

SmartEx SEG

固体绝缘全封闭开关柜

Solid Insulated Switchgear

智能电气专家
服务中国电力

Intelligent Electric Experts
Service China Electric Power



alsburg

阿斯博开关

源自德国 电气精品

Quality Electrical from Germany

SmartEx SEG

SmartEx SEG固体绝缘全封闭开关柜核心技术源自德国，系德国ALSBURG公司为了满足中国电力市场对高品质、环保型开关柜的需求，而推出的新一代开关柜。

SmartEx SEG Solid Insulated Switchgear core technology from Germany, Department of German ALSBURG company introduced a new generation to meet the electricity market demand for high-quality, environmentally friendly RMU.



公司简介
Company Profile



智能开关
Intelligent Switch



中压生产
Medium pressure production

目录

Contents

产品概述 Product overview	02
技术特点 Technical characteristics	04
产品结构 Product structure	06
技术参数 Technical parameters	08
设备选型 Equipment selection	10
外形尺寸 Dimensions	13
地基图 Foundation drawing	14

- 德国阿斯博荣誉产品，品质卓越。
- 适合未来电网对产品技术可靠性和绿色环保的发展趋势。
- 新一代12kV固体绝缘开关柜。

Honorable product from Alsburge with premium quality.
For future grid reliability of product technology and green trends.
A new generation of 12 kV solid insulated swichgear.

新一代开关柜

SmartEx SEG固体绝缘全封闭开关柜核心技术源自德国，系德国ALSBURG公司为满足中国电力市场对高品质、环保型开关柜的需求，而推出的新一代开关柜。

SmartEx SEG固体绝缘开关柜是一种集外固封、绝缘母线及组合单元小型化三种技术于一体，开关及高压带电部件采用环氧树脂进行整体浇注，以环氧树脂固封作为带电体相对地、相间绝缘的新型配电设备。

阿斯博公司设计生产的SmartEx SEG固体绝缘全封闭开关柜所使用的材料全部选用可回收性、无污染的固体材料，包括一次带电体的绝缘和开关灭弧的实现，不会排放任何有毒物质，更没有任何气体释放到大气中，无漏气爆炸和内部燃弧的隐患，其具有绝缘性能高、体积小、整体强度高、免维护等技术特点，实现了真正意义上的零排放、零污染的绿色环保产品。

A new generation of Switchgear

Solid SmartEx SEG Insulated Switchgear core technology from Germany, Department of German ALSBURG company introduced a new generation to meet the electricity market demand for high-quality, environmentally friendly Switchgear.

Smartex SEG Solid Insulated Switchgear is a set of the outer solid seal, insulated bus and combination unit miniaturization three technologies in one, switches and high-voltage live parts with epoxy resin for the whole cast, solid epoxy resin sealed as a charged body In contrast, phase insulation new distribution equipment.

The company designed and manufactured in A Sibol Smartex SEG Solid Insulated Switchgear materials used in all the selected recyclable, pollution-free solid materials, including a charged body insulation and the realization of the switch interrupter, do not emit any toxic substances, no gas is released into the atmosphere, no hidden leak explosion and internal arcing, which has a high insulation performance, small size, high overall strength, maintenance-free technical characteristics, to achieve a true sense of the zero-emission, zero pollution green products.

试验

SmartEx SEG固体绝缘开关柜已经通过以下的各种试验，可以确保其在正常使用条件下安全运行。

- 型式试验：绝缘试验、温升、短时和峰值耐受电流、短路电流开断能力和短路关合能力、电缆充电电流、防护等级、电寿命和内部燃弧试验，以及固体绝缘组件的环境试验。
- 出厂试验：机械特性测试、主回路min工频耐压试验、辅助回路工频耐压试验、主回路电阻测试、联锁试验、固封组件局部放电测量，以及机械和电气操作试验。

Test

SmartEx SEG Solid Insulated Switchgear has passed the following test. To ensure safe operation under normal conditions of use.

- Type test, insulation test, temperature rise, short-term tolerance and peak current, short circuit current, open circuit and short circuit close, cable charging current, protection grade, electrical endurance and internal arc test, and environmental testing of solid insulation component.
- routine tests: mechanical property test, main circuit power frequency withstand voltage test, auxiliary circuit power frequency withstand voltage test, main circuit resistance test, interlock test, sealing components, partial discharge measurement, as well as mechanical and electrical operation test.

