Products Manual

Complete power distribution products
成套配电产品

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产品索引

终端配电产品
SP—JXF系列
低压封闭式配电箱

Terminal power distribution products

SP—JXF series

Low—voltage distribution box

1 产品概述 Product Overview

JXF低压配电箱适用于400V及以下的负荷电流不大于630A的三相三线、三相四线、三相　五线制系统，对配电系统做控制、漏电保护以及电动机的过载、短路、缺相及各种控制。该箱根据　配置实际情况而设计，设计合理、体积小、外形美观、结构新颖、防护等级高、使用安全可靠。可　广泛用于发电厂、轨道交通、航空航天、石油代工、冶金、纺织、地产、钢铁等行业控制保护之用。

SP-JXF low-voltage distribution box is applicable to three-phase three-wire, three-phase four-wire and three-phase five-wire systems of 400V and below or with load current not more than 630A for control, leakage protection, motor overload, short circuit and phase shortage. The box is designed according to the actual configuration, with reasonable design, small size, attractive appearance, novel structure, high protection grade, safe and reliable use. It can be widely used in power plant, rail transit, aerospace, petrochemical engineering, metallurgy, textile, real estate, steel and other industries for control and protection.

2 符合标准 Compliance with Standards

GB/T7251.12—2013《低压成套开关设备和控制设备第2部分：成套电力开关和控制设备》
GB/T72S1.12-2013 Low-voltage Switchgear and Controlgear Assemblies - Part 2: Power Switchgear and Controlgear Assemblies
IEC61439-1《低压开关设备和控制设备组合装置——第1部分：一般规则》
IEC61439-1 Low-voltage Switchgear and Controlgear Assemblies - Part 1: General Rules
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GB 10233 Basic Testing Method for Low-voltage Switchgear and Controlgear Assemblies
GB17625.1-2003《电磁兼容限值谐波电流发射限值(设备每相输入电流S16A)》
GB17625.1-2003 Electromagnetic Compatibility- Limits -Limits for Harmonic Current Emissions (Equipment Input Current Per Phase ≤ 16A)
GB 16838-2005《消防电子产品环境试验方法及严酷等级》
GB 16838-2005 Environmental Test Methods and Severities for Fire Electronic Products
GB 4208《外壳防护等级(IP代码)》
GB 4208 Degrees of Protection Provided by Enclosure (IP Code)
GB50171-2002《电气装置安装工程盘、柜及二次回路结线施工及验收规范》
GB50171-2002 Code for Construction and Acceptance of Switchboard Outfit Complete Cubicle and Secondary Circuit Electric Equipment Installation Engineering
GB14287.1~3-2005《电气火灾监控系统》
GB14287.1~3-2005 Alarm and Control System for Electric Fire Prevention

3 技术特点与优势 Technical Characteristics and Advantages

3.1、最佳的表面保护 Best surface protection

3.1.1采用德国环保高压静电喷涂自动设备
3.1.1 German environment-friendly and high-voltage electrostatic spraying automatic equipment is adopted
3.1.2喷涂工件表面形成陶化膜，产品表面涂层均匀色泽美观；
3.1.2 The vitrified membrane is formed on the surface of the spraying workpiece, and the surface coating of the product is uniform and attractive in color;
3.1.3一次性喷涂成膜厚度达60μm～80μm ,涂装厚度精度误差±20μm ;
3.1.3 The membrane thickness after one-time spraying is 60μm～80μm, and the precision error of coating thickness is ±20μm;
3.1.4喷涂附着力符合国家0级标准，可以满足168小时盐雾试验；
3.1.4 The spraying adhesion meets the national-level 0 standard, which can meet the 168h salt spray test;

3.2、可靠的电器连接方案 Reliable electrical connection scheme

3.2.1微型断路采用定制汇流排连接，满足温升与电气间隙要求；
3.2.1 The miniature circuit breaker is connected by the customized busbar, to meet the requirements of temperature rise and electrical clearance;
3.2.2全系采用国标电缆导线连接，可靠放心；
3.2.2 The whole system is connected by national standard cable conductor, which is reliable;
3.2.3铜排采用数字化数控设备加工，加工精度高有效防止因加工精度问题产生的铜排安装应力而产 生的接触可靠性问题；
3.2.3 The copper bar is processed by digital numerical control equipment with high processing accuracy, which effectively prevents the unreliable contact caused by the installation stress of the copper bar;
3.2.4先进的冷压接线端子设备保证了导线与元件的可靠连接；
3.2.4 The advanced cold pressing terminal equipment ensures the reliable connection between the conductor and the components;

3.3、7+5全面的检测标准 7+5 comprehensive test standards

按照IEC61439-1进行设计验证
Design verification according to IEC61439-1

结构检测 Structure inspection	性能检测 Performance inspection
1-材料和部件的强度 1 - Strength of materials and parts	1-介电性能 1 - Dielectric property
1-成套设备的保护等级 2 - Protection class of complete equipment	2-温升验证 2 - Verification of temperature rise
3-电气间隙和爬电距离3 - Electrical clearance and creepage distance	3-短路耐受强度 3 - Short-circuit resistance strength
4-电击防护和保护电路完整性 4 - Integrity of protection against electric shock and protection circuit	4-电磁兼容性 4 - Electromagnetic compatibility
5-开关器件和元件的组合 5 - Combination of switching devices and components	5-机械操作 5 - Mechanical operation
6-内部电路和连接 6 - Internal circuit and connection	
7-外部接线端子 7 - External terminal	

4 使用环境条件 Environmental Conditions for Use

3.2、可靠的电器连接方案 Reliable electrical connection scheme

4.1周围空气温度不高于+40°C ,不低于-25°C ，24小时内平均温度不得高于+35°C ,超过时需根据实际情况降容运行；
4.1 The ambient air temperature shall not be higher than +40°C and not lower than - 25°C, and the average temperature within 24h shall not be higher than +35°C. Otherwise, the capacity shall be reduced according to the actual situation;
4.2使用地点的海拔高度不得超过2000m ；
4.2 The altitude at the place of use shall not exceed 2,000m;
4.3周围空气相对湿度在最高温度为+40°C时不超过50% ,在较低温度时允许有较大的相对湿度；如 + 20°C时为90% ,但应考虑到由于温度的变化可能会偶然产生凝露的影响；
4.3 The relative ambient air humidity shall not exceed 50% when the maximum temperature is +40°C, and the high relative humidity is allowed at lower temperature (90% at +20°C). However, the change of temperature occasionally caused by the condensation shall be considered;
4.4产品安装时与垂直面的倾斜度不超过5°；
4.4 When the product is installed, the gradient with the vertical plane shall not exceed 5°;
4.5产品应安装在无剧烈震动和冲击以及不足以使电器元件受到腐蚀的场所；
用户有特殊要求时，可以与制造厂协商解决
4.5 The product shall be installed in a place without severe vibration and shock and that will not cause corrosion to the electrical components.
The problem can be resolved through consultation with the manufacturer in case that users have special requirements.

5 技术参数 Technical Parameters

技术参数 Technical parameters	SP-JXF
额定电流（A ） Rated current (A)	630
额定绝缘电压Ui（V AC） Rated insulation voltage Ui (V AC)	690
额定工作电压（V AC） Rated operating voltage (V AC)	400
额定冲击耐受电压（KV ） Rated impulse withstand voltage (KV)	8
频率（Hz）Frequency (Hz)	50
额定短时耐受电流Icw （ KA/1S ） Rated short-time withstand current Icw (KA/1S)	20
IP防护等级IP protection degree	≤IP65
运行Operation	室内、室外Indoor, outdoor
最大海拔高度（m） Maximum altitude (m)	2000
环境平均温度（°C） Average ambient temperature (°C)	35
污染等级 Pollution degree	3
箱体材料 Box material	冷轧钢板、不锈钢、ABS、PC Cold-roll steel sheet, stainless steel, ABS, and PC
涂料 Coating	静电喷涂的环氧树脂粉末 Electrostatic spraying epoxy resin powder
颜色Color	RAL7035（工业灰）、可要求定制 RAL7035 (industrial ash), customized
箱体内部绝缘材料 Insulation material inside the box	耐高温、阻燃 High temperature resistance and fire resistance

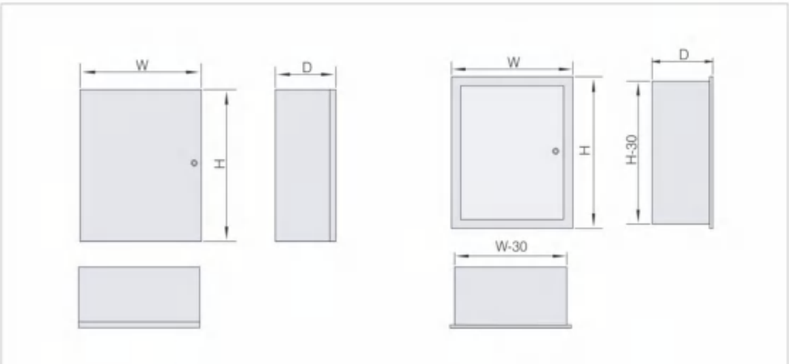
控制箱密封条
Control box sealing strip

6 结构特点 Structural Characteristics

6.1JXF低压封闭式配电箱壳体材料采用1.2mm及以上优质钢板，表面采用色泽美观的环氧树脂粉末涂料，经静电喷涂处理，造型美观大方。
6.1 The enclosure of JXF low-voltage enclosed distribution box is made of 1.2mm and above high-quality steel plate, and the surface is made of epoxy resin powder coating with attractive color. After electrostatic spraying, the appearance is attractive and generous.
6.2控制箱按结构特点可分为：焊接式、分体式、组装式
6.2 According to the structural characteristics, the control box can be divided into: welded type, split type, and assembly type.
6.3控制箱可采用多种双层门结构，使用更安全可靠。
6.3 The control box can use a variety of double-layer door structures, which is safer and more reliable.
6.4防护等级：IP54、IP6S (可选）
6.4 Protection degree: IP54, IP6S (optional)
6.5控制箱多种优化的尺寸规格，适用于不同方案的配置要求。
6.5 There are many optimized dimensions of the control box, which are applicable to the configuration requirements of different schemes.
6.6箱体采用1.2及以上冷轧钢板焊接而成，有足够的强度和刚度，也可选工程塑料材质。
6.6 The box is welded with 1.2 or more cold-roll steel sheets, with sufficient strength and rigidity, and can also be made of engineering plastics.
6.7所有的金属部件，根据其在结构中的位置及作用分别以锁层或涂层加以防护，锁层有足够的厚度 和附着力，可保证永久耐腐蚀性。
6.7 All metal parts shall be protected by lock layer or coating according to their positions and functions in the structure. The lock layer shall have sufficient thickness and adhesion to ensure permanent corrosion resistance.
6.8箱体全部采用标准紧固件连接，拼装结构的每一个零件或部件具有良好接地措施，保证其电路具有永久的连续性。
6.8 All boxes are connected with standard fasteners, and the assembled parts or components shall have good grounding measures to ensure the permanent continuity of their circuits.
6.9控制箱具有多种优化的尺寸规格，适用于不同方案的配置要求。
6.9 There are many optimized dimensions of the control box, which are applicable to the configuration requirements of different schemes.
6.10箱体拼接采用密封焊接，没有缝隙，控制箱采用高强度高韧性较链和门锁，半圆型密封条采用 专用设备发泡成型。
6.10 The assembly of the box uses the seal welding without gaps. The control box uses high-strength and high-toughness fork chain and door lock, and the semicircle sealing strip is made of foam materials.
6.11同种控制箱的门可左右互换，同时可满足左开门或右开门的要求。
6.11 The left and right doors of the same control box can be interchanged, and can meet the requirements of left or right opening.
6.12控制箱的安装板深度可随意调节，可满足各种元器件的安装要求。
6.12 The depth of mounting plate of the control box can be adjusted at will to meet the installation requirements of various components.
6.13箱体的下部设有封板及渗水孔，封板可根据不同的进出线要求开孔配置不同的密封接头。
6.13 The lower part of the box is provided with a sealing plate and a water seepage hole. The sealing plate is provided with different seal joints based on the opening requirements of different incoming and outgoing lines.
6.14外形尺寸较大的控制箱门板内侧配置了S型多孔加强条，同时可作为防干扰屏蔽板的安装支架。
6.14 The inner side of the door panel of the control box with larger outline dimension is equipped with S-shaped porous reinforcing strip, which can also be used as the mounting bracket of the anti-interference shielding plate.
6.15控制箱配备了万能式安装挂件（可选件），适用于各种不同的安装尺寸
6.15 The control box is equipped with universal hanging parts (optional), which are applicable to various installation dimensions.

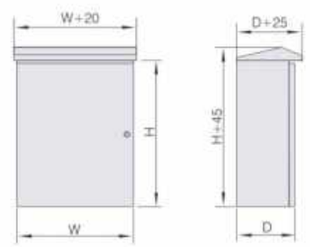
7 外形及安装尺寸 Outline and Installation Dimension

7.1 、SP-JXF外形及安装尺寸 SP-JXF outline and installing dimension



SP-JXF(G1系列明装)外形图
SP-JXF (exposed installation) outline drawing

SP-JXF(G1系列暗装)外形图
SP-JXF(concealed installation) outline drawing

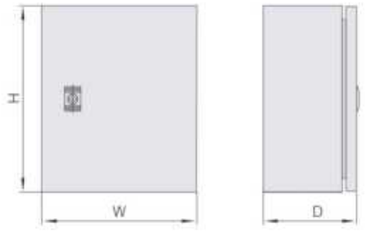


SP-JXF(G1系列户外)外形图
SP-JXF (G1 outdoor) outline drawing

外形尺寸 Outline dimension	高(H) Height (H)	宽(W) Width (W)	深(D) Depth (D)
2520/14	250	200	140
3025/14	300	250	140
3025/18	300	250	180
3030/14	300	300	140
3030/18	300	300	180
4030/14	400	300	140
4030/20	400	300	200
5040/14	500	400	140
6040/20	600	400	200
6040/23	600	400	230
6050/14	600	500	140
6050/20	600	500	200
6050/23	600	500	230
7050/16	700	500	160
7050/20	700	500	200
7050/23	700	500	230
8060/20	800	600	200
8060/23	800	600	230
8060/25	800	600	250
10080/20	1000	800	200
10080/25	1000	800	250
10080/30	1000	800	300

外形尺寸 Outline dimension	高(H) Height (H)	宽(W) Width (W)	深(D) Depth (D)
3025/15	300	250	150
3025/18	300	250	180
3030/15	300	300	150
3030/18	300	300	180
4030/15	400	300	150
4030/20	400	300	200
5040/15	500	400	150
5040/20	500	400	200
6040/15	600	400	150
6040/20	600	400	200
6050/15	600	500	150
6050/20	600	500	200
7050/15	700	500	150
7050/20	700	500	200
7060/15	700	600	150
7060/20	700	600	200
8060/20	800	600	200
8060/25	800	600	250
8070/20	800	700	200
8070/25	800	700	250
10080/20	1000	800	200
10080/25	1000	800	250

7.1、SP-JXF外形及安装尺寸 SP-JXF outline and installing dimension



SP-JXF(G2系列)外形图
SP-JXF (G2)outline drawing

8 订货须知 Ordering Instruction

订货时要注明：
When ordering, please note:
8.1型号；
8.1 Model;
8.2安装方式；
8.2 Installation method;
8.3结构形式；
8.3 Structure form;
8.4系统图和控制原理图；
8.4 System diagram, and control schematic diagram;
8.5有特殊要求可协商解决。
8.5 The problem can be resolved through consultation in case of special requirements.

终端配电产品
SP—XL系列
动力配电柜

Terminal Power Distribution Products

Model SP—XL

Power Distribution Cabinet

1 产品概述 Product Overview

SP-XL型低压动力配电柜，适用于400V及以下的三相三线、三相四线、三相五线制系统，做动力　照明配电之用。具有配电方案灵活、组合方便、组合性强、结构新颖等特点。可广泛用于发电厂、轨道交通、航空航天、石油代工、冶金、纺织、地产、钢铁等行业。

SP-XL low-voltage power distribution cabinet is suitable for three-phase three-wire, three-phase four-wire, three-phase five-wire system of 400V and below, and is used for power lighting distribution. It has the characteristics of flexible power distribution scheme, convenient combination, strong combination and novel structure. It can be widely used in power plants, rail transit, aerospace, oil foundry, metallurgy, textile, real estate, steel and other industries.

2 符合标准 Compliance with Standards

GB/T72S1.12-2013《低压成套开关设备和控制设备第2部分：成套电力开关和控制设备》
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GB50171-2002《电气装置安装工程盘、柜及二次回路结线施工及验收规范》
GB50171-2002 Code for Construction and Acceptance of Switchboard Outfit Complete Cubicle and Secondary Circuit Electric Equipment Installation Engineering

3 技术特点与优势 Technical Characteristics and Advantages

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3.1.2 The vitrified membrane is formed on the surface of the spraying workpiece, and the surface coating of the product is uniform and attractive in color;
3.1.3一次性喷涂成膜厚度达60μm~80μm ,涂装厚度精度误差±20μm；
3.1.3 The membrane thickness after one-time spraying is 60μm~80μm, and the precision error of coating thickness is ±20μm;
3.1.4喷涂附着力符合国家0级标准，可以满足168小时盐雾试验；
3.1.4 The spraying adhesion meets the national-level 0 standard, which can meet the 168h salt spray test;

3.2、优质的柜体设计 High-quality cabinet design

3.2.1柜体设计融入先进的标准化与模数化设计理念，结构坚固而精炼；
3.2.1 The cabinet is designed based on the advanced standard and modular design concept, with a solid and refined structure;
3.2.2柜门采用斜边设计，简约大方；专用设计开关柜门锁彰显柜体的高品质；
3.2.2 The cabinet door uses the inclined edge, which is simple and generous; the special design of the switch cabinet door lock shows the high quality of the cabinet;
3.2.3专业的设计已为客户考虑了不同的接线方式、安装与接线空间；
3.2.3 The design is professional, and the different wiring methods, installation and wiring space for customers have been considered;
3.2.4通过极其严酷的柜内短路实验验证，品质可靠有保障；
3.2.4 It passes the extremely severe short circuit test, and the quality is reliable and guaranteed;

3.3、可靠的电器连接方案 Reliable electrical connection scheme

3.3.1主铜排和分支铜排采用T2紫铜，先进的铜排表面处理工艺保证不氧化，非电气接触面做热缩绝缘处理；
3.3.1 Copper T2 is used for main copper bar and branch copper bar. The advanced copper bar surface treatment process ensures that there is no oxidation. The non-electrical contact surface is heat shrinkable and insulated;
3.3.2铜排采用数字化数控设备加工，加工精度高有效防止因加工精度问题产生的铜排安装应力而产生的接触可靠性问题；
3.3.2 The copper bar is processed by digital numerical control equipment with high processing accuracy, which effectively prevents the unreliable contact caused by the installation stress of the copper bar;
3.3.3先进的冷压接线端子设备保证了导线与元件的可靠连接；
3.3.3 The advanced cold pressing terminal equipment ensures the reliable connection between the conductor and the components;

3.4、7+5全面的检测标准 7+5 comprehensive test standards

按照IEC61439-1进行设计验证
Design verification according to IEC61439-1

结构检测 Structure inspection	性能检测 Performance inspection
1-材料和部件的强度 1-Strength of materials and parts	1-介电性能 1-Dielectric property
2-成套设备的保护等级 2-Protection class of complete equipment	2-温升验证 2-Verification of temperature rise
3-电气间隙和爬电距离 3-Electrical clearance and creepage distance	3-短路耐受强度 3-Short-circuit resistance strength
4-电击防护和保护电路完整性 4 - Integrity of protection against electric shock and protection circuit	4-电磁兼容性 4 - Electromagnetic compatibility
5-开关器件和元件的组合 5 - Combination of switching devices and components	5-机械操作 5 - Mechanical operation
6-内部电路和连接 6 - Internal circuit and connection	
7-外部接线端子 7 - External terminal v	

4 使用环境条件 Environmental Conditions for Use

4.1使用地点不超过海拔高度4500m ,如安装在2000m以上，设备相应的要降容运行。
4.1 The place of use shall not exceed 4,500m above sea level. If the equipment is installed above 2,000m, the capacity of the equipment shall be reduced accordingly.
4.2没有粉尘、腐蚀性气体和雨水侵袭的户内；
4.2 Indoors without dust, corrosive gas and rainwater.
4.3周围空气温度：周围空气温度上限为+40°C,下限为-25°C.在24小时内测得的平均温度不超过+35°C；
4.3 Ambient air temperature: the upper limit and lower limit of ambient air temperature are +40°C and -25°C, respectively. The average temperature measured within 24h shall not exceed +35°C;
4.4没有震动及颠簸，且安装倾斜度不超过5°；
4.4 The place of use shall be no vibration and jolt, and the installation gradient shall not be more than 5°;
4.5用户有特殊要求时，可以与制造厂协商解决。
4.5 The problem can be resolved through consultation with the manufacturer in case that users have special requirements.

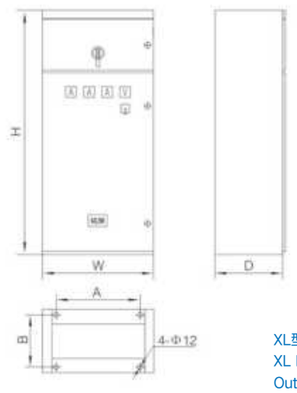
5 技术参数 Technical Parameters

技术参数 Technical parameters	SP-XL
额定电流（A） Rated current (A)	≦1250
额定绝缘电压Ui（V AC） Rated insulation voltage Ui (V AC)	800
额定工作电压（V AC） Rated operating voltage (V AC)	400
额定冲击耐受电压（KV ） Rated impulse withstand voltage (KV)	8
频率（Hz）Frequency (Hz)	50
额定短时耐受电流Icw （ KA/1S ） Rated short-time withstand current Icw (KA/1S)	≦30
IP防护等级 IP protection degree	≦IP65
运行Operation	室内、室外Indoor, outdoor
最大海拔高度（m） Maximum altitude (m)	2000
环境平均温度（°C ） Average ambient temperature (°C)	35
污染等级Pollution degree	3
箱体材料Box material	冷轧钢板、不锈钢、覆铝锌板 Cold-roll steel sheet, stainless steel, and Al-Zn plate
涂Coating	静电喷涂的环氧树脂粉末 Electrostatic spraying epoxy resin powder
颜色Color	RAL7035（工业灰）、可要求定制 RAL7035 (industrial ash), customized
箱体内部绝缘材料Insulation material inside the box	耐高温、阻燃High temperature resistance and fire resistance
柜体结构Cabinet structure	组装式、焊接式Assembly type, welded type

6 结构特点 Structural Characteristics

6.1SP-XL型低压动力配电柜，采用C型材组装而成。框架及专用配套零件由本公司生产配套供货，以保证柜体的精度和质量。柜体零部件按模块原理设计，通用化系数高，可以实现预生产。
6.1 SP-XL low-voltage power distribution cabinet is assembled with C profile. The frame and special supporting parts are produced and supplied by our Company to ensure the accuracy and quality of the cabinet. Cabinet parts are designed based on the modular principle, with high generalization coefficient, which can be pre-produced.
6.2防护等级：产品防护等级最高可达IP65 ,柜体采用高强度高韧性钗链和门锁；门板密封条采用PU聚氨酯环保发泡材料。
6.2 Protection degree: the protection degree of the product can reach up to IP65, and the cabinet uses high-strength and high-toughness fork chain and door lock; the door panel sealing strip is made of PU environment-friendly foam materials.
6.3柜体加工：产品采用激光、数控、机器人等设备自动化流水线加工，加工精度高，无裂缝接点和断裂点，角和边缘都是圆型角，整体既整齐又美观。
6.3 Cabinet processing: the products are processed by the automatic assembly line of laser, numerical control, robot and other equipment, with high processing accuracy, no crack or fracture, and the angle and edge are round, which are neat and attractive.
6.4防腐能力：箱体表面采用耐候性、耐磨性、耐化学性能及三防性能均优良的无毒型阿克苏 诺贝尔TGIC-FREE热固性纯聚酯塑粉。
6.4 Anticorrosion ability: the box surface is made of non-toxic TGIC-FREE thermosetting pure polyester powder of Akzo Nobel with excellent weather resistance, wear resistance, chemical resistance and three-proofing properties.
6.5安装电器元件的仪表门其接地采用多股软铜线与框架相连。柜内的安装件与框架用滚花垫圈连接，整柜构成完整的接地保护系统。
6.5 The grounding of the instrument door installed with electrical components is connected to the frame with multiple annealed copper wires. The installation parts and the frame of the cabinet shall be connected by knurling washer, and the whole cabinet shall form a complete ground protection system.
6.6柜内T2铜母排采用镀锡工艺，具有稳定的接触电阻，显著的防潮、防腐蚀、放烟雾功能，减少环境污染。
6.6 Copper T2 busbar in the cabinet uses the tinning process, with stable contact resistance, significant moisture-proof, corrosion-proof and smoke-proof functions, to reduce the environmental pollution.

7 柜体外形及安装尺寸 Outline and Installation Dimension



XL型低压封闭式动力柜外形及安装尺寸图
XL Low-voltage Enclosed Power Cabinet
Outline and Installation Dimension Drawing

高 Height	宽 Width	深 Depth	BxA安装尺寸（C型材） BxA installation dimension (C profile)
1600	600	400	300*500
1600	600	500	400*500
1800	600	400	300*500
1800	600	500	400*500
1800	800	400	300*700
1800	800	500	400*700
2000	800	400	300*700
2000	800	500	400*700

注：1、柜体尺寸可根据客户提供图样要求确定
Note: 1. The cabinet dimension can be determined according to the drawing requirements provided by customers
2、图中所示尺寸不包括门及左右护板尺寸
2. The dimensions shown in the figure do not include the dimensions of the door and left and right guard boards
3、客户未做要求时，门锁为2把及以上圆铁锁
3. If the customer has no requirements, the door shall be provided with two or more round iron locks

8 主电路方案 Main Circuit Scheme

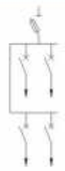
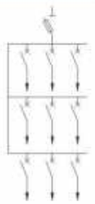
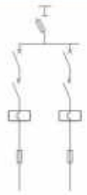
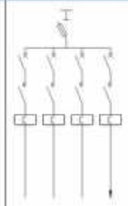
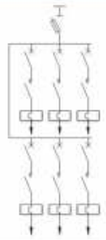
符号说明：
Symbol description:

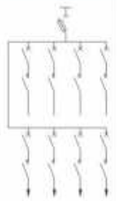
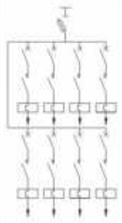
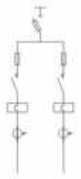
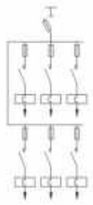
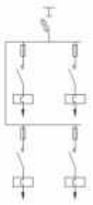
“ ”为熔断器开关：型号可选用QSA系列、HR5、HR6(箱内操作）；
" " is the fuse switch: The model can be QSA series, HR5, HR6 (operated in box);
“ ”为隔离开关：型号可选用QA、QP系列；
" " is the isolating switch: The model can be QA, QP series;
“ ”为熔断器：型号可选用RTO、附00等；
" " is the fuse switch: The model can be RTO, NT00, etc.
“ ”为断路器：型号可选用M1、DZ15、DZ20、DZ47等；
" " is the circuit breaker: The model can be M1, DZ15, DZ20, DZ47, etc.;
“ ”为接触器：型号可选用CJ20、B系列、0X1、0X2、N系列等；
" " is the contactor: The model can be CJ20, B, CJX1, CJX2, N series, etc.;
“ ”为热继电器：型号可选用JR20、JRS1、JRS2、N系列等；
" " is the thermal relay: The model can be JR20, JRS1, JRS2, N series, etc.;
“ ”为电流互感器：型号可选用BH-0.66、LMZJ1-0.5、LMK1-0.66等.
" " is the current transformer: The model can be BH-0.66, LMZJ1-0.5, LMK1-0.66, etc.

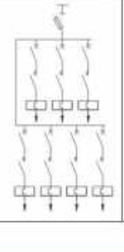
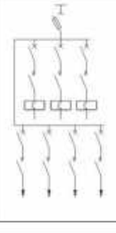
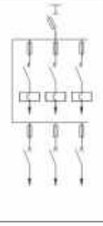
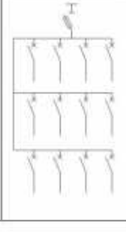
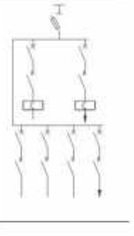
以上产品型号均可由用户另行指定。
The above product models can be specified by users separately.

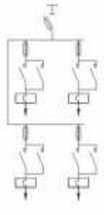
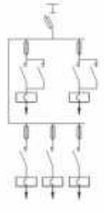
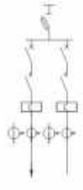
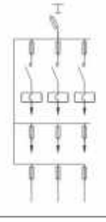
SP-XL型低压动力配电柜

SP-XL low-voltage power distribution cabinet

方案编号Scheme No.	01	02	03	04	05
主电路方案 Main Circuit Scheme					

方案编号Scheme No.	06	07	08	09	10
主电路方案 Main Circuit Scheme					

方案编号Scheme No.	11	12	13	14	15
主电路方案 Main Circuit Scheme					

方案编号Scheme No.	16	17	18	19	20
主电路方案 Main Circuit Scheme					

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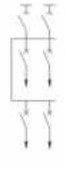
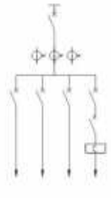
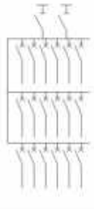
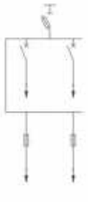
主电路方案 Main Circuit Scheme					

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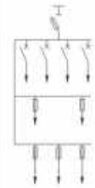
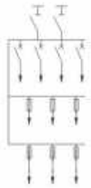
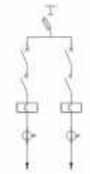
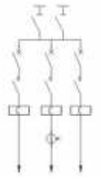
主电路方案 Main Circuit Scheme					

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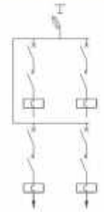
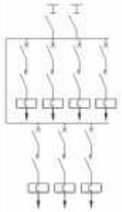
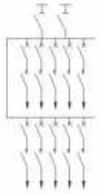
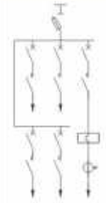
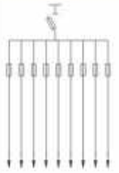
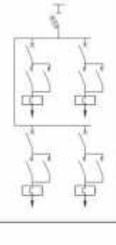
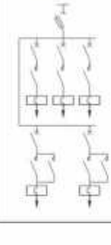
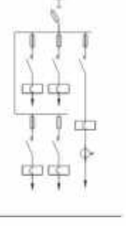
主电路方案 Main Circuit Scheme					

方案编号Scheme No.	36	37	38	39	40
主电路方案 Main Circuit Scheme					

方案编号Scheme No.	41	42	43	44	45
主电路方案 Main Circuit Scheme					

方案编号Scheme No.	46				
主电路方案 Main Circuit Scheme					

9 订货须知 Ordering Instruction

订货时须注明：

When ordering, please note:

9.1产品的型号；

9.1 Product model;

9.2主电路系统图，平面排列图；

9.2 Main circuit system diagram, and layout plan;

9.3辅助电路电气原理图；

9.3 Electrical schematic diagram of auxiliary circuit;

9.4柜内元器件清单（主母线规格）；

9.4 List of components in cabinet (specification of main bus);

9.5柜体颜色（如无要求，则按RAL7035(标准)供货），柜体尺寸；

9.5 Cabinet color (supplied according to RAL7035 (standard) in case of no requirements), and cabinet dimension;

9.6其它与产品正常使用条件不符的特殊要求。

9.6 Other special requirements inconsistent with the normal use conditions of the product.

终端配电产品
SP-PLC系列
动力配电箱

Terminal power distribution products

SP-PLC cabinet

Power distribution cabinet

1 产品概述 Product Overview

SP-PLC型低压动力配电柜，适用于400V及以下的三相三线、三相四线、三相五线制系统，做动力照明配电之用。具有配电方案灵活、组合方便、组合性强、结构新颖等特点。可广泛用于发电厂、轨道交通、航空航天、石油代工、冶金、纺织、地产、钢铁等行业.

SP-PLC low-voltage power distribution cabinet is applicable to three-phase three-wire, three-phase four-wire and three-phase five-wire systems of 400V and below for power lighting distribution. It is characterized by flexible distribution scheme, convenient combination, strong combinability and novel structure. It can be widely used in power plant, rail transit, aerospace, petrochemical engineering, metallurgy, textile, real estate, steel and other industries.

2 符合标准 Compliance with Standards

GB/T72S1.12-2013《低压成套开关设备和控制设备第2部分：成套电力开关和控制设备》
GB/T72S1.12-2013 Low-voltage Switchgear and Controlgear Assemblies - Part 2: Power Switchgear and Controlgear Assemblies
IEC61439-1《低压开关设备和控制设备组合装置一一第1部分：一般规则》
IEC61439-1 Low-voltage Switchgear and Controlgear Assemblies - Part 1: General Rules
GB 10233《低压成套开关设备和电控设备基本试验方法》
GB 10233 Basic Testing Method for Low-voltage Switchgear and Controlgear Assemblies
GB17625.1-2003《电磁兼容限值谐波电流发射限值(设备每相输入电流≦16A)》
GB17625.1-2003 Electromagnetic Compatibility- Limits -Limits for Harmonic Current Emissions (Equipment Input Current Per Phase ≤ 16A)
GB 16838-2005《消防电子产品环境试验方法及严酷等级》
GB 16838-2005 Environmental Test Methods and Severities for Fire Electronic Products
GB 4208《外壳防护等级(IP代码)》
GB 4208 Degrees of Protection Provided by Enclosure (IP Code)
GB50171-2002《电气装置安装工程盘、柜及二次回路结线施工及验收规范》
GB50171-2002 Code for Construction and Acceptance of Switchboard Outfit Complete Cubicle and Secondary Circuit Electric Equipment Installation Engineering

3 技术特点与优势 Technical Characteristics and Advantages

3.1、最佳的表面保护 Best surface protection

3.1.1采用德国环保高压静电喷涂自动设备
3.1.1 German environment-friendly and high-voltage electrostatic spraying automatic equipment is adopted
3.1.2喷涂工件表面形成陶化膜，产品表面涂层均匀色泽美观；
3.1.2 The vitrified membrane is formed on the surface of the spraying workpiece, and the surface coating of the product is uniform and attractive in color;
3.1.3一次性喷涂成膜厚度达60μm~80μm ,涂装厚度精度误差±20μm ；
3.1.3 The membrane thickness after one-time spraying is 60μm~80μm, and the precision error of coating thickness is ±20μm;
3.1.4喷涂附着力符合国家0级标准，可以满足168小时盐雾试验；
3.1.4 The spraying adhesion meets the national-level 0 standard, which can meet the 168h salt spray test;

3.2、优质的柜体设计 High-quality cabinet design

3.2.1柜体设计融入先进的标准化与模数化设计理念，结构坚固而精炼；
3.2.1 The cabinet is designed based on the advanced standard and modular design concept, with a solid and refined structure;
3.2.2柜门采用斜边设计，简约大方；专用设计开关柜门锁彰显柜体的高品质；
3.2.2 The cabinet door uses the inclined edge, which is simple and generous; the special design of the switch cabinet door lock shows the high quality of the cabinet;
3.2.3专业的设计已为客户考虑了不同的接线方式、安装与接线空间；
3.2.3 The design is professional, and the different wiring methods, installation and wiring space for customers have been considered;
3.2.4通过极其严酷的柜内短路实验验证，品质可靠有保障；
3.2.4 It passes the extremely severe short circuit test, and the quality is reliable and guaranteed;

3.3、可靠的电器连接方案 Reliable electrical connection scheme

3.3.1主铜排和分支铜排采用T2紫铜，先进的铜排表面处理工艺保证不氧化，非电气接触面做热缩绝缘处理；
3.3.1 Copper T2 is used for main copper bar and branch copper bar. The advanced copper bar surface treatment process ensures that there is no oxidation. The non-electrical contact surface is heat shrinkable and insulated;
3.3.2铜排采用数字化数控设备加工，加工精度高有效防止因加工精度问题产生的铜排安装应力而产 生的接触可靠性问题；
3.3.2 The copper bar is processed by digital numerical control equipment with high processing accuracy, which effectively prevents the unreliable contact caused by the installation stress of the copper bar;
3.3.3先进的冷压接线端子设备保证了导线与元件的可靠连接；
3.3.3 The advanced cold pressing terminal equipment ensures the reliable connection between the conductor and the components;

3.4、7+5全面的检测标准 7+5 comprehensive test standards

按照IEC61439-1进行设计验证
Design verification according to IEC61439-1

结构检测 Structure inspection	性能检测 Performance inspection
1-材料和部件的强度 1 - Strength of materials and parts	1-介电性能 1 - Dielectric property
1-成套设备的保护等级 2 - Protection class of complete equipment	2-温升验证 2 - Verification of temperature rise
3-电气间隙和爬电距离3 - Electrical clearance and creepage distance	3-短路耐受强度 3 - Short-circuit resistance strength
4-电击防护和保护电路完整性 4 - Integrity of protection against electric shock and protection circuit	4-电磁兼容性 4 - Electromagnetic compatibility
5-开关器件和元件的组合 5 - Combination of switching devices and components	5-机械操作 5 - Mechanical operation
6-内部电路和连接 6 - Internal circuit and connection	
7-外部接线端子 7 - External terminal	

4 使用环境条件 Environmental Conditions for Use

4.1使用地点不超过海拔高度4500m ,如安装在2000m以上，设备相应的要降容运行。
4.1 The place of use shall not exceed 4,500m above sea level. If the equipment is installed above 2,000m, the capacity of the equipment shall be reduced accordingly.
4.2没有粉尘、腐蚀性气体和雨水侵袭的户内；
4.2 Indoors without dust, corrosive gas and rainwater.
4.3周围空气温度：周围空气温度上限为+40℃ ,下限为-25℃。在24小时内测得的平均温度不超过+35℃;
4.3 Ambient air temperature: the upper limit and lower limit of ambient air temperature are +40℃ and -25℃, respectively. The average temperature measured within 24h shall not exceed +35℃;
4.4没有震动及颠簸，且安装倾斜度不超过5°；
4.4 The place of use shall be no vibration and jolt, and the installation gradient shall not be more than 5°;
4.5用户有特殊要求时，可以与制造厂协商解决。
4.5 The problem can be resolved through consultation with the manufacturer in case that users have special requirements.

