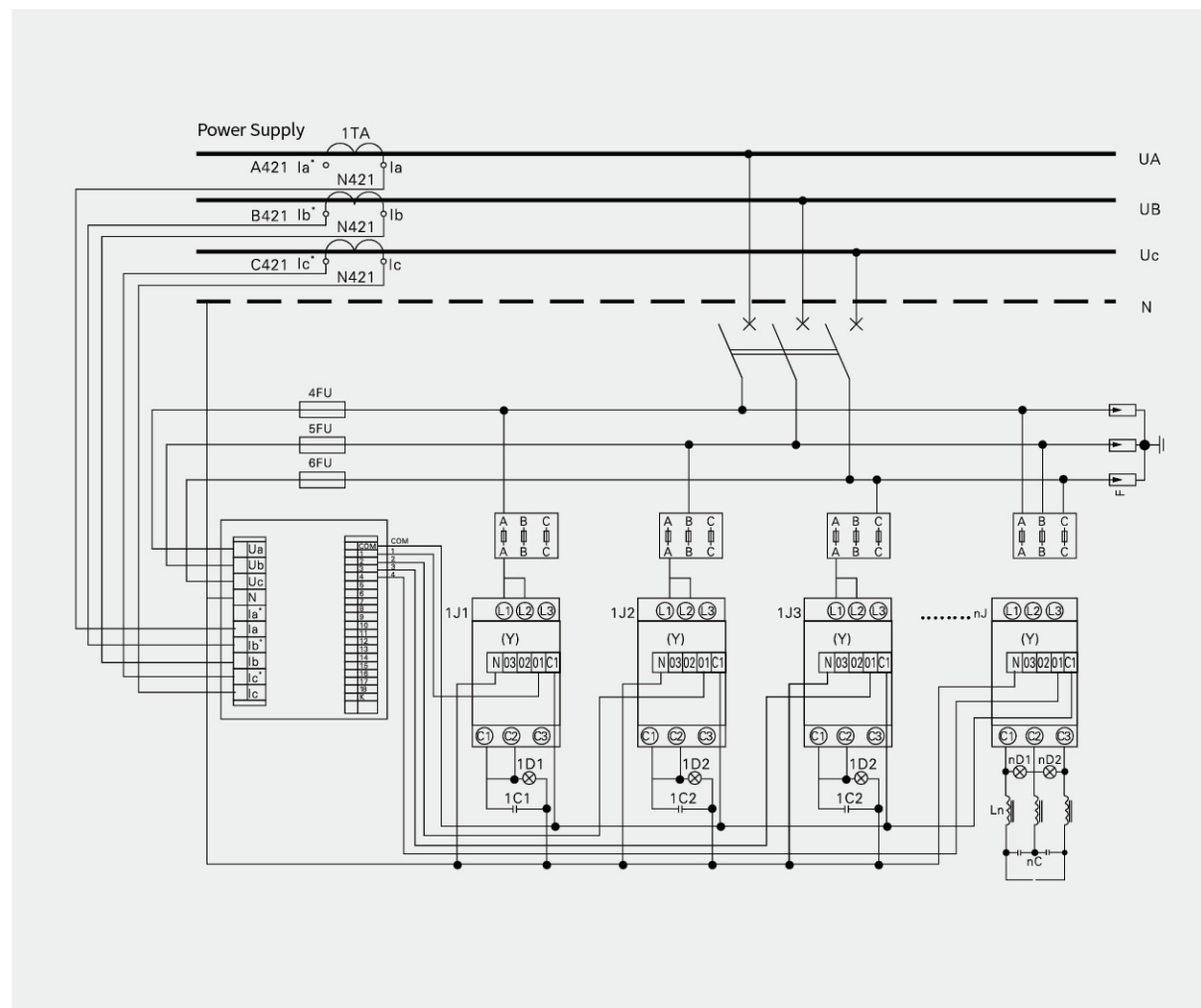
Distribution network detection function

- ◆ Real time measurement and hourly recording of three-phase voltage, current, frequency, active power, reactive power, power factor, active energy, and reactive energy on the low-voltage side of transformers: total distortion rate of voltage and current and 2-25th harmonic content;
- ◆ Equipped with RS-232 and RS-485 interfaces, it can perform data transcription on handheld computers and also achieve wireless meter reading, device testing, parameter setting, real-time measurement data, and record data reading through remote communication functions;
- ◆ Data analysis function: It can analyze, process, and perform statistical queries on operational load data; Comprehensive analysis of power supply quality, calculation of voltage qualification rate, power supply load rate, reliability rate, and maximum load rate; Query power factor, active power, and reactive power in different time periods; Draw curves of voltage, current, power factor, etc. for each phase: print comprehensive analysis and statistical reports.

Dimensions and Installation



▶ Example of Device System Principle



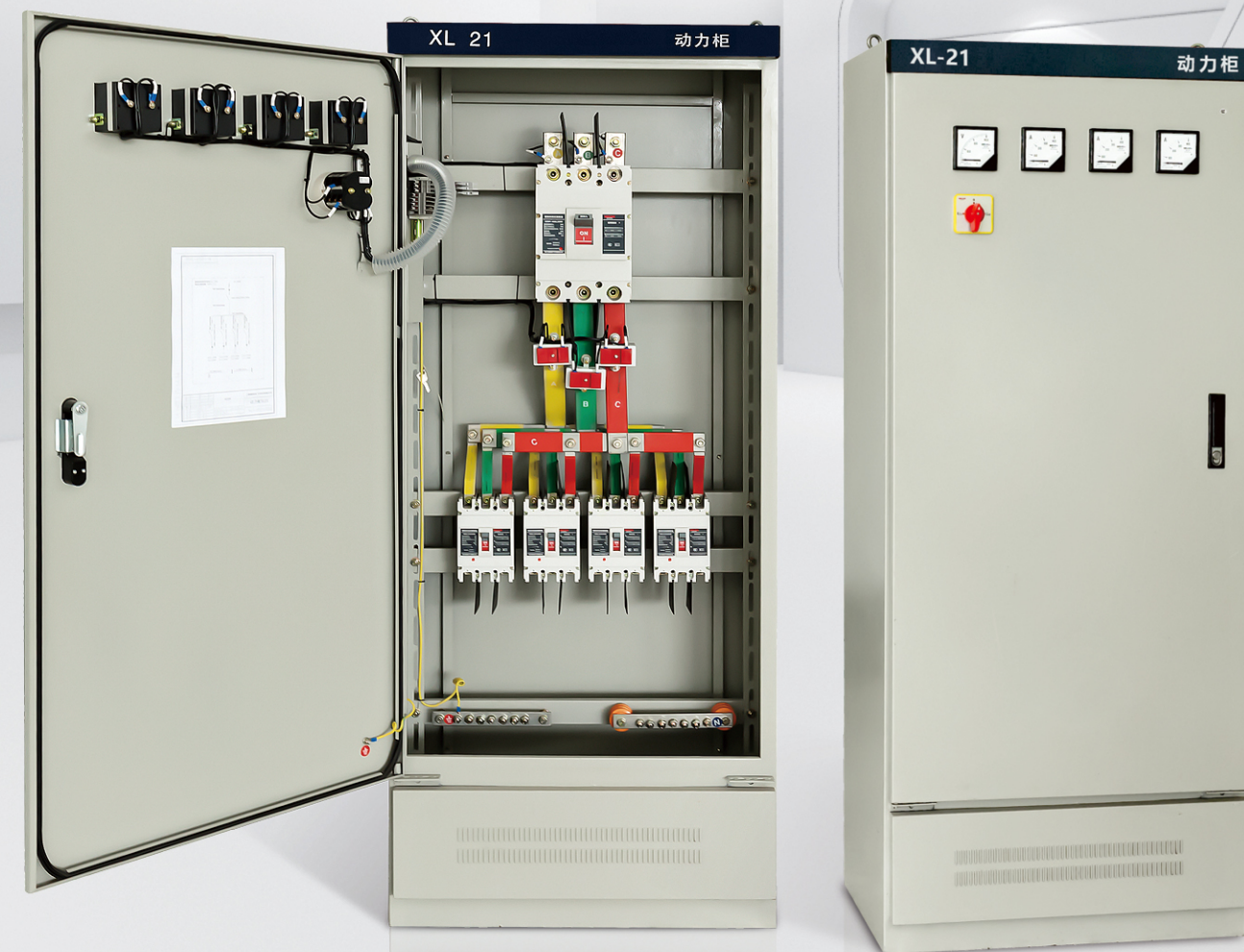
▶ Ordering Notice

1. Main circuit schematic diagram;
2. Compensation capacity and compensation method;
3. Any discrepancies with the normal usage conditions of the product must be explained in advance.

