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GDSGR

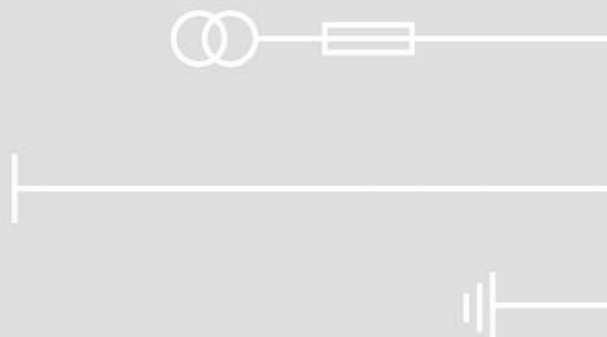
环保气体绝缘环网柜 GDSGR of Safe Gas Ring Main Unit

厦门顾德益电器有限公司 Xiamen Good EP Electrical Co.,Ltd.

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公司简介 Company Profile

厦门顾德益电器有限公司 (www.gudep.com) 成立于 2008 年 6 月, 属民营高科技企业, 目前注册资金 3000 万元人民币, 厂房面积 17000 平方米。我司专业生产中高压智能电气产品, 专业专注为电力开关厂服务。目前开关元器件拥有固体绝缘系列、固封极柱系列、充气柜系列、SF6 开关壳体系列、40.5kV 成套绝缘件以及其他绝缘元件系列等六大系列产品。集新产品技术开发、来图来样加工、生产、技术培训、销售服务于一体的科技型公司, 是一家高技术、高品质电气产品的制造商及服务商。

厦门顾德益的使命 缔造绿色绝缘、保障开关安全、为促进电气事业的快速发展而努力奋斗!

厦门顾德益的愿景: 成为世界一流的绝缘元件制造商、成为世界一流的电气行业服务商!

厦门顾德益以“创新科技、以人为本”为经营管理理念。汇集并培养了一批长期从事电力产品研发的专业团队; 为客户提供质优价廉的电气产品。始终秉承以市场为导向、以客户为核心、以技术服务社会、以创新开拓市场、以品质及服务赢得客户的信任和尊重。

厦门顾德益创始人自 1995 年从事电力电气行业, 研发团队在电力电气行业长期专注技术开发, 探索世界先进水平并与国外电力市场接轨。例如, 管理团队经验丰富, 制造团队精益求精, 销售团队敬业强大。始终坚持现代化的管理, 制造出优质的产品; 精心打造“创新科技、只能领先”的“GOODEP”电工电气品牌, 为国家、为民族、为世界电力事业的发展做出更多、更大的贡献。

Xiamen Good EP Electrical Co.,Ltd.(www.gudep.com) was founded in June,2008. It is a high technology privately operated company, which with a registered capital of 30 million yuan and factory area of 17,000 Square meters. We specialized in producing middle-high voltage intelligent electrical products and serving the electric switchgear companies. At present, we have six series of products of switch components, namely solid insulated series, enveloped pole series, C-GIS series, SF6 switch shell series, 40.5kV insulation part and other insulated component series. Good EP is not only a technology company integrating technological development of new products, processing based on customers' samples and drawings, production, technical training and sales service, but also a manufacturer and service provider of high-tech and high-quality electrical products.

Our mission is to develop and produce environmentally-friendly insulated products, to guarantee the safety of switch products and dedicated in promoting the fast development of electric industry.

Our vision is to be the first-class insulated components manufacturer and a world-leading electric service provider.

We always uphold the concept of people-oriented and technological innovation-driving management. We gathered and trained a team of professionals who have long been working on research and development of electrical products, so we can provide our customers high-quality electrical products with reasonable price. We earned our customers' trust and respect by consistently adhering to the development principle of market-oriented, customer-centered, serving the community with technologies, exploring market with innovation and by providing high-quality products and services.

The founder of GOOD EP has been engaged in electricity and power industry since 1995 while our R&D team have long devoted themselves in technological development. We are reaching for advanced world levels and trying to integrate with overseas electric market. In addition, our management team is full of rich experience, our manufacturing team cautious and conscientious and our sales team devoted and powerful. Always insisting on modernized management, we produce high-quality products, deliberately establish "GOODEP" as an electrical brand featuring technological innovation, leading products and services, and trying to make great contributions to the development of electric industry in China and abroad.



概述 General Introduction



20 世纪 50 年代以来，中压开关设备发展经历了敞开式、箱式、金属封闭式等阶段，在满足设备的功能性使用要求方面已经不存在任何问题，而且产品早已系列化和使用范围全覆盖。体积小、免维护、高模块化、安全可靠的环保气体绝缘环网柜快速发展，可实现对电力系统配电网络的远程监测、控制、管理，实现了电网优化、用电安全、电能管理、节能降耗的需求；系统同时可广泛应用于交通、工厂、医院、学校、建筑、住宅小区及商用写字楼等智能配电领域。

GDSGR-12 序列环保气体绝缘环网柜全面引进先进的生产设备及制造技术，实现本地化生产，大大降低了制造成本，缩短了交货周期，推出后深受用户好评。

Since 1950s, the development of medium-voltage switchgear have experienced several stages including open style, box type, metal enclosed type and other types. It is undoubted that the latest version of medium-voltage switchgear is qualified in meeting the functional requirements from any aspects, and the products have already been serialized and fully covered. The fast development of the small-size, maintenance-free, high-modular, safe and reliable environmental-friendly gas insulated ring main unit(RMU) can not only realize the remote monitoring, control and management of power system distribution network, but also make the demand of optimizing power grid, safety utilization of electricity, managing power, saving energy and reducing consumption come true. The system can be widely used in transportation, factories, hospitals, schools, buildings, residential district and commercial office buildings and other intelligent distribution areas as well.

We have introduced a whole set of advanced production equipment and manufacturing technologies in GDSGR - 12 series of environmental-friendly gas insulated RMU, which entitled us to localized production, to achieve greatly manufacturing costs reduction, to shorten the delivery cycle and received wide acclaims after launching it.



产品特点 Product Features

● 功能复合、一体化产品

开关设备的充气壳体采用高品质的厚 2.5mm 不锈钢板通过激光焊接而成，保证气箱密闭可靠性，机械强度高，耐腐蚀性好，充气壳体的防护等级达到 IP67；气箱装有防爆膜片，能有效防止气压过高时对人及设备造成的损害；将全部导电部件封闭在气箱当中，既能避免外界环境因素的影响，又能提高运行可靠性，使其具备免维护（或少维护）的功能，同时还能符合体积小小型化要求。

主回路采用三工位开关（接通 + 隔离 + 接地）和真空灭弧室组合，该结构是目前技术最成熟的配置方式，特别适合目前电网运行维护需求。

● 环保、无污染

GDSGR-12 序列充气柜的绝缘介质是零级干燥空气（外购）或符合 GB/T 8979-2008 的 99.99% 纯 N₂，气体的泄露对外界环境不会造成任何影响，无需进行任何回收处理。

● 完善的机械连锁

GDSGR-12 序列充气柜的操作面板具有完善的五防机械连锁功能，所有的连锁功能都在内部已配置好，操作时请按操作说明顺序操作，使用非常方便。

● 灵活的拓展化设计

GDSGR-12 序列充气柜为模块化设计，可以将各种模块通过专用的母线连接件，实现多样化的单元组合，最大限度的满足中国各个地方复杂多样的配电设计方案。

Multi-functional & Integrated Product

The inflatable shell of switchgear is made of high quality 2.5mm-thick stainless steel plate by laser welding. To ensure its airtight reliability, high mechanical strength, good corrosion-resistance and the grade of inflatable shell protection to achieve IP67; the gas box is equipped with explosion-proof diaphragm, which can effectively prevent the damage to people and equipment when internal pressure is too high; all conductive parts are enclosed in the air tank, which can not only avoid the impact of external environmental factors, but also improve the operational reliability, so that it can be maintenance-free (or less maintenance) and can meet the requirements of small size at the same time.

The main circuit is combined with a three-position switch (connecting + disconnecting + grounding) and the vacuum interrupter. This structure is perfectly suitable for the operation and maintenance needs of current power grid because its structure is configured with the most mature technologies.

Environmental Friendly & Pollution Free

The insulation medium of GDSGR-12 series gas filled tank is zero-level dry air (outsourcing) or 99.99% pure N₂ that in line with GB/t 8979-2008. The gas leakage will not cause any impact to external environment, therefore no recycling work is needed.

Complete Mechanical Interlock

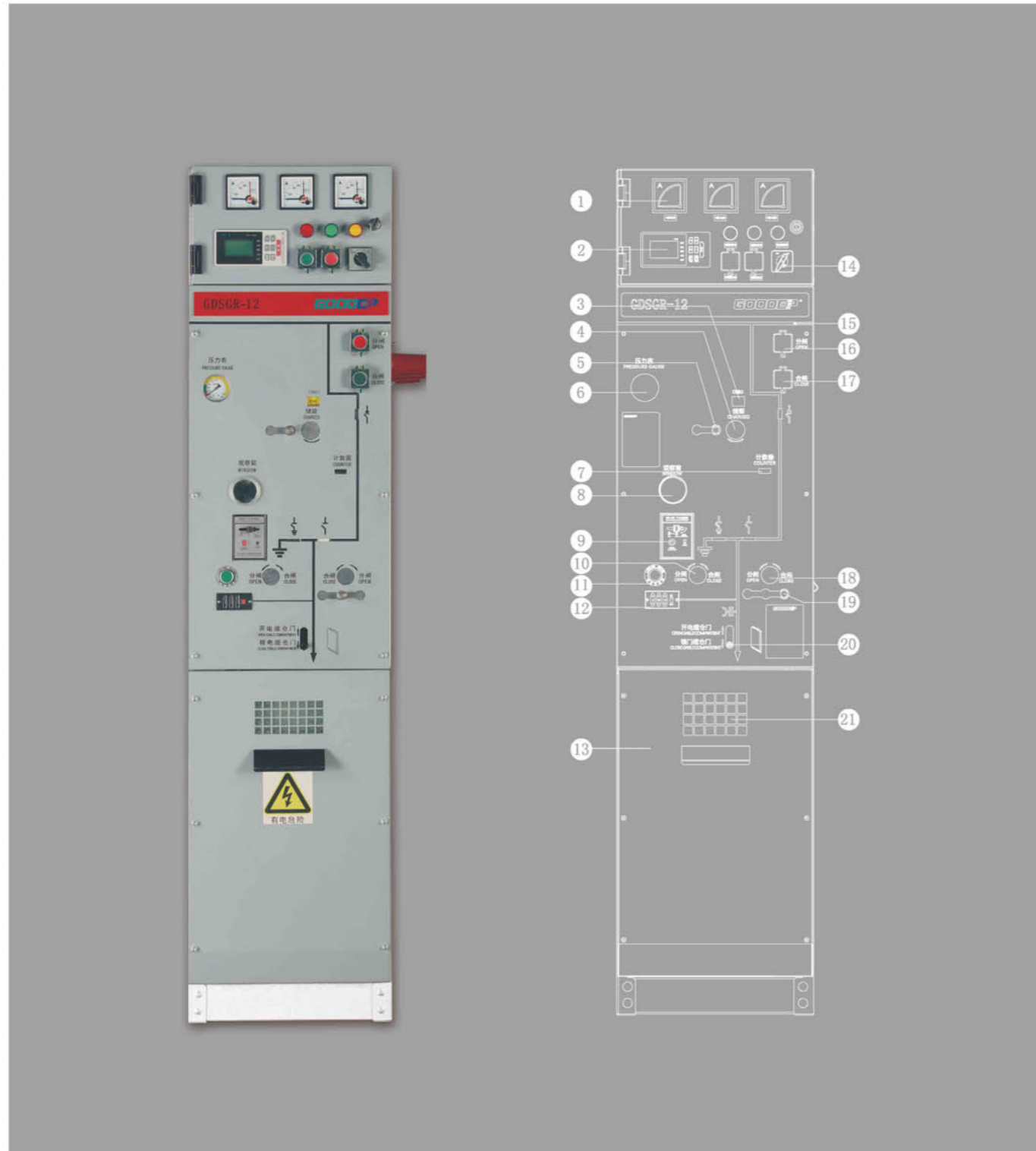
The operation panel of GDSGR-12 series gas filled tank has a perfect mechanical interlock function that is water-proof, fire-proof, lighting-proof, snow-proof and against small animals, which have been well configured in the internal system. Therefore, you can use the product smoothly if only the instructions are followed.