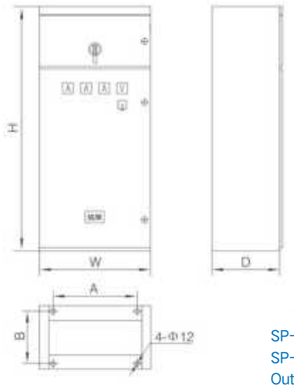
5 技术参数 Technical Parameters

技术参数Technical parameters	SP-PLC
额定电流（A） Rated current (A)	≤1250
额定绝缘电压Ui（V AC） Rated insulation voltage Ui (V AC)	800
额定工作电压（V AC） Rated operating voltage (V AC)	400
额定冲击耐受电压（KV） Rated impulse withstand voltage (KV)	8
频率（Hz）Frequency (Hz)	50
额定短时耐受电流Icw （KA/1S） Rated short-time withstand current Icw (KA/1S)	≤30
IP防护等级IP protection degree	≤IP65
运行Operation	室内、室外Indoor, outdoor
最大海拔高度（m） Maximum altitude (m)	2000
环境平均温度（°C） Average ambient temperature (°C)	35
污染等级 Pollution degree	3
箱体材料 Box material	冷轧钢板、不锈钢、覆铝锌板Cold-roll steel sheet, stainless steel, and Al-Zn plate
涂料 Coating	静电喷涂的环氧树脂粉末 Electrostatic spraying epoxy resin powder
颜色Color	RAL7035（工业灰），可要求定制 RAL7035 (industrial ash), customized
箱体内部绝缘材料 insulation material inside the box	耐高温、阻燃 High temperature resistance and fire resistance
柜体结构Cabinet structure	组装式、焊接式Assembly type, welded type

6 结构特点 Structural Characteristics

6.1 SP-PLC型低压动力配电柜，采用C型材组装而成。框架及专用配套零件由本公司生产配套供货，以保证柜体的精度和质量。柜体零部件按模块原理设计，通用化系数高，可以实现预生产。
6.1 SP-PLC low-voltage power distribution cabinet is assembled with C profile. The frame and special supporting parts are produced and supplied by our Company to ensure the accuracy and quality of the cabinet. Cabinet parts are designed based on the modular principle, with high generalization coefficient, which can be pre-produced.
6.2 防护等级：产品防护等级最高可达IP65 ,柜体采用高强度高韧性钗链和门锁；门板密封条采用PU聚氨酯环保发泡材料。
6.2 Protection degree: the protection degree of the product can reach up to IP65, and the cabinet uses high-strength and high-toughness fork chain and door lock; the door panel sealing strip is made of PU environment-friendly foam materials.
6.3 柜体加工：产品采用激光、数控、机器人等设备自动化流水线加工，加工精度高，无裂缝接点和断裂点，角和边缘都是圆型角，整体既整齐又美观。
6.3 Cabinet processing: the products are processed by the automatic assembly line of laser, numerical control, robot and other equipment, with high processing accuracy, no crack or fracture, and the angle and edge are round, which are neat and attractive.
6.4 防腐能力：箱体表面采用耐候性、耐磨性、耐化学性能及三防性能均优良的无毒型阿克苏 诺贝尔TGIC-FREE热固性纯聚酯塑粉。
6.4 Anticorrosion ability: the box surface is made of non-toxic TGIC-FREE thermosetting pure polyester powder of Akzo Nobel with excellent weather resistance, wear resistance, chemical resistance and three-proofing properties.
6.5 安装电器元件的仪表门其接地采用多股软铜线与框架相连。柜内的安装件与框架用滚花垫圈连接，整柜构成完整的接地保护系统。
6.5 The grounding of the instrument door installed with electrical components is connected to the frame with multiple annealed copper wires. The installation parts and the frame of the cabinet shall be connected by knurling washer, and the whole cabinet shall form a complete ground protection system.
6.6 柜内T2铜母排采用镀锡工艺，具有稳定的接触电阻，显著的防潮、防腐蚀、放烟雾功能，减少环境污染。
6.6 Copper T2 busbar in the cabinet uses the tinning process, with stable contact resistance, significant moisture-proof, corrosion-proof and smoke-proof functions, to reduce the environmental pollution.

7 柜体外形及安装尺寸 Outline and Installation Dimension



SP-PLC型低压封闭式动力柜外形及安装尺寸图
SP-PLC Low-voltage Enclosed Power Cabinet Outline and Installation Dimension Drawing

高 Height	宽 Width	深 Depth	BxA安装尺寸（C型材） BxA installation dimension (C profile)
1600	600	400	300*500
1600	600	500	400*500
1800	600	400	300*500
1800	600	500	400*500
1800	800	400	300*700
1800	800	500	400*700
2000	800	400	300*700
2000	800	500	400*700

注：1、柜体尺寸可根据客户提供图样要求确定
Note: 1. The cabinet dimension can be determined according to the drawing requirements provided by customers
2、图中所示尺寸不包括门及左右护板尺寸
2. The dimensions shown in the figure do not include the dimensions of the door and left and right guard boards
3、客户未做要求时，门锁为2把及以上圆铁锁
3. If the customer has no requirements, the door shall be provided with two or more round iron locks

8 主电路方案 Main Circuit Scheme

符号说明：
Symbol description:

“ ”为熔断器开关：型号可选用QSA系列、HR5、HR6(箱内操作）；
" " is the fuse switch: The model can be QSA series, HR5, HR6 (operated in box);
“ ”为隔离开关：型号可选用QA、QP系列；
" " is the isolating switch: The model can be QA, QP series;
“ ”为熔断器：型号可选用RTO、附00等；
" " is the fuse switch: The model can be RTO, NT00, etc.
“ ”为断路器：型号可选用M1、DZ15、DZ20、DZ47等；
" " is the circuit breaker: The model can be M1, DZ15, DZ20, DZ47, etc.;
“ ”为接触器：型号可选用CJ20、B系列、0X1、0X2、N系列等；
" " is the contactor: The model can be CJ20, B, CJX1, CJX2, N series, etc.;
“ ”为热继电器：型号可选用JR20、JRS1、JRS2、N系列等；
" " is the thermal relay: The model can be JR20, JRS1, JRS2, N series, etc.;
“ ”为电流互感器：型号可选用BH-0.66、LMZJ1-0.5、LMK1-0.66等.
" " is the current transformer: The model can be BH-0.66, LMZJ1-0.5, LMK1-0.66, etc.

以上产品型号均可由用户另行指定。
The above product models can be specified by users separately.

终端配电产品
SP–XJ1系列
低压封闭式计量箱

Terminal Power Distribution Products
SP–XJ1 series
Low–voltage metering box

SP-XJ1系列低压封闭式计量箱
SP-XJ1 series Low-voltage metering box

1 产品概述 Product Overview

SP-XJ1低压封闭式计量箱适用于50Hz、500V及以下，负荷电流不大于200A的单相二线、三相四 线、三相五线制系统，对用电系统进行计量及控制，该箱设计合理、体积小、外形美观。
SP-XJ1 low-voltage enclosed metering box is applicable to single-phase two-wire, three-phase four-wire and three-phase five-wire systems of 50Hz, 500V and below or with load current not more than 200A. It meters and controls the power consumption system. The box is reasonable in design, small in volume and attractive in appearance.

2 符合标准 Compliance with Standards

GB7251.3《低压成套开关设备和控制设备、第三部分：对非专业人员可进入场地的低压成套开关设备和控制设备--配电板的特殊要求》
GB7251.3 Low-voltage Switchgear and Controlgear Assemblies - Part 3: Particular Requirements for Low-voltage Switchgear and Controlgear Assemblies Intended to Be Installed in Places Where Unskilled Persons Have Access for Their Use - Distribution Boards
IEC61439-3《低压开关设备和控制设备组合装置--第3部分：普通人操作用配电板》
IEC61439-3 Low-voltage Switchgear and Controlgear Assemblies - Part 3. Distribution Boards Intended to Be Operated by Ordinary Persons

3 型号及其含义 Model and Its Meaning

NXJ 1-□

- 产品分类：K1系列、K2系列、K3系列
  Product category: K1 series, K2 series, K3 series
- 设计序号 Design serial number
- 计量 Metering
- 封闭式箱 Enclosed box
- 企业代号 Enterprise code

4 使用环境条件 Environmental Conditions for Use

4.1 海拔高度不超过2000m。
4.1 The altitude shall not exceed 2,000m.
4.2 周围空气温度不超过+40°C以及不低于-25°C。
4.2 The ambient air temperature shall not be higher than +40°C and not lower than - 25°C.
4.3 +20°C时空气相对湿度月平均不大于90%。
4.3 The monthly average relative air humidity at +20°C shall not be greater than 90%.
4.4 无剧烈振动和冲击的场所。
4.4 The product shall be installed in a place without severe vibration and shock.
4.5 无爆炸危险场所，且介质中无足以腐蚀金属和破坏绝缘的气体及导电尘埃
4.5 The product shall be installed in a place without explosion hazard. There is no gas and conductive dust in the medium that can corrode metal and damage insulation

SP-XJ1（K1）

5 结构特点 Environmental Conditions for Use

5.1 SP-XJ1（K1系列）结构特点 Structural characteristics of SPXJ1 (K1 series)

SP-XJ1（K1系列）低压封闭式计量箱壳体材料采用1.2mm及以上优质钢板或不锈钢板，表面采 用色泽美观的环氧树脂粉末涂料，经静电喷涂处理，造型美观大方。
The enclosure of SP-XJ1 (K1 series) low-voltage enclosed metering box is made of 1.2mm and above high-quality steel plate or stainless steel plate, and the surface is made of epoxy resin powder coating with attractive color. After electrostatic spraying, the appearance is attractive and generous.

a.按结构特点可分为：焊接式、组装式、分体式。
a. Classification based on structural characteristics: welded type, assembly type, and split type.

b.多种新型视窗及操作小门结构，操作安全方便。
b. Various new windows and wickets, safe and convenient operation.

C.防护等级户内IP40 ,户外IP43。
c. Indoor protection degree: IP40; outdoor protection degree: IP43.

d.多种优化的结构形式，可适用于各种电度表的安装，而且可有效的达到防窃电要求。d. Various optimized structural forms. Such forms are applicable to the installation of various watt-hour meters, and can effectively meet the requirements of electricity larceny prevention.

5.2 SP-XJ1（K2系列）结构特点 Structural characteristics of SPXJ1 (K2 series)

SP-XJ1（K2系列）低压封闭式计量箱壳体材料采用SMC、DMC不饱和聚酚树脂玻璃纤维增强塑料经模压成型。具有绝缘性能可靠、强度高、阻燃性好、耐腐蚀、耐老化、造形新颖、表面光洁美观。本产品采用严格的防雨设计,适用于户外安装。
The enclosure of SP-XJ1 (K2 series) low-voltage enclosed metering box is molded by SMC and DMC unsaturated poly resin glass fiber reinforced plastics. It is characterized by reliable insulation performance, high strength, good fire resistance, corrosion resistance, aging resistance, novel appearance, smooth and attractive surface. This product uses strict rain-proof design, which is applicable to the outdoor installation.

SP-XJ1（K2）

5.3 SP-XJ1（K3系列）结构特点 Structural characteristics of SPXJ1 (K3 series)

SP-XJ1（K3系列）低压封闭式计量箱壳体材料采用新型环保塑料聚碳酸酯（PC）制造,具有绝缘性 能可靠、强度高、透明性好、抗老化、耐酸雨、耐盐雾、耐高温、耐低温、抗冲击，造形新颖、表 面光洁美观。本产品采用严格的防雨设计，适用于户外安装。并有良好的通风、散热等功能，正常使用寿命达20年。此电表箱造型美观、比例匀称、线条流畅，箱内元器件结构紧凑、布局合理。
The enclosure of SP-XJ1 (K3 series) low-voltage enclosed metering box is made of new environment-friendly plastic PC. It is characterized by reliable insulation, high strength, good transparency, ageing resistance, acid rain resistance, salt fog resistance, high temperature resistance, low temperature resistance, impact resistance, novel appearance, smooth and attractive surface. This product uses strict rain-proof design, which is applicable to the outdoor installation. It also has good ventilation, heat dissipation and other functions, and the normal service life is 20 years. The electric meter box is attractive in appearance, well proportioned, smooth in line, compact in structure and reasonable in layout.

SP-XJ1（K2）

SP-XJ1（K2）

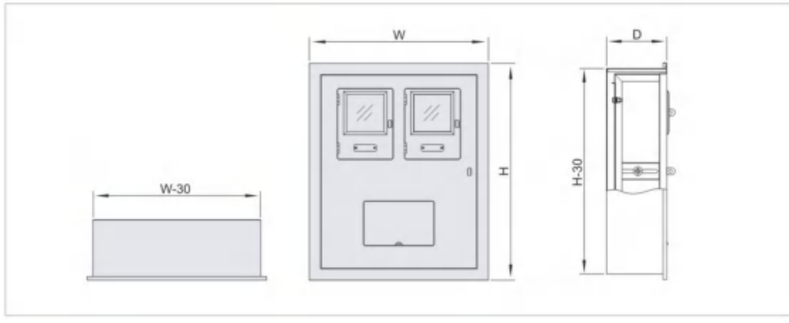
5.3 SP-XJ1（K3系列）结构特点 Structural characteristics of SP-XJ1 (K3 series)

箱盖通过挂钩、专用螺丝用挂锁与箱体互锁，只有电管人员凭借专用螺丝扳手和钥匙才可开启。
The box cover is interlocked with the box through the hook and the special screw with the padlock, and can only be opened by the electric control personnel with the special screw wrench and key.

K3系列电表箱包括单相和三相两大部分，适用于交流50Hz或60Hz ,额定电220V、380V、690V，额定工作电流10-200A的供电系统中。
K3 series meter box consists of single-phase and three-phase parts, which is applicable to the power supply system with AC 50Hz or 60Hz, rated voltage of 220V, 380V, 690V and rated operating current of 10-200A.

6 外形及安装尺寸 Outline and Installation Dimension

6.1 SP-XJ1外形及安装尺寸 SP-XJ1 outline and installing dimension



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Note: The above data are for reference only. Our Company reserves the right to modify the data.

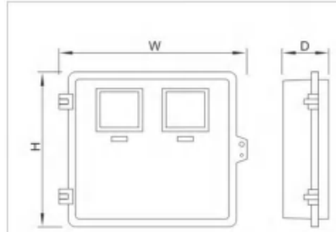
户数 Number of users	外形尺寸（mm） Outline dimension (mm)			M （回路数） M (Number of circuits)
	H	W	D	
SP-XJ1-1	580	380	160	6
SP-XJ1 -2	580	480	160	10
SP-XJ1-3	580	670	160	12
SP-XJ1 -4	830	480	160	15

备注：明装外形尺寸与暗装相同。
Remarks: The outline dimension of exposed installation is the same as that of concealed installation.

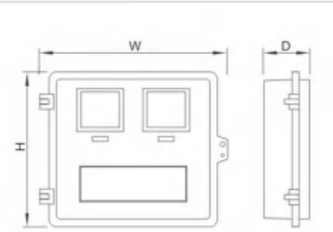
SP-XJ1（K3）

SP-XJ1（K3）

6.1 SP-XJ1（K2系列）外形及安装尺寸 SP-XJ1 (K2 series) outline and installation dimension



SP-XJ1 (不带小门）外形图
SP-XJ1 (without wicket) outline drawing



SP-XJ1 (带小门）外形图
SP-XJ1 (with wicket) outline drawing

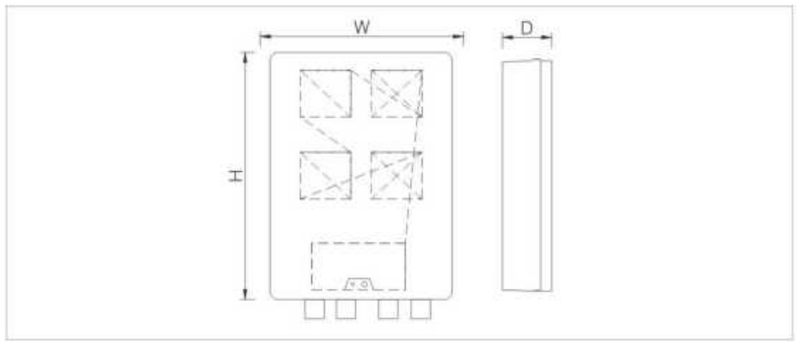
SP-XJ1 （不带小门）尺寸表SP-XJ1 (without wicket) size specification

户数 Number of users	外形尺寸（mm） Outline dimension (mm)		
	H	W	D
SP-XJ1 -1	330	255	153
SP-XJ1 -2	355	441	153
SP-XJ1 -3	355	596	153
SP-XJ1 -4	561	443	153
SP-XJ1 -6	561	598	153

SP-XJ1 （带小门）尺寸表SP-XJ1 (with wicket) size specification

户数 Number of users	外形尺寸（mm） Outline dimension (mm)		
	H	W	D
SP-XJ1 -1	355	255	153
SP-XJ1 -2	355	441	153
SP-XJ1 -3	355	596	153
SP-XJ1 -4	561	443	153
SP-XJ1 -6	561	598	153

6.1 SP-XJ1（K3系列）外形及安装尺寸 SP-XJ1 (K3 series) outline and installation dimension



SP-XJ1（K3）

户数 Number of users	外形尺寸（mm） Outline dimension (mm)		
	H	W	D
SP-XJ1-1	363	197	140
SP-XJ1-2	420	370	142
SP-XJ1-4	640	370	142
SP-XJ1-6	640	510	142
SP-XJ1-8	640	665	142
SP-XJ1-9	355	968	125
SP-XJ1-12	1009	994	125
SP-XJ1-1 （三相）SP-XJ1-1 (three-phase)	590	313	125

注：深度125箱只能装电子式电度表
Note: Only electronic watt-hour meter can be installed in the box with the depth of 125

7 订货须知 Ordering Instruction

订货时要注明：
When ordering, please note:
7.1型号；
7.1 Model;
7.2安装方式；
7.2 Installation method;
7.3结构形式；
7.3 Structure form;
7.4系统图；
7.4 System diagram;
7.5有特殊要求可协商解决。
7.5 The problem can be resolved through consultation in case of special requirements.

电网应用产品
SP—JP型
智能型低压综合配电箱

Grid application product
SP—JP series
Intelligent low—voltage integrated distribution box

1 产品概述 Product Overview

SP-JP智能型低压综合配电箱是本公司根据国家电网公司最新标准研发生产的新一代智能型低压综合配电箱，具有计量、测量、控制、保护、电能分配、无功补偿、谐波治理，三相不平衡调节等全部或两个及以上功能单元为一体的智能综合配电箱。该产品不仅防雨、防尘、防盗、防漏电、防雷击、防电磁干扰、结构新颖、合理、防护等级高、安装调试、维护及检修方便等优点还具有智能电网要求的集数据采集、通讯、无功补偿、电网参数分析、控制等多功能于一体的智能化产品,该产品可通过GPRS或光纤连接台区电网控制中心，控制中心可实时查询和设置各项参数，远程控制电容 器投入和切除及馈电开关的分合闸，轻松方便实现电能信息采集与监控，电网负荷控制管理。
该产品主要适用于额定电压400V及以下，交流频率50Hz电网中，安装于户外容量为500kVA 及以下变压器低压端，城网、农网、工矿企业、路灯照明、住宅小区等户外变压器台区。

SP-JP intelligent low-voltage integrated distribution box is a new generation of intelligent low-voltage integrated distribution box developed and produced by our Company in accordance with the latest standards of State Grid Corporation of China. It has two or more functions of metering, measurement, control, protection, power distribution, reactive power compensation, harmonic control, and three-phase imbalance adjustment. The product has the advantages of rain proof, dust-proof, anti-theft, anti-leakage, anti-lightning, anti-electromagnetic interference, novel and reasonable structure, high protection degree, convenient installation, commissioning, maintenance and repair, etc. It is an intelligent product integrating data collection, communication, reactive power compensation, power grid parameter analysis, control and other functions required by the smart grid. The product can be connected to the grid control center of the courts through GPRS or optical fiber. The control center can query and set various parameters in real time, remotely control the input and removal of capacitors and the opening and closing of feeder switches, in order to easily realize the collection and monitoring of electric energy information and the control and management of power grid load.
The product is mainly applicable to the power grid with rated voltage of 400V and below and AC frequency of 50Hz. It is installed in the low-voltage end of transformer with outdoor capacity of 500KVA and below, or urban power grid, rural power grid, industrial and mining enterprises, street lighting, residence community and other courts.

2 符合标准 Compliance with Standards

GB/T 7251.1-2013低压成套开关设备和控制设备第1部分:总则(IEC 61439-1：2011, IDT)
GB/T 7251.1-2013 Low-voltage Switchgear and Controlgear Assemblies - Part 1: General Rules (IEC 61439-1：2011, IDT)
GB/T 7251.8-2005低压成套开关设备和控制设备智能型成套设备通用技术要求
GB/T 7251.8-2005 Low-voltage Switchgear and Controlgear Assemblies - General Technology Requirement for Intelligent Assemblies
GB/T 7251.12-2013低压成套开关设备和控制设备第2部分：成套电力开关和控制设备(IEC 61439-2：2011,IDT)
GB/T 7251.12-2013 Low-voltage Switchgear and Controlgear Assemblies - Part 2: Power Switchgear and Controlgear Assemblies (IEC 61439-2：2011,IDT)
GB/T 10233-2016低压成套开关设备和电控设备基本试验方法
GB/T 10233-2016 Basic Testing Method for Low-voltage Switchgear and Controlgear Assemblies
GB/T 15576-2008低压成套无功功率补偿装置
GB/T 15576-2008 Low-voltage Reactive Power Compensation Assemblies

2 符合标准 Compliance with Standards

DL/T 375户外配电箱通用技术条件
DL/T 375 General Technical Condition for Outdoor Distribution Box
DL/T 645多功能电能表通信协议
DL/T 645 Multi-function Watt-hour Meter Communication Protocol
DL/T 842低压并联电容器装置使用技术条件
DL/T 842 Application Specification of Low-voltage Shunt Capacitor Installation
DL/T 1441-2015智能低压配电箱技术条件
DL/T 1441-2015 Technical Conditions for Intelligent Low-voltage Distribution Box
DL/T 1442智能配变终端技术条件
DL/T 1442 Technical Conditions for Intelligent Distribution Transformer Terminal

3 产品应用 Product Application

SP-JP智能型低压综合配电箱是一种集电能分配、计量、保护(过载、短路、漏电、过压、欠压以及缺相等)、自动重合闸、防雷、电容无功补偿于一体的配电变压器综合配电柜，主要为适应农村低压配电装置标准化、小型化、户外式的要求而设计，广泛应用于农网改造、城网、工矿企业、路灯照明、住宅小区等交流50Hz、额定电压0.4kV的配电系统中。
SP-JP intelligent low-voltage integrated distribution box is a distribution transformer integrated distribution cabinet integrating power distribution, metering, protection (overload, short circuit, leakage, overvoltage, undervoltage and phase shortage, etc.), automatic reclosing, lightning protection and reactive power compensation of capacitor. It is mainly designed to meet the requirements of standard, minimum and outdoor rural low-voltage distribution device, and is widely used in the power distribution system with AC 50Hz and rated voltage of 0.4kV, such as rural power grid reconstruction, urban power grid, industrial and mining enterprises, street lighting, and residence community, etc.
SP-JP智能型低压综合配电箱具有成套性强、体积小、造型美观、运行安全可靠、维护方便、可选择性大、建设周期短等优点。
SP-JP intelligent low-voltage integrated distribution box has the advantages of strong integrity, small size, attractive appearance, safe and reliable operation, easy maintenance, large selectivity, and short construction period, etc.

4 技术特点与优势 Technical Characteristics and Advantages

4.1通过新型结构和工艺,提高外壳防护等级，提升户外使用的安全性，满足GB/T4208规定的IP44。
4.1 It has the new structure and process, which can enhance the protection degree of the enclosure, improve the safety of outdoor use, and meet the requirements of IP44 in GB/T4208.
4.2箱内应设置照明装置，具备开门即亮功能，并可将开门动作上传终端进行状态记录。
4.2 Lighting device shall be set in the box, which has the function of lighting when opening the door, and uploading the opening action to the terminal for status record.
4.3低压智能监测系统，采集低压电缆的电压、电流和温度，收集采线路的遥测信号，并做出故障逻辑判断，将遥测和遥信信息上送。根据参数定值设定，通过遥测量进行故障逻辑运算后，判断故障原因。并将过电压、低电压、过流、失压等故障信息上报主站。
4.3 The low-voltage intelligent monitoring system can collect the voltage, current and temperature of the low-voltage cable, collect the remote signal of the acquisition line, determine the logic of the fault, and deliver the remote measurement and remote signaling information. The parameter shall be set according to the constant value, and the cause of the fault can be determined after the logic calculation of the fault through the remote measurement. In addition, the overvoltage, low voltage, overcurrent, voltage loss and other fault information can be reported to the master station.
4.4应急电源接口，可在变压器、高压侧检修、故障时接入应急电源(发电机、电源车)，保证台区用户的电源应急使用，降低因停电造成的损失，保证重要负载的安全使用。
4.4 The emergency power supply (generator, power supply vehicle) can be connected to the emergency power supply interface when the transformer and high-voltage side are overhauled or in fault, so as to ensure the emergency use of the power supply of the users in the courts, reduce the loss caused by power failure, and ensure the safe use of important loads.
4.5三相不平衡的自动调节，减少了变压器的危害，对用电设备的影响，对线损的影响
4.5 The automatic adjustment of three-phase imbalance can reduce the harm of the transformer, and the influence on the electric equipment and line loss.

5 工作和环境条件 Operating and Environment Conditions

5.1如无特殊规定，装置应能在下列条件下正常使用：
5.1 Unless otherwise specified, the device shall be able to operate normally under the following conditions:
5.1.1使用地点不超过海拔高度2000m ,如安装在2000m以上，设备相应的要降容运行。
5.1.1 The place of use shall not exceed 2,000m above sea level. If the equipment is installed above 2,000m, the capacity of the equipment shall be reduced accordingly.
5.1.2没有粉尘、腐蚀性气体的户外，在污染等级3环境中使用；
5.1.2 Outdoors without dust and corrosive gas. It shall be used in the environment with the pollution degree of 3;
5.1.3周围空气温度:-25°C~+40°C,且24小时内的平均温度不超过+35°C ,超过时需根据实际情 况降容使用；
5.1.3 Ambient air temperature: -25°C~+40°C. The average temperature within 24h shall not exceed +35°C. Otherwise, the capacity of the equipment shall be reduced according to the actual situation;
5.1.4相对湿度：在最高温度为+40°C时不超过50% ,在较低温度时容许有较高的相对湿度，如温度为+ 2(TC时，相对湿度允许为90% ,但要考虑到由于温度变化有可能会偶然产生适度的凝露;
5.1.4 Relative humidity: the relative ambient air humidity shall not exceed 50% when the maximum temperature is +40°C, and the high relative humidity is allowed at lower temperature (90% at +20°C). However, the change of temperature occasionally caused by the condensation shall be considered;
5.1.5产品安装时与垂直面的倾斜度不超过5°;
5.1.5 When the product is installed, the gradient with the vertical plane shall not exceed 5°;
5.2当使用条件与5.1规定的内容不相符合时，应作为"特殊条件"来处理，用户在订货时应向制造厂提出，并协商解决。
5.2 When the use conditions do not conform to the contents specified in 5.1, it shall be treated as "special conditions". When ordering, the user shall notify the manufacturer of requirements and negotiate for solution.

6 主要技术参数 Main Technical Parameters

	单位Unit	参数Parameter
额定短路耐受电流Icw Rated short-circuit withstand current Icw	KA	30KA/1S
额定工作电流 Rated operating current	A	≦800A
额定绝缘电压U1 Rated insulation voltage U1	V	AC690V
额定工作电压Ue Rated operating voltage Ue	V	AC400V
额定补偿容量 Rated compensation capacity		10~130Kvar
补偿方式 Compensation method		分补+共补 Separate compensation + mutual compensation
额定脉冲耐受电压UimP Rated impulse withstand voltage UimP	KV	8KV
过电压等级 Overvoltage grade		IV
额定频率 Rated frequency	Hz	50Hz
外壳防护等级 Enclosure protection degree		IP44
使用环境温度 Environmental temperature for use	℃	-25℃ ~45℃

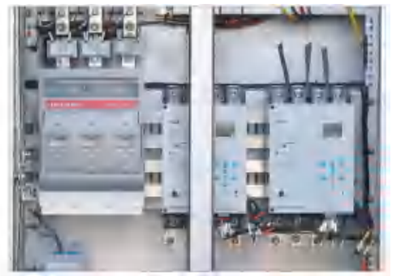
7 结构特点 Structural Characteristics

7.1柜内采用一体化绝缘母线系统，不仅操作安全，而且有效降低了母线的温升,提高产品的运行稳定性。

7.2综合配电箱按照不同变压器容量安装智能配电终端、无功补偿一体式控制器、测量电流互感器、计量电流互感器、隔离型熔断器开关，高分断自动重合闸漏电综合保护断路器、智能电容器、防雷　保护等电器元件，通过通讯接口对各功能数据汇总至智能配电终端，由智能配电终端将汇总处理的 数据通过GPRS或光纤传至后台。

7.1 The integrated insulated busbar system is adopted in the cabinet, which not only ensures safe operation, but also effectively reduces the temperature rise of the busbar and improves the operational stability of the product.

7.2 The integrated distribution box shall be equipped with intelligent power distribution terminal, reactive power compensation integrated controller, measuring current transformer, metering current transformer, isolating fuse switch, high-breaking auto reclosing leakage integrated protection circuit breaker, intelligent capacitor, lightning protection and other electrical components according to different transformer capacity. Through the communication interface, the functional data are collected to the intelligent power distribution terminal, which transmits the collected data to the background through GPRS or optical fiber.



7.3无功补偿根据变压器容量采用小容量电容器组配，实现精细化补偿，防止过补偿。无功补偿单元 设有过流，过压，欠压，缺相、投切振荡闭锁等保护。

7.3 According to the transformer capacity, the reactive power compensation adopts small capacity capacitors to realize fine compensation and prevent over compensation. The reactive power compensation unit is equipped with overcurrent, overvoltage, undervoltage, phase shortage, switching oscillation locking and other protections.

7.4产品的主构架采用2mm及以上防炫目磨砂不锈钢板折弯而成，构架采用部份焊接的结构形式或采用不锈钢双层专利隔热结构，主构架上均设有模数孔的立柱，安装组合方便；门柜设翻边防水导流槽，上部设防水顶盖，箱体两侧设百叶窗式通风散热孔、顶盖下檐及底部设桥型通风散热孔。产品独特的结构设计不仅提高了整体强度，而且提高了其防护性能。

7.4 The main framework of the product is made of 2mm or above anti-glare frosted stainless steel plate by bending. The frame uses partial welded structure or patented stainless steel double-layer heat insulation structure, and the main framework is equipped with module hole column, which is convenient for installation and combination; the door cabinet is provided with a flanging waterproof diversion trench, of which the upper part is provided with a waterproof top cover; two sides of the box are provided with louver ventilation and heat dissipation holes; the lower eaves of the top cover and the bottom of the box are provided with bridge-type ventilation and heat dissipation holes. The unique structural design of the product not only improves the overall strength, but also improves its protective performance.

7.5综合配电箱划分为：计量单元、进线单元、馈线单位、无功补偿单元、智能控制单元、辅助功能 单元，各功能室间用优质镀锌钢板分隔。
7.6产品门板采用我公司独有的双折边工艺，不仅外表美观且大大提高了门板强度。门内侧四周采用 进口 PU聚氨酯环保发泡材料直接发泡密封条与箱体防水槽无缝配合大大提高了产品防护等级，防护 等级可达IP54。
7.7方便灵活的进出线方式，配电箱进线方式采用箱体侧面进线，出线采用箱体侧面出线和底部出线 两种形式，侧面进出线设有专用不锈钢防水弯头和固线支架，弯头处配置防电缆割伤橡胶圈。

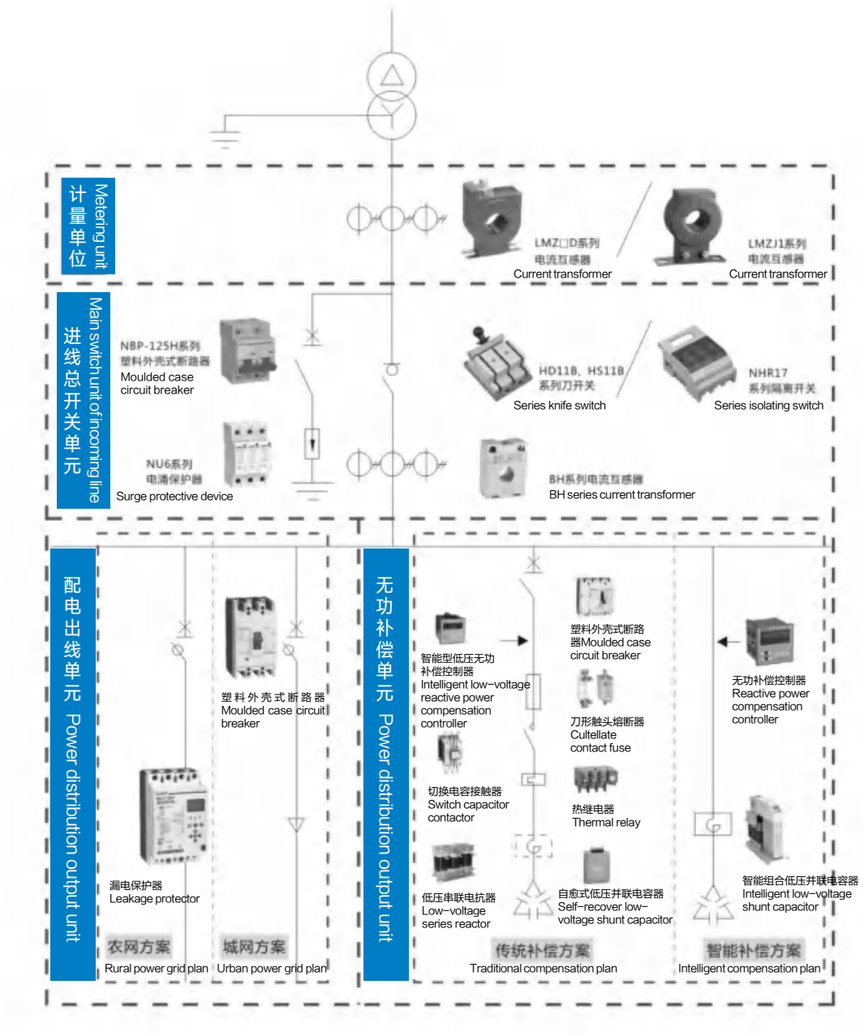
7.5 The integrated distribution box is divided into: metering unit, incoming line unit, feeder unit, reactive power compensation unit, intelligent control unit, and auxiliary function unit. Function rooms are separated by high-quality galvanized steel plate.
7.6 The door panel uses the unique double folding process of our Company, which not only looks beautiful but also greatly improves its strength. The inner side of the door uses the imported PU environment-friendly foam sealing strip to seamlessly connect to the waterproof tank of the box, which greatly improves the product protection degree (reach IP54).
7.7 Convenient and flexible incoming and outgoing line mode is adopted. The incoming line of distribution box uses the side incoming line of the box, and the outgoing line uses the side and bottom outgoing line of the box. The side incoming and outgoing lines are equipped with special stainless steel waterproof elbow and fixed line bracket, and the elbow is equipped with rubber ring to prevent cable cutting.