LOW VOLTAGE SWITCHGEAR SERIES

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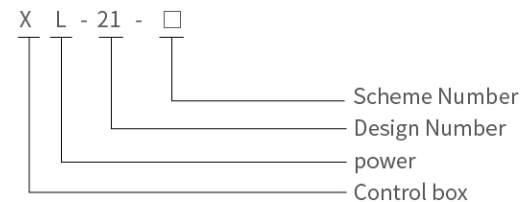
XL-21
Power distribution cabinet



summary

The XL-21 low-voltage power distribution cabinet is suitable for power distribution in three-phase four wire or three-phase five wire systems with AC voltage of 500 volts or below in power plants and industrial and mining enterprises. The XL-21 low-voltage power distribution box is an indoor device installed against the wall and requires maintenance in front of the screen.

Model meaning



Structural characteristics

The XL-21 low-voltage power distribution cabinet is enclosed, with a steel plate bent outer shell. The knife switch operating handle is installed on the upper right column in front of the box and can be used to switch power sources. There is a voltmeter installed in front of the distribution box to indicate the voltage of the busbar. There is a door in front of the distribution box. When the door is opened, all equipment inside the distribution box is exposed for easy maintenance and repair. This distribution box adopts domestically designed components, which have the characteristics of compact structure, easy maintenance, and flexible combination of circuit schemes. In addition to air circuit breakers and fuses for short-circuit protection, the distribution box is also equipped with contactors and thermal relays. The front door of the box can be equipped with operation buttons and indicator lights.

Normal usage conditions

- ◆ Environmental temperature: -50 °C ~+40 °C , and the average temperature within 24 hours does not exceed +36 °C ;
 - ◆ Altitude: not exceeding 2000m;
 - ◆ Relative humidity: not exceeding 50% when the surrounding air humidity is +40 °C ;
- At lower humidity levels, there can be higher relative humidity (e.g. 90% at +20 °C), and considering temperature changes, moderate frost formation is allowed:
- ◆ The inclination angle between the equipment and the vertical plane should not exceed 5 ° during installation, and the equipment should be installed in a place without severe vibration, impact, and corrosion.

Scheme Number	01	02	03	04	05	06
Main Circuit Scheme Diagram						

LOW VOLTAGE SWITCHGEAR SERIES

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JP

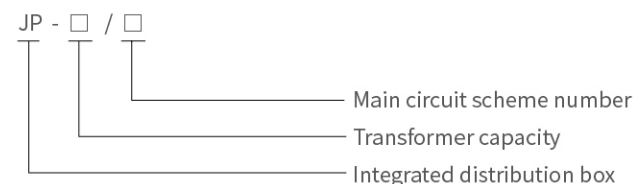
Integrated distribution box
(compensation/control/terminal/lighting)



summary

The JP series outdoor comprehensive distribution box is an outdoor comprehensive distribution device that integrates multiple functions such as metering, outgoing lines, and reactive power compensation. It has functions such as short circuit, overload, overvoltage, and leakage protection. It is small in size, beautiful in appearance, and economical and practical. It is installed on the poles of outdoor pole mounted transformers and is an ideal new generation of distribution products for urban and rural power grid renovation.

Model and its meaning



Normal operating environment

- ◆ Environmental temperature: -25 °C +40 °C ;
- ◆ Relative humidity of the air: daily average not exceeding 90%, monthly average not exceeding 90%;
- ◆ Altitude: not exceeding 2000m;
- ◆ Installed in a place without severe vibration and impact, and without corrosive gases.

Structural characteristics

The box structure is separate and horizontal, and the outer shell is made of 2mm high-quality stainless steel plate bent by multiple folding processes (or made of honeycomb structured stainless steel double layered composite plate, which has flame retardant, environmental protection, thermal insulation, anti condensation and other properties). Special stainless steel welding technology is used. After the box is formed, the overall strength is high, the surface is as smooth as a mirror, and no weld marks are left; The internal installation beams (plates) are treated with hot-dip galvanizing technology to ensure that they will not rust for twenty years; The front and rear doors of the box are easy for users to operate and maintain. The doors are surrounded by high elasticity and anti-aging sealing strips, and each door is equipped with two types of locks: light and dark. The exposed lock is equipped with an anti blocking and anti rust rain cover; Measurement room fully enclosed with lead sealing device; The side of the box is equipped with a rainproof and foreign object proof inlet cable conduit, with ventilation holes and cable outlet holes punched at the bottom, and ventilation ducts and wire mesh at the top. It has the functions of waterproofing, rust prevention, dust prevention, and foreign object prevention, with a protection level of IP54.

Main technical parameters

Serial number	name	Company	parameter
1	Transformer capacity	kVA	30-400
2	Rated working voltage	V	AC400
3	Auxiliary circuit operating voltage	V	AC220,AC380
4	Rated frequency	Hz	50
5	Rated current	A	≤ 630
6	Rated leakage action current	mA	30~300Adjustable
7	Protection level		IP54

Box dimensions

Dimensions of horizontal box body

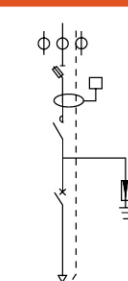
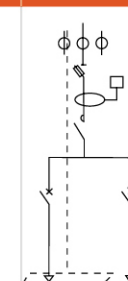
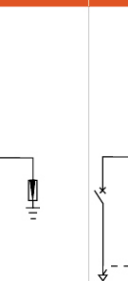
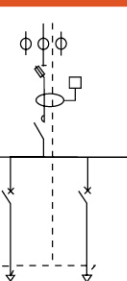
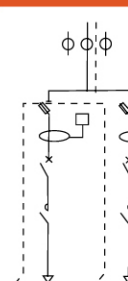
Transformer capacity	Scheme Number	L	W	H
30~100kVA	01、06	800	450	700
30~250kVA	02、04、07、09	900	500	700
100~400kVA	03、05、08、10	1100	600	800

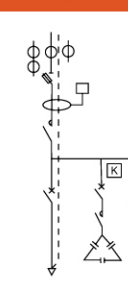
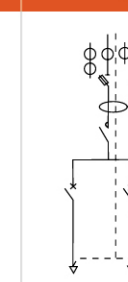
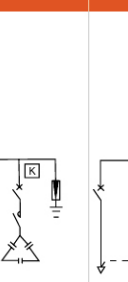
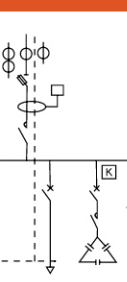
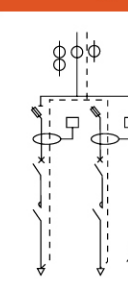
Vertical box body external dimensions

Transformer capacity	Scheme Number	L	W	H
30~100kVA	01、06	600	450	1000
30~250kVA	02、04、07、09	700	500	1000
100~400kVA	03、05、08、10	800	600	1100