Flexible & Suitable Design

The design of GDSGR-12 series environment-friendly gas filled tank adopted modular design which is to connect a variety of modules through a dedicated busing to achieve diversified unit combinations, thus to meet the most complex and diverse distribution design schemes in various parts of China.



产品结构 Product Structure

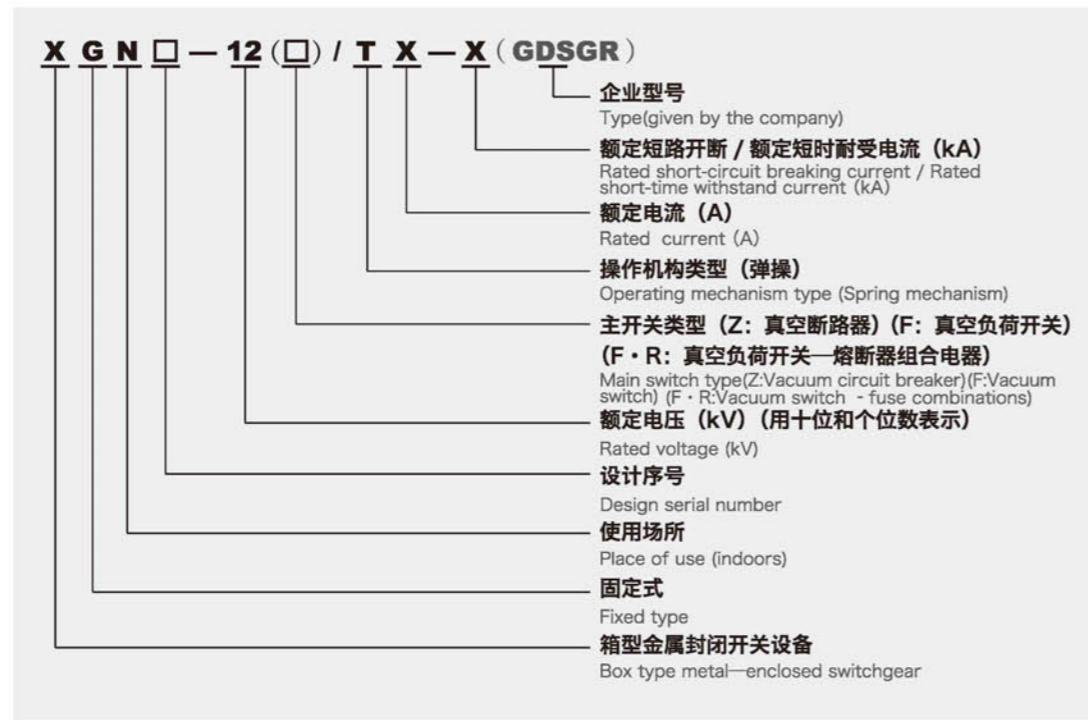


- 1. 电流表**
- 2. 微机综合保护装置**
- 3. 主开关储能指示**
观察主开关储能指示可以掌握主开关操作机构的储能情况
- 4. 储能操作孔**
利用操作手柄转动储能机构轴，令主开关操作机构储能。
- 5. 储能操作孔挂锁装置**
挂锁装置联动的挂锁板将储能操作孔遮挡，只有拨动挂锁装置才可以将操作手柄插入操作孔。不操作时可配置挂锁，防止非授权人员误操作。
- 6. 气压表**
显示气箱内部相对外部的气压值。
- 7. 计数器指示**
指示主开关操作机构的累积分闸次数。
- 8. 观察窗**
通过此观察窗，可以看到接地开关的分合闸情况以及隔离开关是处于合闸还是分闸
- 9. 接地电磁锁**
使开关只要在不带电的情况下，才能对接地开关进行操作
- 10. 接地开关操作孔**
利用操作手柄转动接地开关操作轴，可对接地进行分、合闸操作
- 11. 照明灯按钮**
通过观察窗照明按钮控制照明灯的开关。
- 12. 容性带电指示器**
带电指示器显示套管是否带电，指示灯下方三个插口可用于二次核相。带电指示器设置开关按钮，有效延长了使用寿命。
- 13. 电缆室门**
- 14. 远方 / 就地转化开关**
通过远方 / 就地转化开关实现设备所在地的控制和后台控制之间的控制方式的转换。
- 15. 模拟线路图**
指示主开关及接地开关处于合闸还是分闸
- 16. 主开关分闸按钮**
可通过分闸按钮对主开关进行分闸操作
- 17. 主开关合闸按钮**
可通过合闸按钮对主开关进行合闸操作
- 18. 隔离开关操作孔**
利用操作手柄转动隔离开关操作轴，可对隔离开关进行分、合闸操作
- 19. 隔离开关操作孔和接地开关操作孔挂锁装置**
挂锁装置联动的挂锁板将接地开关操作孔或隔离操作孔遮挡，只有拨动挂锁装置才可以将操作手柄插入接地开关操作孔或隔离开关操作孔。不操作时可配置挂锁，防止非授权人员误操作。
- 20. 柜门联锁装置**
电缆室门与接地开关互锁。当装有互锁机构时，只有在接地开关处于接地合闸以及柜门联锁拉至解锁位置，电缆室门才可打开，柜门打开后，开关将无法操作。
- 21. 电缆室观察窗**

- 1.Ammeter**
- 2.Micro-computer integrated protection device**
- 3.Main switch energy-storage indicator**
To know the energy-storage of main switch operation mechanism by observing the indicator.
- 4.Energy-Storage Operation Hole**
Store energy for main switch operation mechanism by using the operation handle to rotate energy storage mechanism shaft.
- 5.Padlock Device for Energy Storage Operation Hole**
The padlock plate that in linkage with padlock device shield the Hole, so that the operation handle can be inserted in the Hole only when the padlock device is stroked. And the device should be padlocked to prevent unauthorized personnel operate wrongly.
- 6.Barometer**
Display the internal air pressure value relative to the outside of the air box.
- 7.Counter Indicator**
Indicate the cumulative opening/closing frequency of main switch operation mechanism.
- 8.Observation Window**
Observe the closing/opening position of grounding switch and disconnecter switch through this observation shaft.
- 9.Grounding Electromagnetic Lock**
The grounding switch can be operated only if the switch is not charged.
- 10.Grounding Switch Operation Hole**
Operate opening/closing control of grounding switch by using the operation handle to rotate the operation shaft of grounding switch.
- 11.Isolated Lighting Button**
The lamp of observation window is controlled by the Lighting button.
- 12.Capacitive Charging Indicator**
The charging indicator shows whether the bushing is charged, and three sockets below the indicator can be used in secondary checking phase. The charging indicator set switch button, which can effectively prolong its service life.
- 13.Cable Chamber Door**
- 14.Remote/Local Conversion Switch**
To convert the control mode from the equipment location control to the background control through the remote/local conversion switch.
- 15.Analog Circuit Diagram**
Indicate the state of main switch and grounding switch is opened or closed.
- 16.Opening Button of Main Switch**
Operate opening control of main switch through the opening button.
- 17.Closing Button of Main Switch**
Operate closing control of main switch through the closing button.
- 18.Disconnector Switch Operation Hole**
Operate opening/closing control of disconnecter switch by using the operation handle to rotate the operation shaft of isolated switch.
- 19.Padlock Device of Disconnecter Switch Operation Hole and Grounding Switch Operation Hole**
The padlock plate that in linkage with padlock device shield the isolated switch operation hole or ground switch operation hole, so that the operation handle can be inserted in the disconnecter switch operation hole or ground switch operation hole only when the padlock device is stroked. And the device should be padlocked to prevent unauthorized personnel operate wrongly.
- 20.Interlock Device of Cabinet Door**
The cable chamber door interlock with grounding switch. When the interlock mechanism is installed, only when the grounding switch is in closing state and the cabinet door interlock at unlock position, the cable chamber doors can be opened and once the doors are open, the switch will not be able to operate.
- 21.Observation Window of Cable Chamber**



型号说明 Model Designation



注: 企业型号定义如下

- GDSGR-E-V:** 可扩展断路器方案
- GDSGR-E-C:** 可扩展负荷开关方案
- GDSGR-E-T:** 可扩展负荷开关—熔断器组合电器方案
- GDSGR-V/C/C:** 不可扩展断路器+负荷开关+负荷开关三单元共箱方案

Note: Enterprise Model Definition as follows

- GDSGR-E-V:** Extensible Circuit Breaker Solution
- GDSGR-E-C:** Extensible Load Switch Solution
- GDSGR-E-T:** Extensible Load Switch-Fuse Combined Electrical Apparatus Solution
- GDSGR-V/C/C:** Non-extensible Circuit Breaker & Load Switch & Load Switch three-unit in one-box Solution



使用环境 Working Environment

- 2.4.1 海拔高度: ≤2000m (安装海拔高度超过 2000m 请联系顾德益公司)。
 - 2.4.2 环境温度: 最高温度: 40°C; 最低温度: -40°C; 24h 内平均气温不超过 35°C。
 - 2.4.3 环境湿度: 24h 相对湿度平均不超过 95%; 月相对湿度平均值不超过 90%。
 - 2.4.4 安装环境: 周围空气没有爆炸性和腐蚀性气体, 安装场所无剧烈振动冲击。
 - 2.4.5 抗震裂度: 8 度。
- 2.4.1 Altitude ≤ 2000m (Installation altitude of more than 2000m, please contact us.)
- 2.4.2 Ambient Temperature: the highest temperature: 40°C; the lowest temperature: -40°C; the 24 hours average temperature ≤35°C.
- 2.4.3 Environment Humidity: 24 hours average relative humidity ≤95%; Monthly average relative humidity ≤90%.
- 2.4.4 Installation Environment: no explosive or corrosive gas in the surrounding air, no violent vibration impact at installation place.
- 2.4.5 Anti-vibration Cracking Degree: 8 degree.