应用场合

- SmartEx SEG固体绝缘开关柜是阿斯博公司为适合未来电网对产品技术可靠性和绿色环保的发展趋势，而推出的全新一代开关柜，其具有高水平的运行安全性，系SF6开关柜的完美替代解决方案，适应于智能电网应用，可广泛应用于12kV二次配电系统，用于中压电缆线路的分段、联络及分接负荷；并且该系统具有灵活、完备的解决方案，用户可根据使用需要进行任意方案的组合和选型。

Applications

SmartEx SEG Solid Insulated Switchgear, ALSBURG for future power grid technology of product reliability and the development trend of environmental protection, green environment and a new generation of ring net cabinet, it has a high level of safety, perfect instead of SF6 ring main unit cabinet solution, suitable for smart grid applications, can be widely applied to 12 kv secondary distribution system, used in medium voltage cable line section, liaison, and tap the load; And the system has a flexible, complete solution, users can be used according to need to undertake any project combination and selection.



开关柜用固体绝缘母线系统
Solid isolated bus system for switchgear



开关柜用固体绝缘母线系统
Solid isolated bus system for switchgear



固体绝缘真空断路器及
隔离开关主回路组合
Solid insulated vacuum circuit
breaker and isolating switch main
circuit combination



固体绝缘的断路器与
隔离开关的组合电器
Combined electrical apparatus of
solid insulated circuit breaker and
isolating switch

绿色
环保

Green



SEG所使用材料全部为可回收无污染环保材料，避免了目前在开关柜中普遍使用的SF6气体对环境的威胁和破坏。

SEG materials used all recyclable non-polluting environmentally friendly materials, to avoid the widespread use of SF6 gas in the RMU threats to the environment and destruction.

安全
可靠

Safe and
Reliable

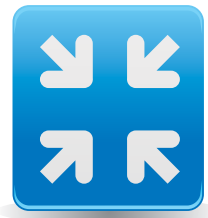


全封闭金属外壳，相对地和相间采用环氧树脂和硅橡胶实现全绝缘，防护等级IP67；方便查看隔离断口，确保运行人员操作安全；无压力元件，无需泄漏检测等运行安保措施。

Fully enclosed metal shell, and phase using epoxy resin and silicone rubber to achieve full insulation, protection class IP67; easy viewing isolated fracture ensure the operational safety of the operating personnel; pressure element, without leakage detection run security measures.

简洁
紧凑

Simple
and
Compact



同类开关柜产品中体积最小的产品之一，因此在新建变电站和改造项目中能带来突出的经济效益。

Similar RMU smallest one of the products in new substations and renovation projects can bring outstanding value for money.

智能

Intelligent



具备配网各种自动化运行保护装置、以及确保设备安全运行的在线监测装置，确保SEG可以在全自动化电力网络中安全运行。

With a variety of automated distribution network run protection device, as well as to ensure the safe operation of equipment on-line monitoring device to make sure that the SEG can run fully automated power network security.

特殊
应用

Special
Applications



可以安全运行于高海拔、盐雾潮湿、低温寒冷、安全防爆或者高环保要求的各种特殊使用场所。

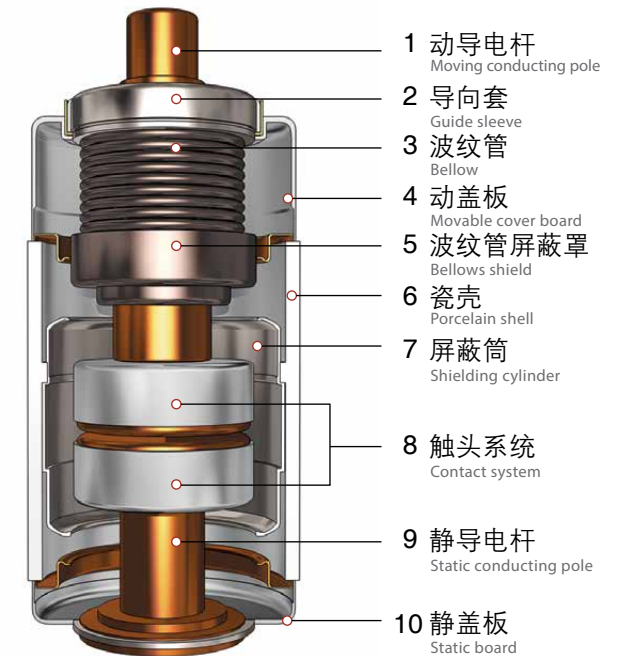
Safe operation in high altitude, salt spray wet, low temperature cold, safety explosion-proof or advanced high environmental requirements of various special place.