*The above dimensions are for reference only

Main circuit scheme diagram

Scheme Number	01	02	03	04	05
Main Circuit Scheme Diagram					
explain	Total measurement/once Outgoing line/leakage protection	Total measurement/total leakage protection/Secondary outgoing line	Total measurement/total leakage protection/Three circuit outgoing line	Total measurement/secondary output Line/branch leakage protection	Total measurement/three output Line/branch leakage protection

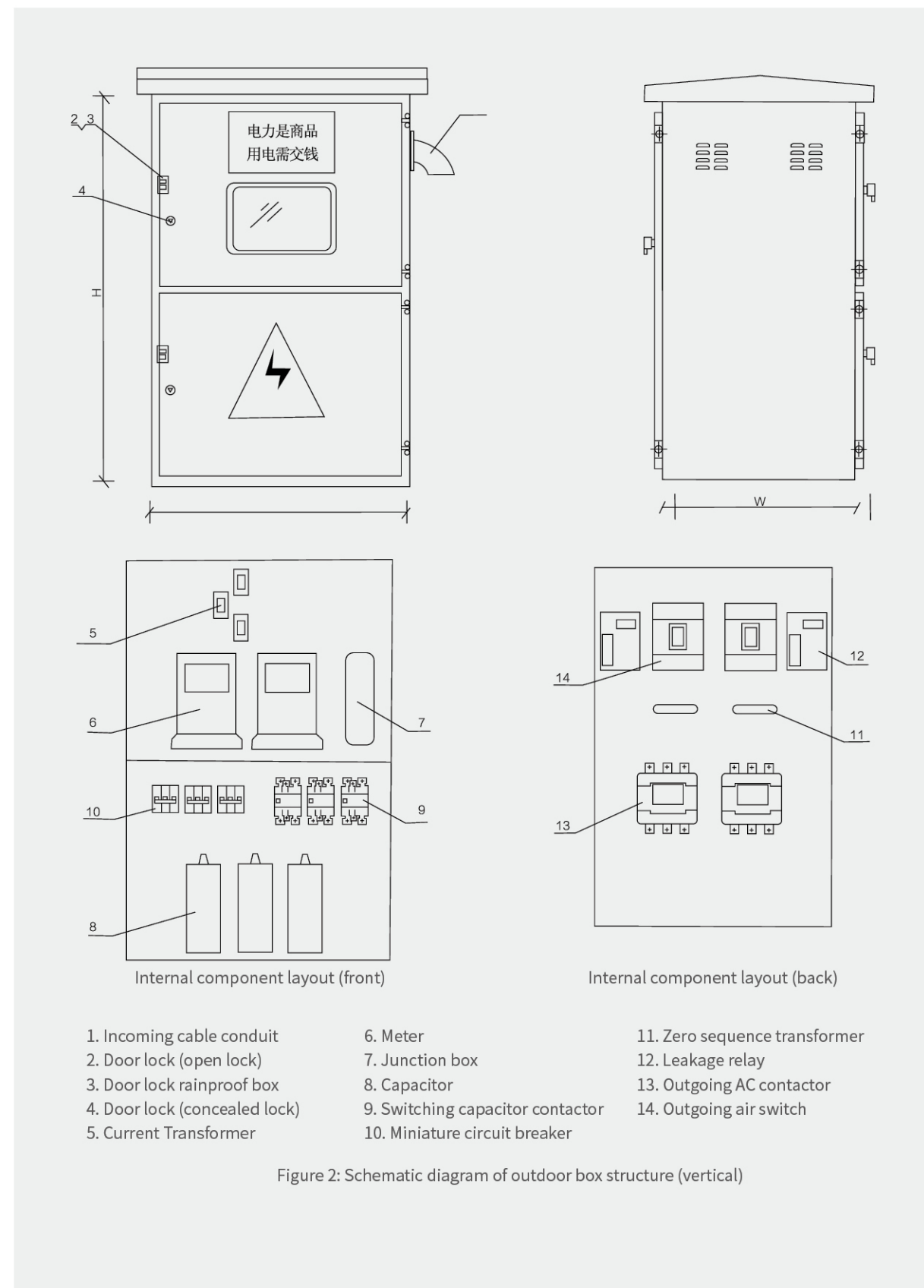
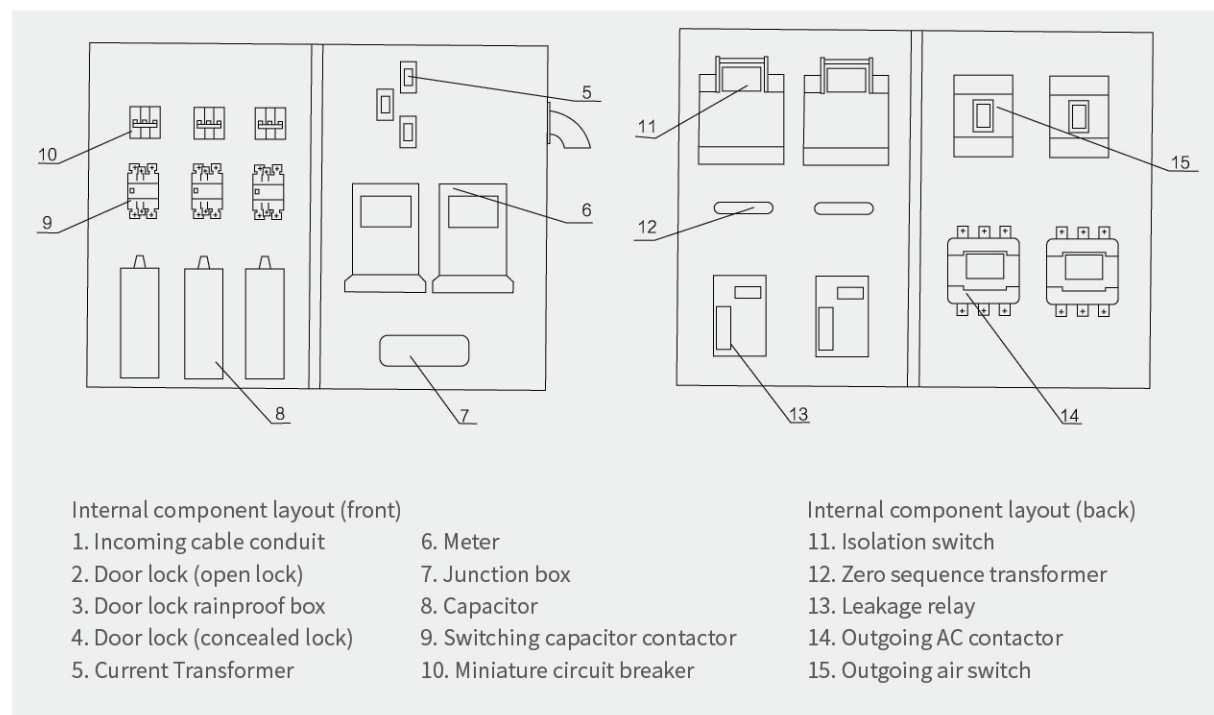
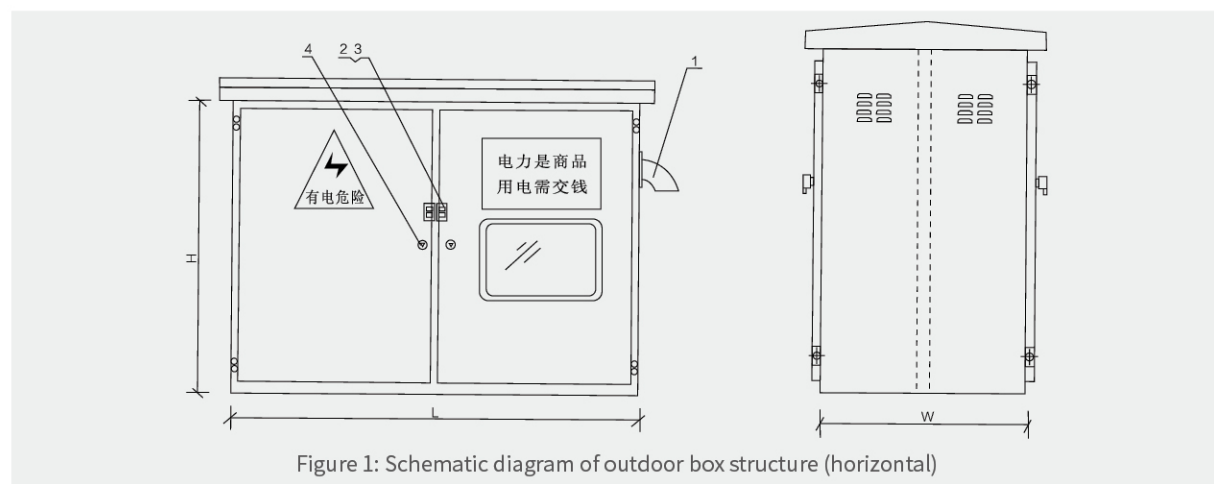
Scheme Number	06	07	08	09	10
Main Circuit Scheme Diagram					
explain	Total measurement/one-time output Line/leakage protection compensation	Total measurement/Total leakage protection/Two Return line/with compensation	Total measurement/Total leakage protection/Three Return line/with compensation	Total metering/secondary outgoing line/Branch leakage protection/compensation	Total measurement three circuit outgoing line/Branch leakage protection/compensation