依据标准 According to Standards

GB/T 11022—2011	高压开关设备和控制设备标准的公用技术要求 Public technical requirements for the standard of High-voltage switchgear and controlgear
GB 3906—2006	3.6kV ~ 40.5kV 交流金属封闭开关设备和控制设备 Alternating-current metal-enclosed switchgear and controlgear for rated voltages above 3.6 kV and up to and including 40.5 kV
GB 1984—2014	高压交流断路器 High-voltage alternating-current circuit breaker
GB 3804—2004	3.6kV ~ 40.5kV 高压交流负荷开关 High-voltage alternating-current switches for rated voltages above 3.6 kV and up to and including 40.5 kV
GB 16926—2009	高压交流负荷开关—熔断器组合电器 High-voltage alternating current switch- fuse combination
GB 1985—2014	高压交流隔离开关和接地开关 high-voltage alternating-current disconnectors and earthing switch
GB 3309-1989	高压开关设备常温下的机械试验 Mechanical test at ambient temperature for high-voltage switchgear
DL/T404-2007	3.6kV~40.5kV 交流金属封闭开关设备和控制设备 Alternating-current metal-enclosed switchgear and controlgear for rated voltages above 3.6kV and up to and including 40.5kV
JB/T 3855—2008	3.6kV ~ 40.5kV 户内交流高压真空断路器 Indoor alternating-current high-voltage vacuum circuit breaker for rated voltages above 3.6 kV and up to and including 40.5 kV
GB 4208—2008	外壳防护等级 (IP 代码) Degrees of protection provided by enclosures (IP Code)
GB/T 4205—2010	人机界面 (MMI)—操作规则 Man-machine Interface- Operation rules
GB/T 6388—1986	运输包装收发货标志 Transportation packaging shipping mark
GB 9969—2008	工业产品使用说明总则 General instructions of industrial products
GB/T 13384—2008	机电产品包装通用技术条件 General technical requirements for packaging mechanical and electrical products
GB/T 14436—1993	工业产品保证文件总则 General principles of industrial products guarantee documents
GB/T 191—2008	包装储运图示标志 Pictorial marks for packaging, storage and transportation

技术参数 Technical Parameter

GDSGR-12 系列环保气体绝缘环网开关设备主要技术参数表

项目	单位	断路器	负荷开关	负荷开关 - 熔断器组合电器
额定电压	kV	12	12	12
额定电流	A	630/1250	630	125
额定频率	Hz	50	50	50
额定绝缘水平	1 min 工频耐压 (相间及相对地)	42	42	42
	1 min 工频耐压 (隔离断口)	48	48	48
	工频耐压 (控制和辅助回路)	2	2	2
	雷电冲击耐压 (相间及相对地)	75	75	75
	雷电冲击耐压 (隔离断口)	85	85	85
额定短路开断电流	kA	20/25	—	31.5
额定短路关合电流	kA	50/63	50	80
额定短时耐受电流	kA	20/25	20	—
额定短路持续时间	s	4	4	—
额定峰值耐受电流	kA	50/63	50	—
交流电流 / 转移电流	A	—	—	3150
额定操作顺序	—	O—0.3s—CO—180s—CO		
额定充气压力 (20°C时表压)	Mpa	0.02		
最小功能压力 (20°C时表压)	Mpa	0		
压力释放装置释放压力 (20°C时表压)	Mpa	0.16		
年漏气率	—	≤ 0.01%		
机械寿命	次	10000	10000	10000
主回电路	μΩ	≤ 150	≤ 150	≤ 300

以上参数满足国家电网公司、南方电网公司及江苏省电力公司 12kV 环网开关设备 II 类接地系统技术规范，全面兼容不同的中性点接地方式。

配合 GDSGR-12 系列 12kV 电缆附件可实现三路电缆连接组合或两路电缆加一路避雷器连接组合。

备注：I 类：中性点经低电阻接地系统；

II 类：中性点经消弧线圈接地或不接地系统。



Main technical parameter list of GDSGR - 12 series of environmental-friendly gas insulated RMU

Item	Unit	Circuit Breaker	Load switch	Load switch - fuse combinations	
Rated voltage	kV	12	12	12	
Rated current	A	630/1250	630	125	
Rated frequency	Hz	50	50	50	
Rated insulation level	1 min Power frequency withstand voltage (interphase and phase to ground)	kV	42	42	42
	1 min Power frequency withstand voltage (isolating distance)		48	48	48
	Power frequency withstand voltage (control and auxiliary circuit)		2	2	2
	Lightning impulse withstand voltage		75	75	75
	Lightning impulse withstand voltage (isolating distance)		85	85	85
Rated short-circuit breaking current	kA	20/25	—	31.5	
Rated short-circuit making current	kA	50/63	50	80	
Rated short-time withstand current	kA	20/25	20	—	
Rated duration of short-circuit	s	4	4	—	
Rated peak withstand current	kA	50/63	50	—	
Take-over current/transfer current	A	—	—	3150	
Rated operating sequence	—	O—0.3s—CO—180s—CO			
Rated filling pressure (gauge pressure when temperature is 20°C)	Mpa	0.02			
Minimum functional pressure (gauge pressure when temperature is 20°C)	Mpa	0			
Pressure relief device release pressure (gauge pressure when temperature is 20°C)	Mpa	0.16			
Yearly Gas Leakage Rate	—	≤ 0.01%			
Mechanical life	次	10000	10000	10000	
Main Loop Resistance	μΩ	≤ 150	≤ 150	≤ 300	

All the above parameters have met the technical specifications of type-II grounding system for the 12kV ring main switchgear set by the State Grid, China Southern power Grid and Jiangsu Electric Power company and are fully compatible with different neutral point grounding mode.

The combination of three-way cable or two-way cable plus one arrester combination can be realized with combination of the GDSGR-12 series 12kV cable accessory.

Note: Type- I : grounding system of neutral point through little resistance;

Type- II : grounding of neutral point through arc suppression coil or ungrounded system

基本单元方案 Basic unit solution



基本单元方案简介 Basic unit solution Introduction

3.1 真空断路器单元 V

标准配置与特性:

630A/1250A 母线
真空断路器
真空开关电动操作机构
三工位隔离开关
三工位隔离开关手动操作机构
真空开关和三工位隔离开关位置指示牌
电缆连接套管
显示套管带电的容性电压指示器
气压表
挂锁装置
柜体
接地母排
操作手柄
电流互感器 (保护专用)
数字式继电保护装置

可选配置与特性:

短路及接地故障指示器
可分离连接器 (电缆接头)
避雷器
进线带电 / 接地闭锁装置
钥匙机械互锁装置
环形电流互感器及表计

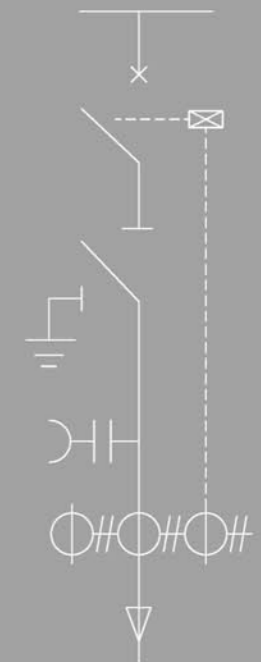
3.1 Vacuum circuit breaker unit V

Standard Configuration and Characteristics:

630A/1250A Busbar
Vacuum Vacuum circuit breaker
Vacuum switch electric operation mechanism
Three-position disconnecter
Three-position disconnecter switch manual operation mechanism
Vacuum switch and three-position disconnecter switch position indicator
Cable connecting bushing
Capacitive voltage indicator display bushing charged
The pressure gauge
Padlock device
Cabinet
Ground bus
Operating handle
Current transformer (for protection)
Digital relay protection device

Optional configuration and characteristics:

Short-circuit and ground fault indicator
Separable connector (cable joint)
Arrester
Locking device of grounding /charging income line
Interlock device of key machinery
Ring current transformer and meters



3.2 负荷开关单元 C

标准配置与特性:

630A 母线
真空负荷开关
真空负荷开关手动操作机构
三工位隔离开关
三工位隔离开关手动操作机构
负荷开关和三工位隔离开关位置指示牌
电缆连接套管
显示套管带电的容性电压指示器
气压表
挂锁装置
柜体
接地母排
操作手柄

可选配置与特性:

真空负荷开关电动操作机构
短路及接地故障指示器
可分离连接器 (电缆接头)
避雷器
进线带电 / 接地闭锁装置
钥匙机械互锁装置
环形电流互感器

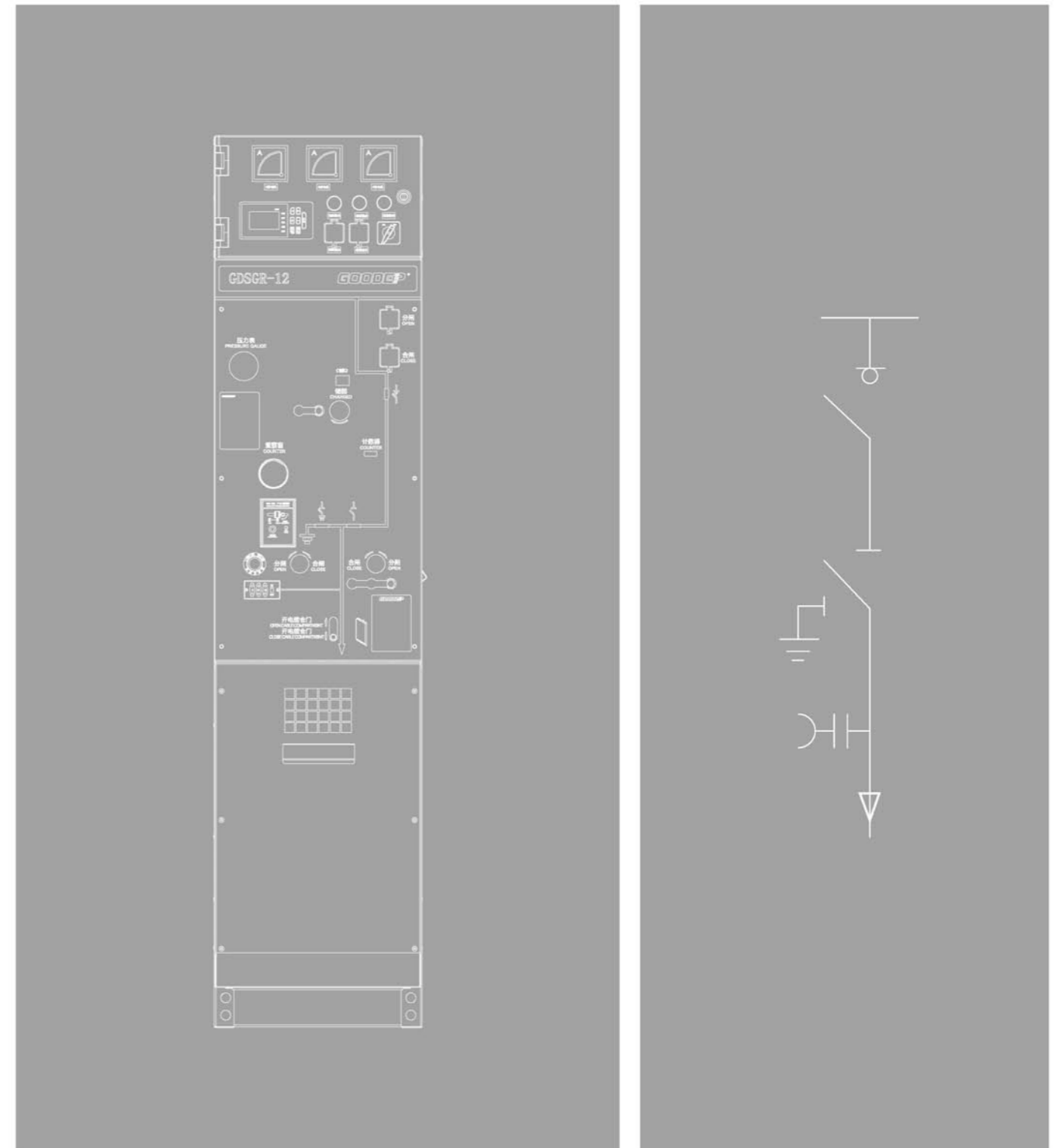
3.2 Load Switch Unit C

Standard Configuration and Characteristics:

630A Busbar
Vacuum load switch
Vacuum load switch manual operation mechanism
Three-position disconnecter switch
Three-position disconnecter switch manual operation mechanism
Load switch and three-position disconnecter switch position indicator
Cable connecting bushing
Capacitive voltage indicator display bushing charged
The pressure gauge
Padlock device
Cabinet
Ground busbar
Operating handle

Optional configuration and characteristics:

Vacuum load switch electric operation mechanism
Short-circuit and ground fault indicator
Separable connector (cable joint)
Arrester
Locking device of grounding charging income line
Interlock device of key machinery
Circular current transformer



3.3 组合电器单元 T

标准配置与特性:

125A 母线
真空负荷开关
真空负荷开关手动操作机构
三工位隔离开关 / 熔断器首端与末端接地开关
三工位隔离开关 / 熔断器首端与末端接地开关手动操作机构
负荷开关和接地开关位置指示牌
电缆连接套管
显示套管带电的容性电压指示器
气压表
挂锁装置
柜体
接地母排
操作手柄
熔断器筒

可选配置与特性:

真空负荷开关电动操作机构
短路及接地故障指示器
可分离连接器 (电缆接头)
避雷器
钥匙机械互锁装置
高压限流熔断器
环形电流互感器及表计

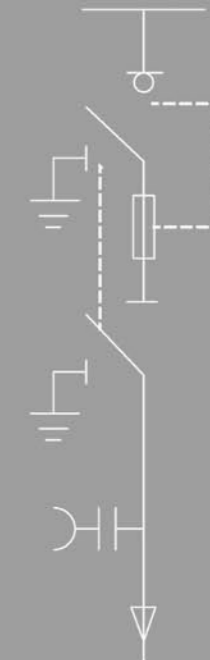
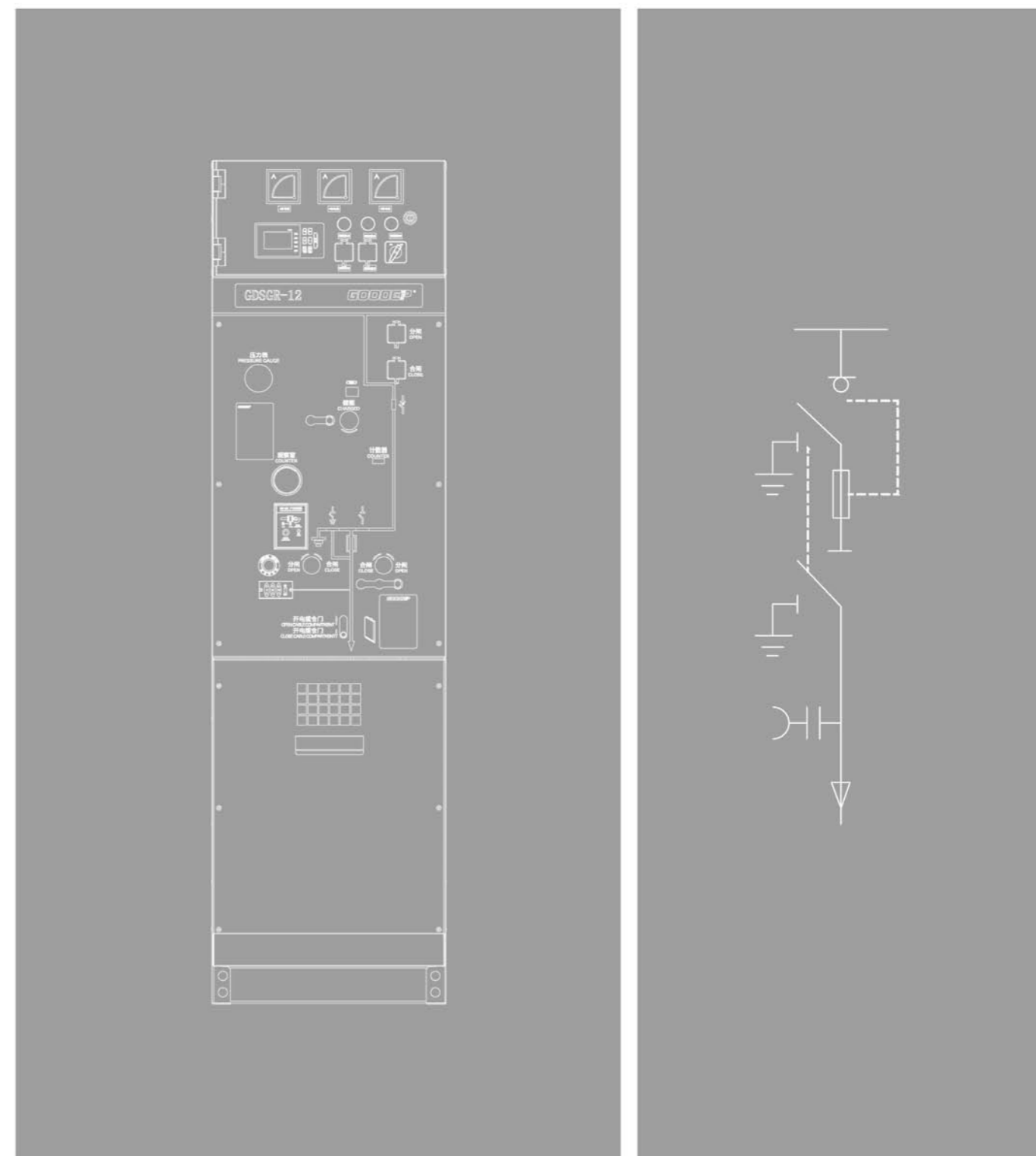
3.3 Switch-fuse Combinations unit T

Standard Configuration and Characteristics:

125A Busbar
Vacuum load switch
Vacuum load switch manual operation mechanism
Three-position disconnecter switch/fuse terminal grounding switch
Three-position disconnecter switch/fuse terminal grounding switch manual operation mechanism
Load switch and grounding switch position indicator
Cable connecting bushing
Capacitive voltage indicator display bushing charged
The pressure gauge
The padlock device
Cabinet
Ground bus
Operating handle
Fuse tube

Optional configuration and characteristics:

Vacuum load switch electric operation mechanism
Short-circuit and ground fault indicator
Separable connector (cable joint)
Arrester
Interlock device of key machinery
Current limiting fuses
Ring current transformer and meters



3.4 电压互感器单元 PT

标准配置与特性:

2 只电流互感器
 保护 PT 的熔断器
 1 只带转换开关的电压表
 显示套管带电的容性电压指示器
 柜体
 气压表

可选配置与特性:

3 只电压互感器
 避雷器
 三工位隔离开关
 三工位隔离开关手动操作机构

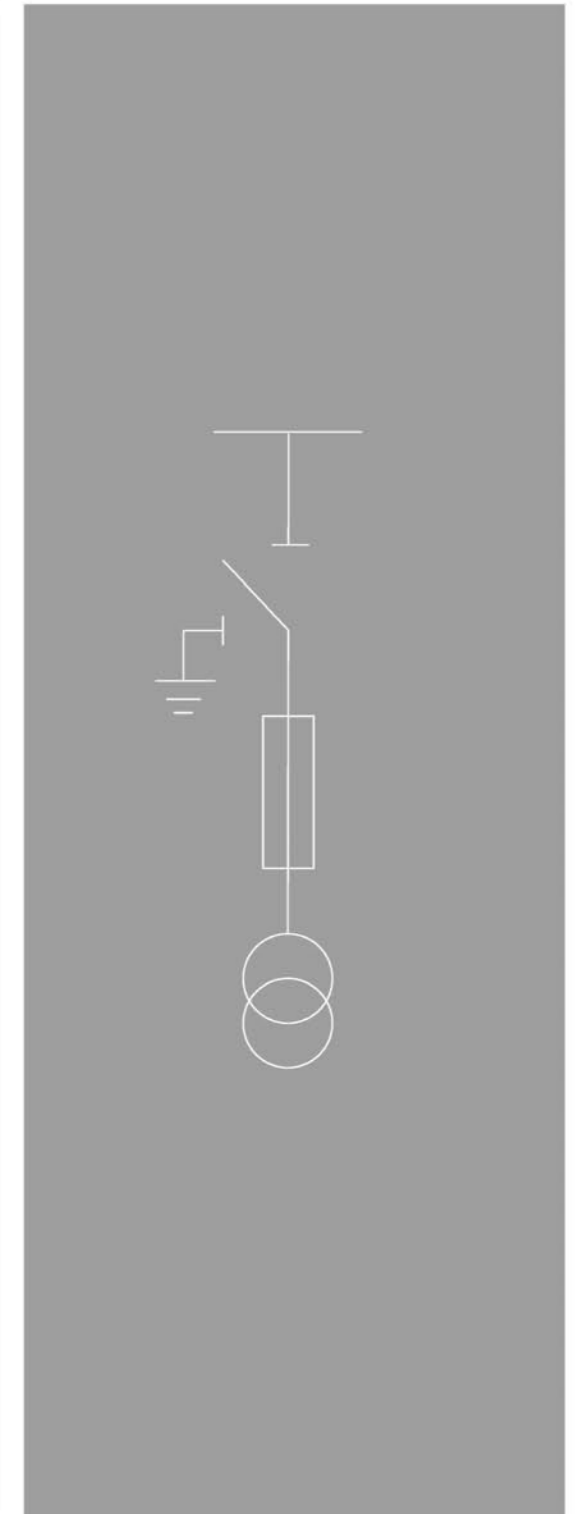
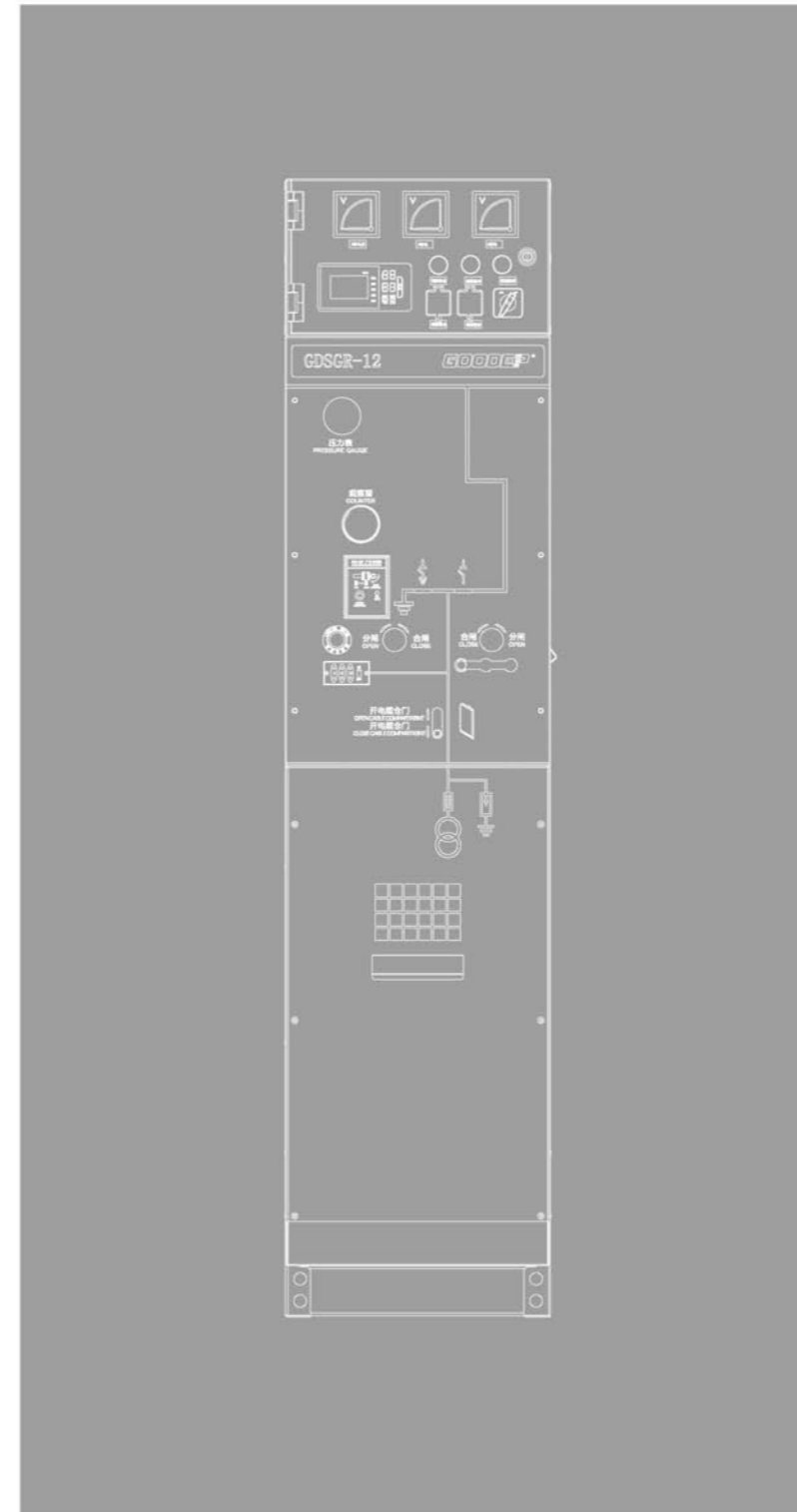
3.4 Voltage Transformer Unit PT