真空技术特点

- SmartEx SEG固体绝缘开关柜选用的断路器或真空负荷开关的灭弧介质选用真空介质，采用固封式真空灭弧室。
- 独特的纵磁R触头电场优化设计；
- 分断短路电流能力强、重燃率低、可靠性高；
- 完全一次封排工艺；
- 高稳定质量的陶瓷金属化工艺；
- 不锈钢直接钎焊工艺。

Vacuum Technology Characteristics

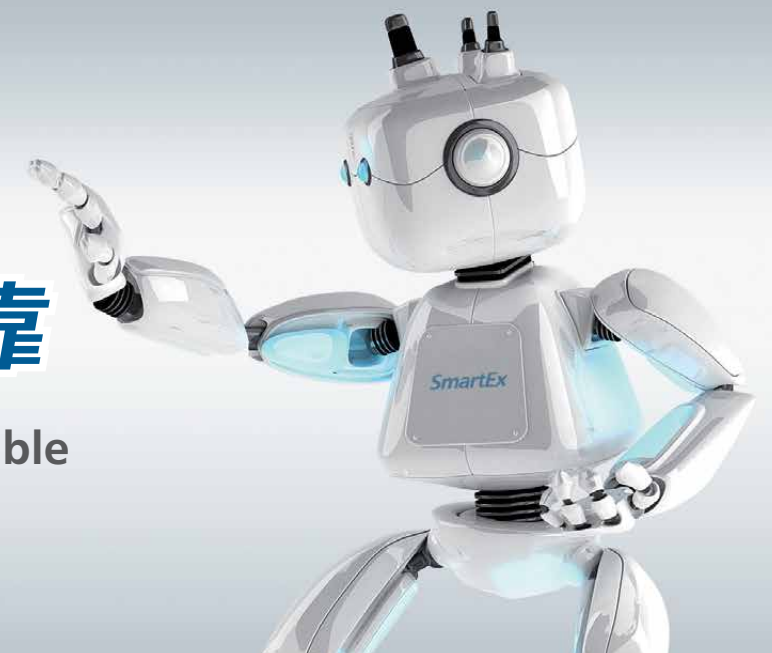
- Vacuum circuit breaker arcing medium vacuum load switch medium, using solid sealing vacuum arcing.
- Unique electric field optimization design with longitudinal magnetic R contact.
- Strong capacity of breaking short-circuit current, low rate of reignition and high reliability.
- One-time seal-exhaust process.
- Ceramic metallization process of high and stable quality.
- Direct welding process of stainless steel.