Ordering Notice

- ◆ Product model and quantity;
- ◆ Product structure type (vertical, horizontal);
- ◆ The model and technical parameters of the main components;
- ◆ Other special requirements.



Schematic diagram of box structure

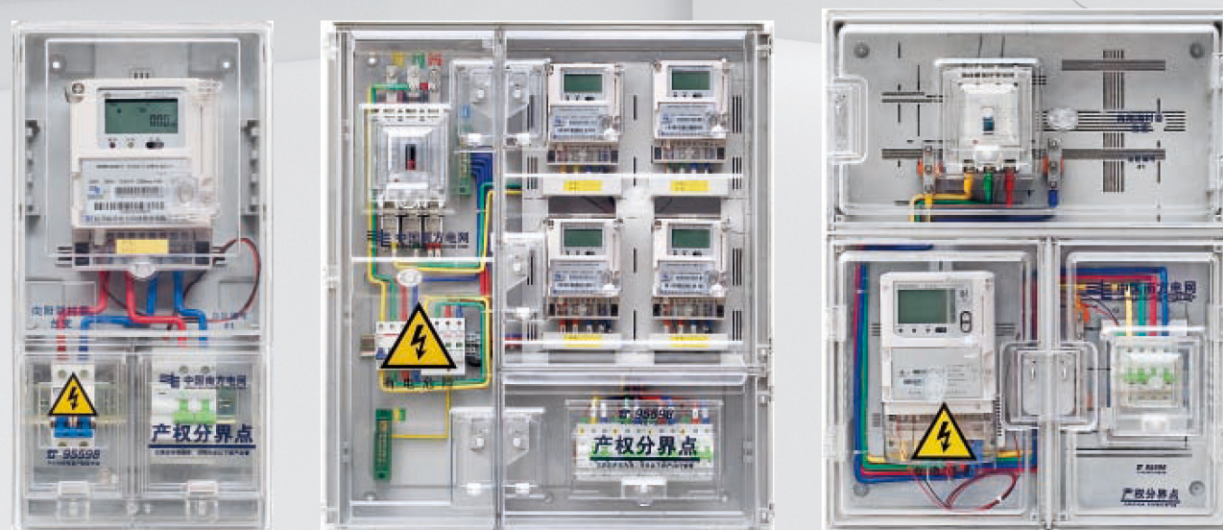


METER BOX SERIES

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FPFD/S

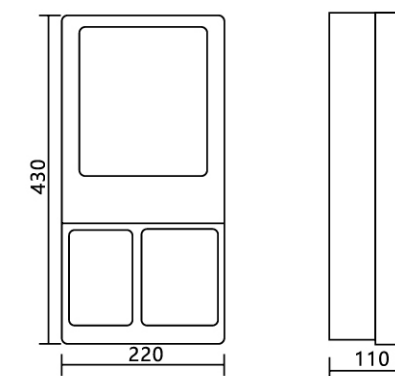
Non metallic meter box for cost control



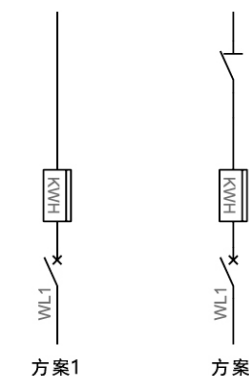
A single-phase non-metallic cost control meter box



(size: 430*220*110mm)



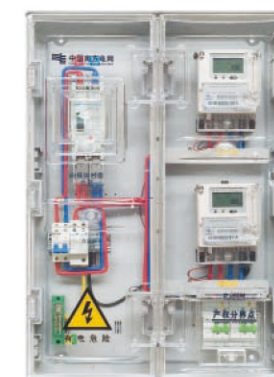
Measurement box size diagram



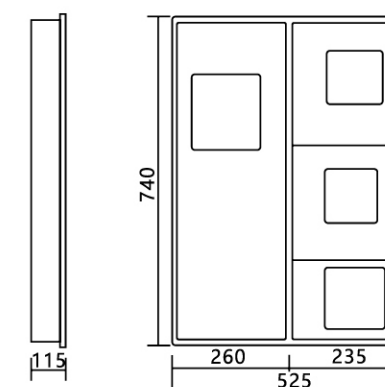
Wiring diagram

model	Configuration Content	to configure	Specifications	quantity	remarks
FPFD1X	Isolating switch	Incoming end	100A/2P	1	Wiring wire cross-sectional area BV16mm ²
	Cost controlled circuit breaker	Outgoing terminal	80A/2P	1	

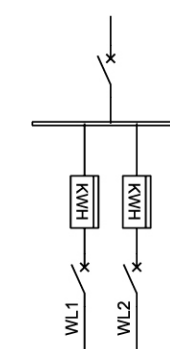
Two digit single-phase non-metallic cost control meter box



(size: 740*525*115mm)