Standard Configuration and Characteristics:

2 current transformer
 Fuse for protecting unit PT
 1 voltmeter with transfer switch
 Capacitive voltage indicator display bushing charged
 Cabinet
 The pressure gauge

Optional configuration and characteristics:

3 voltage transformer
 Arrester
 Three-position disconnecter
 Three-position disconnecter switch manual operation mechanism position indicator



3.5 母线分段开关单元（真空断路器）SV

标准配置与特性:

630A/1250A 母线

真空开关

真空开关手动操作机构

两工位隔离开关

两工位隔离开关手动操作机构

真空开关和两工位隔离开关位置指示牌

N2 压力表

挂锁装置

柜体

操作手柄

跳闸线圈

数字式继电保护装置

可选配置与特性:

真空负荷开关电动操作机构

可分离连接器（电缆接头）

钥匙机械互锁装置

3.5 Sectional Switch Unit(Vacuum Circuit Breaker) SV of Busbar

Standard Configuration and Characteristics:

630A/1250A Busbar

Vacuum switch

Vacuum switch manual operation mechanism

Two-position disconnecter switch

Two-position disconnecter switch manual operation mechanism

Vacuum switch and two-position disconnecter switch position indicator

The pressure gauge

Padlock device

Cabinet

Operating lever

Breaking coil

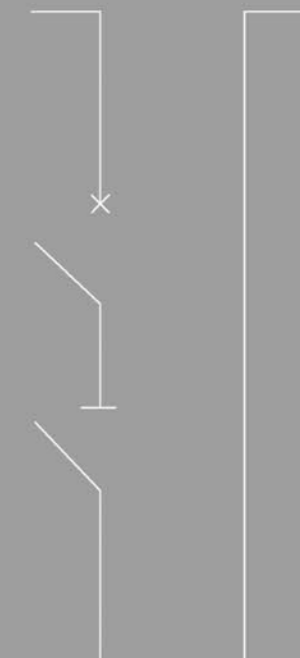
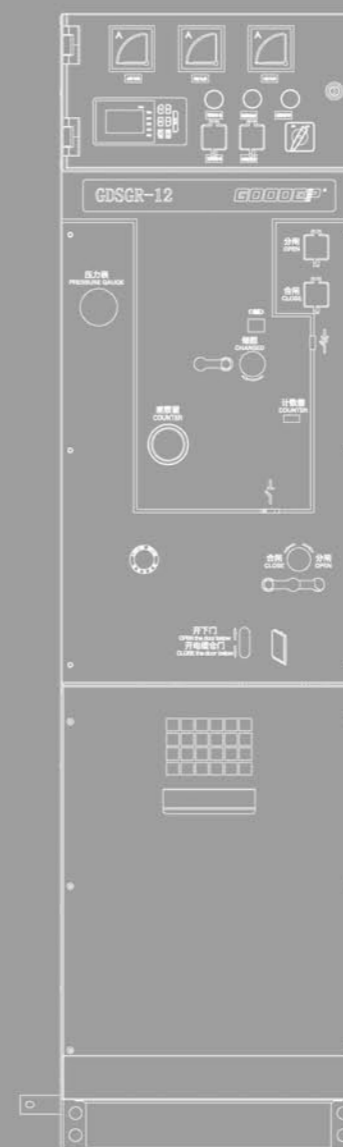
Digital relay protection device

Optional configuration and characteristics:

Vacuum load switch electric operation mechanism

Separable connector (cable joint)

Interlock device of key machinery



3.6 计量模块 M

标准配置与特性:

630A/1250A 母线
电压互感器 (两台)
电流互感器 (两台)
保护 PT 的熔断器
显示套管带电的容性电压指示器
柜体

可选配置与特性:

1 只转换开关
1 只电压表
1 只 / 2 只 / 3 只电流表
1 只有功电度表
1 只无功电度表

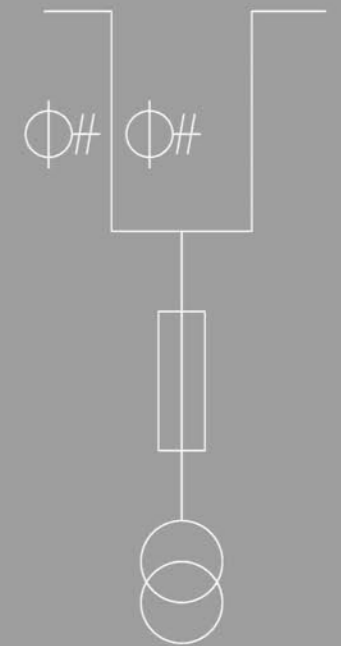
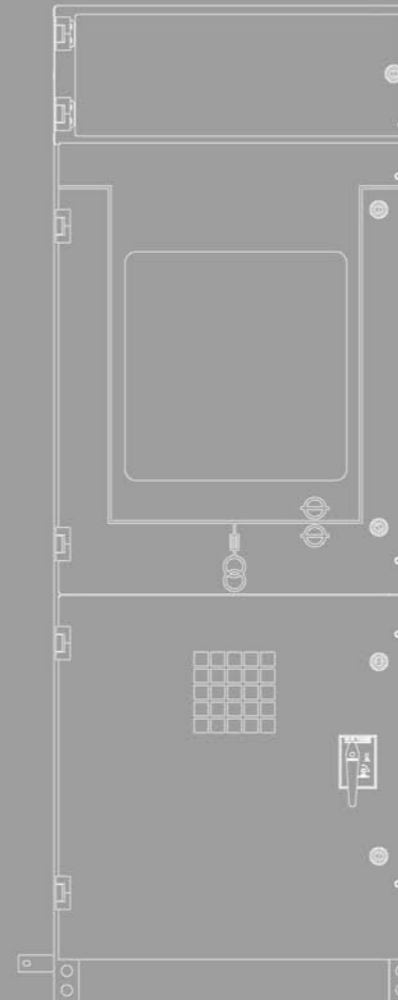
3.6 Metering Module M

Standard Configuration and Characteristics:

630A/1250A Busbar
Voltage transformer (2)
Current transformer (2)
Fuse for protecting unit PT
Capacitive voltage indicator display bushing charged
Cabinet

Optional configuration and characteristics:

1 transfer switch
1 voltmeter
1/2/3 ammeter
1 watt-hour meter
1 wattless component meter



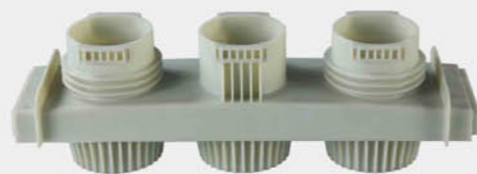
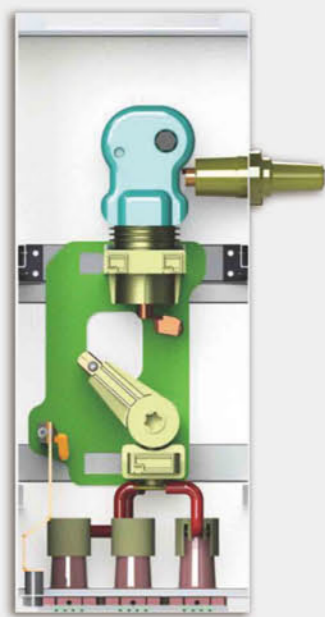
核心元器件技术简介 Technical Introduction of Core Components



主开关设计 Main Switch Design

- a、简洁的一次回路设计，均匀的电场分布结构、无需较多的复合绝缘、具有宽敞的气箱空间，满足良好的散热对流
- b、使用机械强度高、耐热性能优良的可回收再利用的环保热塑性材料，通过一次注射成型的三相整体真空灭弧室骨架替代环氧浇筑真空灭弧室骨架，具有结构简单、场强均匀、绝缘性能好、生产效率高、少调整、易装配等诸多优点

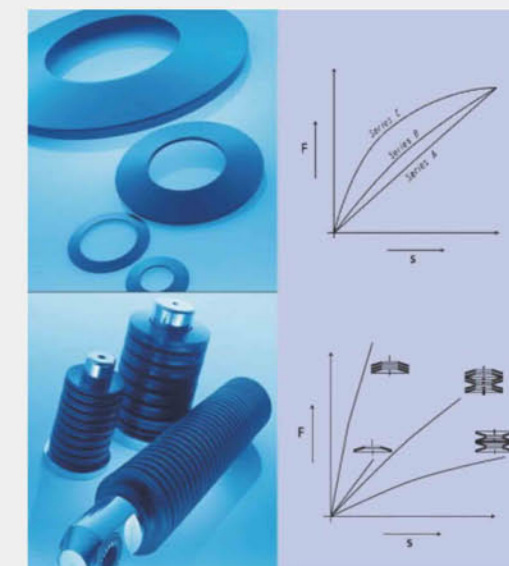
- a、Simple circuit design, uniform electric field distribution structure, no need for more complex insulation, spacious gas box space which meets the good heat convection
- b、Use recyclable and reusable environmental thermoplastic materials with high mechanical strength and good heat-resistance. Replace epoxy casting vacuum interrupter skeleton with one-injection molding three-phase integral vacuum interrupter frame. The design is featuring simple structure, uniform electric field strength, outstanding insulation performance, high production efficiency, less adjustment, easy assembly and many other advantages.