密封条 Sealing strip

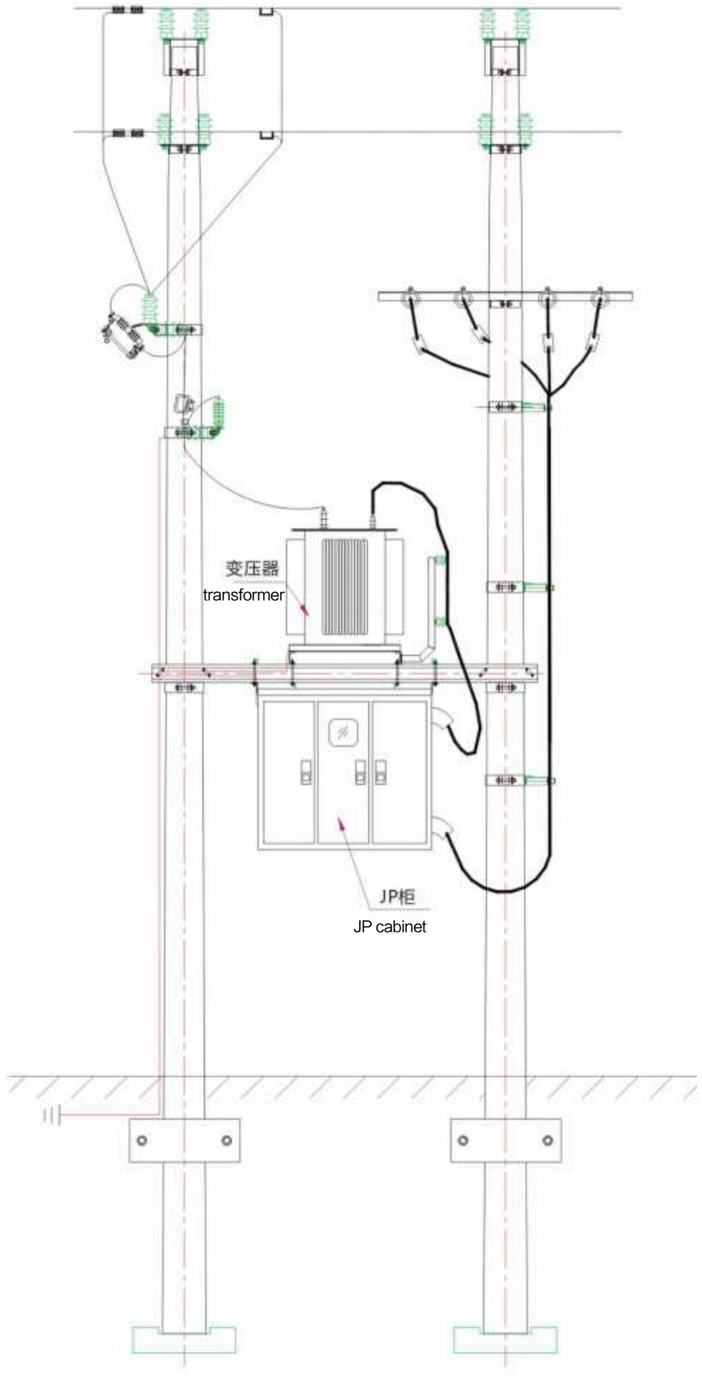
进线弯管 Incoming line elbow

8产品典型应用方案与系统图
Typical Application Scheme and System Diagram of Product

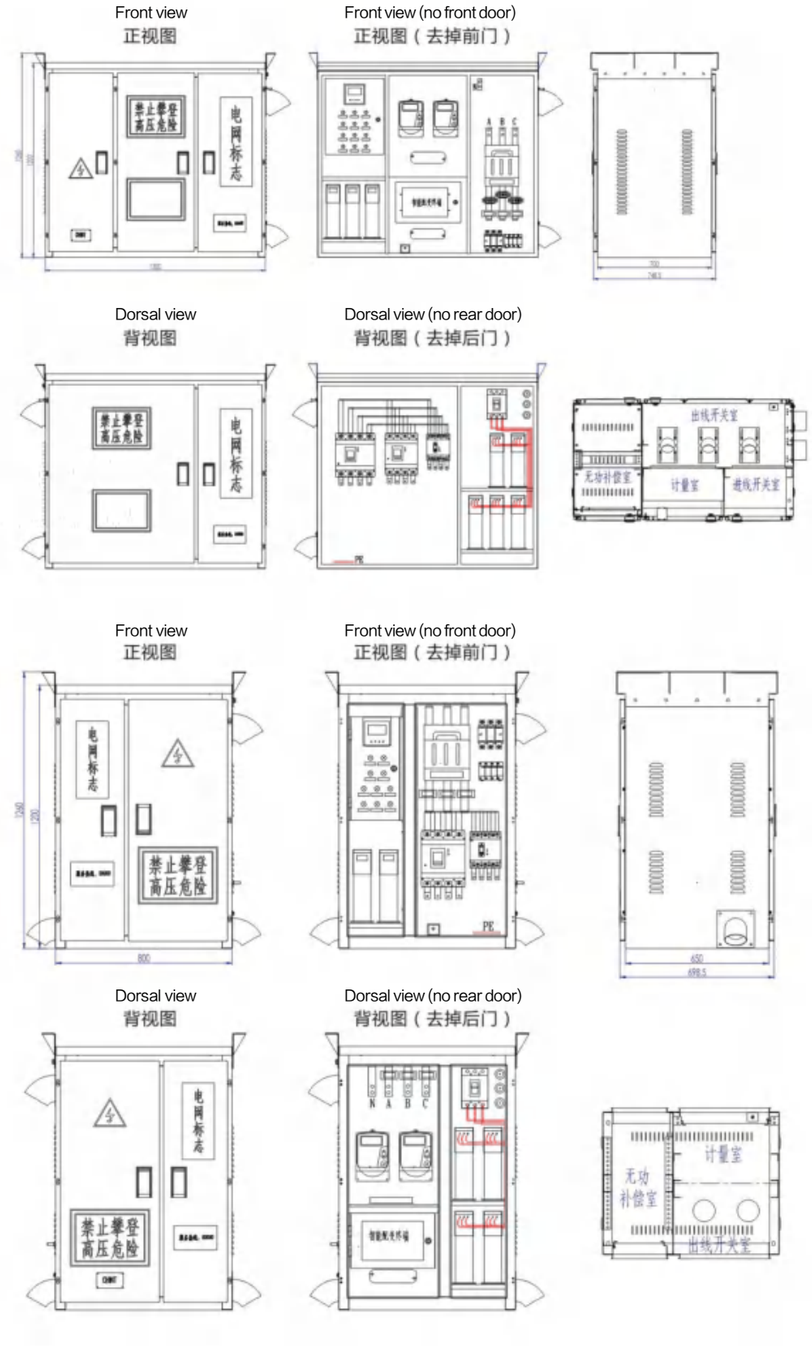
8.1典型应用系统图 Typical application system diagram



8.2产品安装示意图 Installation diagram of products

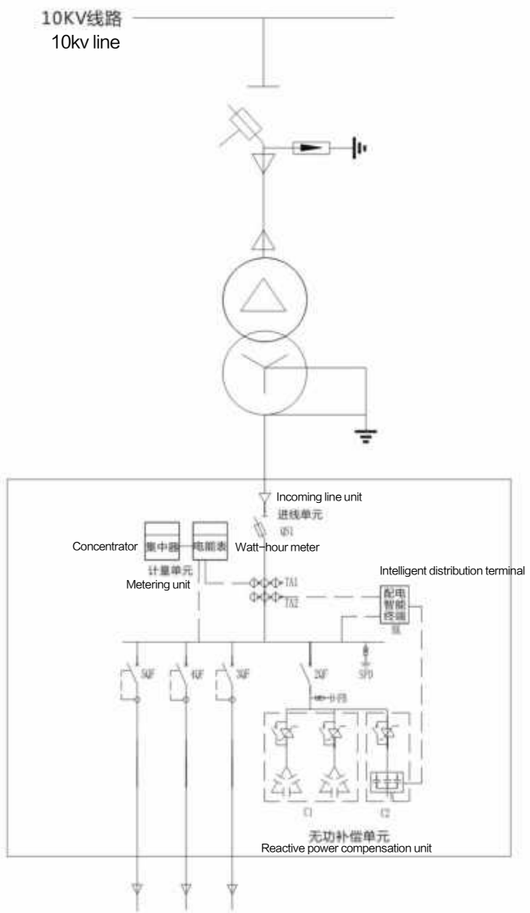


8.3柜内元件布局 Layout of components in the cabinet



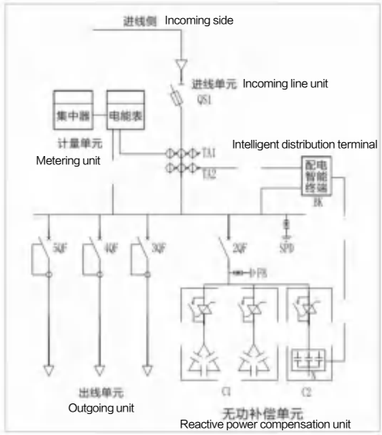
SP-JP型低压综合配电箱
SP-JP low-voltage integrated distribution box

8.4典型应用方案 Typical application scheme



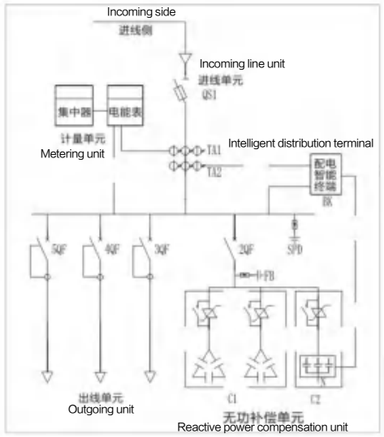
架空(电缆)引下线 Aerial (cable) down lead
跌落式熔断器 Drop-out fuse 中压避雷器 Medium-voltage lightning arrester
绝缘导线（10KV电缆） Insulated conductor (10KV cable)
配电变压器 Distribution transformer
低压电缆（软铜线） Low-voltage cable (annealed copper wire)
配变 Distribution transformer 低压综合配电箱 Low-voltage integrated distribution box
低压出线 Low-voltage outgoing line

400kVA低压综合配电箱电气图（一）
Electrical diagram of 400kVA low-voltage integrated distribution box (I)



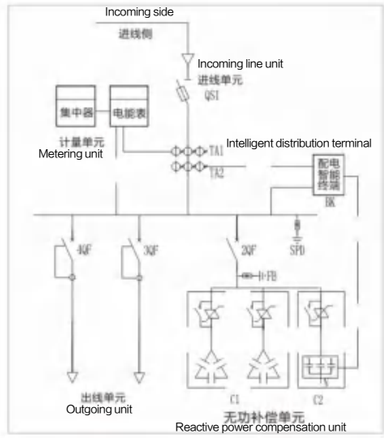
序号 S/N	代号 Code	名称 Name	规格及型号 Specification and model	数量 Quantity	单位 Unit	备注Remarks
1	QS1	熔断器式隔离开关 Fuse-type isolating switch	630A (800A)	1	个 Pcs.	按实际需求选择 Select according to actual demand
2	TA1	电流互感器 Current transformer	不低于0. 5S级Not less than Grade 0.5S	3	只 Pcs.	按实际需求调整 Adjust according to actual demand
3	TA2	电流互感器 Current transformer	不低于0. 5S级Not less than Grade 0.5S	3	只 Pcs.	按实际需求调整 Adjust according to actual demand
4	FB	避雷器 Lightning arrester		3	只 Pcs.	
5	SPD	浪涌保护器 Surge protective device	T1级 Grade T1	1	套 Set	
6	C1	智能电容器组 Intelligent capacitor bank	共补 Mutual compensation	1	组 Set	可替换为复合开 It can be replaced by combination switch
7	C2	智能电容器组 Intelligent capacitor bank	分补 Separate compensation	1	组 Set	关、电容器方案 Capacitor plan
8	BK	配电智能终端 Intelligent distribution terminal	通讯、数据采 集、四遥一体 Integrating communication, data acquisition, and four remote controls	1	只 Pcs.	若只需无功补偿控制功能时，可替换为无功补偿控制器 If only reactive power compensation control function is needed, it can be replaced by reactive power compensation controller
9	3QF	断路器（带剩余电流动作保护） Circuit breaker (with residual current operated protection)	630A/3P + N	1	个 Pcs.	
10	4QF		400A/3P + N	1	个 Pcs.	
11	5QF		400A/3P + N	1	个 Pcs.	
12	2QF	断路器 Circuit breaker		1	个 Pcs.	按需求配置 Configure according to demand

200kVA低压综合配电箱电气图（二）
Electrical diagram of 200kVA low-voltage integrated distribution box (II)



序号 S/N	代号 Code	名称 Name	规格及型号 Specification and model	数量 Quantity	单位 Unit	备注Remarks
1	QS1	熔断器式隔离开关 Fuse-type isolating switch	400A	1	个 Pcs.	
2	TA1	电流互感器 Current transformer	不低于0. 5S级Not less than Grade 0.5S	3	只 Pcs.	按实际需求调整 Adjust according to actual demand
3	TA2	电流互感器 Current transformer	不低于0. 5S级Not less than Grade 0.5S	3	只 Pcs.	按实际需求调整 Adjust according to actual demand
4	FB	避雷器 Lightning arrester		3	只 Pcs.	
5	SPD	浪涌保护器 Surge protective device	T1级 Grade T1	1	套 Set	
6	C1	智能电容器组 Intelligent capacitor bank	共补 Mutual compensation	1	组 Set	可替换为复合开 It can be replaced by combination switch
7	C2	智能电容器组 Intelligent capacitor bank	分补 Separate compensation	1	组 Set	关、电容器方案 Capacitor plan
8	BK	配电智能终端 Intelligent distribution terminal	通讯、数据采集、四遥一体 Integrating communication, data acquisition, and four remote controls	1	只 Pcs.	若只需无功补偿控制功能时，可替换为无功补偿控制器 If only reactive power compensation control function is needed, it can be replaced by reactive power compensation controller
9	3QF	断路器（带剩余电流动作保护） Circuit breaker (with residual current operated protection)	400A/3P + N	1	个 Pcs.	选配可视断点型 Optional visual breakpoint type
10	4QF		250A/3P + N	1	个 Pcs.	选配可视断点型 Optional visual breakpoint type
11	5QF		250A/3P + N	1	个 Pcs.	选配可视断点型 Optional visual breakpoint type
12	2QF	断路器 Circuit breaker		1	个 Pcs.	按需求配置 Configure according to demand

200kVA低压综合配电箱电气图（三）
Electrical diagram of 200kVA low-voltage integrated distribution box (III)



序号 S/N	代号 Code	名称 Name	规格及型号 Specification and model	数量 Quantity	单位 Unit	备注Remarks
1	QS1	熔断器式隔离开关 Fuse-type isolating switch	400A	1	个 Pcs.	
2	TA1	电流互感器 Current transformer	不低于0. 5S级Not less than Grade 0.5S	3	只 Pcs.	按实际需求调整 Adjust according to actual demand
3	TA2	电流互感器 Current transformer	不低于0. 5S级Not less than Grade 0.5S	3	只 Pcs.	按实际需求调整 Adjust according to actual demand
4	FB	避雷器 Lightning arrester		3	只 Pcs.	
5	SPD	浪涌保护器 Surge protective device	T1级 Grade T1	1	套 Set	
6	C1	智能电容器组 Intelligent capacitor bank	共补 Mutual compensation	1	组 Set	可替换为复合开 It can be replaced by combination switch
7	C2	智能电容器组 Intelligent capacitor bank	分补 Separate compensation	1	组 Set	关、电容器方案 Capacitor plan
8	BK	配电智能终端 Intelligent distribution terminal	通讯、数据采集、四遥一体 Integrating communication, data acquisition, and four remote controls	1	只 Pcs.	若只需无功补偿控制功能时，可替换为无功补偿控制器 If only reactive power compensation control function is needed, it can be replaced by reactive power compensation controller
9	3QF	断路器（带剩余电流动作保护） Circuit breaker (with residual current operated protection)	400A/3P + N	1	个 Pcs.	选配可视断点型 Optional visual breakpoint type
10	4QF		250A/3P + N	1	个 Pcs.	选配可视断点型 Optional visual breakpoint type
11	2QF	断路器 Circuit breaker		1	个 Pcs.	选配可视断点型 Optional visual breakpoint type

产品概述 Product Overview

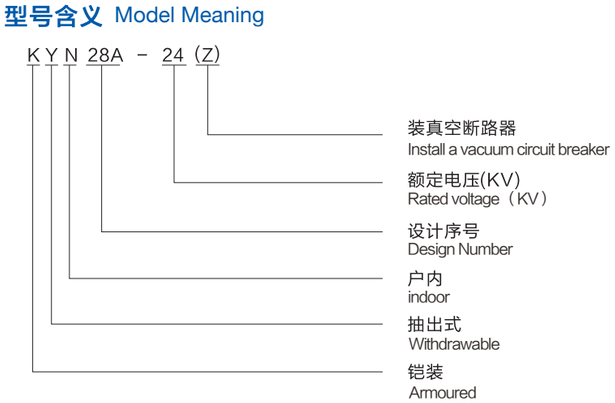
KYN28A-24(Z)(GZS1)铠装抽出式交流金属封闭开关设备(以下简称“开关设备”)，适用于三相交流50Hz电力系统，用于接受和分配电能并对电路实行控制，保护及监测。

本产品符合标准: GB3906-2006《3.6-40.5KV交流金属封闭开关设备和控制设备》，GB /T11022《高压开关设备和控制设备标准的共用技术要求》，IEC60298《额定电压1KV以上52KV以下交流金属封闭开关设备和控制设备》，DL/T404《户内交流高压开关柜订货技术条件》。

KYN28A-24(Z)(GZS1) armored withdrawable AC metal-enclosed switchgear (hereinafter referred to as "switching device"), suitable for three-phase AC The 50Hz power system is used to receive and distribute electrical energy and control, protect and monitor the circuit.

This product conforms to the standard: GB3906-2006 "3.6-40. 5KV AC metal-enclosed switchgear and control equipment", GB /T11022 "High voltage Common Technical Requirements for Switchgear and Control Equipment Standards", IEC60298 "AC metal-enclosed switchgear with rated voltage above 1KV and below 52KV Control Equipment", DL/T404 "Technical Conditions for Ordering Indoor AC High Voltage Switchgear".

型号含义 Model Meaning



正常使用环境条件 Normal use environmental conditions

1、周围空气温度：最高温度40℃，最低温度-15℃。
2、湿度条件：日平均相对湿度：≤95%，日平均水蒸气压力不超过2.2Kpa；
　　月平均相对湿度：≤90%，月平均水蒸气压力不超过1.8Kpa；
3、海拔高度：1000m及以下。
4、地震烈度：不超过8度。
5、周围空气应不受腐蚀性或可燃气体、水蒸气等明显污染。
6、无经常性的剧烈振动场所。
7、在超过GB3906规定的正常的环境条件下使用时，由用户和制造商协商；

1. Ambient air temperature: the highest temperature is 40°C, the lowest temperature is -15°C.
2. Humidity conditions:
Daily average relative humidity: ≤95%, daily average water vapor pressure does not exceed 2.2Kpa;
Monthly average relative humidity: ≤90%, monthly average water vapor pressure does not exceed 1.8Kpa;
3. Altitude: 1000m and below.
4. Earthquake intensity: no more than 8 degrees.
5. The surrounding air should not be significantly polluted by corrosive or combustible gas, water vapor, etc.
6. There is no frequent severe vibration place.
7. When used under normal environmental conditions exceeding GB3906, it shall be negotiated by the user and the manufacturer;

技术参数(见表1) Technical parameters (see Table 1)

表1 Table 1

项目 Project			单位 Unit	数据 Data
额定电压 Rated voltage			KV	3.6、7.2、12、24
额定频率 Rated frequency			Hz	50
断路器额定电流 Circuit breaker rated current			A	630、1250、1600、2000、2500、3150、4000
开关设备额定电流 Rated current of switchgear			A	630、1250、1600、2000、2500、3150、4000
额定短时耐受电流（4s） Rated short-time withstand current (4s)			KA	16、20、25、31.5、40、50
额定峰值耐受电流（峰值） Rated peak withstand current (peak value)			KA	40、50、63、80、100、25
额定短路开断电流 Rated short-circuit breaking current			KA	16、20、25、31.5、40、50
额定短路关合电流（峰值） Rated short-circuit making current (peak value)			KA	40、50、63、80、100、25
额定绝缘水平 Rated insulation level	1min工频耐受电压 1min power frequency withstand voltage	极间、极对地间 Between poles, between poles to ground	KV	24、32、42、65
		断口间 Fracture	KV	24、32、48、79
	雷电冲击耐受电压（峰值） Lightning impulse withstand voltage (peak value)	极间、极对地间 Between poles, between poles to ground	KV	40、60、75、125
		断口间 Fracture	KV	46、70、85、145
防护等级 Protection level			外壳为IP4X，隔壁间、断路器室门打开时为IP4X The shell is IP4X, and when the door of the next door and circuit breaker room is opened, it is IP4X	

注：1、电流互感器的短路容量单独考虑；2、VS1-24技术参数详见本公司相应样本。
Note: 1. The short-circuit capacity of the current transformer is considered separately;
2. The technical parameters of VS1-24 are detailed in the corresponding samples of our company.

产品结构特征 Product structure characteristics

1、开关设备结构(见图1)。
2、完全金属铠装，组装式结构，组合方案广。
3、柜体选用进口的敷铝锌薄钢板，经 MINGE机床加工，采用先进的多重折边工艺，用拉铆螺母、高强度螺栓联接，且精度高重量轻、强度高、零件通用性强。
4、可配装VS1-24系列或进口VD4系列真空断路器，适用性广、可靠性高、实现长年免维护。
5、手车设工作、试验位置，各位置均有定位和显示装置，安全可靠。
6、各类手车按模数积木式变化，保证同规格车可自由互换， 不同规格车绝对不能进入。
7、接地开关安装方式
1) 装于柜中部(前置式)便于柜后检修双面维护(图1-a)。
2) 装于柜后部(后置式)便于靠墙节约空间面积(图1-b)。
8、电流互感器安装方式：
1) 柜后部电缆室正装。
2) 大弯板底部吊装。
9、电缆室可安装多达9根单芯电缆。
10、各高压室均有泄压通道，确保人身安全。
11、高可靠的联锁装置，充分满足“五防”安全要求。
12、由专用运载车运送手车，操作轻便，灵活。
13、前后门装有观察窗， 可方便观察室内元件的工作状态。

1. Switchgear structure (see Figure 1).
2. Completely metal armored, assembled structure, wide combination schemes.
3. The cabinet body is made of imported aluminum-zinc coated thin steel plate, processed by MINGE machine tools, and adopts advanced Multi-folding process, connected with blind rivet nuts and high-strength bolts, with high precision, light weight and strong High degree of accuracy and strong versatility of parts.
4. It can be equipped with VS1-24 series or imported VD4 series vacuum circuit breaker, which has wide applicability and reliability. High performance, to achieve long-term maintenance-free.
5. The handcart is equipped with working and test positions, and each position has positioning and display devices, which is safe and reliable.
6. All kinds of handcarts can be changed according to modular building blocks to ensure that cars of the same specification can be freely interchanged, with different specifications Cars must never enter.
7. Installation method of earthing switch
1) Installed in the middle of the cabinet (front-mounted) to facilitate double-sided maintenance after the cabinet (Figure 1-a).
2) Installed at the back of the cabinet (rear-mounted) to save space and area against the wall (Figure 1-b).
8. Current transformer installation method:
1) The cable room at the rear of the cabinet is installed.
2) Hoisting at the bottom of the large curved plate.
9. Up to 9 single-core cables can be installed in the cable room.
10. Each high-pressure chamber has a pressure relief channel to ensure personal safety.
11. The highly reliable interlocking device fully meets the "five prevention" safety requirements.
12. The handcart is transported by a special carrier, which is easy to operate and flexible.
13. The front and rear doors are equipped with observation windows, which can facilitate the observation of the working status of the indoor components.

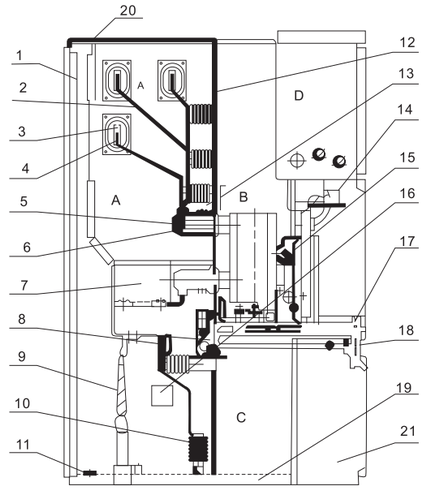


图1 Figure 1

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

A、Busbar room
B、Circuit breaker handcart room
C、Cable room.
D、Relay instrument room.
1、Shell
2、Branch bus
3、Bus bushing
4、Main bus
5、Static contact device
6、Contact box
7、Current Transformer
8、Earthing switch
9、Cable
10. Lightning arrester
11. Ground bus
12. Loading and unloading partitions
13. Partition (trap)
14. Secondary plug
15. Circuit breaker handcart
16. Heating device
17. Withdrawable horizontal partition
18. Grounding switch operating mechanism
19. Bottom plate
20. Pressure relief device
21. Control wire duct

外形尺寸（见图2、表2）Dimensions (see Figure 2 and Table 2)

（mm）Table 2 （mm)表2

高度B Height B		2430
高度A Height A	分支小母线额定电流≤1250A，热稳定电流40KA Rated current of branch small busbar ≤1250A, thermal stability current 40KA	1000
	分支小母线额定电流≥1600A Rated current of branch small busbar ≥1600A	1000
高度C Height C	电缆进出线 Cable in and out	1810
	架空进出线 Overhead incoming and outgoing lines	2170

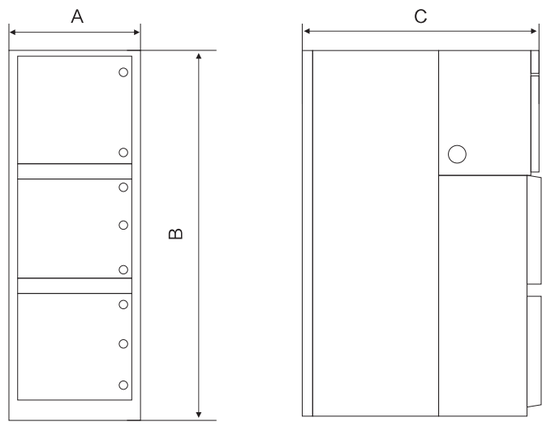
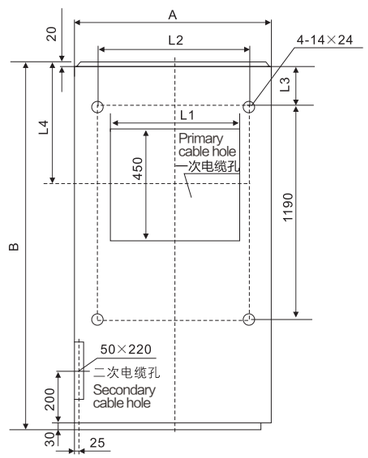


图2、外形尺寸
Figure 2. Dimensions



柜后 图3、开关设备安装尺寸示意图
Figure 3 behind the cabinet, schematic diagram of switchgear installation dimensions

外形尺寸（见图3、表3）Dimensions (see Figure 3,table 3)

（mm）Table 3 （mm)表3

柜宽A Cabinet width A	柜深C Cabinet depth C	L1	L2	L3	L4
1000	1500电缆 1500 cable	730	830	150	800
	2170架空 2170 overhead	730	830	310	1160

订货须知 Order notice

1、主电路方案图编号、用途和单线系统图、额定电压、额定电流、额定短路开断电流、配电室平面布置及开关设备的排列配置图等。
2、开关设备控制、测量及保护功能的要求以及其他闭锁和自动装置的要求。
3、开关设备内主要电器元件的型号、规格及数量。
4、如开关设备之间或进线柜需要母线桥连接，应提供母线桥的额定载流量，母线桥的跨度，距地高度等具体要求数据。
5、开关设备使用在特殊环境条件时，应在订货时详细说明。
6、其它特殊要求。

1. The main circuit diagram number, purpose and single-line system diagram, rated voltage, rated current, rated short-circuit breaking current, distribution room layout and switchgear arrangement diagram, etc.
2. Requirements for control, measurement and protection functions of switchgear, as well as requirements for other locking and automatic devices.
3. The model, specification and quantity of the main electrical components in the switchgear.
4. If the busbar bridge connection is required between switchgear or the incoming cabinet, the rated current carrying capacity of the busbar bridge, the span of the busbar bridge, the height from the ground and other specific requirements data should be provided.
5. When the switchgear is used under special environmental conditions, it should be explained in detail when ordering.
6. Other special requirements.

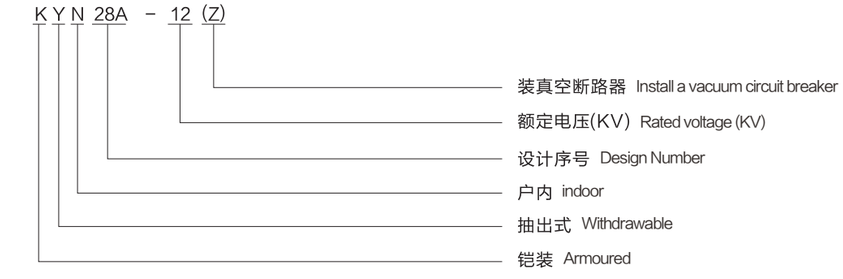
产品概述 Product overview

KYN28A-12(Z)(GZS1)铠装抽出式交流金属封闭开关设备(以下简称“开关设备”)，适用于三相交流50Hz电力系统，用于接受和分配电能并对电路实行控制，保护及监测。

本产品符合标准: GB3906《3.6-40.5KV交流金属封闭开关设备和控制设备》，GB /T11022《高压开关设备和控制设备标准的共用技术要求》，IEC60298《额定电压1KV以上52KV以下交流金属封闭开关设备和控制设备》，DL/T404《户内交流高压开关柜订货技术条件》。

KYN28A-12(Z)(GZS1) armored withdrawable AC metal-enclosed switchgear (hereinafter referred to as "switching device"), suitable for three-phase AC
The 50Hz power system is used to receive and distribute electrical energy and control, protect and monitor the circuit.
This product conforms to the standard: GB3906 "3.6-40.5KV AC metal-enclosed switchgear and control equipment", GB /T11022 "High-voltage switchgear
Common technical requirements for equipment and control equipment standards", IEC60298 "AC metal-enclosed switchgear and control equipment with rated voltage above 1KV and below 52KV "Preparation", DL/T404 "Technical Conditions for Ordering Indoor AC High Voltage Switchgear".

型号含义 Model meaning



正常使用条件 Normal use conditions

1、周围空气温度：最高温度40℃，最低温度-15℃。
2、湿度条件：日平均相对湿度：≤95%，日平均水蒸气压力不超过2.2Kpa；
　　月平均相对湿度：≤90%，月平均水蒸气压力不超过1.8Kpa；
3、海拔高度：1000m及以下。
4、地震烈度：不超过8度。
5、周围空气应不受腐蚀性或可燃气体、水蒸气等明显污染。
6、无经常性的剧烈振动场所。
7、在超过GB3906规定的正常的环境条件下使用时，由用户和制造商协商；

1. Ambient air temperature: the highest temperature is 40°C, the lowest temperature is -15°C.
2. Humidity conditions: daily average relative humidity: ≤95%, daily average water vapor pressure does not exceed 2.2Kpa;
Monthly average relative humidity: ≤90%, monthly average water vapor pressure does not exceed 1.8Kpa;
3. Altitude: 1000m and below.
4. Earthquake intensity: no more than 8 degrees.
5. The surrounding air should not be significantly polluted by corrosive or combustible gas, water vapor, etc.
6. There is no frequent severe vibration place.
7. When used under normal environmental conditions exceeding GB3906, it shall be negotiated by the user and the manufacturer;

技术参数（见表1）Technical parameters (see Table 1)

表1 Table 1

项目 Project			单位 Unit	数据 Data
额定电压 Rated voltage			KV	3.6、7.2、12
额定频率 Rated frequency			Hz	50
断路器额定电流 Circuit breaker rated current			A	630、1250、1600、2000、2500、3150、4000
开关设备额定电流 Rated current of switchgear			A	630、1250、1600、2000、2500、3150、4000
额定短时耐受电流（4s） Rated short-time withstand current (4s)			KA	16、20、25、31.5、40、50
额定峰值耐受电流（峰值） Rated peak withstand current (peak value)			KA	40、50、63、80、100、25
额定短路开断电流 Rated short-circuit breaking current			KA	16、20、25、31.5、40、50
额定短路关合电流（峰值） Rated short-circuit making current (peak value)			KA	40、50、63、80、100、25
额定绝缘水平 Rated insulation level	1min工频耐受电压 1min power frequency withstand voltage	极间、极对地间 Between poles, between poles to ground	KV	24、32、42
		断口间 Fracture	KV	24、32、48
	雷电冲击耐受电压（峰值） Lightning impulse withstand voltage (peak value)	极间、极对地间 Between poles, between poles to ground	KV	40、60、75
		断口间 Fracture	KV	46、70、85
防护等级 Protection level			外壳为IP4X，隔壁间、断路器室门打开时为IP3X The shell is IP4X, and when the door of the next door and circuit breaker room is opened, it is IP3X	

注：1、电流互感器的短路容量单独考虑；　2、ZN63A-12技术参数详见本公司相应样本。
Note: 1. The short-circuit capacity of the current transformer is considered separately;
2. The technical parameters of ZN63A-12 are detailed in the corresponding samples of our company.