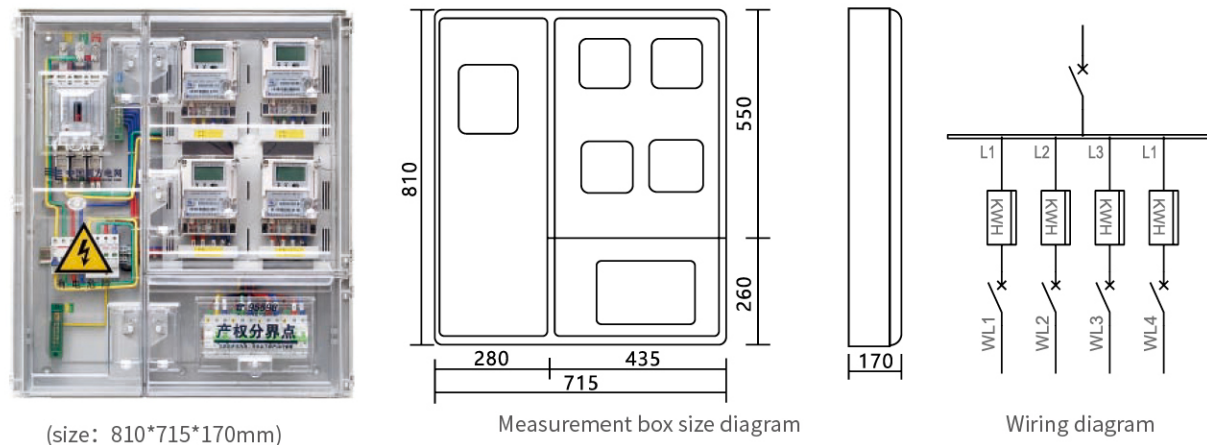
Measurement box size diagram



Wiring diagram

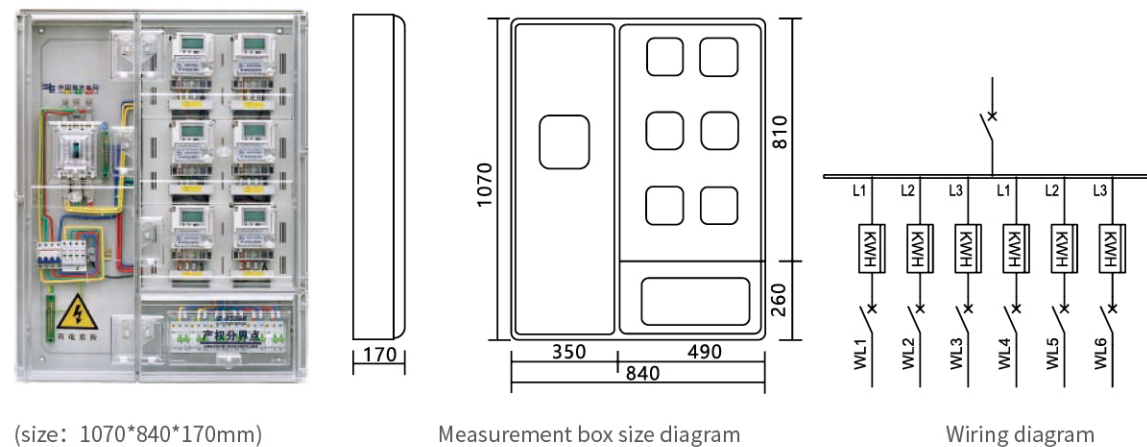
model	Configuration Content	to configure	Specifications	quantity	remarks
FPFD2X	Molded case circuit breaker	Incoming end	125A/2P	1	Wiring wire cross-sectional area BV16mm ² PE line cross-sectional area 16mm ²
	Switch terminal			2	
	Ground wire terminal			1	
	Cost controlled circuit breaker	Outgoing terminal	80A/2P	2	

▶ Four position single-phase non-metallic cost control meter box



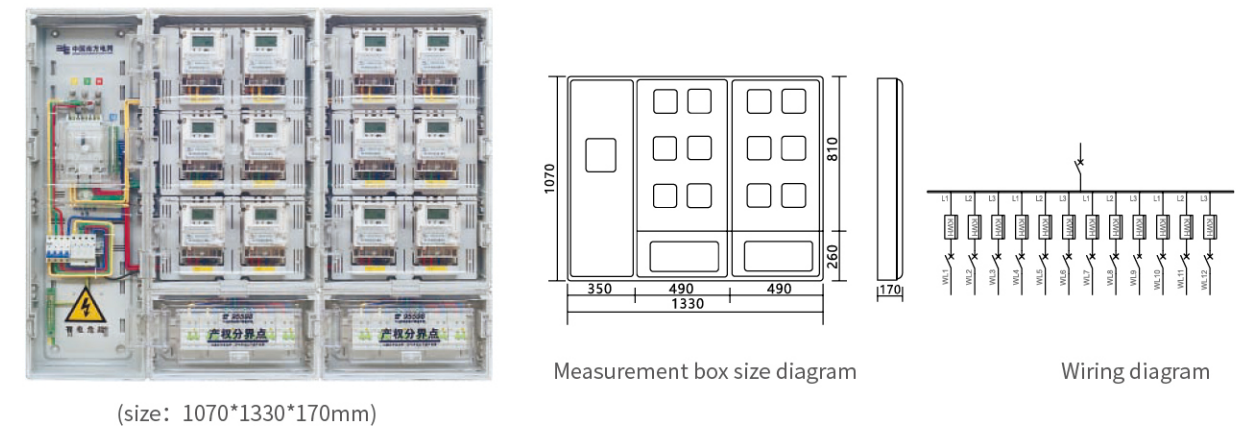
model	Configuration Content	to configure	Specifications	quantity	remarks
FPFD4X	Molded case circuit breaker	Incoming end	160A/3P	1	Wiring wire cross-sectional area BV16mm ² PE line cross-sectional area 16mm ²
	Switch terminal			3	
	Ground wire terminal			2	
	Cost controlled circuit breaker	Outgoing terminal	80A/2P	4	

▶ Six digit single-phase non-metallic cost control meter box



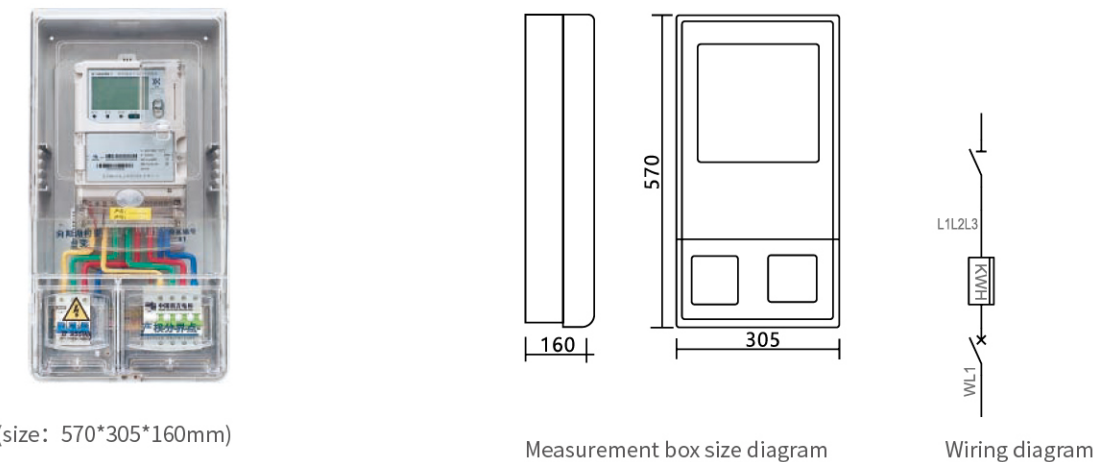
model	Configuration Content	to configure	Specifications	quantity	remarks
FPFD6X	Molded case circuit breaker	Incoming end	160A/3P	1	Wiring wire cross-sectional area BV16mm ² PE line cross-sectional area 16mm ²
	Switch terminal			3	
	Ground wire terminal			2	
	Cost controlled circuit breaker	Outgoing terminal	80A/2P	6	

▶ Twelve digit single-phase non-metallic cost control meter box



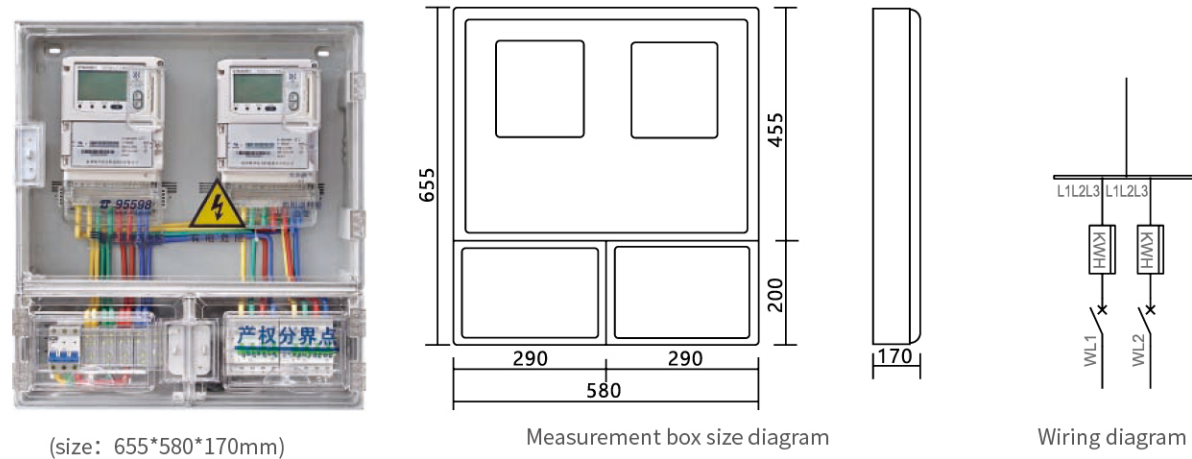
model	Configuration Content	to configure	Specifications	quantity	remarks
FPFD12X	Molded case circuit breaker	Incoming end	250A/3P	1	Wiring wire cross-sectional area BV16mm ² PE line cross-sectional area 16mm ²
	Switch terminal			3	
	Ground wire terminal			2	
	Cost controlled circuit breaker	Outgoing terminal	80A/2P	12	