隔离开关设计 Disconnecter Switch Design

- a、隔离开关采用三工位设计，从理论上彻底避免误操作的发生
- b、采用有利于接地关合的触头设计，接地关合速度 $\geq 4.2\text{m/s}$
- c、高性能的德国慕贝尔碟簧，保证触头压力的稳定性
- d、主轴驱动的旋转隔离，传动间隙小，保证可靠的对地、隔离断口距离

- a、The disconnecter switch adopted three-position design, which theoretically avoid the maloperation completely.
- b、Using the contact design which is advantageous to the grounding connection, so that the grounding closing speed reached $\geq 4.2\text{m/s}$.
- c、High-performance disc spring from Mubea Germany guarantee the stability of contact pressure
- d、The transmission gap of Spindle driven rotation isolation is small, which ensures reliable ground distance and isolating distance

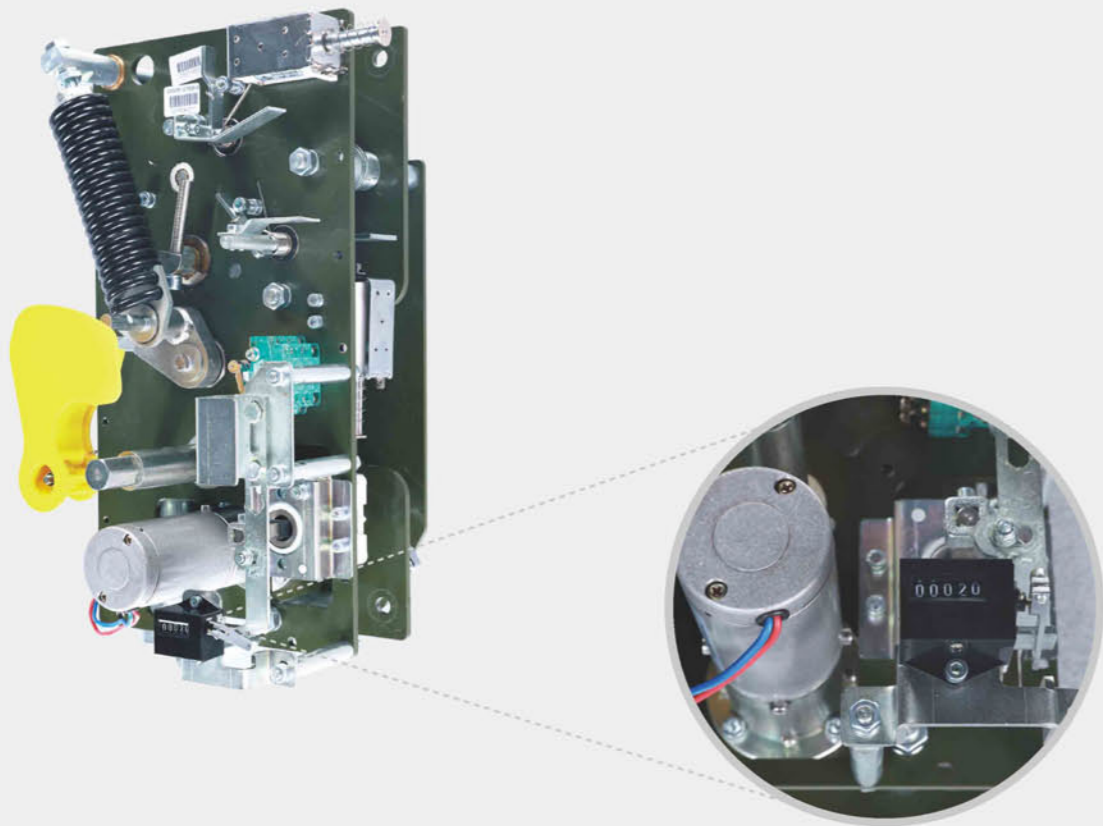




主开关机构设计 Main Switch Mechanism Design

- a、主开关机构的电动机、辅助开关、脱扣器、行程开关、是随时可更换的，方便产品维修
- b、双弹簧精密传动设计，具有重合闸功能
- c、为了满足国网最新采购标准，主开关机构具有自动计数功能
- d、所有的传动零件采用优质钢和淬火钢
- e、核心传动采用滚针轴承设计，抗冲击能力强、载荷大、摩擦阻力小

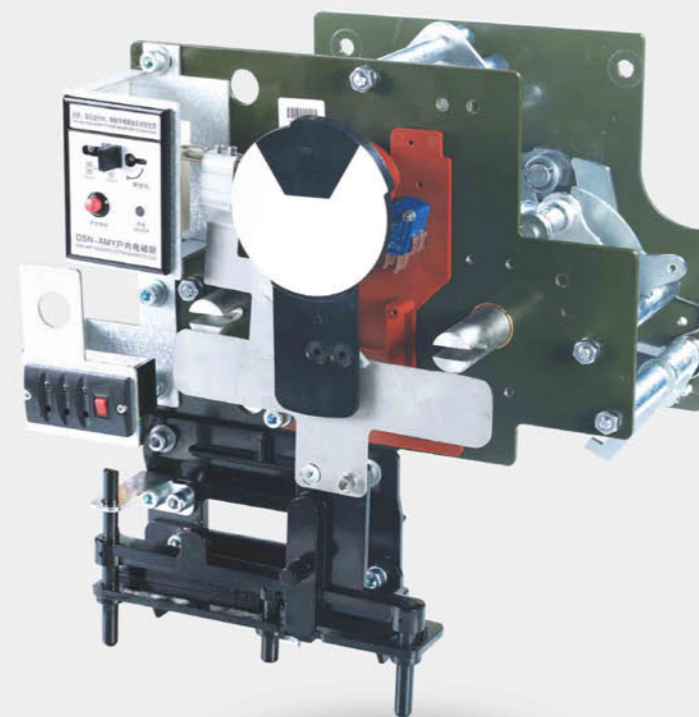
- a、The motor, auxiliary switch, release, travel switch of main switch mechanism can be replaced at any time, so that the products are convenient to be repaired
- b、Double spring precision transmission design with function of reclosing
- c、In order to meet the latest procurement standards of State Grid, the main switching mechanism is equipped with automatic counting function
- d、All transmission parts are made of high-quality steel and quenched steels
- e、The core transmission adopted needle roller bearing design which featuring strong impact resistance, heavy load and small friction resistance



隔离开关机构设计 Disconnecter Switch Mechanism Design

- a、隔离机构采用三工位单弹簧、两把独立的操作轴设计，从理论上彻底避免误操作的发生
- b、隔离位置的刚性限位设计，阻止机构反弹，有效防止操作瞬间断口绝缘击穿
- c、接地关合速度 $\geq 4.2\text{m/s}$
- d、隔离机构“五防”连锁刚性连接，可靠防止误操作

- a、The isolation mechanism is designed with three-position single spring and two independent operation shafts, which theoretically avoid the maloperation completely.
- b、The rigid limit design of the isolation position prevents the mechanism from rebounding, and effectively prevents the instantaneous break of insulation from breaking through.
- c、The grounding closing speed reached $\geq 4.2\text{m/s}$.
- d、Isolation mechanism "five - guard" linkage rigid connection, reliable to prevent wrong operation

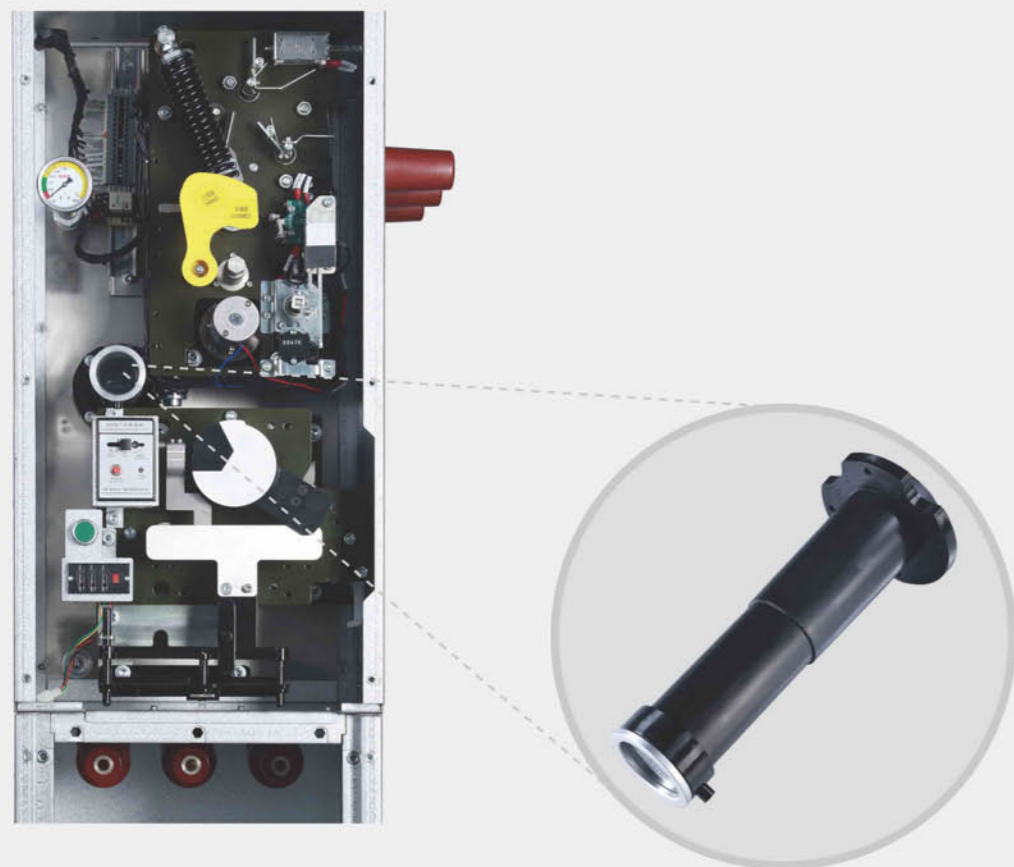




观察窗设计 Observation Window Design

- a、接地观察窗采用光学成像原理，用较小的观察窗来实现较大的观察范围
- b、接地观察窗采用自带光源设计，观察方便、清晰
- c、照明光源采用 LED 灯设计，可靠保证了照明灯的设计寿命

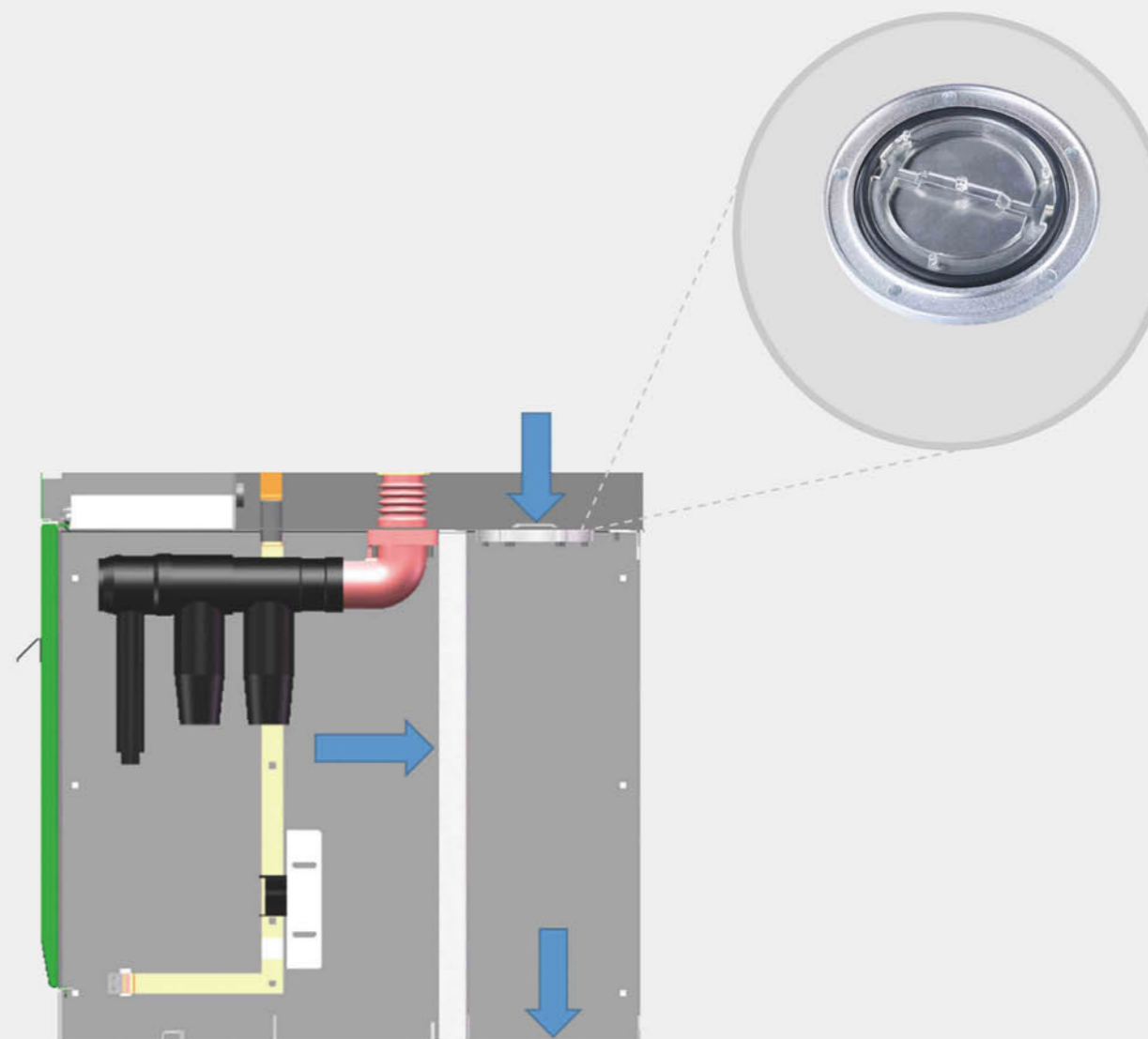
- a、The grounding observation window adopted the principle of optical imaging which is to realize large observation range through the smaller observation window.
- b、The grounding observation window is designed with its own light source, which is convenient and clear.
- c、The illumination light source adopted the LED lamp design which guarantees the the design life of lighting lamp