仪 表 室
Instrument room

主断路器室
Main circuit breaker room

产品结构特征 Product structure characteristics

1、开关设备结构(见图1)。
2、完全金属铠装，组装式结构，组合方案广。
3、柜体选用进口的敷铝锌薄钢板，经 MINGE机床加工，采用先进的多重折边工艺，用拉铆螺母、高强度螺栓联接，且精度高重量轻、强度高、零件通用性强。
4、可配装VS1-12系列或进口VD4系列真空断路器，适用性广、可靠性高、实现长年免维护。
5、手车设工作、试验位置，各位置均有定位和显示装置，安全可靠。
6、各类手车按模数积木式变化，保证同规格车可自由互换， 不同规格车绝对不能进入。
7、接地开关安装方式：(1) 装于柜中部(前置式)便于柜后检修双面维护(图1-a)。(2) 装于柜后部(后置式)便于靠墙节约空间面积(图1-b)。
8、电流互感器安装方式：(1) 柜后部电缆室正装；(2) 大弯板底部吊装。
9、电缆室可安装多达9根单芯电缆。
10、各高压室均有泄压通道，确保人身安全。
11、高可靠的联锁装置，充分满足“五防”安全要求。
12、由专用运载车运送手车，操作轻便，灵活。
13、前后门装有观察窗， 可方便观察室内元件的工作状态。

1. Switchgear structure (see Figure 1).
2. Completely metal armored, assembled structure, wide combination scheme.
3. The cabinet body is made of imported aluminum-zinc coated thin steel plate, processed by MINGE machine tool, and adopts advanced multi-folding technology, connected with rivet nuts and high-strength bolts, and has high precision and light weight.
High strength, strong versatility of parts.
4. It can be equipped with VS1-12 series or imported VD4 series vacuum circuit breakers, with wide applicability, high reliability, and long-term maintenance-free.
5. The handcart is equipped with working and testing positions, and each position has positioning and display devices, which is safe and reliable.
6. All kinds of handcarts are changed according to modular building blocks to ensure that cars of the same specification can be freely interchanged, and cars of different specifications are absolutely not allowed to enter.
7. Earthing switch installation method: (1) Installed in the middle of the cabinet (front-mounted) to facilitate double-sided maintenance after the cabinet (Figure 1-a). (2) Installed at the back of the cabinet (rear-mounted) to save space and area against the wall (Figure 1-b).
8. Current transformer installation method: (1) The cable room at the rear of the cabinet is installed in the front; (2) The large bent plate is hoisted at the bottom.
9. Up to 9 single-core cables can be installed in the cable room.
10. Each high-pressure chamber has a pressure relief channel to ensure personal safety.
11. The highly reliable interlocking device fully meets the "five prevention" safety requirements.
12. The handcart is transported by a special carrier, which is easy to operate and flexible.
13. The front and rear doors are equipped with observation windows, which can facilitate the observation of the working status of the indoor components.

铠装中置式交流金属封闭开关设备

Armored center-mounted AC metal-enclosed switchgear

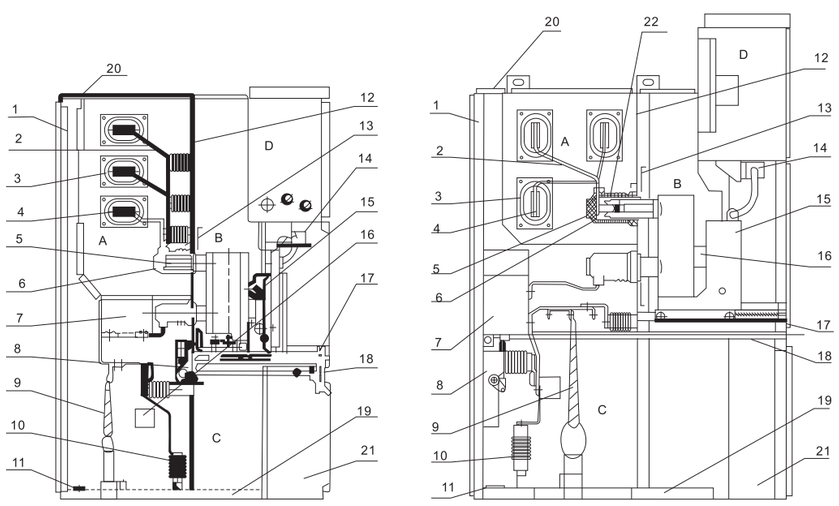


图1 figure 1

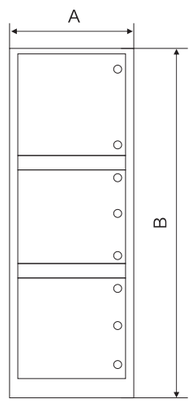
A、母线室
B、断路器手车室
C、电缆室
D、继电器仪表室
1、外壳
2、分支母线
3、母线套管
4、主母线
5、静触头装置
6、触头盒
7、电流互感器
8、接地开关
9、电缆
10、避雷器
11、接地母线
12、装卸式隔板
13、隔板（活门）
14、二次插头
15、断路器手车
16、加热装置
17、可抽式出式水平隔板
18、接地开头操作机构
19、底板
20、泄压装置
21、控制导线槽

A. Busbar room
B. Circuit breaker handcart room
C. Cable room
D. Relay instrument room,
1. Shell
2. Branch bus
3. Bus bushing
4. Main bus
5. Static contact device
6. Contact box
7. Current transformer
8. Grounding switch
9. Cable
10. Lightning arrester
11. Ground bus
12. Loading and unloading partitions
13. Partition (trap)
14. Secondary plug
15. Circuit breaker handcart
16. Heating device
17. Withdrawable horizontal partition
18. Ground operating mechanism
19. Bottom plate
20. Pressure relief device
21. Control wire duct

外形尺寸（见图2、表2）Technical parameters (see Table 1)

（mm）Table 2（mm)表2

高度B Height B		2300（2200）
高度A Height A	分支小母线额定电流≤1250A，热稳定电流40KA Rated current of branch small busbar ≤1250A, thermal stability current 40KA	800（650）
	分支小母线额定电流≥1600A Rated current of branch small busbar ≥1600A	1000
高度C Height C	电缆进出线 Cable in and out	1500
	架空进出线 Overhead incoming and outgoing lines	1660



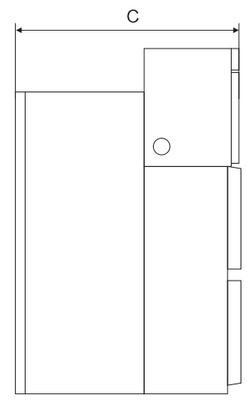
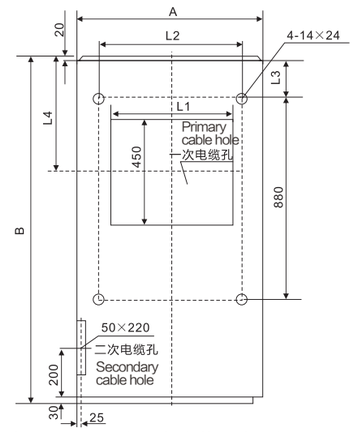


图2、外形尺寸 Figure 2. Dimensions



柜后 图3、开关设备安装尺寸示意图
Figure 3 behind the cabinet, schematic diagram of switchgear installation dimensions

外形尺寸（见图3、表3）Dimensions (see Figure 3,table 3)

（mm）Table 3（mm)表3

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

订货须知 Order notice

KYN28A-12(Z)开关设备订货时应提供下列技术资料：

1、主电路方案图编号、用途和单线系统图、额定电压、额定电流、额定短路开断电流、配电室平面布置及开关设备的排列配置图等。
2、开关设备控制、测量及保护功能的要求以及其他闭锁和自动装置的要求。
3、开关设备内主要电器元件的型号、规格及数量。
4、如开关设备之间或进线柜需要母线桥连接，应提供母线桥的额定载流量，母线桥的跨度，距地高度等具体要求数据。
5、开关设备使用在特殊环境条件时，应在订货时详细说明。
6、其它特殊要求。

1. The main circuit diagram number, purpose and single-line system diagram, rated voltage, rated current, rated short-circuit breaking current, distribution room layout and switchgear arrangement diagram, etc.
2. Requirements for control, measurement and protection functions of switchgear, as well as requirements for other locking and automatic devices.
3. The model, specification and quantity of the main electrical components in the switchgear.
4. If the busbar bridge connection is required between switchgear or the incoming cabinet, the rated current carrying capacity of the busbar bridge, the span of the busbar bridge, the height from the ground and other specific requirements data should be provided.
5. When the switchgear is used under special environmental conditions, it should be explained in detail when ordering.
6. Other special requirements.

产品概述 Product Overview

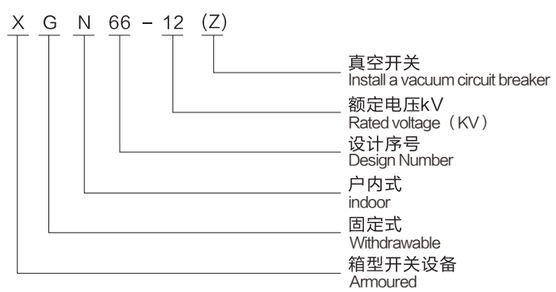
XGN66-12型固定式封闭开关设备(以下简称开关柜)是我公司新一代高压电器成套产品，符合国家标准GB3906《-35KV交流金属封闭开关设备》电力部DLT404《户内交流高压开关柜订货技术条件》的要求，也满足国际标准IEC60298《1KV以上52KV以下交流金属封闭开关设备和控制设备的要求》。

该产品吸收了国外先进技术，它体积小，仅是普通开关柜体保的50%；断路器具有可靠性高，性能好；“五防”联锁机构可靠、简单等优点。开关柜是3.6、7.2、12KV三相交流电50HZ单母线分段的户内成套装置，作为接受和分配电能之用。并具有对电路进行控制、保护和监测等功能，可使用在各类型发电厂、变电站及工矿企业，高层建筑等场所，也可与环网组合应用于开闭所中。

XGN66-12 fixed closed switchgear (hereinafter referred to as switchgear) is our company's new generation of high-voltage electrical complete sets of products, in line with national standards.The requirements of GB3906 "-35KV AC Metal-enclosed Switchgear" DLT404 "Technical Conditions for Ordering Indoor AC High Voltage Switchgear" of the Ministry of Electric Power are also full.Meet the international standard IEC60298 "Requirements for AC metal-enclosed switchgear and control equipment above 1KV and below 52KV".

This product has absorbed foreign advanced technology, it is small in size, which is only 50% of the protection of ordinary switch cabinet; the circuit breaker has high reliability and good performance;"Five The "anti-" interlocking mechanism is reliable and simple. The switch cabinet is an indoor complete set of 3.6, 7.2, 12KV three-phase alternating current 50HZ single busbar segmentation, as To receive and distribute electrical energy. It also has the functions of controlling, protecting and monitoring circuits, and can be used in various types of power plants, substations, and industrial and mining enterprises.High-rise buildings and other places can also be combined with the ring network to be used in opening and closing stations.

型号含义 Model meaning



断路器室
Circuit breaker room

正常使用环境条件 Normal use environmental conditions

电缆室

1. 环境温度：-25℃~+40℃，24小时内平均温度不超过+35℃。
2. 海拔高度不超过1000m。
3. 水平倾斜度不大于3℃。
4. 地震烈度不超过8℃
5. 无剧烈振动和冲击及爆炸危险场所。

1. Ambient temperature: -25°C~+40°C, the average temperature within 24 hours does not exceed +35°C.
2. The altitude does not exceed 1000m.
3. The horizontal inclination is not more than 3°C.
4. The seismic intensity does not exceed 8°C
5. There is no violent vibration, shock and explosion hazard place.

结构特点 Structural features

1. 柜体采用优质角钢焊接而成。
2. 断路器室位于柜体中（下）部，安装，调试、维护方便。标准配装ZN63A（VS1-12）断路器，并设有压力释放通道，确保人身安全。
3. 采用先进可靠的旋转式隔离开关，可在主母线带电下安全进入断路器室检修。
4. 整柜防护等级IP4X。
5. 设有可靠功能齐全的强制性机械闭锁装置，简便有效达到“五防”要求。
6. 具有可靠的接地系统。
7. 门上装有观察窗，可清楚观察到柜内元件地工作状态。
8. 操作机构闭锁采用同XGN12-12柜用的JSXGN闭锁机构，简单可靠方便实用。
9. 进出线电缆低于柜底前部，方便用户连接。

1. The cabinet body is welded with high-quality angle steel.
2. The circuit breaker room is located in the middle (lower) part of the cabinet, which is convenient for installation, debugging and maintenance. It is equipped with ZN63A (VS1-12) circuit breaker as standard, and has a pressure release channel to ensure personal safety.
3. Using advanced and reliable rotary isolating switch, it can safely enter the circuit breaker room for maintenance when the main bus is live.
4. The protection level of the whole cabinet is IP4X.
5. Equipped with a reliable and fully functional compulsory mechanical locking device, which can easily and effectively meet the requirements of "five preventions".
6. Have a reliable grounding system.
7. The door is equipped with an observation window, which can clearly observe the working status of the components in the cabinet.
8. The operating mechanism is locked using the same JSXGN locking mechanism used in the XGN12-12 cabinet, which is simple, reliable, convenient and practical.
9. The incoming and outgoing cables are lower than the front of the cabinet bottom, which is convenient for users to connect.

主要技术参数 The main technical parameters

序号 Serial number	项目 project	单位 unit	技术参数 technical parameter
1	额定电压 Rated voltage	KV	3.6，7.2，12
1	额定工频耐受电压 Rated power frequency withstand voltage	KV	To the ground, alternately: 42: Fracture: 48
3	额定雷电冲击耐受电压 Rated lightning impulse withstand voltage	KV	To the ground, alternately: 75: Fracture: 85
4	额定频率 Rated frequency	HZ	50
5	额定电流 Rated current	A	630，1250
6	额定短路开断电流(有效值) Rated short-circuit breaking current (effective value)	KA	20，25，31.5
7	额定短路关合电流(峰值) Rated short-circuit making current (peak value)	KA	50，63，80
8	额定动稳定流(峰值) Rated dynamic steady flow (peak value)	KA	50，63，80
9	额定热稳定电流4S (有效值) Rated thermal stability current 4S (effective value)	KA	20，25，31.5
10	防护等级 Protection level		IP4X
11	外形尺寸(宽x深x高) Dimensions (width x depth x height)	mm	900*1000*2300
12	重量 weight	Kg	≈600

序号 Serial number	项目 project	单位 unit	技术参数 technical parameter
1	额定电压 Rated voltage	KV	12
1	额定电流 Rated current	A	630 1250
3	额定短路开断电流 Rated short-circuit breaking current	KA	20，25，31.5
4	额定短路关合电流 Rated short-circuit making current	KA	50，63，80
5	额定短时耐受电流(4s有效值) Rated short-time withstand current (4s effective value)	KA	20，25，31.5
6	额定峰值耐受电流(峰值) Rated peak withstand current (peak)	KA	50，63，80
7	机械寿命 Mechanical life	次	10000
8	额定短路开断电流开断次数 Rated short-circuit breaking current breaking times	次	50
9	额定操作顺序 Rated operating sequence		分-0.3s-合分-180s-合分
10	触头开距 Contact opening distance	mm	11±1
11	触头接触行程 Contact stroke	mm	4±0.5
12	相间中心距 Center distance between phases	mm	210
13	分闸速度 Opening speed	m/s	41.2±0.2
14	合闸速度 Closing speed	m/s	0.6±0.2
15	分闸时间 Opening time	ms	≤60
16	合闸时间 Closing time	ms	≤75
17	三相分闸同期性 Three-phase opening synchronization	ms	≤2
18	合闸弹跳 Closing bounce	ms	≤2
19	回路电阻 Loop resistance	μΩ	≤45
20	触头累积允许磨损厚度 Contact accumulative allowable wear thickness	mm	3

其它电器元件的技术参数见其各自的使用说明书。
开关柜额定电流大于1600A的方案须与本公司协商解决。
The technical parameters of other electrical components can be found in their respective operating instructions.
If the rated current of the switchgear is greater than 1600A, the solution must be negotiated with our company.

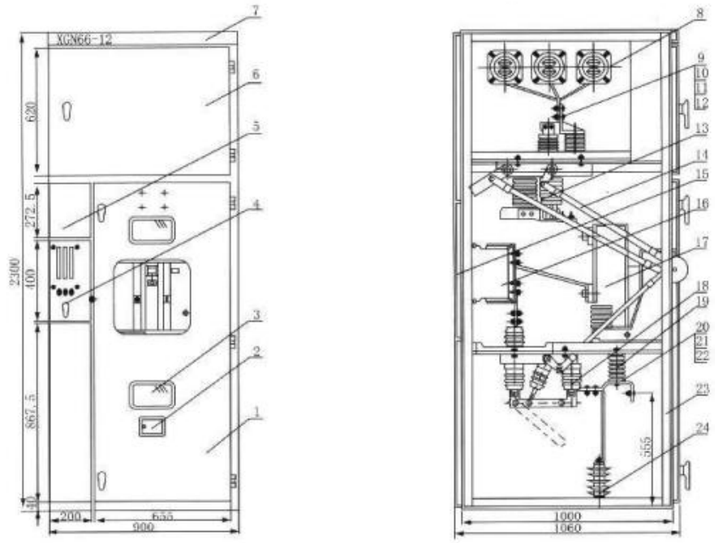


图1：开关柜布置示意图
Figure 1: Schematic diagram of switch cabinet layout

1. 柜门
2. 照明灯
3. 观察窗
4. 操作机构
5. 小门板
6 仪表门
7. 眉头
8. 母线穿墙套管
9. 镙栓
10. 垫圈
11. 垫圈
12. 镙母
13. 隔离开关
14. 拉杆
15. 后封板
16. 电流互感器
17. 真空断路器
18. 隔离开关
19. 传感器
20. 镙栓
21. 垫圈
22. 垫圈
23. 骨架
24. 避雷器

1. Cabinet door
2. Lighting
3. Observation window
4. Operating mechanism
5. Small door panel
6.Instrument door
7. Brow
8. Busbar through wall bushing
9. Bolt
10. Washer
11. Washer
12. The mother
13. Isolating switch
14.Tie rod
15. Rear sealing plate
16. Current transformer
17. Vacuum circuit breaker
18. Isolating switch
19. Sensor
20. Bolt
21. Washer
22. Washer
23.Skeleton
24. Lightning arrester

安装 Install

1．安装基础参考下图，基础槽钢突出地面1-3mm,每米范围内不平度不应超过1.5mm，全长范围内不超过5mm。

2．将开关柜安顺序放置于基础上，调整好安装的位置。然后用M12螺栓或者用点焊方法进行固定，柜与柜间用M8螺栓并紧。

3．拆开后盖板安装主母线和一次电缆，端子接触面应注意清理干净并涂中性凡士林。安装好后注封堵意好一次电缆孔。

4．连接柜间接地母线，使沿开关柜排列方向连成一体，检查工作和保护接地是否有遗漏，接地回路是否连续导通，工作接地电阻应不大于1000μΩ,保护接电阻应不于4Ω.

5．安装二次电缆由柜前底部引入，顺侧壁进入低压室，分接于端子排上；或由柜顶二次小母线上引入低压室，装好后封堵电缆孔。

6．清理柜内灰尘杂物。

1. Refer to the figure below for the installation foundation. The foundation channel steel protrudes 1-3mm from the ground, and the unevenness per meter should not exceed 1.5mm, and the total length should not exceed 5mm.

2. Place the switch cabinet on the foundation in order and adjust the installation position. Then fix it with M12 bolts or spot welding, and tighten the cabinet with M8 bolts.

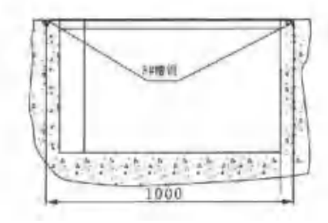
3. After disassembling the cover, install the main bus bar and the primary cable, and the contact surface of the terminal should be cleaned and coated with neutral petroleum jelly. After installation, please plug the cable hole once.

4. Connect the indirect ground bus of the cabinet to make it one body along the arrangement direction of the switch cabinet. Check whether there is any omission of the working and protective grounding, whether the grounding loop is continuously connected, and the working grounding resistance should be

Not more than 1000μ Q, the protection connection resistance should not be less than 42.

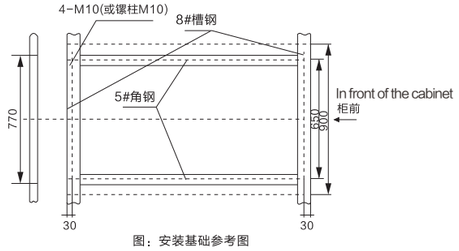
5. Install the secondary cable from the bottom of the front of the cabinet, enter the low-voltage room along the side wall, and tap it on the terminal block; or lead into the low-voltage room from the secondary small bus on the top of the cabinet, and block the cable hole after installation.

6. Clean up the dust and debris in the cabinet.



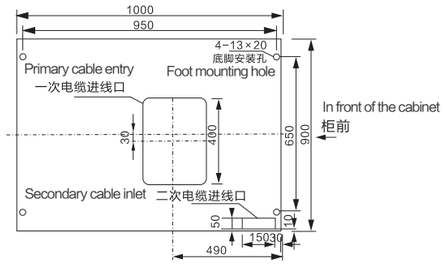
电缆沟深根据电缆弯曲半径确定

The depth of the cable trench is determined according to the cable bending radius;



图：安装基础参考图

Figure: Installation base reference diagram



图：底板布置图

Figure: Floor plan

投运 Put into operation

1．投运前应进行如下检查和调式：

A．根据订货要求检查柜内安装的电气元件的型号与规格是否相符；检查紧固件是否松动；检查一、二次配线是否正确；操作隔离开关、接地开关、断路器、机械联锁3~5次，应灵活无卡滞现象，联锁满足“五防”要求，然后对机械活动部位加注润滑脂。

B．按本说明书第三条和出厂试验报告检查开关柜的绝缘水平和回路电阻、断路器的机械特性，试验结果应与出厂试验报告相符或相近。

1. The following inspections and adjustments should be carried out before putting into operation:

A. According to the ordering requirements, check whether the models and specifications of the electrical components installed in the cabinet are consistent; check whether the fasteners are loose; check whether the first and second wiring are correct; operate the isolation switch,The grounding switch, circuit breaker, and mechanical interlocking should be flexibly free from jamming for 3 to 5 times, and the interlocking should meet the requirements of "five preventions", and then lubricate the moving parts of the machine.

B. Check the insulation level and loop resistance of the switchgear and the mechanical characteristics of the circuit breaker according to Article 3 of this manual and the factory test report. The test results should be consistent or similar to the factory test report.

随机文件及附件 Random documents and attachments

1、产品合格证、装箱单；

2、开关柜及主要无器件的安装使用说明书、二次接线图；

3、储能和操作手柄；

4、其它备品备件用户请与本公司协商。

1. Product qualification certificate and packing list;

2. Installation instructions and secondary wiring diagrams of switch cabinets and main non-components;

3. Energy storage and operating handle;

4. For other spare parts users, please consult with our company.

订货须知 Order notice

1、一次接线方案图和一次接线方案排列图；

2、二次回路原理图、接线图、端子排列图；

3、一、二次设备清单；

4、开关柜平面布置和母线桥架的安装位置；

5、备品备件和设备特殊使用条件请与本公司协商。

1. A wiring plan diagram and a wiring plan arrangement diagram;

2. Secondary circuit schematic diagram, wiring diagram, terminal arrangement diagram;

3. List of primary and secondary equipment;

4. The layout of the switch cabinet and the installation position of the busbar tray;

5. Please consult with our company for special conditions of use of spare parts and equipment.

箱型固定式交流金属封闭开关设备
Box-type fixed AC metal-enclosed switchgear

产品概述 Product description

XGN2-12箱型固定式交流金属封闭开关设备(简称开关柜)，是按国家标准GB3906《3-35kV交流金属封闭开关设备》标准，满足国内IEC298标准，并且达到两部提出的“五防”闭锁要求。

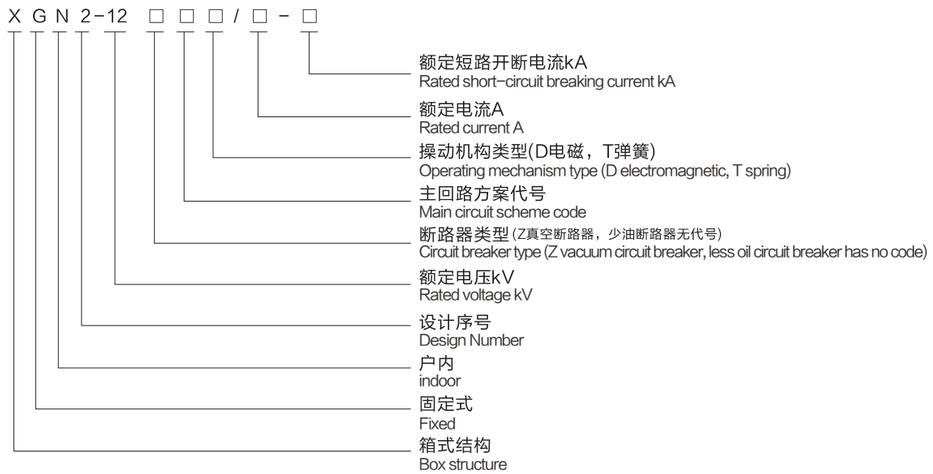
XGN2- 12 box-type fixed AC metal-enclosed switchgear (switch cabinet for short) is based on the national standard GB3906 "3-35kV AC metal-enclosed Switchgear" standard, meets the domestic IEC298 standard, and meets the "five prevention" locking requirements proposed by the two parts.

适用范围 Scope of application

本产品适用于额定电压为3.6-12kV、50Hz，额定电流630-3150A三相交流单母线、双母线、单母线带旁路系统，作为接受和分配电能之用。可满足各种类型发电厂、变电站(所)及工矿企业的使用要求。

This product is suitable for three-phase AC single bus, double bus, single bus with bypass system with rated voltage of 3.6-12kV, 50Hz and rated current of 630-3150A for receiving and distributing electric energy. It can meet the requirements of various types of power plants, substations (substations) and industrial and mining enterprises.

型号含义



正常使用环境条件 Normal use environmental conditions

1. 环境温度：上限+40℃，下限-10℃，允许在-30℃时储运饱和蒸汽压日平均值不大于2.2 x 10-3mpa，月平均值不大于1.8 × 10-3mpa；
2. 相对湿度：日平均值不大于95%，月平均值不大于90%；
3. 海拔高度：1000m以下(超过1000m时可与制造厂协商生产)；
4. 地震烈度：小于8度；
5. 无火灾、爆炸危险、严重污秽、化学腐蚀及剧烈震动的场所。

1. Ambient temperature: The upper limit is +40°C, the lower limit is -10°C, and the daily average value of saturated vapor pressure allowed to be stored and transported at -30°C is not more than 2.2x 10-3mpa, and the monthly average value is not more than 1.8x 10- 3mpa;
2. Relative humidity: the daily average value is not more than 95%, and the monthly average value is not more than 90%;
3. Altitude: below 1000m (when it exceeds 1000m, it can be produced in consultation with the manufacturer);
4. Seismic intensity: less than 8 degrees;
5. There is no place with fire, explosion hazard, serious pollution, chemical corrosion and severe vibration.

主要技术参数 Normal use environmental conditions

（1）、开关柜主要技术参数 (1) Main technical parameters of switchgear

序号 Serial number	项目 project	单位 unit	技术参数 technical parameter
1	额定电压(最高工作电压) Rated voltage (maximum working voltage)	KV	3.6，7.2，12
1	额定电流 Rated current	A	630-3150
3	额定短路开断电流 Rated short-circuit breaking current	KA	16，20，31.5，40
4	额定短路关合电流(峰值) Rated short-circuit making current (peak value)	KA	40，50，80，100
5	额定短路动稳定电流(峰值) Rated short-circuit dynamic stability current (peak value)	KA	40，50，80，100
6	额定热稳定电流 Rated thermal stability current	KA	16，20，31.5，40
7	额定热稳定时间 Rated thermal stability time	S	4
8	防护等级 Protection level		IP3X
9	母线系统 Busbar system		单母线分段
10	操作方式 Operation method		电磁式，弹簧储能式
11	外形尺寸(宽x深x高) Dimensions (width x depth x height)	mm	1100*1200*2650（一般型）
12	重量 weight	Kg	1000

（2）、开关柜内主要电器设备技术参数 (2) Technical parameters of main electrical equipment in the switch cabinet

a、ZN28A-12真空断路器技术参数 a. Technical parameters of ZN28A-12 vacuum circuit breaker

序号 Serial number	项目 project	单位 unit	技术参数 technical parameter
1	额定电压(最高工作电压) Rated voltage (maximum working voltage)	KV	3.6，7.2，12
1	额定电流 Rated current	A	630-3150
3	额定短路开断电流 Rated short-circuit breaking current	KA	16，20，31.5，40
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9	母线系统 Busbar system		单母线分段
10	操作方式 Operation method		电磁式，弹簧储能式
11	外形尺寸(宽x深x高) Dimensions (width x depth x height)	mm	1100*1200*2650（一般型）
12	重量 weight	Kg	1000

结构特点

XGN2-12开关柜为金属封闭箱式结构，柜体骨架原设计为角钢焊接而成，后经我公司研制开发也可为钢板弯制组装结构，这样即大大增加了外形美观，又便于组织生产，缩短生产周期。柜内分为断路器室、母线室、电缆室、继电器室等，室与室之间用钢板隔开。

(1). 断路器室在柜体前下部，断路器的转动由拉杆与操动机构连接，断路器上接线端子与上隔离开关连接，断路器下接线端子与电流互感器连接，电流互感器与下隔离开关的母排连接，断路器室还设有压力释放通道，若内部电弧发生时，气体可通过排气通道将压力释放。

(2). 母线室在柜体后上部，为了减小柜体高度，母线呈品形排列，以7350N抗弯强度的瓷质绝缘子支持，母线与上隔离开关母排连接，相邻两母线室之间可隔离。

(3). 电缆室在柜体下部的后方，电缆室内支持绝缘子可设有电压监视装置，电缆固定在支架上，对于主接线为联络方案时，本室则为联络小室。继电器室在柜体上部前方，室内安装板可安装各种继电器等，室内有端子排支架，门上可安装指示仪表、信号元件等二次元件，顶部还可布置二次小母线。

(4). 断路器的操动机构装在下面左边位置，其上方为隔离开关的操作及联锁机构。开关柜为双面维护，前面检修继电器室的二次元件，维护操动机构，机械联锁及传动部分，检修断路器。后面维修主母线和电缆终端，在断路器室和电缆室均有照明灯。前门的下方设有与柜宽方向平行的接地铜母线，其截面为4 x 40mm^2。

(5). 机械联锁:为了防止带负荷分合隔离开关，防止误分误合断路器，防止误入带电间隔；防止带电合接地开关；防止带接地刀合闸，开关柜采用相应的机械联锁，机械联锁的动作原理如下：

a、停电操作(运行-检修)

开关柜处于工作位置，即上下隔离开关、断路器处于合闸状态，前后门已锁好，并处于带电运行之中，这时的小手柄处于工作位置。

先将断路器分闸后，再将小手柄扳到“分断闭锁”位置，这时断路器不能合闸，将操作手柄插入下隔离的操作孔内从上往下拉，拉到下隔离分闸位置，将手柄拿下，再插入上隔离操作孔内，从上往下拉，拉到上隔离分闸位置。再将操作手柄拿下，插入接地开关操作孔内，从下向上推，使接地开关处于合闸位置，这时可将小手柄扳至“检修”位置。可先打开前门，取出门后边钥匙打开后门，停电操作完毕，检修人员对断路器室及电缆室进行维护和检修。

b. 送电操作(检修-运行)

若已检修完毕，需要送电，其操作程序如下：

将后门关闭，钥匙取出后关前门， 将小手柄从“检修”位置扳到“分断闭锁”位置，这时前门被锁定，断路器不能合闸，用操作手柄插入接地开关操作孔内，从上向下拉，使接地开关处于分闸位置，将操作手柄拿下，再插入上隔离的操作孔内，从下向上推，使上隔离处于合闸位置，将操作手柄拿下，插入下隔离的操作孔内，从下向上推使下隔离处于合闸位置，取出操作手柄，将小手柄扳至工作位置，这时可将断路器合闸。

Structural features

The XGN2-12 switchgear is a metal enclosed box structure. The frame of the cabinet was originally designed by welding angle steel. Later, it can also be a steel plate bending assembly structure developed by our company, which greatly increases the appearance and is easy to organize. Production, shorten the production cycle. The cabinet is divided into a circuit breaker room, a busbar room, a cable room, a relay room, etc., and the rooms are separated by steel plates.

(1). The circuit breaker room is in the lower part of the front of the cabinet. The rotation of the circuit breaker is connected with the operating mechanism by the pull rod. The upper wiring terminal of the circuit breaker is connected with the upper isolating switch, and the lower wiring terminal of the circuit breaker is connected with the current transformer, and the current mutual inductance The breaker is connected to the busbar of the lower isolating switch, and the circuit breaker room is also equipped with a pressure release channel. If an internal arc occurs, the gas can release the pressure through the exhaust channel.

(2). The busbar compartment is in the upper part of the back of the cabinet. In order to reduce the height of the cabinet, the busbars are arranged in a product shape, supported by 7350N bending strength porcelain insulators. The busbars are connected to the upper isolating switch busbar, and the adjacent two busbar chambers Can be isolated between.

(3). The cable room is at the rear of the lower part of the cabinet. The supporting insulator in the cable room can be equipped with a voltage monitoring device, and the cable is fixed on the bracket. When the main wiring is a contact plan, this room is a contact room. The relay room is in the front of the upper part of the cabinet. The indoor installation board can be installed with various relays. There are terminal block brackets in the room. The door can be installed with secondary components such as indicating instruments and signal components. The top can also be equipped with a secondary small bus.

(4). The operating mechanism of the circuit breaker is installed at the lower left position, and the upper part is the operating and interlocking mechanism of the isolating switch. The switch cabinet is double-sided maintenance. The secondary components of the relay room are inspected in front, the operating mechanism is maintained, the mechanical interlocking and transmission parts, and the circuit breaker is inspected. The main bus and cable terminals are repaired at the back, and there are lights in the circuit breaker room and the cable room. Below the front door is a grounded copper bus bar parallel to the width of the cabinet, with a cross section of 4 x 40mm2.

(5).Mechanical interlock: In order to prevent the disconnecting switch with load, prevent the circuit breaker from being switched on and off by mistake, and to prevent the electric interval from being mistakenly entered; prevent the grounding switch from being switched on when the power is on; prevent the switch with a grounding knife from being switched on, the switch cabinet adopts corresponding machinery Interlock, the principle of action of mechanical interlock is as follows:

a. Power failure operation (operation-overhaul)

The switch cabinet is in the working position, that is, the upper and lower isolation switches and circuit breakers are in the closed state, the front and rear doors have been locked, and are in live operation, and the small handle is in the working position. First open the circuit breaker, and then pull the small handle to the "breaking lock" position. At this time, the circuit breaker cannot be closed. Insert the operating handle into the operating hole of the lower isolation and pull it down from the top to the bottom to isolate and open the circuit breaker. Position, remove the handle and insert it into the upper isolation operating hole, pull it down from the top to the upper isolation opening position. Then take down the operating handle, insert it into the operating hole of the grounding switch, and push it from bottom to top to make the grounding switch in the closed position. At this time, pull the small handle to the "overhaul" position. You can open the front door first, take out the key behind the door and open the back door. After the power failure operation is completed, the maintenance personnel will maintain and repair the circuit breaker room and the cable room.

b. Power transmission operation (overhaul-run)

If it has been overhauled, it needs to be powered on. The operating procedure is as follows:

Close the rear door, take out the key and close the front door, and move the small handle from the "inspection" position to the "disconnecting lock" position. At this time, the front door is locked and the circuit breaker cannot be closed. Insert the operating handle into the grounding switch operating hole, Pull down to make the grounding switch in the open position, remove the operating handle, and then insert it into the operating hole of the upper isolation, push it from the bottom up to make the upper isolation in the closing position, remove the operating handle, and insert the operation of the lower isolation In the hole, push from the bottom to the top to make the bottom isolation in the closing position, take out the operating handle, and pull the small handle to the working position. At this time, the circuit breaker can be closed.