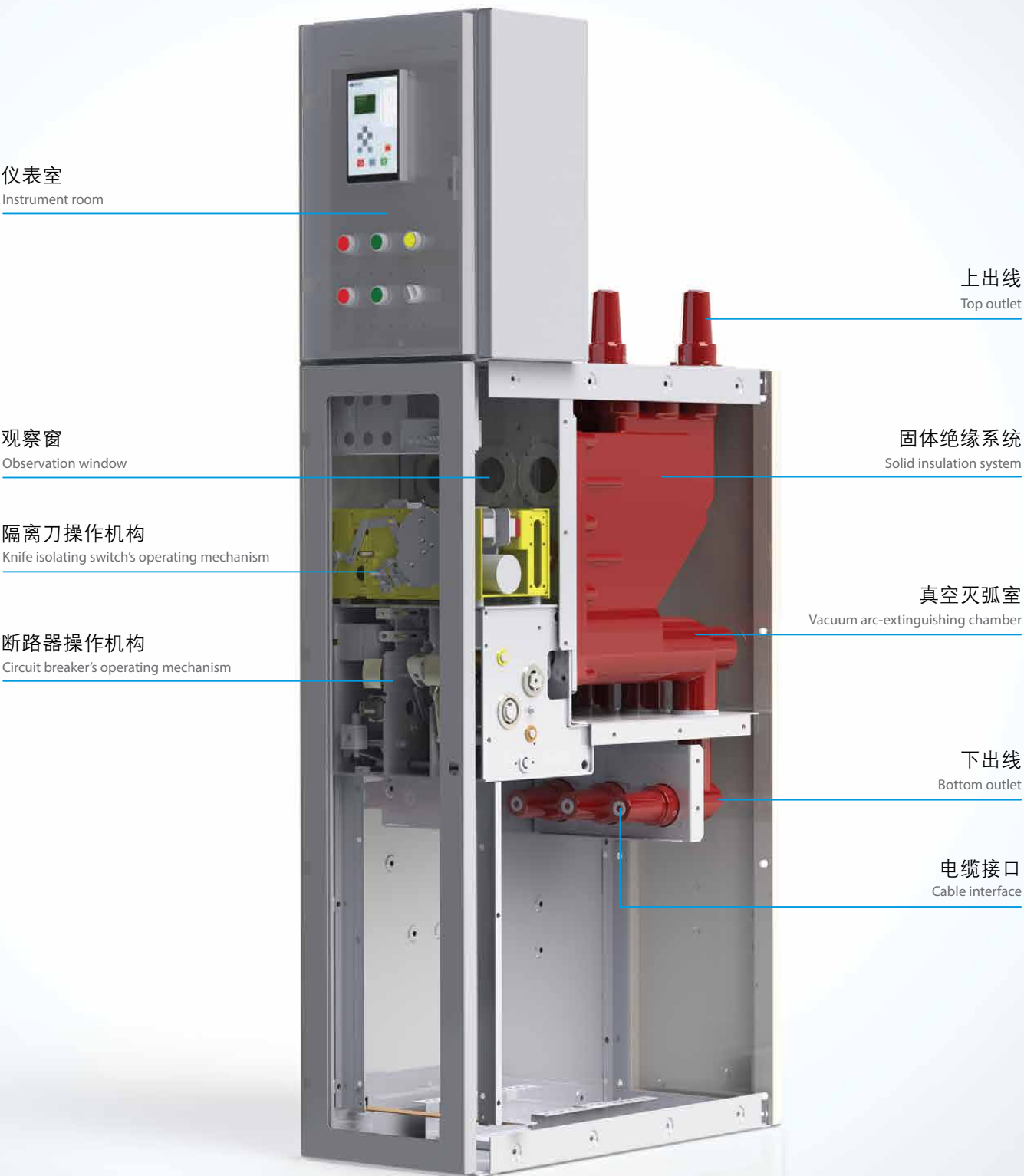


真空灭弧室剖视图
Vacuum Arcing Cutaway View

绿色环保
安全可靠

Green Safe and reliable





SmartEx SEG固体绝缘开关柜（V柜方案）
SmartEx SEG solid insulated switchgear (V cabinet scheme)



三工位隔离刀
Three-position knife isolating switch



断路器-隔离刀组合电器
Combined electrical apparatus of circuit breaker and knife isolating switch