泄压设计 Pressure-relief Design

- a、泄压采用专用的泄压装置
- b、电缆室可向后泄压，柜体后端无需增加泄压通道

- a、Special pressure relief device
- b、Cable room can release pressure backward, so that the back-end of cabinet need not to increase pressure relief channel

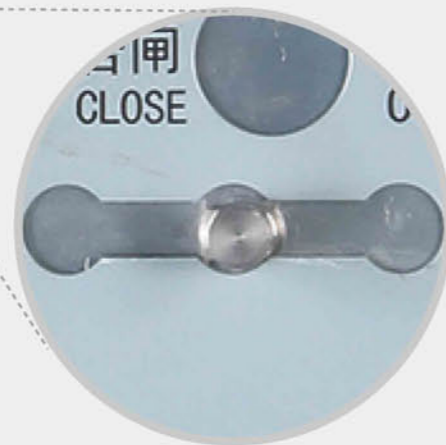




操作面板设计 Operation Panel Design

- a、模拟母线清晰明了
- b、隔离开关和接地开关分别采用两个独立的操作孔
- c、操作孔可挂锁
- d、接地开关可加装“电磁闭锁装置”以防止带电误合接地开关

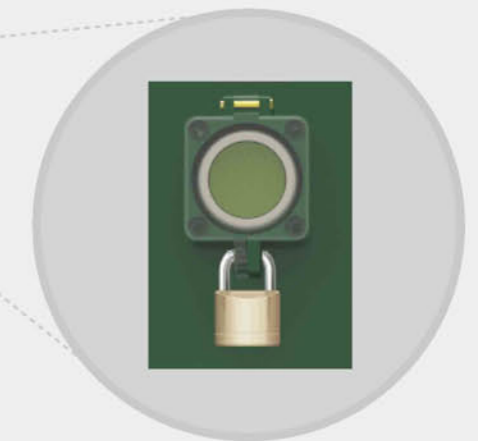
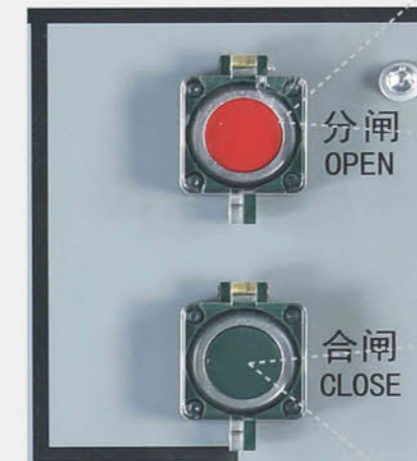
- a、Analog busbar clarity
- b、There are two separate operation hole for both disconnecter switch and grounding switch.
- c、Operation hole can padlock
- d、Grounding switch can be mounted to "electromagnetic lock device" to prevent wrongly charging and closing grounding switch



操作按钮设计 Operation Button Design

- a、主开关手动操作采用按钮设计，操作简单方便
- b、按钮设计有防误合操作盖，并可挂锁

- a、The main switch manual operation adopted the button design, so that the operation is simple and convenient
- b、The button design is fitted with a tamper-resistant lid and can be padlock





储能电机设计 Energy-Storage Electric Machine Design

行星减速直流永磁电动机，体积小，工作稳定，有着十分惊人的传动效率，能效损失约 3%左右

Planetary deceleration dc permanent magnet motor is small and stable which has an excellent transmission efficiency with its energy efficiency loss as low as about 3%



环境保护 Environmental Protection



环境保护 Environmental Protection

我们产品设计尽可能选用可回收再利用材料。

我们的设计致力于环境保护，严格执行 ISO14001 环境管理体系。

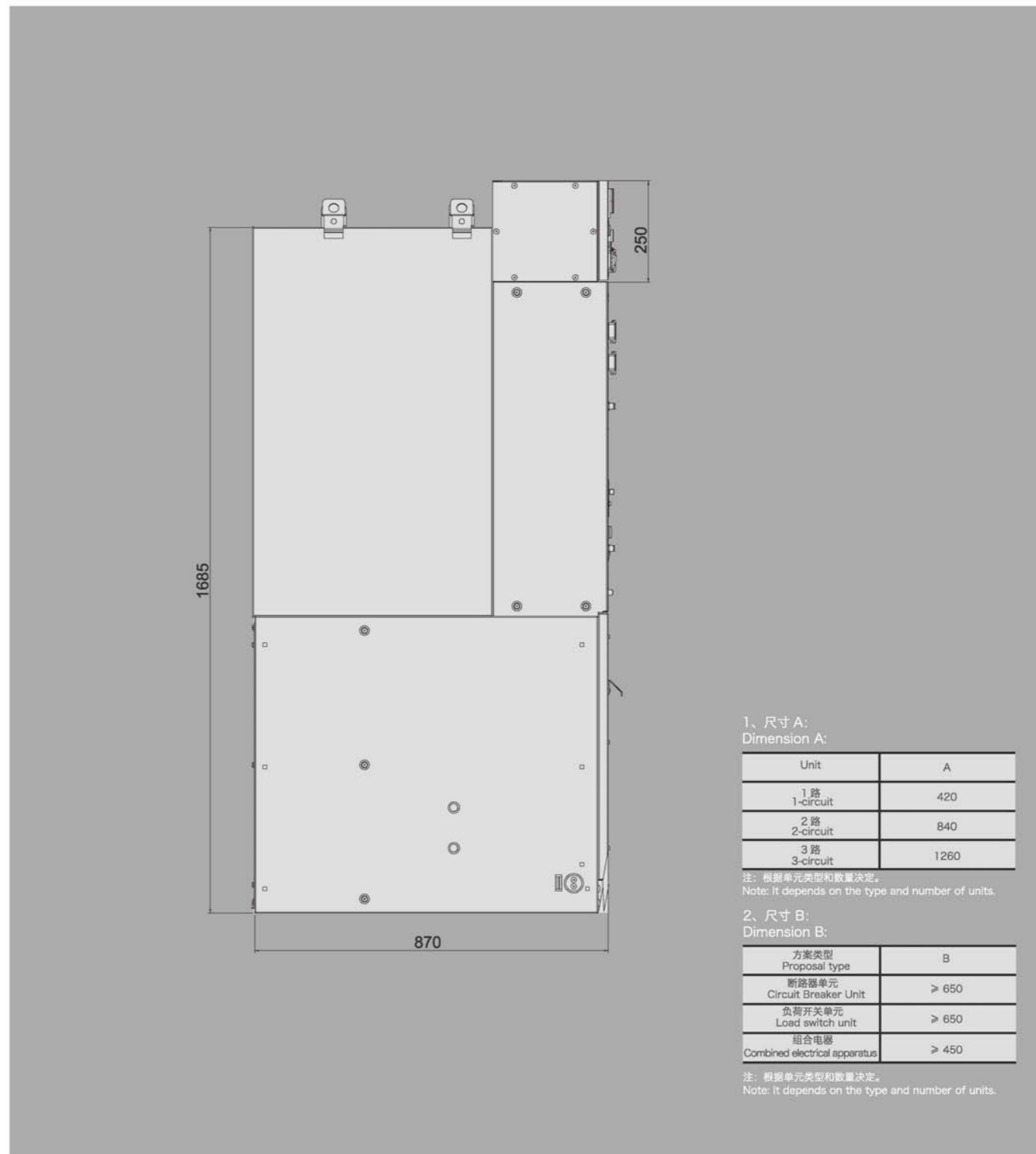
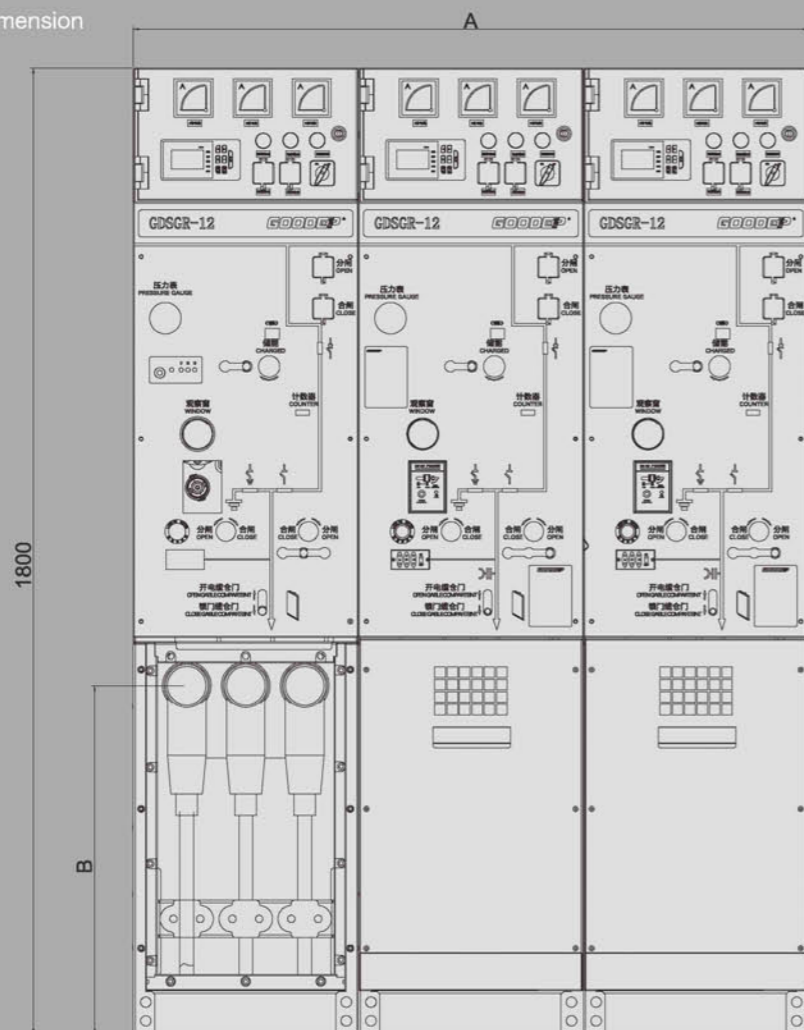
对于我们的产品，寿命结束后回收是我们的义务。

Recyclable materials are selected. Production design matches environmental protection according to ISO14001 environment management system. We are obligated to recycle our product when its lifetime is over.