产品外形尺寸及结构（见图1、图2、图3）

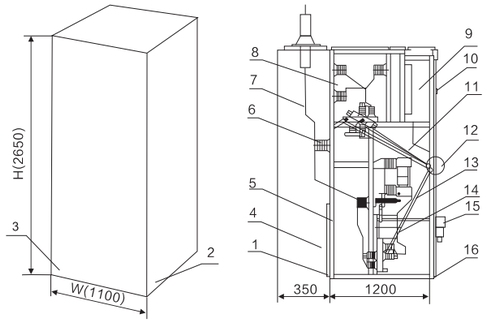


图1　XGN2-12Z外形尺寸及结构图
Figure 1 XGN2- 12Z outline size and structure diagram

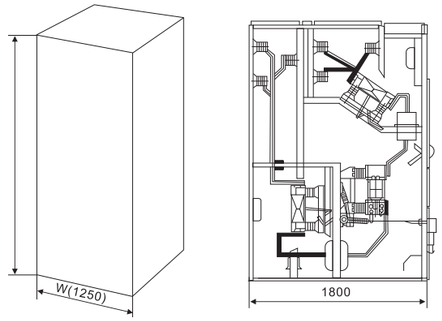
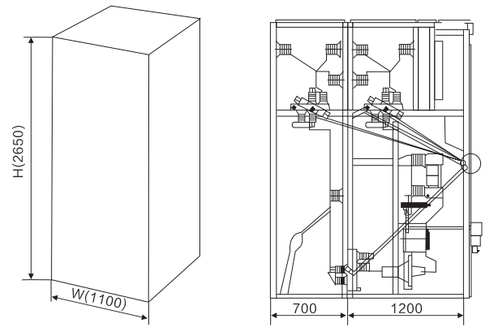


图2　XGN2-12Z大电流柜外形结构图
Figure 2 Outline structure diagram of XGN2-12Z large current cabinet



(配用ZN28A系列真空断路器)
图3　XGN2-12Z旁路电缆出线柜外形结构图
(With ZN28A series vacuum circuit breaker)
Figure 3 Outline structure drawing of XGN2-12Z bypass cable outlet cabinet

1. 本体结构
2. 门接地线路
3. 二次电缆安装
4. 后门联锁装配
5. 照明灯
6. 支持绝缘子
7. 架空出线装配
8. 母线室装配
9. 继电室装配
10. 前门元件装配
11. 带接地刀上隔离开关传动装配
12. 操作联锁机构
13. 下隔离开关传动装配
14. 电流互感受器装配
15. 真空断路器传动装配(电操)
16. 接地母线装配

1. Ontology structure
2. Door grounding circuit
3. Secondary cable installation
4. Rear door interlock assembly
5. Lighting
6. Support insulator
7. Overhead outlet assembly
8. Busbar room assembly
9. Relay room assembly
10. Assembly of front door components
11. Transmission assembly of upper isolating switch with grounding knife
12. Operate the interlocking mechanism
13. Lower isolation switch drive assembly
14. Current transformer assembly
15. Vacuum circuit breaker drive assembly (electrical operation)
16. Ground bus assembly

产品概述 Product description

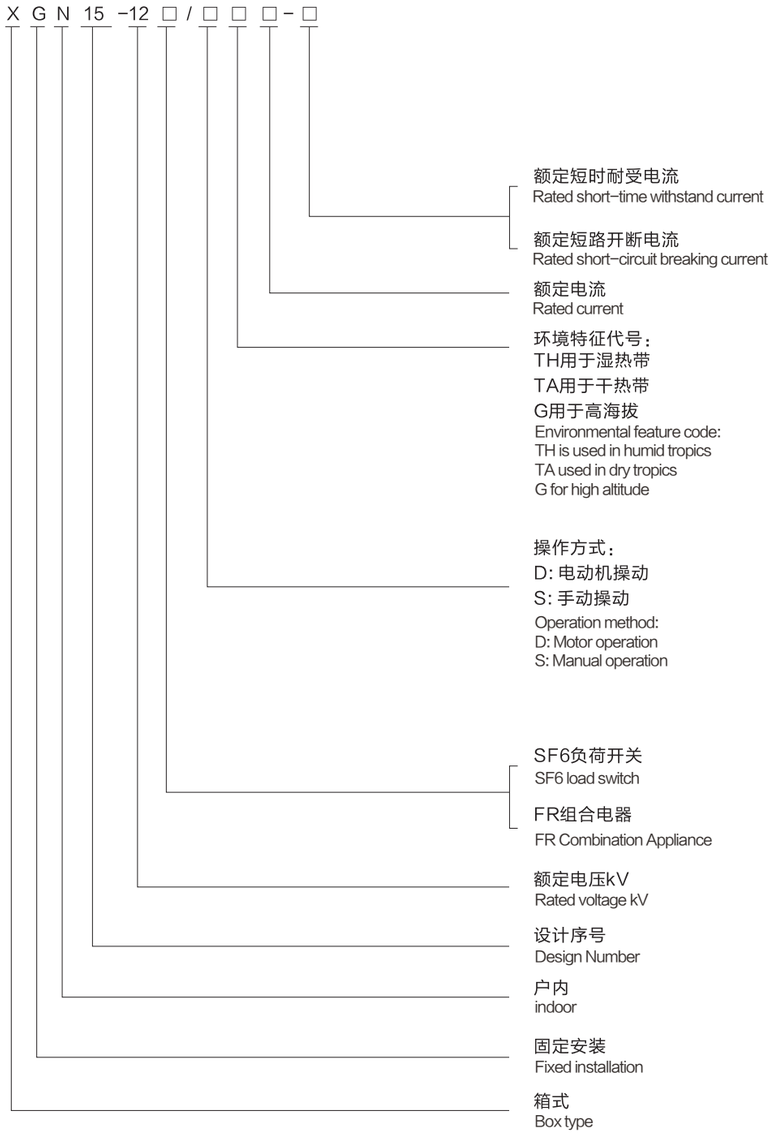
XGN15-12箱型固定式金属封闭高压开关设备(以下简称环网柜)是以六氟化硫负荷开关及负荷开关 -- 熔断器组合电器作为主开关面整框采用空气绝缘，适用于配电自动化、既紧凑又可扩展的成套配电装置。可广泛应用于城市电网的建设和改造，适用于工矿企业、高层建筑、住宅小区、医院、学校、公园等的配电系统，作为接受和分配电能之用，主要用于环网供电和终端供电，亦适于装入便装式变电站。

产品符合GB3804、GB3906、GB16926、GB／T11022、IEC420等标准。

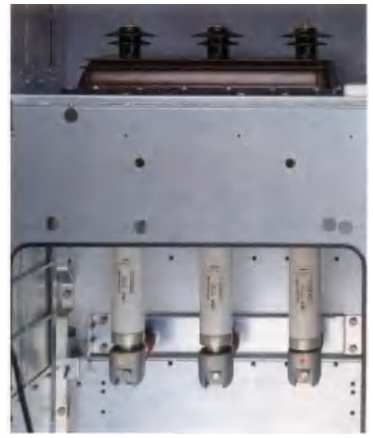
XGN15-12 box-type fixed metal-enclosed high-voltage switchgear (hereinafter referred to as the ring main unit) is based on sulfur hexafluoride load switch and load switch-fuse combination electrical appliances as the main switch surface. The whole frame adopts air insulation and is suitable for power distribution. Automated, compact and expandable complete power distribution device. It can be widely used in the construction and transformation of urban and municipal power grids. It is suitable for the power distribution systems of industrial and mining enterprises, high-rise buildings, residential communities, hospitals, schools, parks, etc., as the use of receiving and distributing electrical energy, and is mainly used for ring network power supply and Terminal power supply is also suitable for installation in convenient substations.

Products comply with GB3804, GB3906, GB16926, GB/T11022, IEC420 and other standards.

型号含义 Product description



正常使用环境条件 Normal use environmental conditions



1、环境温度：
最高温度：+40℃；
最低温度：−15℃；
日常均值：≤35℃；
2、环境湿度：
日平均相对湿度：≤95%；
月平均相对湿度：≤90%；
日平均蒸气压：$\leq 2.2\times10^{-3}$Mpa
月平均蒸气压：$\leq 1.8\times10^{-3}$Mpa
3、海拔高度：不超过1000m；
4、地震烈度不超过8度；
5、使用场所无滴水、无易燃和爆炸危险、无化学腐蚀性气体以及无剧烈震动。

注：若有特殊要求，请用户和我公司联系!

1. Ambient temperature:
Maximum temperature: +40°C;
Minimum temperature:-15C;
Daily average: ≤35°C;
2. Ambient humidity:
Daily average relative humidity: ≤95%;
Monthly average relative humidity: ≤90%;
Daily average vapor pressure: ≤2.2x 10 Mpa
Monthly average vapor pressure: ≤1.8x 10-Mpa
3. Altitude: not more than 1000m;
4. The earthquake intensity does not exceed 8 degrees;
5. There is no dripping water, no flammable and explosive danger, no chemical corrosive gas and no violent vibration in the use place.

Note: If you have special requirements, please contact our company!

主要技术参数 The main technical parameters

序号 Serial number	名称 name		单位 unit	参数 parameter	
				负荷开关柜 Load switch cabinet	组合电器(负荷开关熔断器) Combined electrical appliances (load switch fuse)
1	额定电压 Rated voltage		KV	12	12
2	主母线额定电流 Rated current of main bus		A	630	630
3	额定电流 Rated current		A	630	125
4	额定频率 Rated frequency		HZ	50	50
5	额定短时耐受电流 Rated short-time withstand current		KV	20	
6	额定短路持续时间 Rated short-circuit duration		S	3	
7	额定峰值耐受电流 Rated peak withstand current		KA	50	
8	额定短路开断电流 Rated short-circuit breaking current		KA		31.5
9	额定短路关合电流 Rated short-circuit making current		KA	50	80
10	额定有功负载开断电流 Rated active load breaking current		A	630	
11	额定闭环开断电流 Rated closed loop breaking current		A	630	
12	额定电缆充电开断电流 Rated cable charging breaking current		A	10	
13	接地开关额定短时耐受电流 Grounding switch rated short-time withstand current		KA	20	
14	接地开关额定短路持续时间 Grounding switch rated short-circuit duration		KA	3	
15	接地开关额定峰值耐受电流 Grounding switch rated peak withstand current		S	50	
16	额定转移电流 Rated transfer current		KA		1700
17	额定绝缘水平 Rated insulation level	1min工频耐受电压 1min power frequency withstand voltage	A	对地、相间42	断口48
		额定雷电冲击耐受电压 Rated lightning impulse withstand voltage	KV	对地、相间75	断口85
18	主回路电阻 Main circuit resistance		KV	≤300	≤300
19	机械寿命(负荷开关) Mechanical life (load switch)		μΩ	2000	2000
20	机械寿1命(接地开关) Mechanical life 1 life (grounding switch)		次	2000	2000
21	辅助回路1min工频耐受电压 Auxiliary circuit 1min power frequency withstand voltage		次	2	2
22	防护等级 Protection level		KV	IP4X	IP4X

结构特点 Structural features

环网柜采用金属封闭箱式结构，主开关与柜体为固定安装，整个环网柜可分成上下两个部分，柜的上部包括母线室、开关室、低压室，与下部电缆室(出线柜含熔断器)分隔开来以避免相互影响。因此，既提高了安全性，又便于安装、检修，还能在必要时整体更换上部单元。整体外形尺寸(宽×深×高)有375×960×1600mm和500×960×1600mm等。(图1)

1、电缆室

环网柜有宽裕的电缆室，主要用于电缆连接，使单芯或三芯电缆可以很方便地进行连接，同时充裕的空间还可以容纳熔断器，避雷器、电流互感器、下接地开关等元件，柜门有观察窗和安全联锁装置。电缆盖板可配密封盖和带支撑架的大小相宜的电缆夹。电缆盖板可以拆下，方便电缆安装。

2、开关室

开关室内可装一个三工位负荷开关，负荷开关的外壳为环氧树脂浇注而成，内充六氟化硫(SF6)气体。壳体上设有观察孔，并可根据客户要求装设SF6气体密度表或带报警触点的气体密度继电器。

3、母线室

母线室布置在柜的上部，三相主母线水平布置，贯穿整排开关柜。

4、低压室

带联锁的低压室同时起到控制盘的作用，低压室内装有带位置指示器的弹簧操动机构和机械联锁装置，也可装设辅助触点、跳闸线圈、紧急跳闸机构、电容式带电显示器、钥匙锁和电动操动装置，同时低压室还可供装设控制回路、计量仪表和保护继电器。

The ring network cabinet adopts a metal-enclosed box structure. The main switch and the cabinet are fixedly installed. The entire ring network cabinet can be divided into two parts. The upper part of the cabinet includes the busbar room, switch room, low voltage room, and the lower cable room (outgoing cabinet) (Including fuse) to avoid mutual influence. Therefore, it not only improves safety, but also facilitates installation and maintenance, and can be replaced as a whole when necessary. Upper part: unit. The overall dimensions (width x depth x height) are 375 X 960 X 1600mm and 500 X 960x 1600mm, etc. (figure 1)

1. Cable room

The ring network cabinet has ample cable compartment, which is mainly used for cable connection, so that single-core or three-core cables can be easily connected. At the same time, the ample space can also accommodate fuses, lightning arresters, current transformers, lower grounding switches and other components , The cabinet door has an observation window and a safety interlock device. The cable cover can be equipped with a sealing cover and a cable clamp of appropriate size with a support frame. The cable cover can be removed to facilitate cable installation.

2. Switch room

A three-station load switch can be installed in the switch room. The shell of the load switch is made of epoxy resin and filled with sulfur hexafluoride (SF6) gas. There is an observation hole on the shell, and an SF6 gas density meter or a gas density relay with alarm contacts can be installed according to customer requirements.

3. Busbar room

The busbar room is arranged on the upper part of the cabinet, and the three-phase main busbar is arranged horizontally and runs through the entire row of switch cabinets.

4. Low pressure room

The low-voltage room with interlock also functions as a control panel. The low-voltage room is equipped with a spring operating mechanism with a position indicator and a mechanical interlocking device. Auxiliary contacts, trip coils, emergency trip mechanisms, and capacitors can also be installed. Charged display, key lock and electric operating device. At the same time, the low-voltage room can also be equipped with control circuits, measuring instruments and protective relays.

操作与联锁 Operation and interlock

1、操作

(1)手动操作：

用专用操作手柄在环网柜正面操作，在环网柜操作面板上有上下两个操作孔，上面为接地开关操作孔，下面为负荷开关操作孔，操作时，手柄旋转方向应与面板上的示图一致。在组合电器方案中，开关所配的机构具备负荷开关分闸脱扣功能，当负荷开关合闸后，其分闸弹簧已处于储能状态，按动分闸按钮或熔断器熔断时将断触发脱扣机构，使负荷开关分闸。

(2)电动操作：

当环网柜配用电动操作机构时，柜体操作面板上设有分闸、合闸两个按钮。接通操作电源后只需按下合闸按钮，即能合上负荷开关并投入运行；按下分闸按钮，负荷开关分闸。当环网柜因操作电源无法正常供电时，开关的动作可用手动操作方式来完成、操作方法如前所述，电动操作时严禁将操作手柄插入操作孔中，否则将无法实现电动操作(有相关的联锁存在)。接地开关只能手动操作，无电动操作方式。

2、联锁

(1)负荷开关合闸后，接地开关不能进行合闸操作，下门不能打开；

(2)负荷开关分闸后，接地开关才能进行合闸操作，接地开关合闸后，下门才能被开启；

(3)接地开关合闸后，负荷开关不能进行合闸操作；

(4)接地开关分闸且柜门关闭后，负荷开关可以合闸；

(5)在组合电器柜中，当任一相熔断器熔断后，其撞击器应使负荷开关可靠分闸，此时即不能对负荷开关进行合闸操作，也不能使其保护在合闸位置。

1. Operation

(1) Manual operation:

Use a dedicated operating handle to operate on the front of the ring main unit. There are two upper and lower operation holes on the ring main unit operation panel. The upper part is the grounding switch operation hole, and the lower is the load switch operation hole. When operating, the rotation direction of the handle should be the same as that of the panel. The diagrams above are consistent. In the combined electrical scheme, the switch equipped with the mechanism has the load switch opening and tripping function. When the load switch is closed, its opening spring is already in a stored energy state, and it will trip when the opening button is pressed or the fuse is blown. The tripping mechanism opens the load switch.

(2) Electric operation:

When the ring main unit is equipped with an electric operating mechanism, there are two buttons for opening and closing on the operation panel of the cabinet. After turning on the operating power, just press the closing button to close the load switch and put it into operation; press the opening button to open the load switch. When the ring network cabinet cannot be supplied normally due to the operating power supply, the switch action can be completed by manual operation. The operation method is as described above. It is strictly forbidden to insert the operating handle into the operating hole during electric operation, otherwise electric operation will not be realized (related The interlock exists). The earthing switch can only be operated manually, and there is no electric operation mode.

2. Interlock

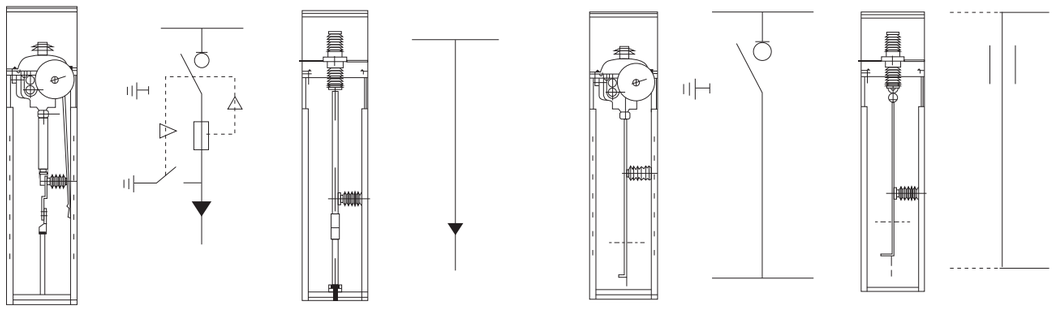
(1) After the load switch is closed, the grounding switch cannot be closed, and the lower door cannot be opened;

(2) After the load switch is opened, the grounding switch can be closed. After the grounding switch is closed, the lower door can be opened;

(3) After the grounding switch is closed, the load switch cannot be closed;

(4) After the grounding switch is opened and the cabinet door is closed, the load switch can be closed;

(5) In the combined electrical cabinet, when any phase fuse is blown, its striker should make the load switch open reliably. At this time, the load switch cannot be closed or protected in the closed position.



基础示意图 Basic schematic

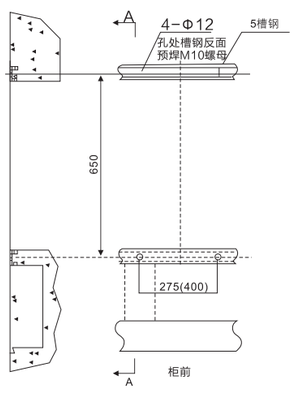


图2 开关柜安装基础示意图
Figure 2 Schematic diagram of switch cabinet installation foundation

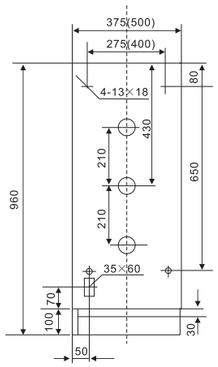


图3 安装尺寸示意图
Figure 3 Schematic diagram of installation dimensions

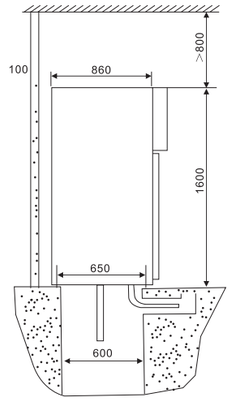


图4 电缆进出口线的布置参考图
Figure 4 Reference diagram for the layout of the cable inlet and outlet

产品概述 Product description

YBM、YBP（ZBW）系列预装式变电站，是将高压电器设备、变压器、低压电器设备等组合成紧凑型成套配电装置，用于城市高层建筑，城乡建筑、豪华别墅、广场公园、居民小区、高新技术开发区、中小型工厂、矿山油田以及临时施工用电等场所，作配电系统中接受和分配电能之用。

YBM、YBP（ZBW）系列预装式变电站，具有成套性强、体积小、结构紧凑、运行安全可靠、维护方便、以及可移动等特点，与常规土建筑式变电站相比，同容量的箱式变电站占地面积通常仅为常规变电站的1/10~1/5，大大减少了设计工作量及施工量，减少了建设费用。在配电系统中，可用于环网配电系统，也可用于双电源或放射终端配电系统，是目前城乡变电站建设和改造的新型成套设备。

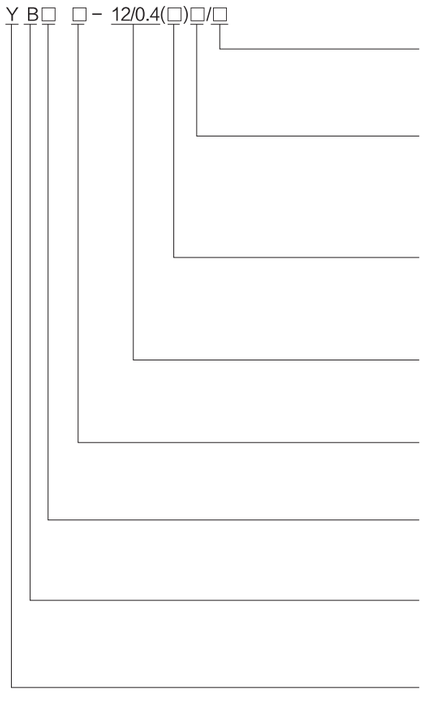
本产品符合GB 17467-2010《高压/低压预装式变电站》的标准和SD320《箱式变电站技术条件》。

YBM, YBP (ZBW) series of prefabricated substations combine high-voltage electrical equipment, transformers, and low-voltage electrical equipment into a compact complete set of power distribution devices, which are used in urban high-rise buildings, urban and rural buildings, luxury villas, square parks, residential communities , High-tech development zones, small and medium-sized factories, mines and oil fields, and temporary construction electricity use places, for the power distribution system to receive and distribute electricity.

YBM, YBP (ZBW) series of prefabricated substations have the characteristics of strong complete set, small size, compact structure, safe and reliable operation, convenient maintenance, and mobility. Compared with conventional earth-building substations, they are box-type substations with the same capacity. The substation area is usually only 1/10~1/5 of the conventional substation, which greatly reduces the design workload and construction volume, and reduces the construction cost. In the power distribution system, it can be used in the ring network power distribution system, and can also be used in the dual power supply or radiation terminal power distribution system. It is a new complete set of equipment for the construction and transformation of urban and rural substations.

This product complies with the standard SD320 "Technical Conditions for Box-type Substations" of GB 17467-2010 "High-voltage/low-voltage prefabricated substations".

型号含义 Model meaning



正常使用环境条件 Normal use environmental conditions

1、海拔高度：1000m及以下；
2、环境温度：-25℃~+40℃,24h周期内平均温度不超过+35℃；
3、风速：不超过35m/s；
4、空气相对湿度：不大于0.4m/S2,垂直加速度不大于0.2m/S；
5、地震水平加速度：不超过90%（+25℃）；
6、使用地点，不应有导电尘埃及对金属、绝缘物有害的腐蚀性、易燃、易爆的危险物品；
7、安装地点无剧烈震动，垂直斜度不大于3度。
注：特殊使用条件，订货时与我公司协商解决。

1. Altitude: 1000m and below;
2. Ambient temperature: -25°C~+40C, the average temperature within a 24h period does not exceed +35°C;
3. Wind speed: no more than 35m/s;
4. The relative humidity of the air: not more than 0.4m/S2, and the vertical acceleration is not more than 0.2m/S;
5. Earthquake horizontal acceleration: no more than 90% (+25°C);
6. At the place of use, there should be no conductive dust, corrosive, flammable, and explosive hazardous materials that are harmful to metals and insulation;
7. There is no severe vibration at the installation site, and the vertical slope is not more than 3 degrees.

Note: For special conditions of use, please negotiate with our company when ordering.


高压室
High pressure chamber


低压室
Low pressure room


变压器室
Transformer room

主要技术参数 The main technical parameters

Table 表1

序号 Serial number	项目 project	单位 Unit	高压电器 High-voltage electrical appliances	变压器 transformer	低压电器 Low-voltage electrical appliances
1	额定电压Ue Rated voltage Ue	KV	7.2/12	6/0.4 10/0.4	6/0.4 10/0.4
2	额定容量Se Rated capacity Se	KVA		目字型：200~1250 Item font: 200~1250 品字型：50~800 Product font: 50~800	最大2*1250 Maximum 2*1250
3	额定电流Le Rated current Le	A	200~630		100~3000
4	额定断开电流 Rated breaking current	A	负荷开关400~630A Load switch 400~630A		15~63
		KA	组合电器取决于熔断器 Combination of electrical appliances depends on the fuse		
5	额定短时耐受电流（秒） Rated short-time withstand current (seconds)	KA	20*（2）	200~400KVA	15*1
			12.5*（4）	400KVA	30*1
6	额定峰值耐受电流 Rated peak withstand current	KA	31.5 50	200~400KVA	30
				400KVA	63
7	额定关合电流 Rated making current	KA	31.5 50		
8	工频耐受电压1min Power frequency withstand voltage 1min	KV	相对地及相间30/42 Relatively and alternately 30/42	油浸：35/5min Oil immersion: 35/5min	≤300V时2KV 2KV when ≤300V
			隔离断口34/48 Isolation fracture 34/48	干式：28/5min Dry type: 28/5min	300 600V时2.5KV 2.5KV at 300 600V
9	雷电冲击 Lightning strike	KV	相对地及相间60/75 Relatively and alternately 60/75	75	
			隔离断口75/85 Isolation fracture 75/85	75	
10	噪声水平 Noise level	dB		油浸：＜55 Oil immersion: <55	
				干式：＜65 Dry type: <65	
11	防护等级 Protection level			IP54	
12	外形尺寸 Dimensions	根据方案和所选高低压开关设备及变压器，选定不同的外形尺寸 According to the plan and the selected high and low voltage switchgear and transformer, select different dimensions			

结构特点 Structural features

本产品由高压配电装置、变压器及低压配电装置联接而成，分成三个功能隔室，即高压室、变压器室和低压室，高、低压室功能齐全。高压侧一次供电系统，可布置成环网供电、终端供电、双电源供电等多种供电方式，还可装设高压计量元件，满足高压计量的要求。变压器室可选样S9、S11、SCB10、SCB13以及其他低损耗油侵式变压器和干式变压器；变压器室设有自动强迫风冷系统及照明系统，低压室根据用户所需供电方案，有动力配电、照明配电、无功功率补偿、电能计量和电量测量等多种功能，满足用户的不同要求，并方便用户的供电管理和提高供电质量。

高、低压室布置合理紧凑，操作、维修方便，高压开关设备具有防误操作联锁功能。变压器根据用户要求，可从轨道上方便地进出于变压器室大门，且变压器根据用户要求，可从轨道上装有迷宫式通风装置。各室均设有自动照明装置，另外高、低压开关设备所选元件性能可靠、操作简单、维修方便。

变电站的顶盖为双层隔热结构，减少阳光辐射作用，四周檐下有通风孔，与各功能室内形成对流作用，以便通风散热。底座为型钢结构，有足够的强度和钢性。

采用自然通风和强迫通风两种方式，使通风冷却性能良好。变压器室有温控仪，能自动控制变压器温度，保证变压器满负荷运行。

根据不同的使用环境和使用条件，可选用不同的结构形式和材料，满足不同的使用要求和保证变电站的正常运行。变电站外壳可用非金属建筑材料、普通钢板、不锈钢钢板、铝合金板、彩钢复合板等材料制作，经部分或全部表面的处理后，具备长期户外使用的条件，确保防腐、防水、防尘性能，使用寿命长，外形美观。

其结构基本形式大致可分为：

非金属建筑材料或其它材料的景式箱变；用普通钢板的一般型箱变；用不锈钢或铝合金板的高防腐型箱变；用彩钢复合板保温隔热型箱变；其它结构形式箱变；

进出线方式一般为电缆进出线，如有特殊要求，可用其它进出线方式。

This product is composed of a high-voltage power distribution device, a transformer, and a low-voltage power distribution device. It is divided into three functional compartments, namely a high-voltage room, a transformer room and a low-voltage room. The high- and low-voltage rooms are fully functional. The high-voltage side-secondary power supply system can be arranged into multiple power supply modes such as ring network power supply, terminal power supply, dual power supply, etc., and high-voltage metering components can also be installed to meet the requirements of high-voltage metering. The transformer room can choose S9, S11, SCB10, SCB13 and other low-loss oil-invaded transformers and dry-type transformers; the transformer room is equipped with an automatic forced air cooling system and a lighting system, and the low-voltage room has a power distribution according to the power supply plan required by the user Various functions such as electricity, lighting power distribution, reactive power compensation, electric energy metering, and electric quantity measurement meet the different requirements of users, and facilitate the user's power supply management and improve the quality of power supply.

The layout of the high and low voltage rooms is reasonable and compact, and the operation and maintenance are convenient. The high voltage switchgear has the function of preventing misoperation and interlocking. According to user requirements, the transformer can be easily accessed from the track.

The gate of the transformer room, and the transformer can be equipped with a labyrinth ventilation device from the track according to user requirements. Each room is equipped with an automatic lighting device, and the selected components of high and low voltage switchgear

It is reliable, easy to operate, and convenient to maintain.

The top cover of the substation is a double-layer thermal insulation structure to reduce the effect of sunlight radiation. There are ventilation holes under the surrounding eaves to form a convection effect with each functional room for ventilation and heat dissipation. The base is a section steel knot

Structure, has sufficient strength and rigidity.

Natural ventilation and forced ventilation are adopted to ensure good ventilation and cooling performance. There is a temperature controller in the transformer room, which can automatically control the temperature of the transformer to ensure the full load operation of the transformer.

According to different usage environments and usage conditions, different structural forms and materials can be selected to meet different usage requirements and ensure the normal operation of the substation. The substation shell can be made of non-metallic building materials, ordinary steel plates, stainless steel plates, aluminum alloy plates, color steel composite plates and other materials. After partial or full surface treatment, it has the conditions for long-term outdoor use to ensure anti-corrosion, waterproof, and dust-proof performance , Long service life, beautiful appearance. The basic form of its structure can be roughly divided into:

View-type box change with non-metallic building materials or other materials; general box change with ordinary steel plate; high anti-corrosion box change with stainless steel or aluminum alloy plate; heat preservation type box change with color steel composite board; other structural forms Box change;

Wire in and out mode-Generally, it is cable in and out. If there are special requirements, other wire in and out methods can be used.

平面布置形式及外形尺寸 Plane layout and dimensions

YBM、YBP(ZBW)系列预装式变电站、根据排列方式分：
"目" 字型排列(图1-1，图1-2)；
"品" 字型排列(图1-3、图1-4)

YBM, YBP (ZBW) series of prefabricated substations, according to the arrangement:
"目" font arrangement (Figure 1-1, Figure 1-2);
'品' font arrangement (picture 1-3, picture 1-4)

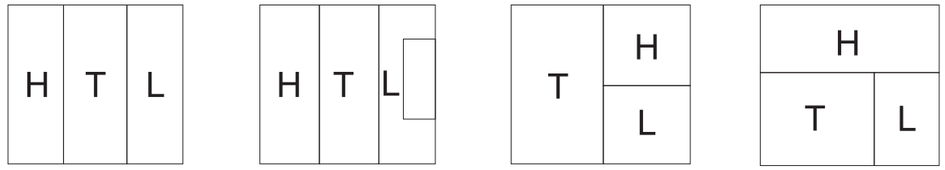


图1-1 Figure 1-1　图1-2 Figure 1-2　图1-3 Figure 1-3　图1-4 Figure 1-4

图1 YBM、YBP（ZBW）系列预装式变电站平面布置形式图（H-高压室 T-变压器室 L-低压室）
Figure 1 The layout of the YBM, YBP (ZBW) series of prefabricated substations (H-high voltage room, T-transformer room, L-low voltage room)

外形尺寸（见图2、表2）Dimensions (see Figure 2 and Table 2)

图2 YBM、YBP（ZBW）系列预装式变电站外形图（“目”字型排列）
Figure 2 Outline drawing of YBM, YBP (ZBW) series of prefabricated substations (arranged in "目" font)

外形尺寸(见表2) Dimensions (see Table 2)

(mm) Table 2（mm）表2

型号 Serial number	变压器容量（KVA） Transformer capacity (KVA)	T	L	B	H	A	C
YBM29	100~250	根据变压器 root according to Change Pressure Device	3000	2000	2520	3320	2320
	315~630		4000	2600	2560	4320	2920
	800~1000		4600	2600	2560	4920	2920
	1250		5000	3000	2980	5320	3320
YBP29	100~250		根据低压出线确定 Determined according to low voltage outlet	2000	2520	根据低压出线确定 Determined according to low voltage outlet	2320
	315~630			2600	2560		2920
	800~1000			2600	2560		2920
	1250			2600	2560		3320

系列预装式变电站(美式箱变)
Series prefabricated substation (American box substation)

产品概述 Product description

YB□系列预装式变电站适用于7.2kV和12kV环网供电，双电源供电或终端供电系统中，作为高压配电计量，补偿控制和保护装置。预装式变电站内除装有变压器外，高压侧还装有四位负荷开关，二工位负荷开关，后备保护熔断器及插入式熔断器低压侧按用户要求装配控制电器、配电电器、补偿装置及电能计量表等。

YB□系列预装式变电站可用于室内，又可用于室外，广泛应用于工业园区，居民小区，商业中心及高层建筑等各种场所。

YB series prefabricated substations are suitable for 7.2kV and 12kV ring network power supply, dual power supply or terminal power supply systems, as high-voltage power distribution metering, compensation control and protection devices. In addition to the transformers in the prefabricated substation, the high-voltage side is also equipped with a four-position load switch, a two-position load switch, a backup protection fuse and a plug-in fuse, and the low-voltage side is equipped with controllers, power distribution appliances, and Compensation device and electric energy meter, etc.

YB series prefabricated substations can be used indoors and outdoors, and are widely used in various places such as industrial parks, residential quarters, commercial centers and high-rise buildings.

型号含义 Model meaning

YB 6 -12/0.4-□

- 变压器容量(kVA) Transformer capacity (kVA)
- 额定电压(高压/低压) Rated voltage (high voltage/low voltage)
- 设计序号 Design Number
- 预装式变电站 Prefabricated substation

结构特点 Structural features

该系列产品箱体结构分为前后两部分。前面为高低压操作间隔。高压间隔内包括高压端子、负荷开关、无载调压分接开关、插入式熔断器、压力释人阀、油温计、油位计、放油阀。低压间隔内包括低压端子。后部为注油箱体及散热片，变压器绕组和铁芯、高压负荷开关及保护用熔断器都在储油箱中。

The box structure of this series of products is divided into front and rear parts. The front is the high and low pressure operation interval. The high-pressure compartment includes high-voltage terminals, load switches, no-load tap-changers, plug-in fuses, pressure release valves, oil temperature gauges, oil level gauges, and oil drain valves. Low-voltage terminals are included in the low-voltage compartment. The rear part is the fuel tank body and the heat sink, the transformer winding and iron core, the high voltage load switch and the protective fuse are all in the fuel storage tank.

新型美式箱变正面视图

新型美式箱变侧面视图

正常使用环境条件 Normal use environmental conditions

1、海拔高度：1000m及以下；
2、风压：不大于70Pa(相当于35m/s)；
3、湿度：日平均值不大于90%，月平均值不大于90%；
4、环境温度：最高气温+40℃，最低气温−25℃；
5、防震水平：水平加速度0.4/s²;垂直加速度0.15m/s²；
6、地震烈度：8度；
7、安装环境：周围空气不受腐蚀性、可燃性气体及水蒸气等明显污染，安装地点无剧烈震动。

1. Altitude: 1000m and below;
2.Wind pressure: not more than 70Pa (equivalent to 35m/s);.
3. Humidity: the daily average value is not more than 90%, and the monthly average value is not more than 90%;
4. Ambient temperature: highest temperature +40°C, lowest temperature -25°C;
5. Anti-vibration level: horizontal acceleration 0.4/S2; vertical acceleration 0.15m/S2;
6. Earthquake intensity: 8 degrees;
7. Installation environment: The surrounding air is not significantly polluted by corrosive, flammable gas and water vapor, and there is no severe vibration at the installation site.