▶ A three-phase non-metallic cost control meter box (direct type A1)



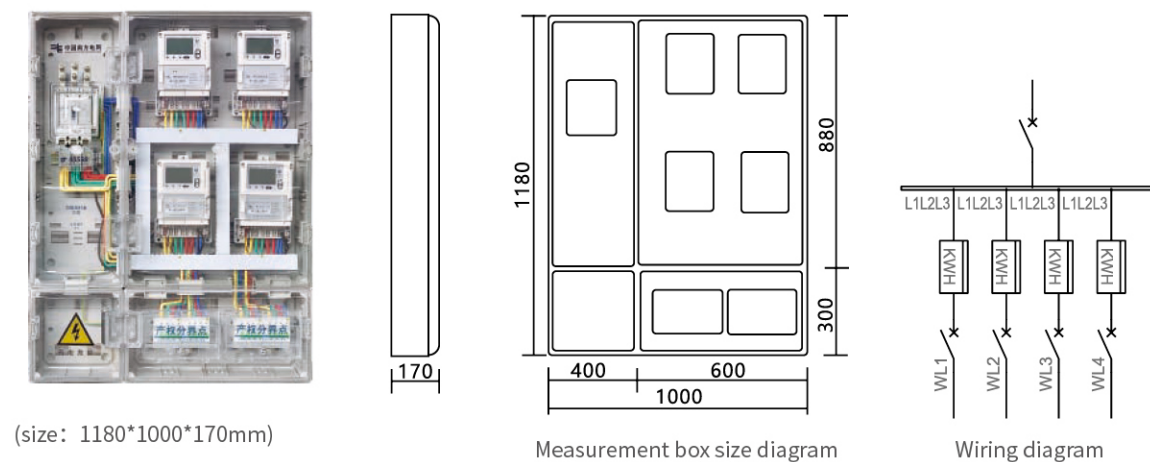
model	Configuration Content	to configure	Specifications	quantity	remarks
FPFS1X	Isolating switch	Incoming end	100A/3P	1	Wiring wire cross-sectional area BV25mm ² PE line cross-sectional area 16mm ²
	Cost controlled circuit breaker	Outgoing terminal	80A/4P	1	

▶ Two position three-phase non-metallic cost control meter box



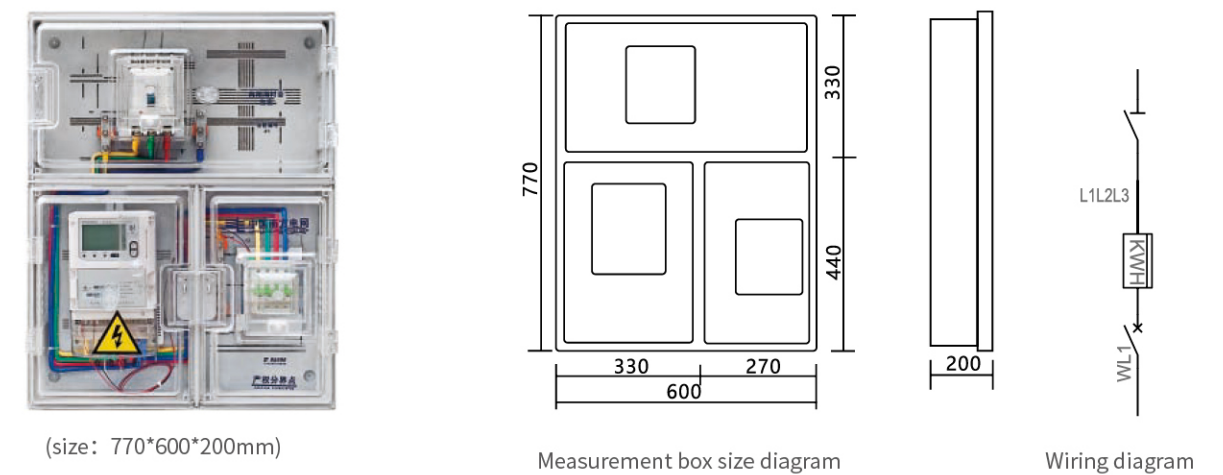
model	Configuration Content	to configure	Specifications	quantity	remarks
FPFS2X	Isolation switch (optional)	Incoming end	100A/3P	1	Wiring wire cross-sectional area BV25mm ²
	Cost controlled circuit breaker	Outgoing terminal	80A/4P	2	

▶ Four position three-phase non-metallic cost control meter box



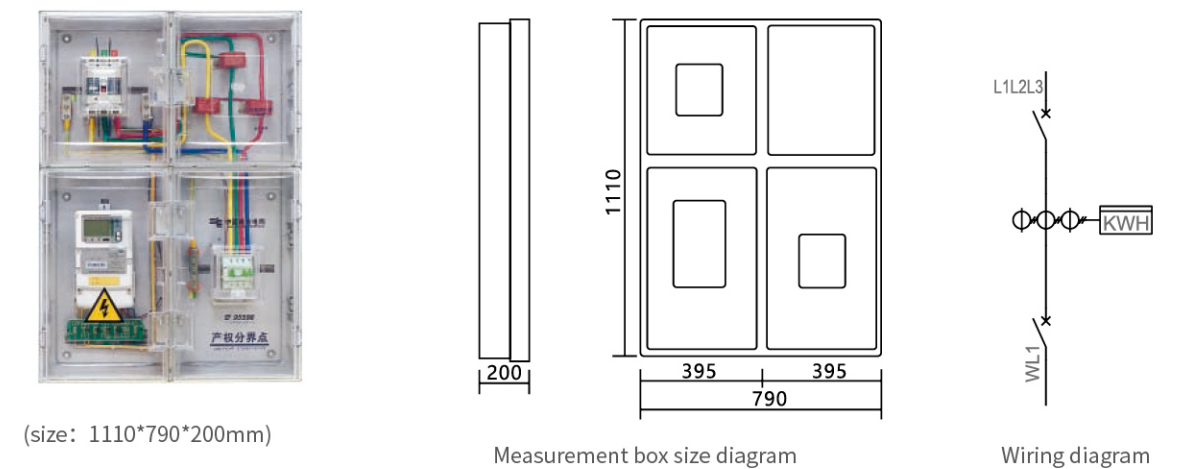
model	Configuration Content	to configure	Specifications	quantity	remarks
FPFS4X	Molded case circuit breaker	Incoming end	250A/3P	1	Wiring wire cross-sectional area BV25mm ² PE line cross-sectional area 16mm ²
	Switch terminal			3	
	Ground wire terminal			2	
	Cost controlled circuit breaker	Outgoing terminal	80A/2P	6	

▶ A three-phase power type non-metallic cost control meter box (without transformer, A1-D)



model	Configuration Content	to configure	Specifications	quantity	remarks
FPFS1D	Isolating switch	Incoming end	125A/3P	1	Wiring wire cross-sectional area BV25mm ² PE line cross-sectional area 16mm ²
	Cost controlled circuit breaker	Outgoing terminal	100A/4P	1	