结构特点 Structural features

- 柜型结构采用单箱体模块化设计方案，整体强度和刚度，同时也可以有效地防止故障的蔓延。
Cabinet type structure is of single-box modular design scheme, with high overall strength and rigidity, and able to prevent fault spreading effectively.
- 单相固体绝缘母线设计，避免相间、相对地放电的可能性。
Single-phase solid insulated bus design, avoiding the possibility of phase-to-phase and phase-to-ground discharge.
- 柜内所有高压带电部件均密封在环氧树脂、开关套管或硅橡胶之中，全密封固体绝缘。
All high-pressure live parts in the cabinet are sealed in the epoxy resin, switch casing or silicon rubber, fully sealed solid insulation.
- 断路器的灭弧介质选用真空介质，先进的真空灭弧技术，具有熄弧能力强，开断容量高，无爆炸、燃烧危险，并且绿色环保。
Vacuum medium is selected as the arc-extinguishing medium of circuit breaker. Advanced arc-extinguishing technology has the characteristics of strong arc blowout capability, high breaking capacity, without explosion and combustion risks, and being green.
- 全模块化设计，标准化水平高，便于批量组织生产，单元模块现场维护和更换非常方便。
Full modular design and high standardization level facilitate volume production, and field maintenance and replacement of unit module are very convenient.
- 采用三工位隔离刀和断路器一体化设计方案，三工位隔离刀闸与断路器主电路一同内置于永久密封的箱体，隔离刀闸配有手动或电动操作机构，可操作实现运行、隔离和接地三个位置。
The integrated design scheme of three-position knife isolating switch and circuit breaker is adopted. The three-position knife isolating switch and circuit breaker main circuit are built in the permanently sealed box. The isolating switch is equipped with manual or electric operating mechanism, achieving three-position operation: operation, isolation and grounding.
- 隔离刀闸运行、隔离和接地三个位置采用可视化端口设计，通过位于开关柜前部的观察窗，可以清楚地观察到隔离刀闸的位置状态。
Three positions, isolating switch operation, isolation and grounding, are of visual port design. Through the observation window in front of the switchgear, position status of the isolating switch can be clearly observed.
- 具有多种机械及电气联锁，满足国家标准对产品“五防”联锁的要求，防止操作人员误操作，保障产品安全、可靠的运行。
Several types of mechanical and electrical interlocks satisfy the national requirements on “five-prevention” interlock of products, and prevent misoperation by operators, and ensure product safety and reliable operation.
- 采用计算机优化设计，防内部燃弧理念，在位于柜体后下部专门设计的泄压盖板压力释放通道，一旦发生内部燃弧，可通过泄压通道引导内部燃弧泄压，为操作人员提供最大的安全性保障，并且尽可能地控制故障影响范围。
The idea of internal arcing prevention with computer optimized design is adopted, located in the specially designed pressure relief cover plate pressure release channel at the bottom of the cabinet. Once internal arcing occurs, guide internal arcing pressure relief through pressure relief channel, providing maximum safety guarantee for the operators and controlling fault influence range as far as possible.
- 方案系列化完整，用户可根据选型需要，任意灵活地进行组合。
The scheme has complete series. Users can combine flexibly at will according to type selection demand.
- 采用密封箱体设计，所有一次带电部分及主要机构完全密封在金属密封箱体中。
The sealed box design is adopted. All primary live parts and main mechanisms are fully sealed in the metal sealed box.
- 柜体结构设计紧凑，整机外形尺寸小，安装占地面积小，并且非常方便进行安装和维护。
The cabinet structure is of compact design. The outline dimension of the complete machine is small, and installation floor area is small, and installation and maintenance are very convenient.

技术参数

Technical parameters

正常使用环境条件

Normal ambient condition

环境温度 / Ambient temperature

最高温度 / Maximum temperature：+ 45℃

最低温度 / Minimum temperature：- 45℃

环境湿度

Ambient humidity

最大平均相对湿度 / Maximum average relative humidity

日平均相对湿度 / Daily mean relative humidity：≤95%

月平均相对湿度 / Monthly mean relative humidity：≤90%

海拔高度

Height above sea level

≤3000米/ m

抗震能力

Seismic resistant capacity

≤8度/ magnitude

浸水试验

Submerging test

水下施加 / Applied underwater：0.3bar, 12kV24小时 / hours

防护等级

Protection class

固体绝缘系统 / Solid insulation system：IP67

熔断器筒 / Fuse tube：IP67

开关柜外壳 / Switchgear enclosure：IP3X

特殊工作条件

Special working conditions

当使用环境为高海拔、高湿度等其他特殊环境条件时，请与公司协商相关的制造技术。

In case of special working conditions such as high altitude, high humidity and others, please negotiate with the company on relevant manufacturing technology.

技术标准

Technical standards

SmartEX SEG 产品设计主要遵循的标准如下：

SmartEx SEG product design mainly follows the standards as below:

IEC 60265-1	Switches
IEC 60298	Metal-endlosed Switchgear and controigear
IEC 62271-100	Circuint-breakers
IEC 62271-102	Disconrentors and earthing Switches
GB1984-2003	高压交流断路器 High-voltage Alternating-current Circuit-breakers
GB3906-2006	3.6～40.5kV交流金属封闭开关设备和控制设备 Alternating-current Metal-enclosed Switchgear and Control Gear for Rated Voltages above 3.6 kV and up to and including 40.5 kV
GB3804-2004	3.6～40.5kV高压交流负荷开关 High-voltage Alternating-current Switches for Rated Voltage above 3.6 kV and less than 40.5 kV
GB16926-2009	高压交流负荷开关-熔断器组合电器 High-voltage Alternating Current Switch-fuse Combinations
GB1985	高压交流隔离开关和接地开关 High-voltage Alternating-current Disconnectors and Earthing Switches
DL/T402-2007	高压交流断路器订货技术条件 Specification of High-voltage Alternating-current Circuit-breakers
DL/T403	12～40.5kV高压真空断路器订货技术条件 HV Vacuum Circuit-breaker for Rated Voltage 12kV to 40.5Kv
DL/T486-2000	高压交流隔离开关和接地开关 High-voltage Alternating-current Disconnectors and Earthing Switches