性能特点 Performance characteristics

1、体积小，结构紧凑，仅为国内同容量箱变的1/3左右；
2、全密封、全绝缘，无需绝缘距离，可靠保证人身安全；
3、既可用于环网，又可用于终端，转换十分方便，提高了供电的可靠性；
4、损耗小，低于国内S9型变压器损耗；
5、电缆接头可操作200A负荷电流，在紧急情况下可作为负荷开关操作，并具有隔离开关的特点；
6、采用双熔丝保护，降低了运行成本。插入式熔断器熔丝为双敏熔丝(温度、电流)；
7、采用了△/Y。接法及三相五柱式结构，优点是电压质量高、中性点不漂移、箱体不发热、噪音低、防雷性好。

1. Small size and compact structure, only about 1/3 of the domestic box change with the same capacity;
2. Fully sealed and fully insulated, no insulation distance is required, and personal safety can be reliably guaranteed;
3. It can be used for both ring network and terminal, the conversion is very convenient, and the reliability of power supply is improved;
4. The loss is small, which is lower than the loss of the domestic S9 transformer;
5. The cable connector can operate 200A load current, and can be operated as a load switch in an emergency, and has the characteristics of an isolating switch;
6. The use of double fuse protection reduces the operating cost. The plug-in fuse fuses are dual sensitive fuses (temperature, current);
7. O/Y is used. The connection method and the three-phase five-column structure have the advantages of high voltage quality, no neutral point drift, no heat generation, low noise, and good lightning protection.

系列预装式变电站(美式箱变)
Series prefabricated substation (American box substation)

主要技术参数 The main technical parameters

名称 name	单位 unit	高压电器设备 High-voltage electrical equipment	变压器 transformer	低压电器设备 Low-voltage electrical equipment
额定电压 Rated voltage	KV	12	10/0.4	0.4
额定电流 Rated current	A	630	72/1800	
额定频率 Rated frequency	Hz	50	50	50
额定容量 Rated Capacity	KVA		50~1250	
1min工频耐受电压 1min power frequency withstand voltage	KV	对地、相间42、断口48 To the ground, interphase 42, fracture 48	35/28	2.5/2.0
雷电冲击耐受电压 Lightning impulse withstand voltage	KV	75	75	
壳体防护等级 Shell protection level			全封闭 Fully enclosed	IP54
噪音水平 Noise level	dB		油变≤55 Oil change ≤55	
外形尺寸（长*宽*高） Dimensions (length*width*height)	mm	1825*1400*2020~3945*1560*2020		

标准型美式变电站 Standard American Substation

该系列预装式变电站外壳材质选用优质冷轧钢板、箱体结构为拼装式。箱体表面采用了先进工艺进行防腐处理。首先经过一首表面预处理工序，然后再进行静电粉沫喷涂和涂覆工序。

The shell material of this series of prefabricated substations is made of high-quality cold-rolled steel plate, and the box structure is assembled. The surface of the box adopts advanced technology for anti-corrosion treatment. First go through a surface preparation Treatment process, followed by electrostatic powder spraying and coating process.

低压室
Low pressure room

高压室
High pressure chamber

变压器室
Transformer room

不锈钢外壳美式变电站
American Substation with Stainless Steel Shell

该系列预装式变电站外壳材质选用优质不锈钢板，极大提高了箱变的防腐蚀性能。

不锈钢蜂窝式双层结构，具有良好的隔温及散热功能。

科学的设计，精湛的加工工艺，使不锈钢外壳美式箱变充满典雅现代气息。

箱体可以采用亮光或亚光，还可以根据客户要求喷涂成各种颜色。

This series of prefabricated substation shells are made of high-quality stainless steel plates, which greatly improves the corrosion resistance of the substations.

The stainless steel honeycomb double-layer structure has good temperature insulation and heat dissipation functions.

Scientific design and exquisite processing technology make the stainless steel shell American box full of elegance and modernity.

The box body can be bright or matt, and can be sprayed into various colors according to customer requirements.

YB□系列预装式变电站订货须知
Y B series prefabricated substation ordering instructions

客(用)户订购预装式变电站时，须提供下列资料

A、箱变型号：欧式或美式；

B、变压器型号及容量；

C、高压系统、低压系统的一次接线图；

D、高压供电方式：环网或终端或其它；高压负荷开关型号；高压计量方式；

E、低压主开关型号，计量方式，出线开关型号和路数；

F、低压无功补偿方式和补偿容量；

G、箱体材料：如钢板或铝合金+彩钢板或非金属等；

H、其它特殊要求可与制造商协商。

When ordering a pre-installed substation, the customer (user) must provide the following information

A. Box change model: European or American;

B. Transformer model and capacity;

C. Primary wiring diagram of high voltage system and low voltage system;

D. High-voltage power supply mode: ring network or terminal or other; high-voltage load switch model; high-voltage measurement method;

E. Low-voltage main switch model, metering method, outlet switch model and number of routes;

F. Low voltage reactive power compensation method and compensation capacity;

G. Box material: such as steel plate or aluminum alloy + color steel plate or non-metal, etc.;

H. Other special requirements can be negotiated with the manufacturer.

紧凑型美式变电站 Compact American substation

本系列预装式变电站，其结构为“品”字形排列、变压器与高底压设备相互紧密连为一体，其中变压器之面外露在空气中，散气条件好，且能与高低设备壳体分离，便于维护、检修。

箱体外壳可采用普通钢板，夹层彩色钢板，或非金属材料，具有较高的机械强度，从整体上看，有线条明快流畅的感觉，表面着色后与周围环境相协调。

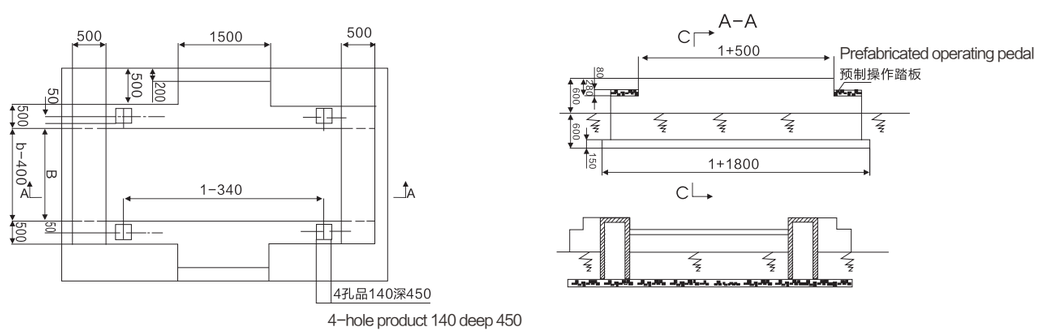
具有结构紧凑、体积小、重量轻、损耗低等特点。

This series of prefabricated substations are structured in a "product"-shaped arrangement. The transformer and the high-bottom voltage equipment are closely connected to each other. The surface of the transformer is exposed in the air, with good air dissipation conditions, and can be separated from the high and low equipment shells. , Easy to maintain and overhaul.

The box shell can be made of ordinary steel plate, laminated color steel plate, or non-metallic materials. It has high mechanical strength. On the whole, it has a bright and smooth feeling. After the surface is colored, it is in harmony with the surrounding environment.

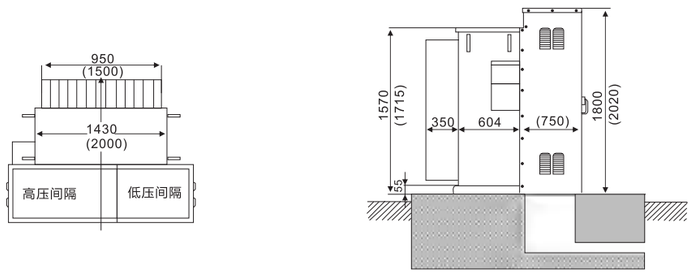
It has the characteristics of compact structure, small size, light weight and low loss.

预装式变电站地基图 Prefabricated substation foundation plan



YB□-22系列预装式变电站地基示意图

Schematic diagram of YB-22 series prefabricated substation foundation



YB6系列预装式变电站地基示意图

Schematic diagram of YB6 series prefabricated substation foundation

产品概述 product description

该系列电缆分支箱适用于交流50Hz、额定电压12kV、电缆进出线的户外配电网中，广泛用于工业园区、居民小区、商业中心以及矿区、机场、铁路、港区、电站等配电网，特别适用城市电网改造工程。具有：

1、全绝缘、全密封、免维护。可靠的人身安全保障。

2、简化城市电缆网络系统，节省投资。

3、户外型、防尘、防潮、抗洪水、耐腐蚀，环境适应性强，组合灵活，进出线从二路到八路，能满足各种接线要求。

4、体积小、结构紧凑、外型美观大方、安装简单，免维修；且有带电显示器，可带短路指示器，可带避雷器。

5、占地小、高度低、外型美观，能与周围环境协调一致；接线方案灵活多样，安装操作极为方便。

6、200A电缆头可带负荷插拔、同时具备隔离开关的功能，可安装短路故障指示器，迅速确定故障位置。

7、可以通过负荷开关或断路器与电缆接头的任意组合，提高了线路运行、维护和检修时的灵活性，减少线路停电时间，提高供电可靠性。能代替部分环网柜或开闭所，减少系统综合造价。

This series of cable branch boxes are suitable for outdoor distribution networks with AC 50Hz, rated voltage 12kV, and cable inlet and outlet lines. They are widely used in industrial parks, residential quarters, commercial centers, mining areas, airports, railways, ports, power stations, and other power distribution networks. , Especially suitable for urban power grid transformation projects. have:

1. Fully insulated, fully sealed and maintenance-free. Reliable personal safety protection.

2. Simplify the urban cable network system and save investment.

3. Outdoor type, dust-proof, moisture-proof, anti-flood, corrosion-resistant, strong environmental adaptability, flexible combination, access lines from two to eight, can meet various connections

Line requirements.

4. Small size, compact structure, beautiful appearance, simple installation, maintenance-free; and there is a live display, can be equipped with a short-circuit indicator, and can be equipped with a lightning arrester.

5. Small footprint, low height, beautiful appearance, can be coordinated with the surrounding environment; flexible and diverse wiring schemes, installation and operation are extremely convenient.

6. The 200A cable head can be plugged and unplugged under load and has the function of an isolating switch. It can be installed with a short-circuit fault indicator to quickly determine the fault location.

7. Any combination of load switches or circuit breakers and cable joints can be used to improve the flexibility of line operation, maintenance and overhaul, reduce line power outage time, and improve power supply reliability. It can replace part of the ring network cabinet or opening and closing station, reducing the overall cost of the system.

型号含义 Model meaning

DWF □□-K-630/12-□

- 方案号(可省略) Project number (can be omitted)
- 表示额定电压12kV Indicates rated voltage 12kV
- 表示额定电流630A Indicates rated current 630A
- 带开关型方案代号，缺省表示普通型 With switch type scheme code, default means common type
- 表示出线回路数 Indicates the number of outgoing circuits
- 表示进线回路数 Indicates the number of incoming circuits
- 表示户外型电缆分支箱 Represents outdoor type cable branch box

正常使用环境条件 Normal use environmental conditions

1、海拔高度不超过1000米。

2、运行环境温度：-30℃~40℃。

3、相对湿度≤95%。

4、周围空气应无明显地受可燃性气体污染，但可以受到烟、尘、腐蚀性气体的污染，污秽等级不得超过GB/T5582中的Ⅲ级。

5、无经常性的剧烈振动。

1. The altitude does not exceed 1000 meters.

2. Operating environment temperature: -30°C~40C.

3. The relative humidity is less than or equal to 95%.

4. The surrounding air should not be obviously polluted by combustible gas, but it can be exposed to smoke, dust and corrosive gas

The pollution level shall not exceed the level II in GB/T5582.

5. There is no frequent severe vibration.

欧式电缆分接箱
European cable distribution box

欧式电缆分接箱
European cable distribution box

主要技术参数 The main technical parameters

名称 name	单位 unit	参数 parameter	备注 Remark
额定电压 Rated voltage	KV	12	可配置负荷开关、断路器、熔断器等设备，其技术参数另见配件之说明 It can be equipped with load switches, circuit breakers, fuses and other equipment, and its technical parameters can also be seen in the description of the accessories
额定频率 Rated frequency	A	50	
额定电流 Rated current	Hz	630	
1min工频耐受电压 1min power frequency withstand voltage	KV	42	
雷电冲击耐受电压 Lightning impulse withstand voltage	KV	75	
防护等级 Protection level		IP54	
外形尺寸（长*宽*高） Dimensions (length*width*height)	mm	650*1150*880~1300*1500*1200	

订货须知 Order notice

客(用)户订购高压电缆分支箱时，需提供下列资料:

a、电缆分支箱型号欧式或美式;

b、接线方案或分支数，避雷器型号;

c、电缆附件选用国产或进口;

d、是否配置带电指示器和短路故障指示器;

e、提供主回路和分支回路的电缆截面大小;

f、箱体材料：如不锈钢板或镀锌钢板等;

g、其它特殊要求可与制造成协商。

When ordering a high-voltage cable branch box, customers (users) need to provide the following information:

a. The model of the cable branch box is European or American;.

b. Wiring scheme or number of branches, type of arrester;

C. Choose domestic or imported cable accessories;

d. Whether it is equipped with a live indicator and a short-circuit fault indicator;

e. Provide the cable cross-section size of the main circuit and branch circuit;

f. Box material: such as stainless steel plate or galvanized steel plate, etc.;

g. Other special requirements can be negotiated with the manufacturer.

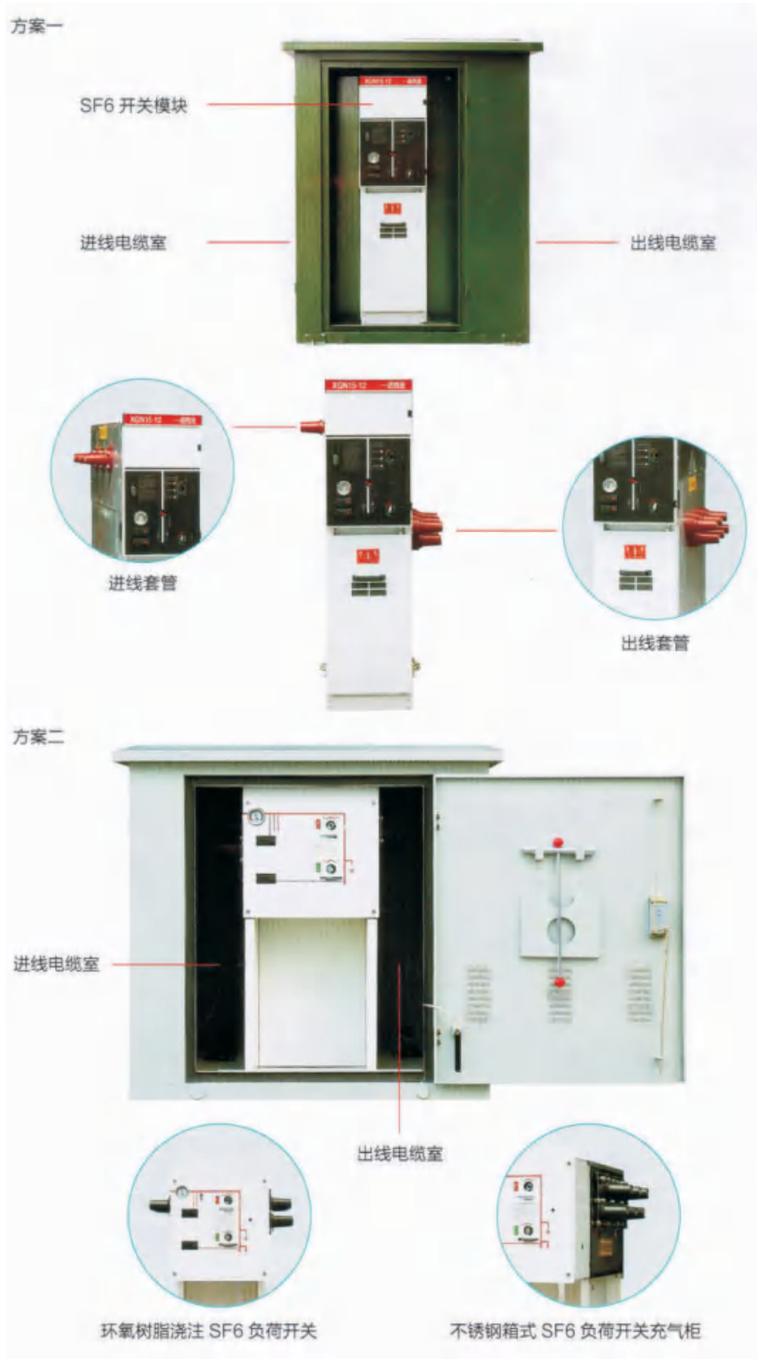
产品结构示意图 Product structure diagram

产品特征 product features

美式普通型电缆分支箱的设计满足安全运行、检查、维护、试验和操作。结构简单安装方便，装在箱内的各种元件满足各自的技术要求。

The design of American common type cable branch box meets safe operation, inspection, maintenance, test and operation. The structure is simple and easy to install, and the various components in the box meet their own technical requirements.

开关型高压电缆分支箱典型方案
Typical scheme of switch type high voltage cable branch box



户外电缆分支箱
Outdoor cable branch box

产品概述 product description

该系列低压电缆分线箱使用于额定频率50/60Hz、额定电压380V（660V）的电力系统中，作为动力、照明及配电设备的电源分配、控制之用。适用于各种恶劣环境、变配电站（所）、工矿企业及城市的道路、花园住宅小区、高层建筑、机场等户外公共场所。特别适合石油、化工等具有腐蚀性气体的厂区以及沿海、岛屿等高盐雾场所使用。

SMC玻璃纤维增强不饱和聚酯箱体，采用新型高性能材料加工制造，具备普通材料所不具有的优点，尤其是它环保、美观、无光污染的特性，更是适应了当今社会所提倡的创建节能环保型社会的潮流。该箱体具有绝缘性强、耐化学腐蚀、阻燃绝热、韧性好等诸多优点，是当今城乡电网改造项目的首选产品。

This series of low-voltage cable junction boxes are used in power systems with a rated frequency of 50/60 Hz and a rated voltage of 380V (660V) for power distribution and control of power, lighting and power distribution equipment. It is suitable for outdoor public places such as various harsh environments, substations (substations), industrial and mining enterprises and urban roads, garden residential quarters, high-rise buildings, airports, etc. It is especially suitable for use in plants with corrosive gases such as petroleum and chemical industries, as well as places with high salt spray such as coastal and islands.

The SMC glass fiber reinforced unsaturated polyester cabinet is made of new high-performance materials. It has the advantages that ordinary materials do not have, especially its environmental protection, beautiful appearance, and no light pollution. It adapts to the creation advocated by today's society. The trend of an energy-saving and environmentally-friendly society. This box has many advantages such as strong insulation, chemical resistance, flame-retardant heat insulation, and good toughness. It is the first choice for today's urban and rural power grid transformation projects.

960 × 600 × 320mm

1140 × 400 × 320mm

1140 × 400 × 320mm

箱体结构及特点 Box structure and characteristics

箱体构件由全绝缘的高分子复合材料(SMC)经高温模压成型，整个箱体由各功能构件环环扣接组装而成，制造精度高。其结构新颖、紧凑、拼装方便。并具有独特的防雨设计及通风设计特点。

该箱体具有非常好的电气性能。绝缘指数、介电强度、耐漏电起痕指数、耐老化指数都非常优良。即使在很潮湿的恶劣环境下也几乎不会产生凝露，并且具有非常强的机械强度。拥有金属箱体无可比拟的安全性能，即使箱体内线路故障或受外力撞击损坏也不会造成箱体带电。特别适合人口稠密的地区且不加防护网的地方使用。

- 箱体构件为模压成型，积木式拼装结构，所以尺寸精度高、安装方便。
- 优良的绝缘性能。箱体为全绝缘结构，无需增设接地系统。
- 材料本身优良的绝热性能，加上特殊的通风结构设计，可以有效的防止箱体内部凝露、凝霜发生的可能。
- 优良的耐化学腐蚀性能，能有效抵抗弱酸、弱碱、盐雾、雨水的腐蚀。
- 优良的抗老化性能。在材料内添加防紫外线元素处理，使得箱体更加耐用，使用寿命长。
- 全封闭的结构，独特的防寸设计，防护等级达到IP44甚至IP54。
- 丰富的内部组件使得电器元件的安装简单、便捷。
- 质量轻、强度高、耐高温性和阻燃性，整体结构稳定，安全可靠。
- 结构紧凑，美观的外型设计及自然色，和谐美观，无光污染。

The box body is made of fully insulated polymer composite material (SMC) by high-temperature compression molding, and the entire box body is assembled by buckling each functional member ring-to-ring, with high manufacturing precision. Its structure is novel, compact and easy to assemble. And has a unique rainproof design and ventilation design features.

The box has very good electrical performance. The insulation index, dielectric strength, tracking resistance index, and aging resistance index are all excellent. Even in a very humid and harsh environment, there is almost no condensation, and it has very strong mechanical strength. With the unparalleled safety performance of the metal box, even if the circuit in the box is faulty or damaged by external force, it will not cause the box to be charged. It is especially suitable for densely populated areas and places without protective nets.

- The box body components are molded and assembled with building blocks, so the dimensional accuracy is high and the installation is convenient.
- Excellent insulation properties. The box body is a fully insulated structure, so there is no need to add a grounding system.
- The excellent thermal insulation performance of the material itself, coupled with the special ventilation structure design, can effectively prevent the possibility of condensation and frost inside the cabinet.
- Excellent chemical resistance, can effectively resist the corrosion of weak acid, weak alkali, salt spray and rain.
- Excellent anti-aging performance. Adding anti-ultraviolet element treatment in the material makes the cabinet more durable and has a long service life.
- Fully enclosed structure, unique anti-inch design, protection level reaches IP44 or even IP54.
- Abundant internal components make the installation of electrical components simple and convenient.
- Light weight, high strength, high temperature resistance and flame retardancy, the overall structure is stable, safe and reliable.
- Compact structure, beautiful appearance design and natural color, harmonious and beautiful, no light pollution.

多功能计量箱 Multifunctional measuring box

- 用于城乡电网中10kV变压器的改造项目，对变压器输出进行控制和计量，也可以用于线路计量。
- 采用壁挂式安装方式，上进上出尽出线方式。
- 箱体采用左右双开门，分为控制室和计量室两个单元，分别挂锁，实现权限分级。
- 计量室安装透明视窗，方便抄表。
- 所有导流铜排均采取热缩绝缘防护，用户侧无裸露带电体安全可靠。
- 外形尺寸(长x宽x大高): 960×600×320mm

- It is used in the transformation project of 10kV transformers in urban and rural power grids to control and measure the output of transformers. It can also be used for line metering.
- It adopts wall-mounted installation, top-in, top-out and all-out line.
- The box body adopts left and right double doors, divided into two units: control room and measuring room, which are respectively padlocked to realize authority classification.
- Transparent windows are installed in the metering room to facilitate meter reading.
- All diversion copper bars adopt heat shrinkable insulation protection, and there is no exposed live body on the user side, which is safe and reliable.
- Dimensions (length x width x large height): 960x600x 320mm

低压抽出式开关柜
Low-voltage withdrawable switch cabinet

产品概述 Product description

MNS型低压抽出式开关柜(以下称开关柜)是我公司参考了瑞士ABB公司的MNS系列低压开关柜并加以综合改进后开发的，是目前国内较先进的低压抽出式开关设备。该产品均由标准化、成系列的模块组成，并且抽屉具有可靠的机械联锁装置，使用户在使用时更安全、更可靠。

本开关柜适用于交流50(60)Hz、额定绝缘电压和工作电压为380(400)V、660V，额定电流5000A及以下三相五线制的电力供电系统，可用于发电厂、变电所、工矿企业、大楼宾馆、机场、码头以及广播电视等通信中心，来作为发电、输配电、电能转换及电能消耗设备的控制，并通过电容补偿柜对其主母线进行无功补偿。

The MNS type low-voltage withdrawable switchgear (hereinafter referred to as the switchgear) is developed by our company after referring to the Swiss ABB company's MNS series of low-voltage switchgear and comprehensively improving it. It is currently the most advanced low-voltage withdrawable switchgear in China. This product is composed of standardized and series modules, and the drawer has a reliable mechanical interlocking device, which makes the user safer and more reliable when using it.

This switchgear is suitable for three-phase five-wire power supply systems with AC 50 (60) Hz, rated insulation voltage and working voltage of 380 (400) V, 660V, and rated current of 5000A and below. It can be used in power plants, substations, Industrial and mining enterprises, buildings, hotels, airports, docks, radio and television and other communication centers are used to control power generation, transmission and distribution, power conversion, and power consumption equipment, and use capacitor compensation cabinets to compensate for their main bus reactive power.

先进型MNS的最新特点 The latest features of advanced MNS

1. 上通风门、电缆室门和后门，转动部分由暗铰链改为明绞链，这使得门转动平稳，转动角度更大，同时也比以前要美观，整体效果更加协调。

2. 改进前，一次转接件与塑料功能件直接相连。假如发生特殊故障，导致一次转接件烧毁，这样会给现场的维修带来较大的困难，更换时间较长。而改进后，由于一次转接件改为独立安装维修方便，减少了停电时间，经济效益显著。

3. MCC柜的一次电缆出线方式更加灵活。相比以前，除了保留原有的侧出和后出方案，更增加了同时侧出和后出的混合方案，极大的方便了用户。

4. 8E、16E和24E单元抽屉内一次电缆的规格可以根据回路的实际电流大小选择电缆，这有利于用户现场的维修和更改。

5. 改进后，后出线方案的后门结构与以前相比，对中立柱进行了重新优化，从而增加了出线电缆的空间，便于用户维修。同时，操作更加方便简单，且具有永固产品的自主特点。

6. 改进后，后出线方案的二次接插件由侧面位置改到后隔板位置。这样，不但减少了二次电缆到端子的距离，而且避免了因现场柜子并柜后无法检修的问题。（600mm宽后出线方案容易产生）

1. On the upper ventilation door, cable room door and back door, the rotating part is changed from concealed hinge to open hinge, which makes the door rotate smoothly, the angle of rotation is larger, and it is more beautiful than before, and the overall effect is more coordinated.

2. Before the improvement, the primary adapter is directly connected with the plastic functional part. If a special failure occurs, which causes the adapter to burn out, it will bring greater difficulties to on-site maintenance and longer replacement time. After the improvement, because the one-time adapter is changed to independent installation and maintenance, it reduces the power outage time and has significant economic benefits.

3. The primary cable outlet mode of the MCC cabinet is more flexible. Compared with the previous, in addition to retaining the original side-out and back-out solutions, it also adds a simultaneous side-out and back-out hybrid solution, which greatly facilitates users.

The specifications of the primary cables in the drawers of 4.8E, 16E and 24E units can be selected according to the actual current size of the loop, which is conducive to the maintenance and modification of the user on-site.

5. After the improvement, the rear door structure of the rear outlet scheme is compared with the previous one, and the center column has been re-optimized, thereby increasing the space for the outlet cable and facilitating user maintenance. At the same time, the operation is more convenient and simple, and has the independent characteristics of permanent products.

6. After the improvement, the secondary connector of the rear outlet scheme is changed from the side position to the rear partition position. In this way, not only the distance between the secondary cable and the terminal is reduced, but also the problem that the on-site cabinets cannot be overhauled after the cabinets are combined is avoided. (After 600mm wide, the outlet plan is easy to produce)

使用条件 Conditions of Use

1、周围空气温度不高于+40℃，不低于-5℃，并且24h内其平均温度不高于+35℃。

2、周围空气相对湿度在最高温度为+40℃时不超过50%，在较低温度时有较大的相对湿度，如+20℃时为90%，但考虑到由于温度的变化有可能会偶然产生适度的凝露。

3、户内使用，使用地点的海拔高度不得超过2000m。

4、应安装在无剧烈震动和冲击，以及不使电器元件受到腐蚀的场所。

1. The ambient air temperature is not higher than +40°C, not lower than -5°C, and its average temperature within 24h is not higher than +35°C.

2. The relative humidity of the surrounding air does not exceed 50% when the highest temperature is +40°C, and there is a larger relative humidity at a lower temperature, such as 90% at +20°C, but considering the temperature changes May occasionally produce moderate condensation.

3. For indoor use, the altitude of the place of use shall not exceed 2000m.

4. It should be installed in a place where there is no severe vibration and impact, and the electrical components are not corroded.

主要技术参数 Technical parameter

标准及技术规范 Standards and technical specifications	GB7251.12-201 3低压成套开关设备和控制设备(TTA) JB/T9661-1 999低压抽出式开关成套设备 GB7251.12-201 3 Low-voltage switchgear and control equipment (TTA) JB/T9661-1 999 low-voltage withdrawable switch complete equipment
过电压类别 Overvoltage category	Ⅳ Ⅲ
污染等级 Pollution level	3
额定工作电压（Ue）（V） Rated working voltage (Ue) (V)	380（660）
额定绝缘电压（Ui）（V）Rated insulation voltage (Ui) (V)	660（1000）
额定频率（Hz）Rated frequency (Hz)	50（60）
水平母线 Horizontal bus	
额定电流 Rated current	5000A、4000A、3150A、2500A、2000A、630A
额定短时耐受电流（1cw）（kA） Rated short-time withstand current (1cw) (kA)	50、65、80（1s有效值）
额定峰值耐受电流（1pk）（kA） Rated peak withstand current (1pk) (kA)	105、140、176（0.1s最大值）
垂直母线 Vertical bus	
额定最大工作电流 Rated maximum working current	≤1000A
额定短时耐受电流 Rated short-time withstand current	50KA
额定峰值耐受电流 Rated peak withstand current	105KA
外壳防护等级 Enclosure rating	IP30 IP40（特殊说明）

结构特征 Structure

本开关柜由于引进了瑞士ABB的先进技术，并在其原有基础上加以技术改进，使其更符合我国国情。柜体采用25mm为模数的C型材通过连接件来组成各种得以满足各种需求的柜架结构和抽屉单元，在MCC柜中大量采用高强度的阻燃型工程塑料组件，使其安全性能更可靠，同时加之将国外的功能板加以改型，以200mm为模数加以组合，使其更有利于PC柜与MCC柜混装柜体的设计需求，抽出单元与柜体具有可靠的联锁装置，以防止在开关通电状态下带负荷拉闸，提高了其安全性，另外该柜体一般均采用冷轧钢板进行钝化处理后组装而成，也可根据用户的不同需求采用敷铝锌钢板。

1、开关柜类型

A、受电、母联柜

B、动力中心柜(PC）采用国内外的各种类型的框架式断路器如DW45、CM1，MT、E系列断路器进行配电。

C、电动机控制中心柜(MCC)，由大小抽屉组装而成，各回路主开关采用高分断能力的塑壳断路器或旋转式带熔断器的负荷开关。

D、无功功率补偿柜

2、抽屉类型

有五种尺寸都是以8E(200mm)高度，进行模块化结构设计，其有效元器件安装高度为1800mm，使柜体整体布局更合理更美观。

8E/4在8E高度空间平行组合4个抽屉单元
8E/2在8E高度空间平行组合2个抽屉单元
8E在8E高度空间组装1个抽屉单元
16E在16E(400mm)高度空间组装1个抽屉单元
24E在24E(600mm)高度空间组装1个抽屉单元
以上五种抽屉单元可在一个柜体中作单一组装，
也可做混合组装(见图一)

This switchgear is more in line with my country's national conditions due to the introduction of advanced technology from Swiss ABB and technical improvements on its original basis. The cabinet body adopts 25mm C-shaped material with a modulus to form various cabinet frame structures and drawer units that can meet various needs through connectors. A large number of high-strength flame-retardant engineering plastic components are used in the MCC cabinet to make it safe. It is more reliable, and at the same time, the foreign functional board is modified and combined with 200mm as the module, which is more conducive to the design requirements of the mixed cabinet of the PC cabinet and the MCC cabinet. The draw-out unit and the cabinet have a reliable interlock The device prevents the switch from being pulled under load when the switch is energized, which improves its safety. In addition, the cabinet is generally assembled by cold-rolled steel plate after passivation treatment, and it can also be coated with aluminum and zinc according to the different needs of users. Steel plate.

1. Switch cabinet type

A. Power receiving, mother joint cabinet

B. The power center cabinet (PC) adopts various types of frame circuit breakers at home and abroad, such as DW45, CM1, MT, and E series circuit breakers for power distribution.

C. The motor control center cabinet (MCC) is assembled by large and small drawers. The main switch of each circuit adopts a high breaking capacity molded case circuit breaker or a rotary load switch with a fuse.

D. Reactive power compensation cabinet

2. Drawer type

There are five sizes with 8E (200mm) height, modular structure design, and its effective component installation height is 1800mm, which makes the overall layout of the cabinet more reasonable and beautiful.

8E/4 combines 4 drawer units in parallel in a space of 8E height

8E/2 combines 2 drawer units in parallel in a space of 8E height

8E assembles 1 drawer unit in 8E height space

16E assembles 1 drawer unit in 16E (400mm) height space

24 E assemble 1 drawer unit in 24E (600mm) height space

The five drawer units above can be assembled in a single cabinet.

Can also be mixed assembling (see Figure 1)

抽屉型式 Drawer type	8E/4	8E/2	8E	16E	24E
最多容纳单元数 Maximum number of units	36	18	9	4+8E	3

图一 Figure one

柜体简介 Introduction to the cabinet

1、柜体基本尺寸 1,The basic size of the cabinet

a. 受电柜及联系柜 a. Power receiving cabinet and contact cabinet

	主母线转接贵 Main bus transfer is expensive	1台断路器 1 circuit breaker
高（mm）	2200	2200
宽（mm）	400	600 800 1000
深（mm）	800 1000	800 1000
备注		DW45-3200及以下载流量且体积较小的同类断路器 DW45-3200 and similar circuit breakers with download flow and smaller volume

b、动力中心(PC)柜 b. Power Center (PC) cabinet

	2台断路器 2 circuit breaker	3台断路器 3 circuit breaker
高（mm）	2200	2200
宽（mm）	800 1000	800 1000
深（mm）	800 1000	800 1000
备注	DW45-2000及以下载流量且体积较小的同类断路器 DW45-2000 and similar circuit breakers with download flow and smaller volume	DW45-2000及以下载流量且体积较小的同类断路器 DW45-2000 and similar circuit breakers with download flow and smaller volume

C、电动机控制中心(MCC)柜及电容补偿柜 C. Motor Control Center (MCC) cabinet and capacitor compensation cabinet

	MCC柜 MCC cabinet			电容补偿柜 Capacitor compensation cabinet
高（mm）	2200			2200
宽（mm）	600	800	1000	600 800 1000
深（mm）	1000 800	1000 800	1000 800 600	800 1000 600

2、柜体分区设计 2. Cabinet partition design

MCC柜根据需要可组成单面操作柜或双面操作柜，每一柜体又固定分隔成三个小室。即主母线室、电器室和电缆室。(具体见图二)

上下层抽屉之间都有带有通风孔的镀锌金属底板相隔离，较小的8E/4、8E/2抽屉其四周均为阻燃型工程塑料件，对相邻回路之间具有较强的绝缘隔离作用。

柜内采用了多种塑料组件以支撑带电部分，这些组件要求是无卤素的，并具有CT1300等级的防漏电性能。

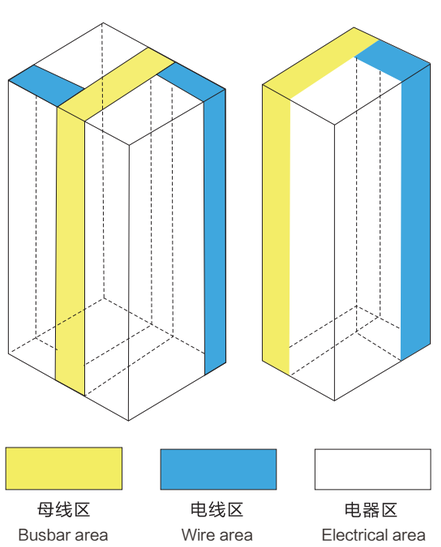
柜内设有独立的PE接地系统和N中性导体，二者贯穿整个装置。安装在柜前底部及右侧，各回路接地或接零都可就近联接。整个母线系统安装见图三所示。框架结构件采用自攻螺钉联接，具有较高的接地可靠性。(具体见图三)。

The MCC cabinet can be composed of a single-sided operation cabinet or a double-sided operation cabinet according to needs, and each cabinet is fixedly divided into three small rooms. Namely the main busbar room, electrical room and cable room. (See Figure 2 for details)

There are galvanized metal bottom plates with ventilation holes between the upper and lower drawers. The smaller 8E/4 and 8E/2 drawers are surrounded by flame-retardant engineering plastic parts, which have a strong impact on the adjacent circuits. The insulation isolation effect.