外形及相关尺寸 Appearance and related dimension



GDSGR-12-CVV 外形尺寸
Appearance and dimension
of GDSGR-12-CVV



1、尺寸 A:
Dimension A:

Unit	A
1路 1-circuit	420
2路 2-circuit	840
3路 3-circuit	1260

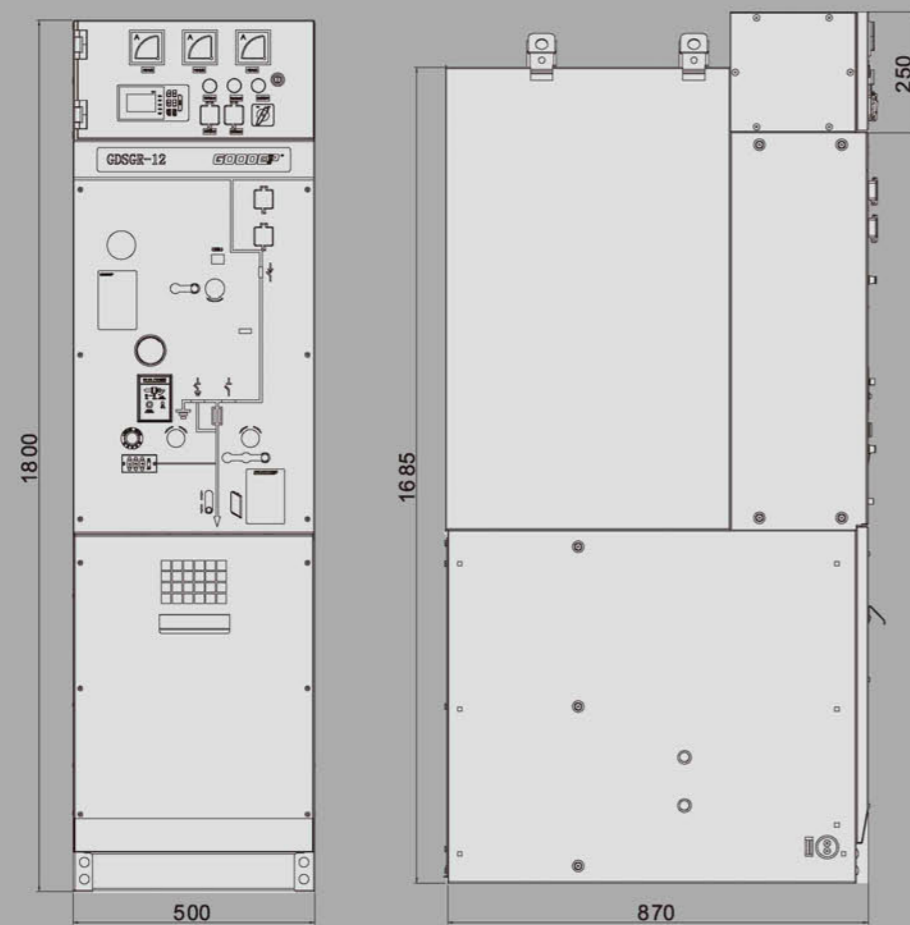
注：根据单元类型和数量决定。
Note: It depends on the type and number of units.

2、尺寸 B:
Dimension B:

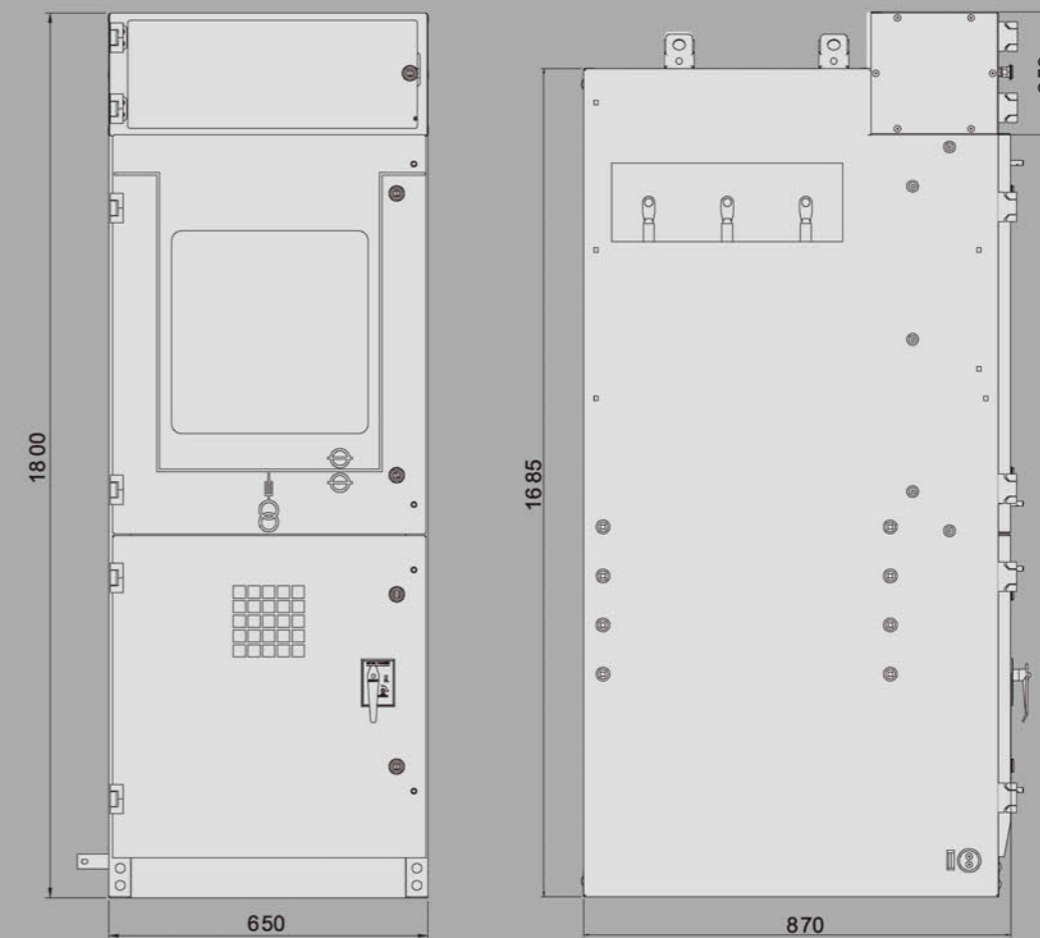
方案类型 Proposal type	B
断路器单元 Circuit Breaker Unit	≥ 650
负荷开关单元 Load switch unit	≥ 650
组合电器 Combined electrical apparatus	≥ 450

注：根据单元类型和数量决定。
Note: It depends on the type and number of units.

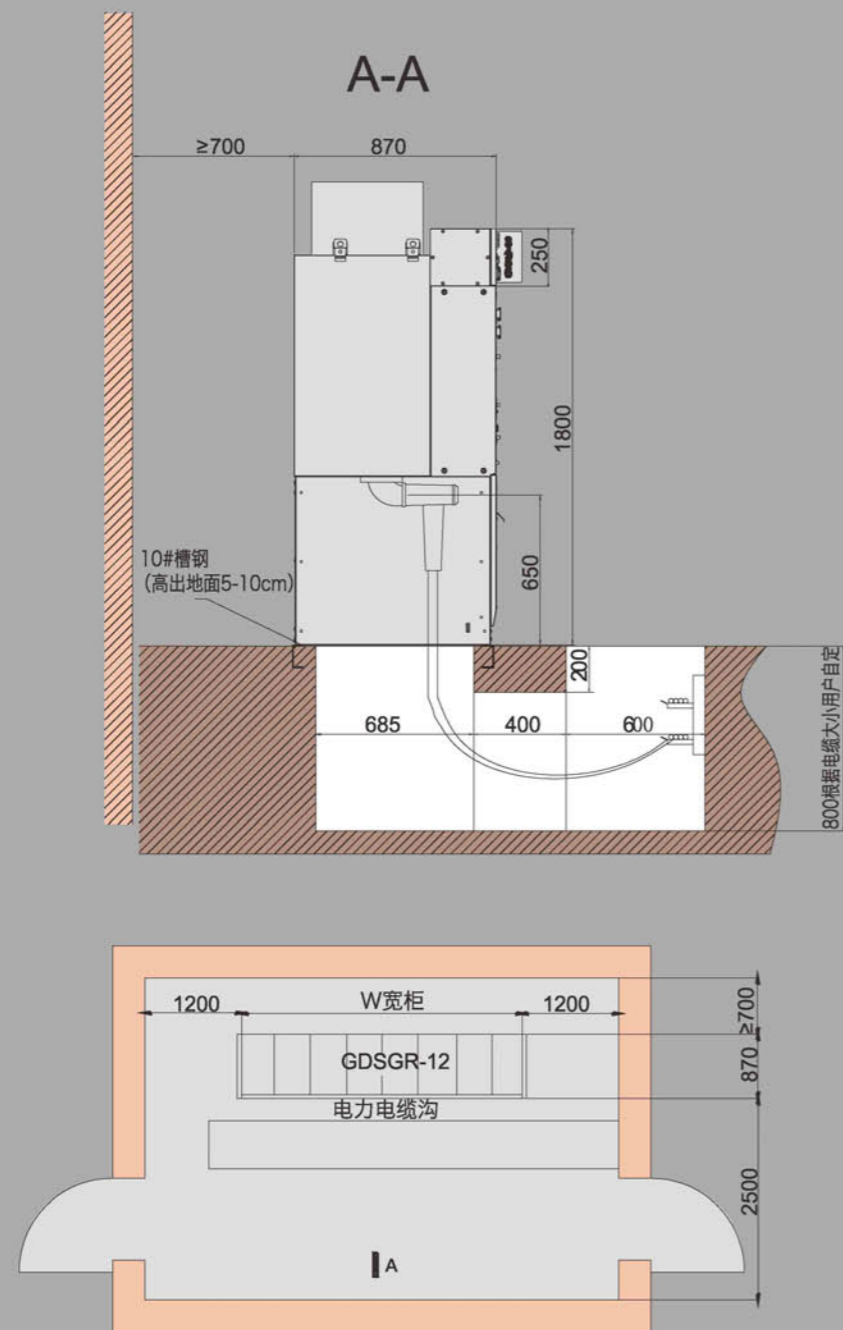
GDSGR-12-T 柜外形尺寸
Appearance and dimension of GDSGR-12-T cabinet



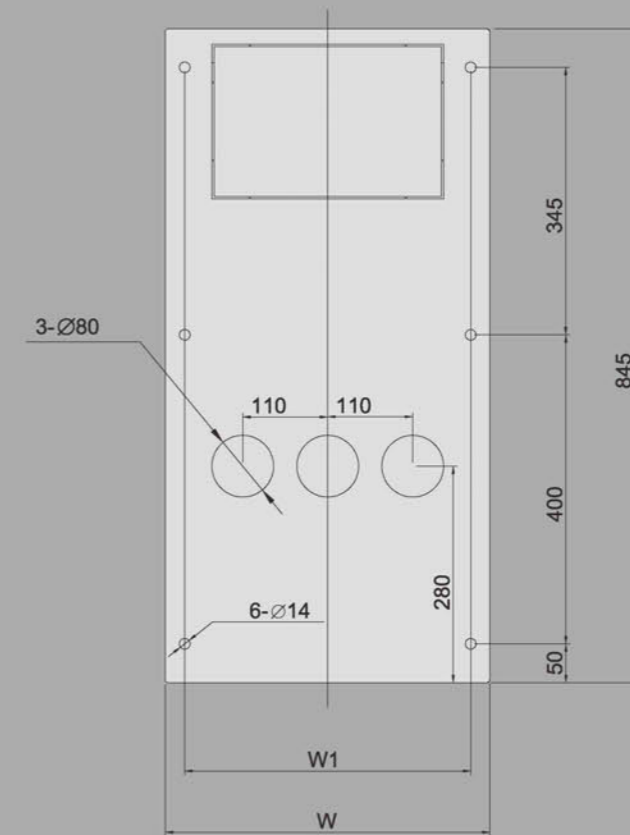
GDSGR-12-M 柜外形尺寸
Appearance and dimension of GDSGR-12-M cabinet



安装相关尺寸
Relevant dimension of installation



底座安装孔位相关尺寸
Relevant dimension of mounting hole on the base



Unit	W1	W
1路 1-circuit	380	420
2路 2-circuit	800	840
3路 3-circuit	1220	1260

销售网络分布图

Sales distribution network diagram