▶ A three-phase non-metallic cost control meter box (reserved for transformer installation position, A1-C)



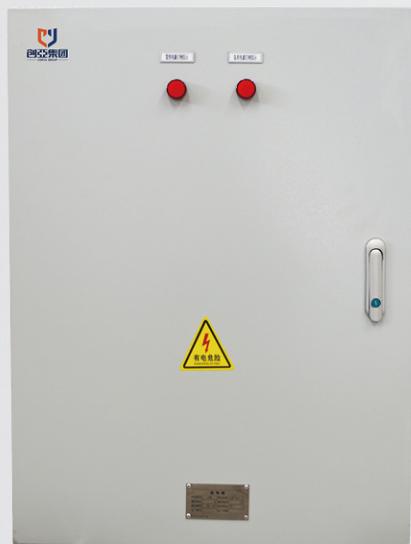
model	Configuration Content	to configure	Specifications	quantity	remarks
FPFS1H	Molded case circuit breaker	Incoming end	160A/3P	1	Wiring wire cross-sectional area BV35mm ² PE line cross-sectional area 16mm ²
	Cost controlled circuit breaker	Outgoing terminal	125A/4P	1	
	Measurement junction box		FJ6/PJ1	1	

SMALL THREE BOX SERIES

Respecting promise and keeping promise,
operating in the right way,
striving for perfection, coexistence and win-win situation

MDrail-E/XM/JXM

ABB Authorized control box/cabinet



characteristic

MDrail-E introduces ABB's next-generation design platform for low-voltage distribution and control systems, providing a highly secure, functional, and flexible solution that enables the digitization, industrialization, and routine functionality of the entire system, ensuring reliable and fast complete application.

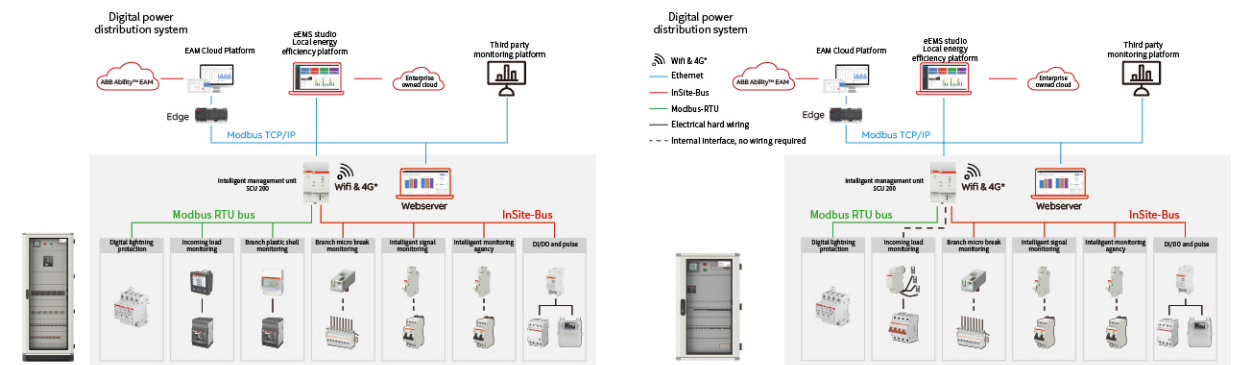
At the same time, this is an easily scalable system with standardized components that enable complete solutions to be completed quickly and cost efficiently, easily matching the intelligent and conventional application needs of various industries, low-voltage power distribution, and control. This scheme can be widely applied in multiple fields.

performance parameter

Product standards	GB 7251.1、GB 7251.12 IEC 61439-1、IEC 61439-2	
Maximum rated insulation voltage	1000V AC	
Rated working voltage	400V/690V AC	
Rated current	Hanging and standing cabinets	250/400A 630A
Rated short-time withstand current	Hanging and standing cabinets	10kA/1s 20kA/1s
Cabinet door type	Metal door/Glass door/Double door	
Protection level	toIP54 (30/31/40/41)	
Cabinet size (hanging box)	Recommended height	500~1000mm
	Recommended width	400~800mm
	Recommended Depth	190~290mm
Cabinet size (standing cabinet)	Recommended height	1400~2000mm
	Recommended width	400~800mm
	Recommended Depth	340~440mm

Rich digital solutions

Can collaborate with ABB Ability™ Cloud platform, eEMS studio local energy efficiency platform, and third-party platform are intelligently interconnected to achieve digital operation and maintenance management, providing support for carbon emission analysis and energy efficiency improvement



▶ summary

The XM/JXM enclosed control box is suitable for three-phase three wire, three-phase four wire, and three-phase five wire systems with a load current of 50Hz, 500V, and below, and a load current not exceeding 630A. It is used for control, leakage protection, motor overload, short circuit, phase loss protection, and various controls in the distribution system. The box has a reasonable design, small size, beautiful appearance, safe and reliable use, and is widely used in industries such as metallurgy, petrochemicals, medical and health, aviation, residential areas, shopping malls, schools, and urban renovation.

▶ Compliant with standards

1. IEC60439-1 "Low voltage switchgear and control equipment - Part 1: Type testing and partial type testing equipment"
2. GB7251.1 "Low voltage switchgear and control equipment - Part 1: Type testing and partial type testing equipment"

▶ Normal operating environment

- ◆ Altitude not exceeding 2000m;
- ◆ The ambient air temperature should not exceed 40 °C and should not be lower than -25 °C ;
- ◆ Places without severe vibration and impact;
- ◆ There is no explosive hazardous area, and there is no gas or conductive dust in the medium that can corrode metals and damage insulation.

▶ Structural characteristics

1. The box body is welded with cold-rolled steel plates of 1.2 or above, which have sufficient strength and rigidity.
 2. All metal components are protected with coatings or coatings according to their position and function in the structure. The coatings have sufficient thickness and adhesion to ensure permanent corrosion resistance.
 3. All the boxes are connected with standard fasteners, and each part or component of the assembled structure has good grounding measures to ensure that its circuit has permanent continuity.
 4. The control box has multiple optimized size specifications, suitable for configuration requirements of different schemes.
 5. The box body splicing adopts sealed welding without gaps. The control box adopts high-strength and high toughness hinges and door locks, and the semi-circular sealing strip is formed by special equipment foaming.
 6. The doors of the same control box can be interchanged left and right, and can also meet the requirements of left or right opening doors.
 7. The installation board depth of the control box can be adjusted freely to meet the installation requirements of various components.
 8. The lower part of the box is equipped with a sealing plate and a seepage hole. The sealing plate can be equipped with different sealing joints according to different inlet and outlet requirements.
- The inner side of the control box door panel with larger external dimensions is equipped with S-shaped porous reinforcement strips, which can also serve as installation brackets for anti-interference shielding plates.
10. The control box is equipped with a universal installation pendant (optional), suitable for various installation sizes.
 11. Protection level: IP40, IP65 (optional).