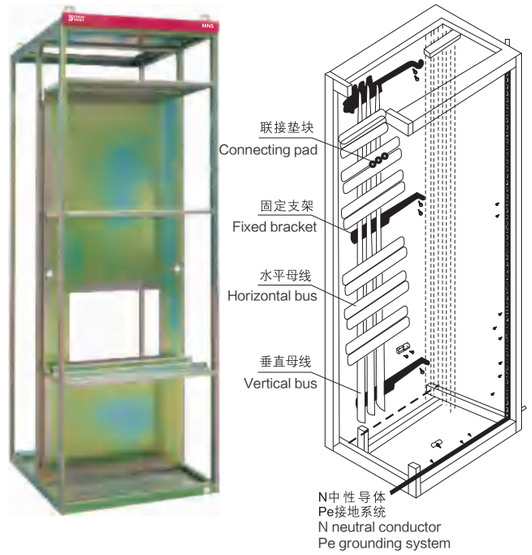
A variety of plastic components are used in the cabinet to support the live parts. These components are required to be halogen-free and have CT1300 level anti-leakage performance.

The cabinet is equipped with an independent PE grounding system and N neutral conductor, both of which run through the entire device. It is installed at the bottom and right side of the front of the cabinet, and each circuit can be connected to the nearest grounding or zero connection. The installation of the entire busbar system is shown in Figure 3. The frame structure is connected by self-tapping screws, which has high grounding reliability. (See Figure 2 for details).



图二、柜体示意图

Figure 2. Schematic diagram of the cabinet



图三、 MNS母线系统

Figure 3. MNS busbar system

3、 安全保护系统

每柜设有一块阻燃型的高密度聚氨脂塑料功能板，或经过电镀的隔板安装在主母线室与电器室之间，其作用为有效防止开关元件因故障引起的飞弧与母线之间短路造成的事故，使操作更安全。

4、母线系统

开关柜可配置二组主母线，安装在开关柜的后部母线室二组母线可分别安装在柜后上部或下部。根据进线需要，上下二组母线可分别采用不同或相同截面的材料。二者既可单独供电，也可并联供电，也可用作后备电源。配电母线(垂直母线)组装在阻燃型塑料功能板中，即可防止电弧引起的放电，又能防止人体接触，通过特殊联接件与主母线联接。

5、抽屉的电气和机械联锁

抽屉单元有可靠的机械联锁装置，通过操作手柄控制，具有明显的准备、合闸、试验、抽出和隔离位置。为加强安全防范，操作手柄定位后可加上挂锁，最多可加三把锁。

3. Safety protection system

Each cabinet is equipped with a flame-retardant high-density polyurethane plastic functional board, or an electroplated partition board is installed between the main busbar room and the electrical room, and its function is to effectively prevent the switching element from arcing due to failure. The accident caused by the short circuit with the bus bar makes the operation safer.

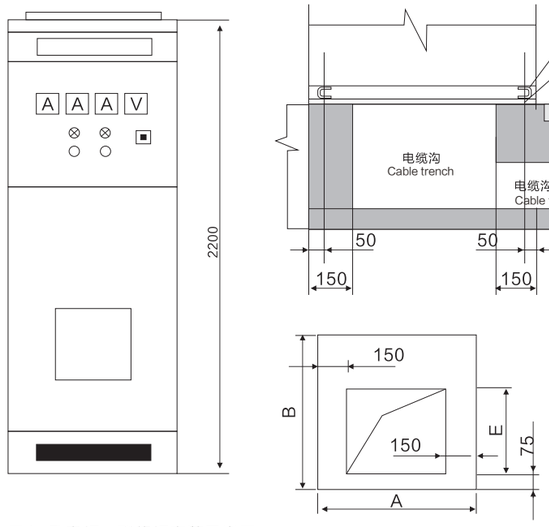
4. Busbar system

The switch cabinet can be equipped with two groups of main bus bars, which are installed in the rear bus compartment of the switch cabinet. The two groups of bus bars can be installed in the upper or lower part of the back of the cabinet respectively. According to the wire entry requirements, the upper and lower bus bars can be made of different or the same cross-section materials. Both can be powered separately, in parallel, or used as a backup power source. The distribution bus (vertical bus) is assembled in the flame-retardant plastic functional board, which can prevent the discharge caused by the arc and prevent the contact of the human body. It is connected to the main bus through a special connector.

5. 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 positions for preparation, closing, testing, withdrawal and isolation. In order to strengthen safety precautions, a padlock can be added after the operating handle is positioned, and up to three locks can be added.

MNS1开关柜的安装示意图 Installation diagram of MNS1 switchgear



	A	B	C	D	E	
各种柜体的组合类型 Combination types of various cabinets	600	800	500	700	500	受电 Receive electricity
	800	800	700	700	500	受电、联络 Receiving and contacting
	1000	800	900	700	500	受电、联络 Receiving and contacting
	600	1000	500	900	500	受电 Receive electricity
	800	1000	700	900	500	受电、联络 Receive electricity
	1000	1000	900	900	500	受电、联络 Receive electricity

图4 受电柜、联络柜安装示意图
Figure 4 Sketch map of installation of power receiving cabinet and contact cabinet

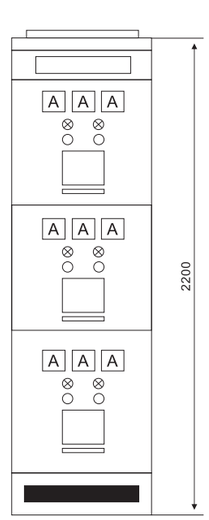
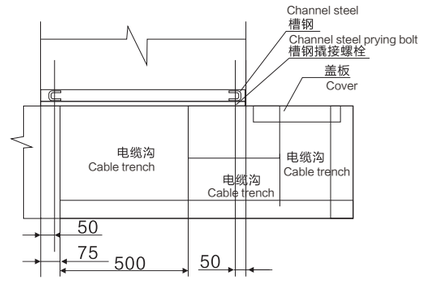
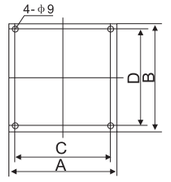


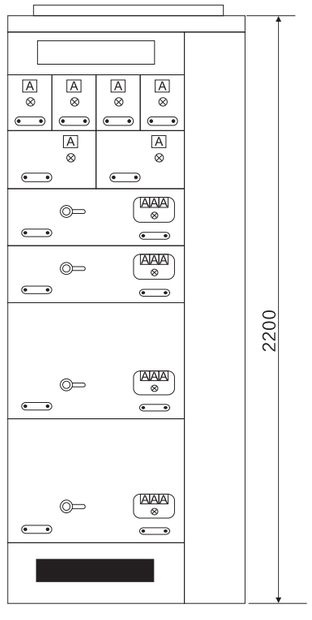
图5 PC柜安装示意图
Figure 5 Schematic diagram of PC cabinet installation

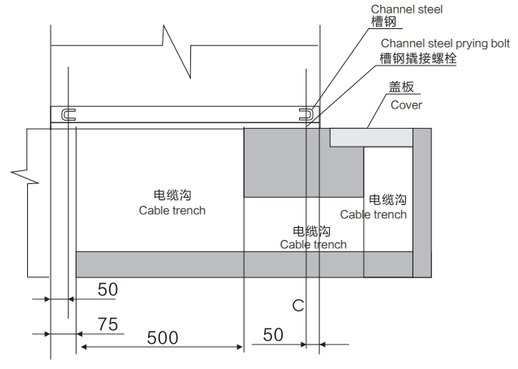


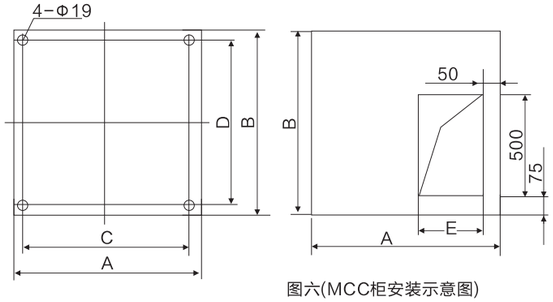
图五（PC柜安装示意图）
Figure 5 Schematic diagram of PC cabinet installation



	A	B	C	D	E	
各种柜体的组合类型 Combination types of various cabinets	800	800	700	700	300	PC
	1000	800	900	700	500	PC
	800	1000	700	900	300	PC
	1000	1000	900	900	500	PC







图六(MCC柜安装示意图)
Figure 6 (Schematic diagram of MCC cabinet installation)

	A	B	C	D	E	
各种柜体的组合类型 Combination types of various cabinets	800	600	500	700	300	MCC
	1000	600	700	900	400	MCC
	800	800	900	700	300	MCC
	1000	800	500	900	400	MCC
	800	1000	700	700	300	MCC
	1000	1000	900	900	400	MCC

图6 MCC柜安装示意图 Figure 6 Schematic diagram of MCC cabinet installation

订货须知 Order notice

1. 提供主接线方案图、编号，用途；额定电压；额定电流； 配电室平面布置图及开关柜的排列配置图，并标明每一回路模数。
2. 标明进出线电缆规格。
3. 开关柜内主要电气元件的型号、规格及数量。
4. 如开关柜之间或进线柜需要母线桥或母线槽连接，应提供母线桥或母线槽的额定载流量，母线桥或母线槽的跨度，距地高宽等具体要求数据。详见母线桥或母线槽的订货须知。
5. 开关柜使用在特殊环境条件时，应在订货时详细说明。
6. 颜色：冰灰皱/7H507。
7. 单元回路电流大于400A以上，建议改为固定安装。
8. 其它具体要求。

1. Provide the main wiring plan diagram, number, purpose; rated voltage; rated current; the layout of the distribution room and the layout of the switch cabinet, and indicate the modulus of each circuit.

2. Indicate the specifications of incoming and outgoing cables.

3. The model, specification and quantity of the main electrical components in the switch cabinet.

4. If busbar bridge or busbar connection is required between switch cabinets or incoming cabinets, the rated current carrying capacity of the busbar bridge or busbar, the span of the busbar bridge or busbar, the height and width from the ground and other specific requirements data should be provided. See the ordering instructions for busbar bridge or busway for details.

5. When the switchgear is used under special environmental conditions, it should be specified in detail when ordering.

6. Color: ice gray wrinkle/7H507.

7. The unit loop current is greater than 400A, it is recommended to change to fixed installation.

8. Other specific requirements.

产品概述 Product description

GCS1型低压抽出式开关柜，(以下简称装置)是两部联合设计组根据行业主管部门、广大电力用户及设计单位的要求设计研制出的符合国情，具有较高技术性能指标、能够适应电力市场发展需要并可与现有引进产品竞争的低压抽出式开关柜。该装置目前已被电力用户广泛使用。

装置适用于发电厂、石油、化工、冶金、纺织、高层建筑等行业的配电系统。在大型发电厂、石化系统等自动化程度高，要求与计算机接口的场所，作为三相交流频率为50(60)Hz、额定工作电压为380(400)V、(660)V，额定电流为5000A及以下的发、供电系统中的配电、电动机集中控制、无功功率补偿使用的低压成套配电装置。

装置的设计符合下列标准

IEC439-1《低压成套开关和控制设备》

GB 7251.12-2013《低压成套开关设备》

The GCS1 low-voltage withdrawable switchgear (hereinafter referred to as the device) is designed and developed by the two joint design teams according to the requirements of the industry authorities, the majority of power users and the design unit, which meets the national conditions, has high technical performance indicators, and can adapt to the power market. Low-voltage withdrawable switch cabinets that are needed for development and can compete with existing imported products. The device has been widely used by electric power users.

The device is suitable for power distribution systems in power plants, petroleum, chemical, metallurgy, textile, high-rise buildings and other industries. In large-scale power plants, petrochemical systems and other places that require high degree of automation and computer interface, as a three-phase AC frequency of 50 (60) Hz, rated working voltage of 380 (400) V, (660) V, and rated current of 5000A Low-voltage complete set of power distribution devices used in power distribution, centralized motor control, and reactive power compensation in power generation and power supply systems and below.

The design of the device meets the following standards

IEC439-1 "Low-Voltage Complete Switch and Control Equipment"

GB 7251.12-2013 "Low-Voltage Complete Switchgear"

型号含义 Model meaning

正常使用环境条件 Normal use environmental conditions

1、周围空气温度不高于+40℃，不低于-5℃。24小时内平均温度不得高于+35℃。超过时，需根据实际情况降容运行；

2、户内使用，使用地点的海拔高度不得超过2000m；

3、周围空气相对湿度在最高温度为+40℃时不超过50%，在较低温度时允许有较大的相对湿度，如+20℃时为90%，应考虑到由于温度的变化可能会偶然产生凝露的影响；

4、装置安装时与垂直面的倾斜度不超过5°，且整组柜列相对平整(符合GBJ232-82标准)；

5、装置应安装在无剧烈震动和冲击以及不足以使电器元件受到不应有腐蚀的场所；

6、用户有特殊要求时，可以与制造厂协商解决。

1. The ambient air temperature is not higher than +40C and not lower than -5°C. The average temperature within 24 hours must not be higher than +35°C. When it exceeds, the capacity needs to be reduced and run according to the actual situation;

2. For indoor use, the altitude of the place of use shall not exceed 2000m;

3. The relative humidity of the surrounding air does not exceed 50% when the highest temperature is +40°C. A larger relative humidity is allowed at a lower temperature, such as 90% at +20°C. The temperature change should be taken into consideration. May occasionally produce condensation effects;

4. When the device is installed, the inclination of the vertical plane is not more than 5°, and the whole group of cabinets is relatively flat (in accordance with the GBJ232-82 standard);

5. The device should be installed in a place where there is no severe vibration and impact, and where the electrical components are not corroded;

6. When the user has special requirements, it can be resolved through consultation with the manufacturer.

主要技术参数 Main technical parameters

1、基本技术参数见表1 1. See Table 1 for basic technical parameters

Table 1 表1

主电路额定电压（V）Rated voltage of main circuit (V)		交流380（400），（600）Exchange 380 (400), (600)
辅助电路额定电压（V）Rated voltage of auxiliary circuit (V)		交流220，380（400）直流110，220 AC 220, 380 (400) DC 110, 220
额定频率（Hz）Rated frequency (Hz)		50（60）
额定绝缘电压（V）Rated insulation voltage (V)		660（1000）
额定电流（A）Rated current (A)	水平母线 垂直母线 （MCC）Horizontal bus Vertical bus (MCC)	≤5000
		1000
母线额定短时耐受电流（kA/1S）Busbar rated short-time withstand current (kA/1S)		50，80
母线额定峰值耐受电流（kA/0.1S）Rated peak withstand current of busbar (kA/0.1S)		105，176
工频试验电压（V/1min） Power frequency test voltage (V/1min)	主电路 辅助电路 Main circuit Auxiliary circuit	2500
		1760
母线 Busbar	三相四线制 三相五线制 Three-phase four-wire system Three-phase five-wire system	A.B.C.PEN
		A.B.C.PE.N
防护等级 Protection level		IP30,IP40

2、主电路方案 2. The main circuit scheme

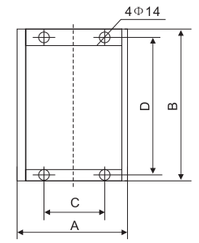
装置主电路方案共32组118个规格，不包括由于辅助电路的控制与保护的变化而派生的方案和规格。 此外，为适应供用电提高功率因数的需要而设计了电容器补偿柜。

The main circuit scheme of the device has 32 groups of 118 specifications, excluding schemes and specifications derived from changes in the control and protection of the auxiliary circuit. In addition, a capacitor compensation cabinet is designed to meet the needs of power supply and use to improve power factor.

产品外形及安装尺寸
Product appearance and installation dimensions

(mm)

通用柜代号 General cabinet code	A	B	C	D	备注
GCS-TG1010-4	1000	1000	900	900	联络柜 Contact cabinet
GCS-TG0810-4	800	1000	700	900	受电柜 Power receiving cabinet
GCS-TG0808-4	800	800	700	700	受电柜 Power receiving cabinet
GCS-TG0608-4	600	800	500	500	受电柜 Power receiving cabinet



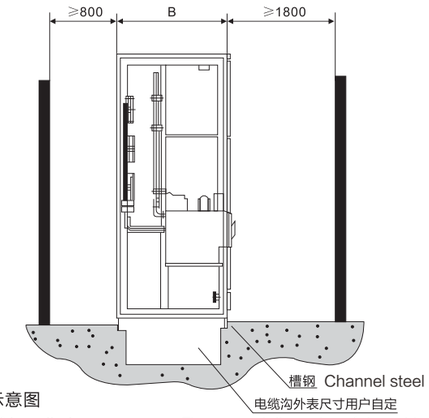


图1 受电、联络柜安装示意图
Figure 1 Schematic diagram of installation of power receiving and contact cabinets

The external dimension of the cable trench is customized by the user

产品外形及安装尺寸
Product appearance and installation dimensions

(mm)

通用柜代号 General cabinet code	A	B	C	D	E	F*G
GCS-TG1010-2	1000	1000	900	900	60	400*400
GCS-TG0810-2	800	1000	700	900	160	200*400
GCS-TG1008-2	1000	800	900	700	60	400*400
GCS-TG0808-2	800	800	700	700	160	200*400

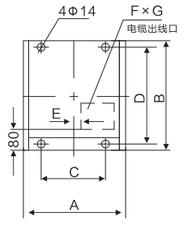
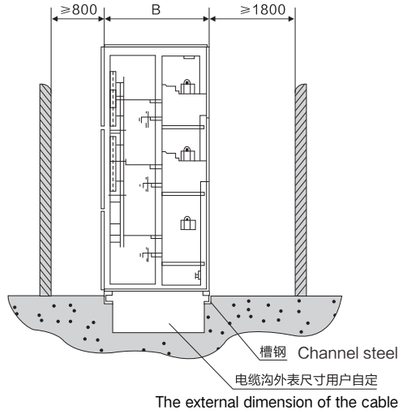


图2 PC柜安装示意图
Figure 2 Schematic diagram of PC cabinet installation



The external dimension of the cable trench is customized by the user

低压抽出式开关柜
Low-voltage withdrawable switch cabinet

(mm)

通用柜代号 General cabinet code	A	B	C	D	E	F*G
GCS-TG1008-1	1000	800	900	700	60	400*350
GCS-TG1006-1	1000	600	900	500	60	400*350
GCS-TG0806-1	800	600	700	500	160	200*350

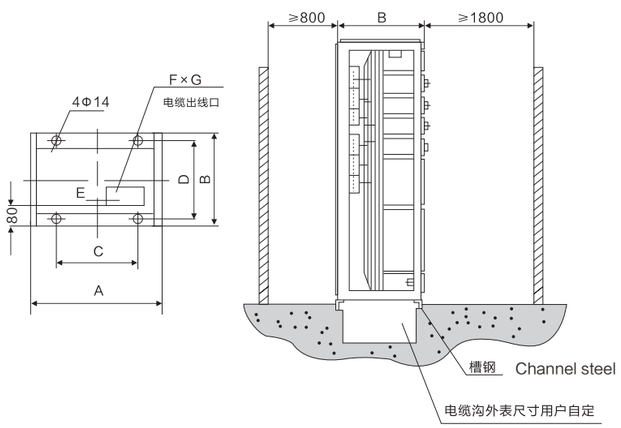


图3 MCC柜安装示意图

Figure 2 Schematic diagram of MCC cabinet installation

订货须知 Order notice

订货时应提供以下资料：

1. 产品的全型号包括主电路方案号和辅助电路方案号；
2. 主电路系统组合顺序图；
3. 柜体平面布置图；
4. 辅助电路电气原理图；
5. 柜内元件器件清单；
6. 电路中电压、电流、时间等整定参数；
7. 与产品正常使用不符的其它特殊要求。

The following information should be provided when ordering:

1. The full model of the product includes the main circuit scheme number and the auxiliary circuit scheme number;
2. The combination sequence diagram of the main circuit system;
3. Cabinet layout plan;
4. Electrical schematic diagram of auxiliary circuit;
5. List of components in the cabinet;
6. Setting parameters such as voltage, current and time in the circuit;
7. Other special requirements that are inconsistent with the normal use of the product.

产品概述 Product description

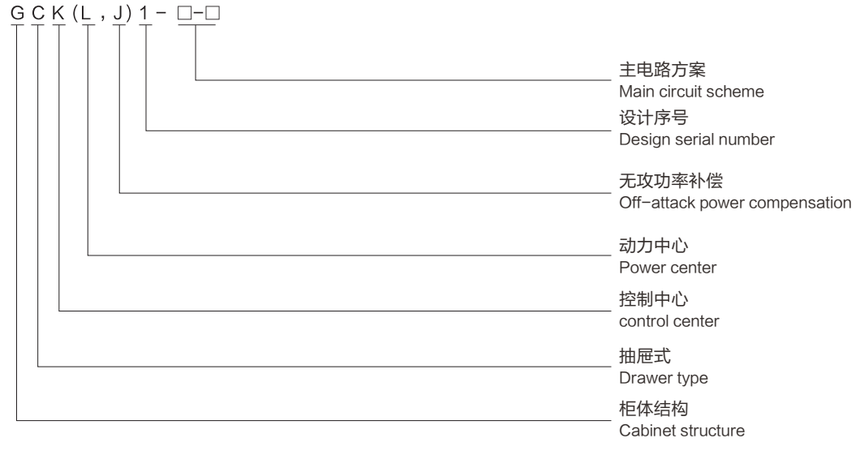
GCK低压抽出式开关柜(以下简称开关柜)是我公司消化吸收国际同类先进技术而开发的新产品。本产品适用于额定工作电压380V，交流三相四线、三相五线系统，作为电力系统的发电厂、 变电站、工矿企业和高层建筑中受电、馈电、无功功率补偿、电能计量、照明及电动机集中控制之用。

本产品符合标准：GB7251.12-2013《 低压成套开关设备和控制设备》、JB/T9661《低压抽出式开关设备》、IEC60439-1《低压成套开关设备和控制设备》。

GCK low-voltage withdrawable switchgear (hereinafter referred to as switchgear) is a new product developed by our company by digesting and absorbing similar international advanced technologies. This product is suitable for the rated working voltage of 380V, AC three-phase four-wire, three-phase five-wire system, as the power system of power plants, substations, industrial and mining enterprises and high-rise buildings in the power receiving, feeding, reactive power compensation, electric energy metering, For centralized control of lighting and electric motors.

This product complies with the standards: GB7251.12-2013 "Low-voltage switchgear and control equipment", JB/T9661 "Low-voltage withdrawable switchgear", IEC60439-1 "Low-voltage switchgear and control equipment".

型号含义 Model meaning



正常使用环境条件 Normal use environmental conditions

1、海拔高度：不得超过2000m。

2、环境温度：-5℃~+40℃：日平均温度不得高于+35℃。

3、相对温度：最高温度为+40℃时不超过50%，在较低温度时允许有较大的相对湿度：如+20℃时为90%。

4、没有火灾、爆炸凶险、严重污染、化学腐蚀及剧烈振动的场所。

5、与垂直面倾斜不超过5°。

6、适用于以下温度的运输和储存过程，-25℃~+55℃，在短时间内(不超过24h)不超过+70℃。

7、如上述使用条件不能满足时，应由用户在订货时向本公司提出，协商解决。

1. Altitude: not more than 2000m.

2. Ambient temperature: -5°C~+40°C: The daily average temperature should not be higher than +35°C.

3. Relative temperature: no more than 50% when the highest temperature is +40°C, and a larger relative humidity is allowed at lower temperatures: such as 90% at +20°C.

4. There is no place with fire, explosion, serious pollution, chemical corrosion and severe vibration.

5. Tilt not more than 5° to the vertical.

6. It is suitable for the transportation and storage process at the following temperature, -25°C~+55°C, not exceeding +70°C in a short time (not more than 24h).

7. If the above conditions of use cannot be met, the user should propose to the company when ordering, and negotiate a settlement.

主要技术参数 Main technical parameters

1、额定绝缘电压：660V、1000V；

2、额定工作电压：380V、660V；

3、辅助电路额定电压：AC 220V、380V、DC 110V、220V；

4、使用频率：50Hz~(60)Hz；

5、额定电流：水平母线≤3150A　垂直母线630A、800A、1200A

6、额定短时耐受电流：50、80KA/1s中，中性母线30KA/1s；

7、额定峰值电流：105KA/1s，176KA/0.1s；

8、功能单元(抽屉)分断能力：50KA(有效值)；

9、外壳防护等级：IP30、IP40；

10、母线设置：三相四线制、三相五线制；

11、操作方式：就地、远方、自动。

1. Rated insulation voltage: 660V, 1000V;

2. Rated working voltage: 380V, 660V;

3. Rated voltage of auxiliary circuit: AC 220V, 380V, DC 110V, 220V;

4. Operating frequency: 50Hz~ (60)Hz;

5. Rated current: horizontal bus ≤ 3150A vertical bus 630A, 800A, 1200A

6. Rated short-time withstand current: 50, 80KA/1s, neutral bus 30KA/1s;

7. Rated peak current: 105KA/1s, 176KA/0.1s;

8. Breaking capacity of functional unit (drawer): 50KA (effective value);

9. Shell protection grade: IP30, IP40;

10.Bus setting: three-phase four-wire system, three-phase five-wire system;

11. Mode of operation: local, remote, automatic.

结构特点 Structural features

MGCK、MGCL的基本柜架为组合装配式结构，采用标准模块设计：结构紧凑，组装灵活，分别可组装成保护、转换、测控、指示等标准单元，可根据需要任意选用组装，组成不同方案的框架结构和抽屉单元。柜体结构技术性能高，主要参数达到21世纪国际先进水平。

1、柜架

柜架采用C型钢局部焊接而成，框架零件及专用配套零件由本公司配套供货，保证柜体的精度和质量。

1) 零部件的成型尺寸，开孔尺寸，设备间隔实行模数化。(模数E=25mm，下同)。

2) 内部结构件采用镀锌处理。

3) 柜体顶盖为可拆卸式，拿掉顶盖可以很方便的安装水平母线，柜顶的四角装有吊环，用于起吊和装运。

4) 外部经磷化处理；然后采用静电环氧粉末喷涂。

5)柜架分成母室、功能单元室、电缆室三个相互隔离区间，可防止事故扩散和便于带电维修。

2、功能单元(抽屉部分)

1)功能单元：馈电单元、电动机单元、公用电源单元。

2)抽屉单元高度模数为200mm，分为1/2单元、1单元、2单元、3单元四个尺寸系列。单元回路定电流630A以下。

3)每台MCC柜最多能安装9个一单元的抽屉或18个1/2单元的抽屉。

4)隔室的门板由主开关的操作机构与抽屉进行机械连锁，主开关在合闸位置时，门板打不开。

5)主开关的操作机构可用一把挂锁锁定在合闸或分闸位置，可安全地进行电器设备的维修。

6)功能单元背面具有主电路进出线插头、辅助电路二次插头及接地插头。

7)接地插头使抽屉在分离试验连接位置时，保证了保护电路的连续性。

8)功能单元隔室采用金属隔板隔开。

9)隔室中的活门，随着抽屉的推进和拉出自动打开和封闭，使之在隔室中不会触及垂直母线。

3、母线系统

1)垂直母线采用聚碳酸脂工程塑料外壳封闭。

2)MGCK、GCL母线系统采用三相四线制、三相五线制，水平母线装于柜顶，N线、PE线既可以装于柜顶，也可以装于柜下部。

3)三相水平母线采用铜母线，机械强度高、散热性好。

The basic cabinet frame of MGCK and MGCL is a combined assembly structure and adopts a standard module design: compact structure and flexible assembly. They can be assembled into standard units such as protection, conversion, measurement and control, and indication. They can be assembled as needed to form different solutions. Frame structure and drawer unit. The cabinet structure has high technical performance, and the main parameters have reached the international advanced level in the 21st century.

1. Cabinet frame

The cabinet frame is partially welded by C-shaped steel, and the frame parts and special supporting parts are supplied by our company to ensure the accuracy and quality of the cabinet.

1) The molding size of the parts, the hole size, and the equipment interval are modulized. (Modulus E=25mm, the same below).

2) The internal structural parts are galvanized.

3) The top cover of the cabinet is detachable, and the horizontal bus can be easily installed by removing the top cover. The four corners of the cabinet top are equipped with lifting rings for lifting and shipping.

4) The exterior is phosphated; then electrostatic epoxy powder is sprayed.

5) The cabinet frame is divided into three separate compartments: mother room, functional unit room, and cable room, which can prevent the spread of accidents and facilitate live maintenance.

2. Functional unit (drawer part)

1) Functional units: feeder unit, motor unit, public power supply unit.

2) The drawer unit height modulus is 200mm, divided into four size series: 1/2 unit, 1 unit, 2 unit, and 3 unit. The unit loop constant current is below 630A.

3) Each MCC cabinet can install at most 9 one-unit drawers or 18 1/2-unit drawers.

4) The door of the compartment is mechanically interlocked with the drawer by the operating mechanism of the main switch. When the main switch is in the closing position, the door cannot be opened.

5) The operating mechanism of the main switch can be locked in the closing or opening position with a padlock, allowing safe maintenance of electrical equipment.

6) The back of the functional unit has main circuit inlet and outlet plugs, auxiliary circuit secondary plugs and grounding plugs.

7) The grounding plug ensures the continuity of the protection circuit when the drawer is in the connection position of the separation test.

8) The functional unit compartments are separated by metal partitions.

9) The trap door in the compartment automatically opens and closes as the drawer advances and pulls out, so that it will not touch the vertical bus in the compartment.

3. Busbar system

1) The vertical busbar is closed with polycarbonate engineering plastic shell.

2) MGCK and GCL busbar systems adopt three-phase four-wire system and three-phase five-wire system. The horizontal busbars are installed on the top of the cabinet, and the N and PE lines can be installed on the top or the bottom of the cabinet.

3) The three-phase horizontal bus bar adopts copper bus bar, which has high mechanical strength and good heat dissipation.

外形及安装尺寸 Appearance and installation dimensions

有效安装高度1800mm。

1、受电柜及母线联络柜：柜宽根据开关电流等级及进出线方式分为600、800、1000、1200、(800-400)mm；
柜深为800、1000(推荐用100mm；上进线上出线柜必须用1000mm)

2、馈电柜：柜宽：600、800mm
柜深：800、1000mm(推荐用1000mm；上出线柜必须用1000mm)

3、电动机控制柜(MCC)：柜宽：600、600+200mm
柜深：800、1000mm(推荐用1000mm；上出线柜必须用1000mm)

4、功率因数补偿柜
柜宽：600(4、6路)、800(8路)、1000(10路)mm
柜深：800、1000mm。

The effective installation height is 1800mm.

1. Power receiving cabinet and busbar contact cabinet: the width of the cabinet is divided into 600,

800, 1000, 1200, (800-400)mm;

The cabinet depth is 800, 1000 (100mm is recommended; 1000mm must be used for the outlet cabinet on the upper inlet)

2. Feeder cabinet: cabinet width: 600, 800mm

Cabinet depth: 800, 1000mm (1000mm is recommended; 1000mm must be used for the upper outlet cabinet)

3. Motor control cabinet (MCC): cabinet width: 600, 600+200mm

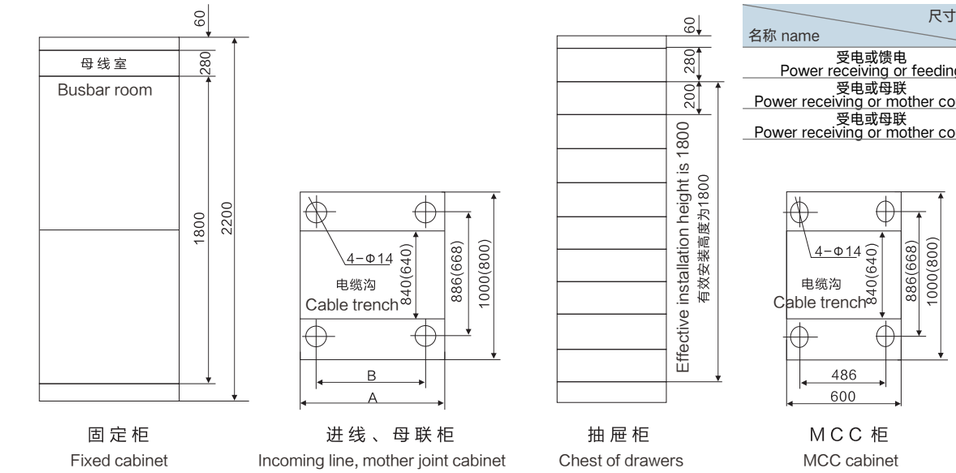
Cabinet depth: 800, 1000mm (1000mm is recommended; the upper outlet cabinet must

F 1000mm)

4. Power factor compensation cabinet

tER: 600(4.6II环). 800(811). 1000(10i3)mm

tEi: 800. 1000mm.



固定柜 Fixed cabinet　　进线、母联柜 Incoming line, mother joint cabinet　　抽屉柜 Chest of drawers　　MCC柜 MCC cabinet

名称 name \ 尺寸 size	A	B
受电或馈电 Power receiving or feeding	600	486
受电或母联 Power receiving or mother couplet	800	686
受电或母联 Power receiving or mother couplet	1000	886

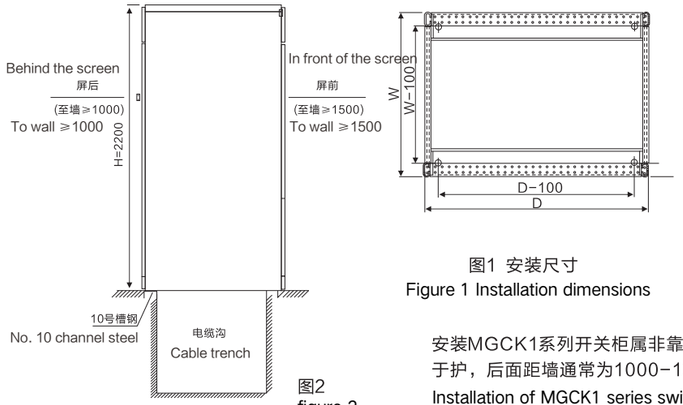


图2 figure 2

	宽（width）	深（depth）	高（high）
抽屉柜 Chest of drawers	600	800 1000	2200
进线柜 Line counters	600 800 1000	800 1000	2200
电容柜 capacitor bank	600 800 1000	800 1000	2200

图1 安装尺寸
Figure 1 Installation dimensions

安装MGCK1系列开关柜属非靠墙垂直安装，其后面为柜体的出线电缆沟，为便于护，后面距墙通常为1000-1200mm，正面距离安装见附图2。

Installation of MGCK1 series switchgear is not to be installed vertically against the wall. The back of the switchgear is the outlet cable trench of the cabinet. For the convenience of protection, the distance from the back to the wall is usually 1000-1200mm. The installation of the front distance is shown in Figure 2.

订货须知 Order notice

客户应提供下列资料：
1、主电路方案单线系统图；
2、原理图或原理接线图；
3、每柜所装电器设备的详细规格及数量；
4、开关柜的排列组合图、平面布置图。
5、进出线方式。
6、开关设备的表面颜色。

The customer should provide the following information:

1. Single-line system diagram of the main circuit scheme:

2. Schematic diagram or principle wiring diagram:

3. Detailed specifications and quantity of electrical equipment installed in each cabinet:

4. Arrangement and combination diagrams and plane layout diagrams of switch cabinets.

5. Ways of incoming and outgoing lines.

6. The surface color of the switchgear.

产品概述 Product description

GGD型交流低压配电柜开关设备适用于发电厂、变电所，工矿企业等电力用户作为交流50Hz，额定工作电压380V，额定电流至3150A的配电系统中作为动力，照明及配电设备的电能转换、分配与控制之用。该产品分断能力高，额定短时耐受电流达50KA。线路方案灵活、组合方便、实用性强、结构新颖等特点。该产品是我国组装式、固定面板开关柜的代表产品之一。该产品符合GB7251.12《低压成套开关设备和控制设备》、IEC60439《低压成套开关设备和控制设备》等标准。

GGD type AC low-voltage power distribution cabinet switchgear is suitable for power users such as power plants, substations, industrial and mining enterprises as power, lighting and power distribution equipment in power distribution systems with AC 50Hz, rated working voltage 380V, and rated current up to 31 50A For the conversion, distribution and control of electrical energy. The product has high breaking capacity, rated short-time withstand current up to 50KA. The line scheme is flexible, easy to combine, strong practicability, novel structure, etc. This product is one of the representative products of my country's assembled and fixed panel switchgear. This product complies with GB7251.12 "Low-Voltage Switchgear and Control Equipment", IEC60439 "Low-Voltage Switchgear and Control Equipment" and other standards.