Adopting foam sealing technology

SMALL THREE BOX SERIES

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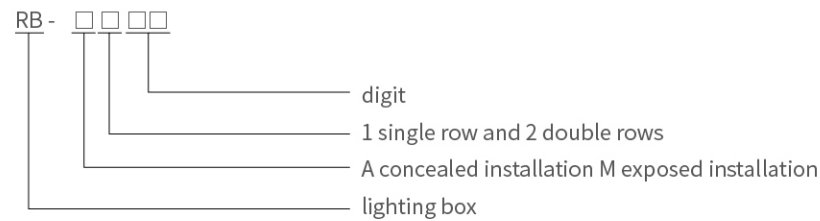
RB

Indoor lighting box/multimedia box



Indoor lighting box

Model and its meaning



product mix

1. Main parameters of the product

- Bottom box material: Spray coated board. Bottom box: Made of high-quality cold-rolled steel plate, with surface electrostatic spraying.
- Galvanized sheet bottom box: Made of high-quality electroplated galvanized steel sheet.
- Side dimensions of single row bottom box: ① 192 × 80mm for positions 10-21 ② 230 × 90mm for positions 24
- Panel material: The base and white movable door of the panel are made of high-quality HIPS material, and the overall color is white. 5. The transparent movable door is made of high-quality PC material.
- Panel installation method: fixed with screws
- Installation method: Embedded installation
- Each standard width: 18mm (standard width)
- Sectional dimensions of wiring terminals: ① 10-42 positions, 6 × 10mm
- Rated voltage:~AC400V (± 20%) 50~60Hz
- Rated current/maximum continuous input current (A): ① 55A (10~42 bits) 6 × 10mm
- Compliant with standards: GB17466.1-2008, GB17466.24-2008
- Protection level: IP40



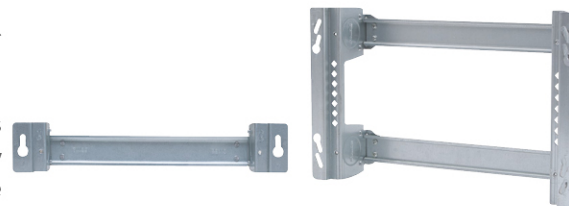
2. Double arc design with delicate touch

The base of the panel and the white movable door are both made of high-quality HIPS material, and the overall color is white; HIPS has strong impact resistance and is a high molecular weight material produced by adding polybutadiene rubber particles to polystyrene; The transparent activity door is made of high-quality PC material; The double row integrated panel is easy to install and will not create gaps due to uneven installation, making it cleaner and more aesthetically pleasing.



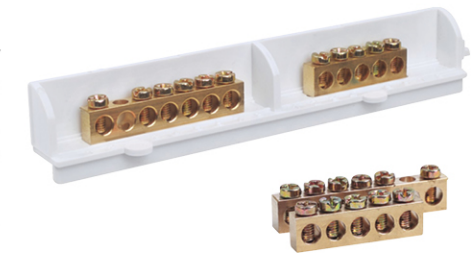
3. Integrated bracket for stable support

The internal guide rail bracket is composed of all metal components and has the function of lifting, rotating, and adjusting; Reverse riveting of the activity bracket and guide rail increases the strength of the bracket by 50%. Reduce damage caused by improper transportation and effectively control the occurrence of breakage due to improper installation.



4. Exquisite copper strips are sturdy and durable

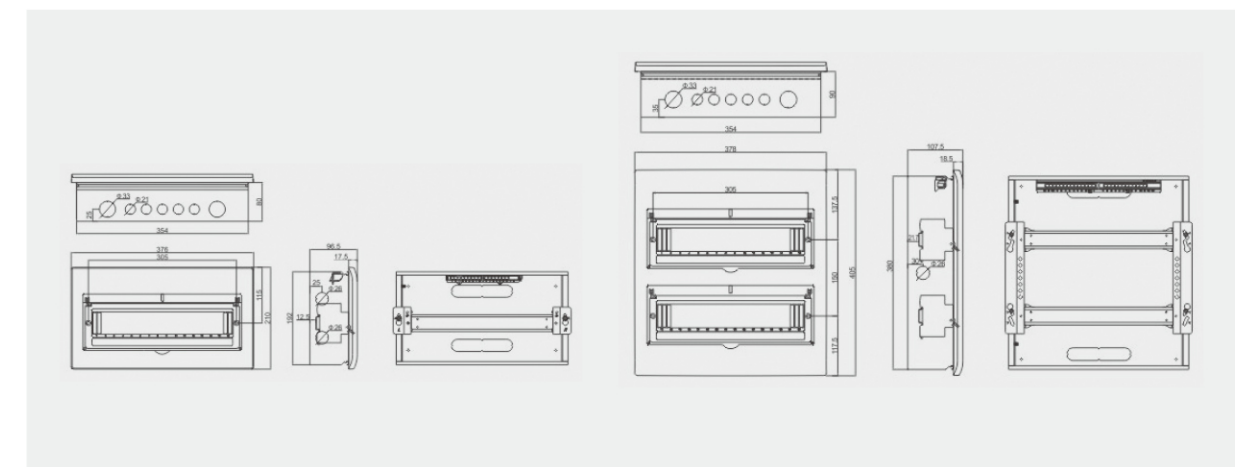
The design of having one more hole for grounding copper bars than for neutral copper bars ensures that each circuit in the distribution box has a separate hole for grounding and neutral copper bars. At the same time, there is at least one hole on the grounding copper bar dedicated to the grounding of the box, ensuring the electrical safety of users. The number of terminal wiring holes adopts a simplified configuration scheme.



Main technical parameters

Row number	digit	Product model	Total depth of the whole box(mm)	Cover size Length x Width x Thickness(mm)	Cover material			Size of concealed bottom box Length x Width x Depth (mm)
					base Matte finish	another name for Nanking Matte finish	Transparent door Matte finish	
a row; Row 1	10position	RB-A110	96.5	268×210×17.5(26)	HIPS	HIPS	PC	246×192×80×0.8
	13position	RB-A113	96.5	322×210×17.5(26)	HIPS	HIPS	PC	300×192×80×0.8
	16position	RB-A116	96.5	376×210× 17.5(26)	HIPS	HIPS	PC	354×192×80×0.8
	18position	RB-A118	96.5	412×210× 17.5(26)	HIPS	HIPS	PC	390×192×80×0.8
	21position	RB-A121	96.5	466×210×17.5(26)	HIPS	HIPS	PC	444×192×80×0.8
	24position	RB-A124	107.5	524×210× 18.5(26)	HIPS	HIPS	PC	498×230×90×1.0
Second row	32position	RB-A232	107.5	378×210×18.5(26)	HIPS	HIPS	PC	354×380×90×1.0
	42position	RB-A242	107.5	468×210×18.5(26)	HIPS	HIPS	PC	444×380×90×1.0

Appearance and installation dimensions



Multimedia box

Design principle of heat sink



New heat dissipation holes

There are air inlets and outlets at the bottom and top of the panel respectively, which can facilitate reasonable air convection.

New heat dissipation holes

The panel adopts independent hinges for strong stability.

Self-locking buckle

There are self-locking buckles on the right side of the upper and lower sides of the movable door, which can keep it in the ideal position when closed.

Main technical parameters of multimedia distribution box body

Serial number	Product model	Cover size(mm)	panel (including activity doors)	Bottom box		Dark box bottom box size (mm)	Total depth of the whole box(mm)	Cover installation hole(mm)	Install U number 1U=25Amm	Box top and bottom single Square knock off hole (mm)
				Material Science	appearance					
1	DMTP-RA	345×270×17.5(23.5)	HIPS	Cold rolled plate	High gloss spray coating	320×250×120×0.8	137.5	310	3U	4-φ26、12-φ21
2	DMTP-RA	345×270×17.5(23.5)	HIPS	Galvanized sheet	Original color of steel plate	320×250×120×0.8	137.5	310		
3	DMTP-RB	375×320×17.5(23.5)	HIPS	Cold rolled plate	High gloss spray coating	350×300×120×0.8	137.5	340	4U	4-φ26、13-φ21
4	DMTP-RB	375×320×17.5(23.5)	HIPS	Galvanized sheet	Original color of steel plate	350×300×120×0.8	137.5	340		
5	DMTP-RC	425×320×20.0(28.0)	HIPS	Cold rolled plate	High gloss spray coating	400×300×120×0.8	140	390	4U	4-φ26、15-φ21
6	DMTP-RC	425×320×20.0(28.0)	HIPS	Galvanized sheet	Original color of steel plate	400×300×120×0.8	140	390		

Installation diagram of multimedia junction box body