型号含义 Model meaning

G G D □–□ – □–□

“D”供用电部分“F”发电部分
"D" power supply part "F" power generation part

辅助电路方案代号
Auxiliary circuit scheme code

主电路方案代号
Main circuit scheme code

设计序号：1–分断能力为15KA
2–分断能力为30KA
3–分断能力为50KA
Design serial number: 1–The breaking capacity is 15KA
2– Breaking capacity is 30KA
3– Breaking capacity is 50KA

电力用柜
Power cabinet

电器元件固定安装、固定接线
Fixed installation and fixed wiring of electrical components

低压成套开关设备
Low–voltage switchgear

正常使用环境条件 Normal use environmental conditions

1、环境温度：–5℃~+40℃；24h内的平均温度不高于+35℃；
2、海拔高度：不超过2000m；
3、相对湿度：在最高温度为+40℃时不超过50%，在较低温度时允许有较大的相对湿度；
(例如+20℃时为90%)应考虑到由于温度的变化可能会偶然产生凝露的影响；
4、设备安装时与垂直面的倾斜度不超过5度；
5、设备应安装在无剧烈振动和冲击的地方，以及不足以使电器元件受到腐蚀的场所。

1. Ambient temperature: –5°C~+40°C; the average temperature within 24h is not higher than +35°C;
2. Altitude: no more than 2000m;
3. Relative humidity: no more than 50% when the highest temperature is +40C, and a higher relative humidity is allowed at a lower temperature;
(For example, 90% at +20°C) It should be taken into account that the influence of condensation may occasionally occur due to temperature changes;
4. When the equipment is installed, the inclination of the vertical plane does not exceed 5 degrees;
5. The equipment should be installed in a place without severe vibration and impact, and in a place where the electrical components are not corroded.

主要技术参数 Main technical parameters

1、主要技术参数(见表1)
2、辅助电路方案
辅助电路的设计分供用电方案和发电厂方案两部分。
3、主母线
额定电流在1500A及以下时采用单铜排母线。额定电流大于1500A时采用双铜排母线。母线的搭接面均采用搪锡工艺处理。
1) 水平母线选用(见表2)
2) 中性接地母线选用(见表3)
4、电器元件选择
1)GGD柜主要采用国内已能批量生产的电器元件。如DW17、DZ20、DW15等，柜架断路器也可选用(DW45)、CW1、AE、M、F等，塑壳断路器选用CM1、TM30等国内外较先进的电器元件。
2)HD13BX和HS13BX型旋转操作式刀开关是专为满足MGGD柜独特结构的需要而设计的专用元件，它改变了机构的操作方式，保留了老产品的优点，是一种实用新型的电器元件。
3)如设计部门根据用户需要，选用性能更优良，技术更先进的新型电器元件时，因GGD柜具有良好的安装灵活性，一般不会因更新电器元件造成制造和安装方面的困难。
4)为进一步提高电路的动稳定能力，MGGD柜的母线支撑采用专用的ZMJ型组合式母线夹和绝缘支撑件。母线夹由高强度、高阻燃型PPO复合材料热塑成型，绝缘强度高、自熄性能好，结构独特，只需调整积木式间块即可方便地组合成单母线或双母线夹。绝缘支撑是套筒式模压结构，成本低、强度高、解决了老产品爬电距离不够的缺陷。

1. Main technical parameters (see Table 1)
2. Auxiliary circuit scheme
The design of the auxiliary circuit is divided into two parts: the power supply plan and the power plant plan.
3. Main bus
Single copper busbar is used when the rated current is 1500A and below. When the rated current is greater than 1500A, double copper busbars are used. The overlapping surfaces of the busbars are all treated with tin enamelling process.
1) Selection of horizontal bus (see Table 2)
2) Selecton of neutral grounding bus (see Table 3)

4. Selection of electrical components

1) The GGD cabinet mainly uses electrical components that can be mass-produced in China. Such as DW17, DZ20, DW15, etc., cabinet circuit breakers can also be used (DW45), CW1, AE, M,

F, etc., molded case circuit breakers use more advanced electrical components at home and abroad, such as CM1 and TM30.

2) HD1 3BX and HS13BX type rotary operation knife switch is a special component designed to meet the needs of the unique structure of the MGGD cabinet. It changes the operation mode of the mechanism and retains

In addition to the advantages of the old product, it is a practical new type of electrical component.

3) If the design department selects new electrical components with better performance and more advanced technology according to user needs, because the GGD cabinet has good installation flexibility, it will generally not cause manufacturing and installation difficulties due to updated electrical components.

4) In order to further improve the dynamic stability of the circuit, the bus support of the MGGD cabinet adopts a dedicated ZMJ type combined bus clamp and insulating support. The busbar clamp is made of high-strength, high-flame retardant type

PPO composite material is thermoformed, with high insulation strength, good self-extinguishing performance, and unique structure. It can be easily combined into a single busbar or double busbar clamp by adjusting the building block. The insulating support is a simple molded structure with low cost and high strength, which solves the defect of insufficient creepage distance of old products.

Table 1 表1

型号 Model	额定电压（V）Rated voltage (V)	额定电流（A）Rated current (A)	额定短路开断电流（KA）Rated short-circuit breaking current (KA)	额定短时耐受电流（IS）(KA) Rated short-time withstand current (IS) (KA)	额定峰值耐受电流（KA）Rated peak withstand current (KA)
GGD1	380	A 1000	380	15	30
		B 600(630)			
		C 400			
GGD2	380	A 1500(1600)	380	30	63
		B 1000			
		C 600			
GGD3	380	A 3150	380	50	105
		B 2500			
		C 2000			

Table 2 表2

额定电流（A）Rated current (A)	铜母线规格（mm）Copper bus specifications (mm)
400	40*4
630	50*5
1250	60*10
1600	80*10
2000	2*（60*10）
2500	2*（80*10）
3150	2*（100*10）

Table 3 表3

相导线截面积(mm²) Cross-sectional area of phase conductor (mm²)	PE（N）线截面积（mm²）PE (N) line cross-sectional area (mm²)
500~720	40*5
1200	60*6
>1200	60*10

结构特点 Structural features

1、GGD型交流低压配电成套开关设备的柜体采用通用柜的形式，框架用8MF冷弯型钢局部焊接而成，框架零件及专用配套零件由本公司生产配套供货，以保证柜体的精度和质量。通用柜的零部件按模块原理设计，并有20模数的安装孔，通用系数高。可以使工厂实现预生产。既缩短了生产制造周期，也提高了工作效率。

2、GGD柜设计时充分考虑到柜体运行中的散热问题。在柜体上下两端均有不同数量的散热槽孔，当柜内电器元件发热时，热量上升，通过上端槽孔排出，而冷风不断地由下端槽孔补充进柜，使密封的柜体自下而上形成一个自然通风道，达到散热的目的。

3、GGD柜按照现代工业产品造型设计的要求，采用黄金分割比的方法设计柜体外形和各部分的分割尺寸，使整柜美观大方。

4、柜门用转轴式活动铰链与构架相连、安装、拆卸方便。门的折边处均嵌条有一定的压缩行程，能防止门与柜体直接碰撞，也提高了门的防护等级。

5、装有电器元件的仪表门用多股软铜线与框架相连。柜内的安装件与框架间用滚花垫圈连接，整柜构成完整的接地保护系统。

6、柜体表面采用高压静电喷塑粉工艺处理。具有附着力强，质感好，整柜呈亚光色调，避免了眩光效应，给值班人员创造了较舒适的视觉环境。

7、柜体的顶盖在需要时可拆除，便于现场主母线的装配和调整，柜顶的四角装有吊环，用于起吊和装运。

8、柜体的防护等级为IP30，用户也可根据使用环境的要求在IP20~IP40之间选择。

1. The cabinet of the GGD AC low-voltage power distribution switchgear is in the form of a general cabinet. The frame is partially welded with 8MF cold-formed steel. The frame parts and special supporting parts are produced and supplied by our company to ensure the accuracy of the cabinet. And quality. The parts of the general cabinet are designed according to the principle of the module, and there are installation holes of 20 modules, and the general coefficient is high. Can make the factory realize pre-production. It not only shortens the production cycle, but also improves work efficiency.

2. The GGD cabinet is designed with full consideration of the heat dissipation problem during the operation of the cabinet. There are different numbers of heat dissipation slots on the upper and lower ends of the cabinet. When the electrical components in the cabinet heat up, the heat rises and is discharged through the upper slot, while the cold air is constantly replenished into the cabinet from the lower slot, so that the sealed cabinet is automatically A natural ventilation duct is formed from bottom to top to achieve the purpose of heat dissipation.

3. According to the requirements of modern industrial product design, the GGD cabinet adopts the golden ratio method to design the appearance of the cabinet and the division size of each part, so that the whole cabinet is beautiful and generous.

4. The cabinet door is connected to the frame with a hinge type movable hinge, which is convenient for installation and disassembly. The folding edge of the door is embedded with a fixed compression stroke, which can prevent the door from directly colliding with the cabinet body, and also improve the protection level of the door.

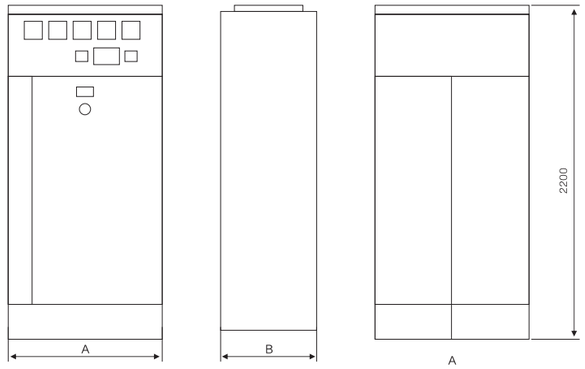
5. The instrument door equipped with electrical components is connected to the frame with multiple strands of soft copper wire. The installation parts in the cabinet and the frame are connected with knurled washers, and the whole cabinet constitutes a complete grounding protection system.

6. The surface of the cabinet is treated with high-voltage electrostatic spray powder process. It has strong adhesion and good texture. The whole cabinet is in matte tones, avoiding the glare effect and creating a more comfortable visual environment for the staff on duty.

7. The top cover of the cabinet can be removed when needed to facilitate the assembly and adjustment of the main busbar on site. The four corners of the cabinet top are equipped with lifting rings for lifting and shipping.

8. The protection level of the cabinet is IP30, and users can also choose between IP20~IP40 according to the requirements of the use environment.

产品外形尺寸和安装图（见图1、图2）
Product dimensions and installation drawings (see Figure 1, Figure 2)



开关柜正面 Front of switch cabinet
开关柜侧面 Side of switch cabinet
开关柜后面 Behind the switch cabinet

mm

产品代号 product code	A	B
GGD 06	600	600
GGD 06A	600	600
GGD 08	800	600
GGD08A	800	800
GGD 10	1000	600
GGD 10A	1000	800
GGD 12	1200	800

图1 外形尺寸图
Figure 1 Dimensions

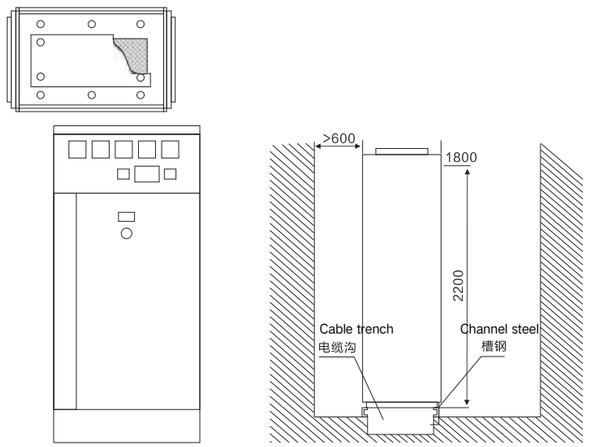
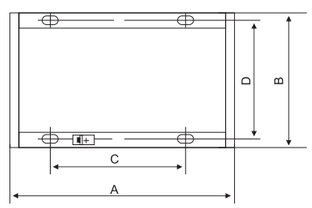


图2 安装尺寸图
Figure 2 Installation dimension drawing



mm

产品代号 product code	A	B	C	D
GGD 06	600	600	450	556
GGD 06A	600	800	450	756
GGD 08	800	600	650	556
GGD08A	800	800	650	756
GGD 10	1000	600	850	556
GGD 10A	1000	800	850	756
GGD 12	1200	800	1050	756

订货须知 Order notice

用户订货时应提供如下资料：

1、产品的全型号(包括主电路方案和辅助电路方案号)。
2、主电路系统组合顺序图。
3、柜体平面布置图。
4、辅助电路电气原理图。
5、柜内元器件名称、型号、规格、清单。
6、其它与产品正常使用条件不符的特殊要求。

The user should provide the following information when ordering:

1. The full model of the product (including the main circuit scheme and the auxiliary circuit scheme number).
2. The combination sequence diagram of the main circuit system.
3. The floor plan of the cabinet.
4. Electrical schematic diagram of auxiliary circuit.
5. Name, model, specification and list of components in the cabinet.
6. Other special requirements that are inconsistent with the normal use conditions of the product.

户外配电箱
Outdoor distribution box

户外四回路电表箱
Outdoor four-circuit meter box

户外六回路电表箱
Outdoor six-circuit meter box

户外挂墙式配电箱
Outdoor wall-mounted distribution box

户外挂墙式配电箱
Outdoor wall-mounted distribution box

户外落地式配电箱
Outdoor floor type distribution box

户外落地式配电箱
Outdoor floor type distribution box

低压应急电源快速连接器
Low voltage emergency power quick connector

产品概述 Product description

为确保城市住宅小区、重要用户的抢修快速供电，现有低压成套开关设备预留/加装快速　应急接入装置可大大节约应急供电准备时间，提高供电安全性及可靠性。 本产品广泛应用于电源测试、发电车、应急电源车、配电柜、电力分配等场景。

In order to ensure rapid power supply for emergency repairs in urban residential quarters and important users, the reservation/installation of rapid emergency access devices for existing low-voltage switchgear can greatly save the preparation time for emergency power supply and improve the safety and reliability of power supply. This product is widely used in power supply testing, power generation vehicles, emergency power supply vehicles, power distribution cabinets, power distribution and other scenarios.

正常使用环境条件 Normal use environmental conditions

a) 海拔高度：≤2000m

b) 环境温度：-30℃ ~ +100℃

箱体内最高温度不高于90℃

c) 污秽等级：≤IV级

d) 日照强度：0.1W/cm²

e) 最大覆冰厚度：10mm

f) 最大风速：小于25m/s

g) 抗震能力：地面水平加速度0.3g.垂直加速度0.15g同时作用持续三个正弦波

安全系数 1.67

h) 安装环境：户外；无易燃、爆炸危险、化学腐蚀及剧烈振动的场所

a) Altitude: ≤2000m

b) Ambient temperature: -30℃ ~ +100℃

The maximum temperature in the box is not higher than 90 ℃

c) Pollution level: ≤ IV level

d) Sunlight intensity: 0.1W/cm²

e) Maximum ice thickness: 10mm

f) Maximum wind speed: less than 25m/s

g) Anti-seismic capability: the ground horizontal acceleration is 0.3g, and the vertical acceleration is 0.15g simultaneously for three sine waves.

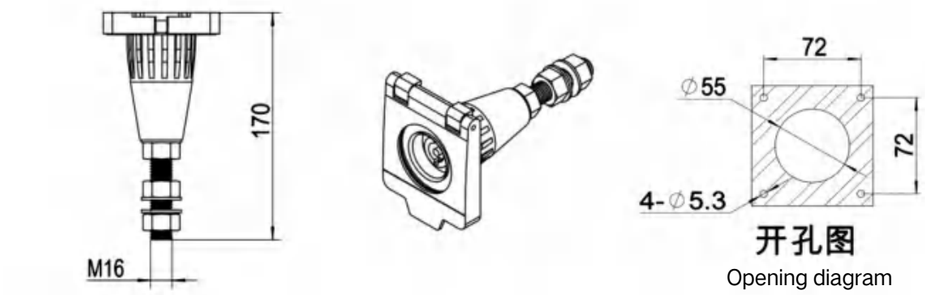
Safety factor 1.67

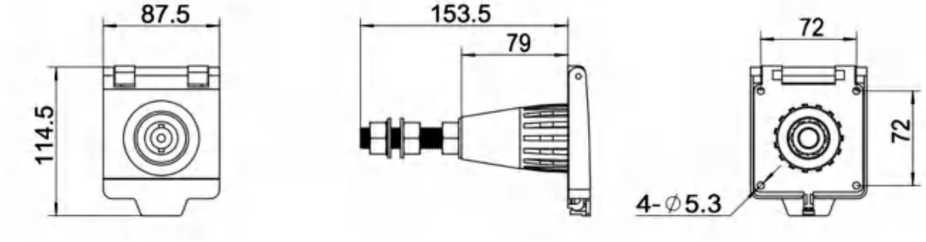
h) Installation environment: outdoor; places without flammability, explosion hazard, chemical corrosion and severe vibration

主要技术参数 Main technical parameters

序号 number	名称 name	单位 unit	数据 data
1	额定电压	V	400/230
2	额定电流	A	630
3	接触电阻	μ Ω	≤25
4	防护等级		IP66

外形及安装尺寸 Outline and Installation Dimension





产品概述 Product description

JXF1系列配电箱是一种根据元件型号、规格、数量设计组装成各种控制功能的配电装置。产品广泛应用工业及民用建筑中，额定电压380V及以下，频率为50Hz的电力系统中作动力配电、照明配电及自动化控制。

JXF1系列产品为封闭式结构，挂墙明装或暗装于墙体内。箱体采用冷轧钢板折弯焊接而成，表面采用静电喷塑处理，既美观又具有防护性能。箱门与箱体都焊有接地螺钉并用多股软线连接，具有良好的接地保护。产品外壳防护等级可达IP54，符合GB7251.3-2006及IEC60439-1等标准。

The JXF1 series distribution box is a power distribution device designed and assembled into various control functions according to the type, specification and quantity of the components. The products are widely used in industrial and civil buildings, and are used for power distribution, lighting distribution and automation control in power systems with a rated voltage of 380V and below and a frequency of 50Hz.

The JXF1 series of products are of closed structure, wall-mounted, exposed or concealed in the wall. The box body is made of cold-rolled steel plate by bending and welding, and the surface is treated with electrostatic spray, which is both beautiful and protective. Both the box door and the box body are welded with grounding screws and connected with multi-stranded cords, which has good grounding protection. The protection level of the product shell can reach IP54, which meets the standards of GB7251.3-2006 and IEC60439-1.

外形尺寸 Dimensions

型号 model	铁料厚度 Iron thickness	外形尺寸 Dimensions			安装尺寸 Installation size		底板 Bottom plate		门锁数量 Number of door locks
		高 high	宽 width	深 deep	高 high	宽 width	高 high	宽 width	
JXF- 2520/14	1.2	250	200	140	290	150	170	158	1
JXF-3025/14	1.2	300	250	140	340	200	220	208	1
JXF-3025/18	1.2	300	250	180	340	200	220	208	1
JXF-3030/14	1.2	300	300	140	340	250	220	258	1
JXF-3030/18	1.2	300	300	180	340	250	220	258	1
JXF-4030/14	1.2	400	300	140	440	250	320	258	1
JXF-4030/20	1.2	400	300	200	440	250	320	258	1
JXF-5040/14	1.5	500	400	140	540	350	420	358	1
JXF-5040/20	1.5	500	400	200	540	350	420	358	1
JXF-5040/23	1.5	500	400	230	540	350	420	358	1
JXF-6040/14	1.5	600	400	140	640	350	520	358	2
JXF-6040/20	1.5	600	400	200	640	350	520	358	2
JXF-6040/23	1.5	600	400	230	640	350	520	358	2
JXF1-6050/14	1.5	600	500	140	640	450	520	458	2
JXF1-6050/20	1.5	600	500	200	640	450	520	458	2
JXF1-6050/23	1.5	600	500	230	640	450	520	458	2
JXF1- 7050/16	1.5	700	500	160	740	450	620	458	2
JXF1- 7050/20	1.5	700	500	200	740	450	620	458	2
JXF1- 7050/23	1.5	700	500	230	740	450	620	458	2
JXF1-8060/20	1.5	800	600	200	840	550	720	558	2
JXF1 -8060/23	1.5	800	600	230	840	550	720	558	2
JXF1-8060/25	1.5	800	600	250	840	550	720	558	2
JXF1-10080/20	1.5	1000	800	200	1040	750	920	758	2
JXF1-10080/25	1.5	1000	800	230	1040	750	920	758	2
JXF1-10080/30	1.5	1000	800	260	1040	750	920	758	2

JXF1系列配电箱是在JXF基础上的重新设计改进。性能优于JXF型。产品具有结构新颖、外形美观、安装方便等优点。

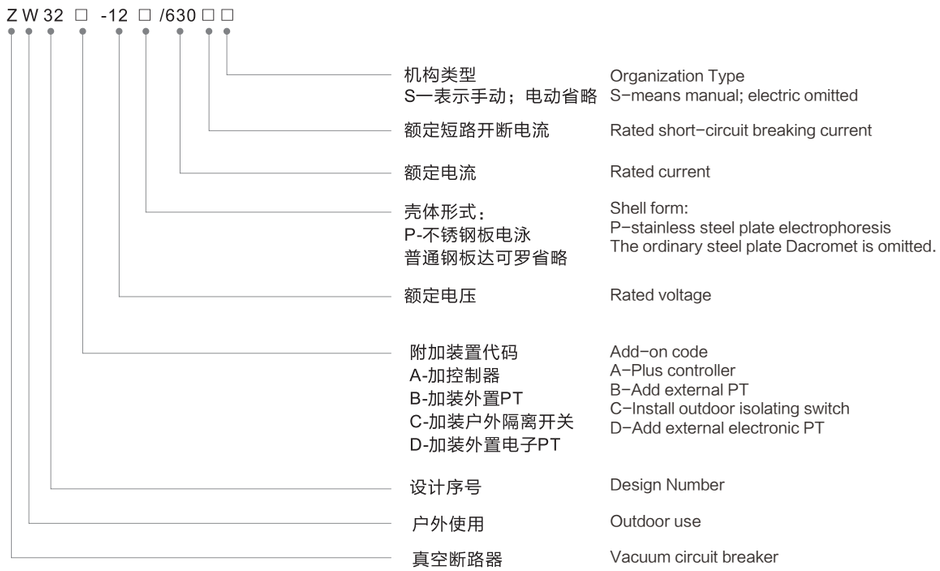
The JXF1 series distribution box is a redesign and improvement on the basis of JXF. Performance is better than JXF type. The product has the advantages of novel structure, beautiful appearance and convenient installation.

产品概述 Product description

ZW32□-12□／630-□□户外交流高压真空断路器(以下简称断路器)为额定电压12kv、三相交流50Hz的户外设备。主要用于开断、关合配电系统中的负荷电流、过载电流及短路电流。适用于变电站及工矿企业配电系统中作保护和控制之用，及农村电网频繁操作的场所。也可作为电网的分段开关，加装控制器后，可实现配网自动化。

ZW32 port-12 port/630-00 outdoor AC high voltage vacuum circuit breaker (hereinafter referred to as the circuit breaker) is an outdoor equipment with a rated voltage of 12kv and a three-phase AC 50Hz. Mainly used for breaking and closing load current, overload current and short-circuit current in power distribution system. It is suitable for protection and control in substations and power distribution systems of industrial and mining enterprises, and places where rural power grids are frequently operated. It can also be used as a section switch of the power grid. After installing a controller, it can realize the automation of the distribution network.

型号含义 Model meaning



例：ZW12C-12P／630-20表示户外交流高压真空断路器、加户外隔离开关、电泳不锈钢外壳、电动机构、额定开断电流为20KA。

Example: ZW12C-12P / 630-20 means outdoor AC high voltage vacuum circuit breaker, outdoor isolation switch, electrophoresis stainless steel housing, motor mechanism, and rated breaking current of 20KA.

引用标准 Reference Standard

Gb1984《交流高压真空断路器》
GB11022《高压开关设备通用技术条件》
GB311.1《高压输变电设备的绝缘配合》
DL/T593《高压开关设备的共用订货技术条件》
DL/T402《交流高压断路器订货技术条件》
GB2706《交流高压电器动、热稳定试验方法》
GB3309《高压开关设备在常温下的机械试验》
DL403《10~35KV户内高压真空断路器订货技术条件》

Gb1984 "AC High Voltage Vacuum Circuit Breaker"
GB11022 "General Technical Requirements for High Voltage Switchgear"
GB311.1 "Insulation coordination of high-voltage power transmission and transformation equipment"
DL/T593 "Common Ordering Technical Conditions for High Voltage Switchgear"
DL/T402 "Technical Conditions for Ordering AC High Voltage Circuit Breakers"
GB2706 "Test Method for Dynamic and Thermal Stability of AC High Voltage Electrical Apparatus"
GB3309 "Mechanical Test of High Voltage Switchgear at Room Temperature"
DL403 "10~35KV Indoor High Voltage Vacuum Circuit Breaker Ordering Technical Conditions"

使用的环境条件 Environmental conditions used

a. 海拔高度不超过2000米；
b. 周围空气温度：-45℃~+47.5℃； 日温差：日变化25℃；
c. 风速不大于35m/s；
d. 无易燃、易爆炸危险化学腐蚀及剧烈振动的场所。

a. The altitude does not exceed 2000 meters;
b. Ambient air temperature: −45° C~+47.5° C; Daily temperature difference: daily change of 25° C;
C. The wind speed is not more than 35m/s;
d. There is no place where there is flammable, explosive, chemical corrosion and severe vibration.

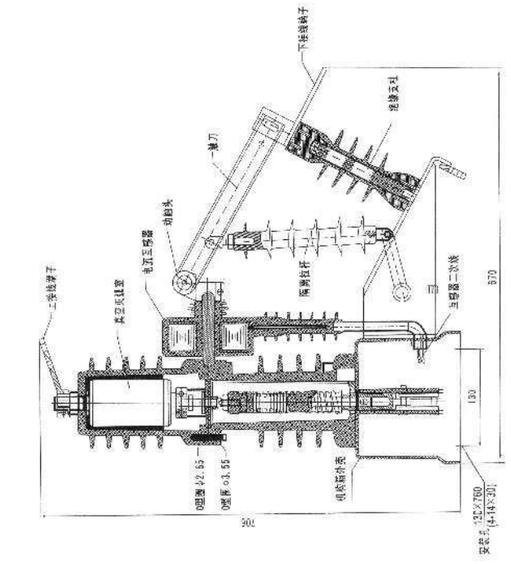
主要技术参数 Main technical parameters

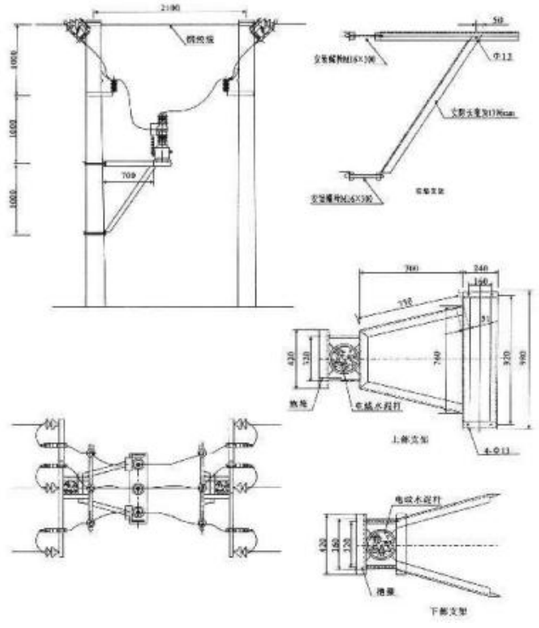
项目 project	单位 unit	数据 data
额定电压 Rated voltage	KV	12
额定频率 Rated frequency	Hz	50
额定电流 Rated current	A	630
额定短路开断电流 Rated short-circuit breaking current	KA	20
额定峰值耐受电流（峰值） Rated peak withstand current (peak value)	KA	50
额定短时耐受电流 Rated short-time withstand current	KA	20
额定短路关合电流（峰值） Rated short-circuit making current (peak value)	KA	50
机械寿命 Mechanical life	次	10000
额定短路开断电流开断次数 Rated short-circuit breaking current breaking times	次	30
额定操作顺序 Rated operating sequence	分-0.3s-合-180s-合分 Split-0.3s-close-180s-close	
工频耐压(1min)：(湿)(干)相间、对地/断口 Power frequency withstand voltage (1min): (wet) (dry) phase to phase, to ground/fracture	KV	34/42/48
雷电冲击耐受电流(峰值)相间、对地/断口 Lightning impulse withstand current (peak value) phase to phase, to ground/fracture	KV	75/85
二次回路1min工频耐压 1min power frequency withstand voltage of secondary circuit	KV	2

机械特性 Mechanical properties

参数名称 parameter name	单位 unit	数据 data
触头开距 Contact opening distance	mm	9±1
触头超行程 Contact overtravel	mm	2±0.5
分闸速度 Opening speed	mm	1.2±0.2
合闸速度 Closing speed	m/s	0.6±0.2
触头合闸弹跳时间 Bounce time of contact closing	m/s	≤2
相间中心距离 Center distance between phases	ms	340±1.5
三相分合闸不同期性 Three-phase opening and closing in different periods	mm	≤2
各相导电回路电阻 Conductive loop resistance of each phase	ms	≤80
合闸时间 Closing time	μΩ	25~60
分闸时间 Opening time	ms	20~45

外形及安装尺寸
Dimensions and installation drawings





系列户外高压真空断路器

Series outdoor high voltage vacuum circuit breaker

产品概述 Product description

ZW20A−12型户外高压交流真空断路器(以下简称断路器)为额定电压12kV，三相交流50Hz的户外配电设备。它采用真空灭弧和SF6气体作为绝缘介质，是ZW20−12型柱上真空断路器改进型产品。箱体采用了VSP5的气体密封，防爆，绝缘结构技术，进出线导管也进行了密封性能改进，整体密封性能优良，内部充装的SF6气体不泄漏，不受外界环境影响，其弹簧操作机构进行了小型化设计和可靠性和稳定性优化，采用直动链条主动和多级脱扣系统，动作可靠性和稳定性比国内传统的弹簧操作机构提高了好几倍；主回路的轴与套之间的接触采用了内收外张式表链结构，主回路的接触电阻小，温升低。所以，ZW20A−12型户外柱上真空断路器是一种免维护产品，是柱上断路器中的佳品。

ZW20A−12较ZW20−12还增加了过流保护，机构弹簧储能指示，并配备航空插座作二次电气连接，便于与智能化控制器相结合。

优良的电气和机构性能，使ZW20A−12型户外柱上真空断路器得到广泛的应用。主要用于开段、关合10kV电力系统的负荷电流及短路电流，适用于变电站及工矿企业配电系统中作保护和控制之用，更适用于电网频繁操作的场合。本产品与控制器配套，具有优良的重合器功能，能满足配电自动化系统要求。

本产品主要符合以下标准：

GB1984 高压交流断路器

GB/T11022 高压开关设备及控制设备标准的共用技术要求

The ZW20A−12 outdoor high voltage AC vacuum circuit breaker (hereinafter referred to as the circuit breaker) is an outdoor power distribution equipment with a rated voltage of 12kV and a three−phase AC 50Hz. It uses vacuum arc extinguishing and SF6 gas as the insulating medium, and is an improved product of the ZW20−12 post vacuum circuit breaker. The box adopts VSP5 gas sealing, explosion−proof and insulating structure technology, and the sealing performance of the inlet and outlet conduits has also been improved. The overall sealing performance is excellent. The SF6 gas filled inside does not leak and is not affected by the external environment. Its spring operating mechanism is used. With a miniaturized design and optimization of reliability and stability, the direct−acting chain active and multi−stage tripping system is adopted, and the reliability and stability of action are several times higher than that of the traditional domestic spring operating mechanism: between the shaft and the sleeve of the main circuit The contact adopts the inner retractable and outer open bracelet structure, the contact resistance of the main circuit is small, and the temperature rise is low. Therefore, the ZW20A−12 outdoor pole−mounted vacuum circuit breaker is a maintenance−free product, and it is the best product among the pole−mounted circuit breakers.

Compared with ZW20−12, ZW20A−12 also adds over−current protection, mechanism spring energy storage indicator, and is equipped with aviation socket for secondary electrical connection, which is easy to combine with intelligent controller.

Excellent electrical and mechanical performance, so that the ZW20A−12 outdoor column. Vacuum circuit breaker has been widely used. It is mainly used to open and close the load current and short−circuit current of 10kV power system. It is suitable for protection and control in substations and industrial and mining enterprise power distribution systems, and is more suitable for occasions where the power grid is frequently operated. This product is matched with the controller and has an excellent recloser function, which can meet the requirements of the power distribution automation system.

This product mainly meets the following standards:

GB 1 984 high voltage AC circuit breaker

GB/T11022 Common technical requirements for high−voltage switchgear and control equipment standards

型号含义 Model meaning

Z W 20A −12 / F □ − □

额定短路开断电流	Rated short−circuit breaking current
额定电流(A)	Rated current (A)
分界开关	Demarcation switch
额定电压	Rated voltage
设计序号	Design Number
户外	outdoor
真空断路器	Vacuum circuit breaker

基本功能及特点 Basic functions and features

此开关可实现以下功能：速断保护、过流保护、三次重合闸、事件记录、防涌流保护、零序保护、实时时钟、重合闸后加速、实时状态查询、智能掌上电脑控制、本地/远程设置定值、故障主动上报、GSM短消息功能。

This switch can realize the following functions: quick−break protection, over−current protection, triple reclosing, event recording, anti−surge protection, zero−sequence protection, real−time clock, acceleration after reclosing, real−time status query, smart handheld computer control, local/remote setting Fixed value, active fault reporting, GSM short message function.

使用环境 Use environment

1. 海拔高度：不超过3000米。
2. 环境温度：最高温度+40℃，最低温度－40℃，日温差25℃。
3. 风压不超过700Pa；
4. 污秽等级：IV级；
5. 覆冰厚度：100mm；
6. 安装场所：无易燃、爆炸危险、化学腐蚀的场所；
7. 地震烈度：不超过8度。

1. Altitude: not more than 3000 meters.
2. Ambient temperature: the highest temperature is +40C, the lowest temperature is −40° C, and the daily temperature difference is 25° C.
3. The wind pressure does not exceed 700Pa;
4. Pollution level: Level IV;
5. Icing thickness: 100mm;
6. Installation site: a place free from flammability, explosion hazard, and chemical corrosion;
7. Earthquake intensity: no more than 8 degrees.

主要技术参数 Main technical parameters

序号 number	名称 name		单位 unit	参数 parameter	
1	额定电压 Rated voltage		KV	12	
2	额定频率 Rated frequency		Hz	50	
3	额定电流 Rated current		A	630	1000
4	额定短时开断电流 Rated short-time breaking current		KA	20	25
5	额定峰值耐受电流 Rated peak withstand current		KA	50	63
6	额定短时耐受电流 Rated short-time withstand current		KA	20	25
7	额定短路关合电流 Rated short-circuit making current		KA	50	63
8	额定操作顺序 Rated operating sequence			分-0.3s-合分-180s-合分 Split-0.3s-Combined Split-180s-Combined Split	
9	额定短路持续时间 Rated short-circuit duration		S	4	
10	机械寿命 Mechanical life		次	10000	
11	额定电流开断次数 Rated current breaking times		次	10000	
12	额定短路开断次数 Rated short-circuit breaking times		次	30	
13	工频耐压1min	（湿）相间，对地 (Wet) alternately, on the ground	KV	34	
		（干）相间，对地/断口 (Dry) phase to phase, to ground/fracture	KV	42/48	
14	雷电冲击耐受电流相间、对地/断口 Lightning impulse withstand current phase to phase, to ground/fracture		KV	75/85	
15	二次回路1min工频耐压 1min power frequency withstand voltage of secondary circuit		V	2000	

外形及安装尺寸 Dimensions and installation drawings