技术参数列表

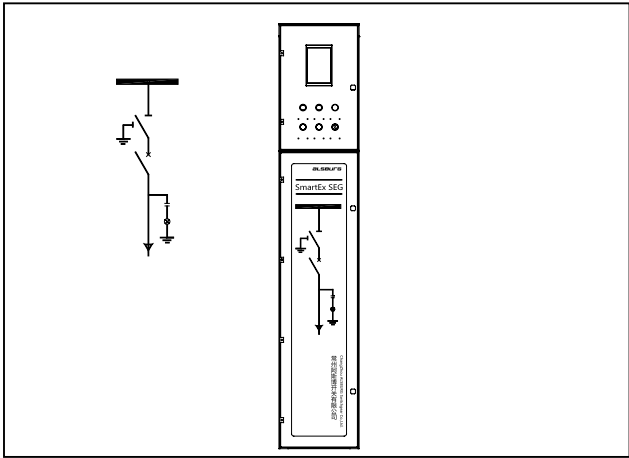
List of Technical Parameters

项目 Item	单位 Unit	参数 Parameters data
常规参数 Rated voltage		
额定电压 Rated voltage	kV	12
工频耐受电压（1min） Power frequency withstand voltage (1min)	kV	42（相间/相对地），48（隔离断口） 42 (phase to phase/phase to ground), 48 (isolating fracture)
雷电冲击电压（峰值） Lightning impulse voltage (peak value)	kV	75（相间/相对地），85（隔离断口） 75 (phase to phase/phase to ground), 85 (isolating fracture)
额定频率 Rated frequency	Hz	50
内部燃弧耐受电流 Internal arcing withstand current	kA/s	25/1
母线系统 Bus system		
额定电流 Rated current	A	630/1250
额定短时耐受电流 Rated short-time withstand current	kA/s	20-4， 25-4
额定峰值耐受电流 Rated peak withstand current	kA	50/63
断路器单元 Circuit breaker unit		
额定电流 Rated current	A	630/1250
额定短路开断电流 Rated short circuit breaking current	kA	20/25
额定短路关合电流 Rated short-circuit making current	kA	50/63
额定短时耐受电流 Rated short-time withstand current	kA/s	20-4， 25-4
额定容性电流开断等级 Rated capacitive current breaking grade		C2
额定电缆充电开断电流 Rated cable-charging breaking current	A	31.5
额定短路开断电流开断次数 Break times for rated short drop out current		E2
额定操作顺序 Rated operating sequence		O - 0.3S - CO - 180s - CO
断路器机械寿命 Circuit breaker's mechanical life		M2 10000
三工位隔离开关机械寿命 Three-position isolating switch's mechanical life		M1 3000
负荷开关单元 Load switch unit		
额定电流 Rated current	A	630， 1250
额定短路关合电流 Rated short-circuit making current	kA	20， 25
额定短时耐受电流 Rated short-time withstand current	kA/s	20-4， 25-4
额定电缆充电开断电流 Rated cable-charging breaking current	A	31.5
负荷开关机械寿命 Load switch's mechanical life		M2 10000
三工位隔离刀机械寿命 Three-position knife isolating switch's mechanical life		M1 3000
负荷开关电气寿命 Load switch's electrical life		E2 100
负荷开关-熔断器组合电气单元 Load switch – fuse combination's electrical unit		
额定电流 Rated current	A	100
额定短路开断电流 Rated short circuit breaking current	kA	50
额定短路关合电流 Rated short-circuit making current	kA	125
配用熔丝最大额定电流 Maximum rated current of equipped fuse	A	125
额定转移电流 Rated transfer current	A	3150

断路器柜型，V柜型

Circuit Breaker Cabinet, V Cabinet Type

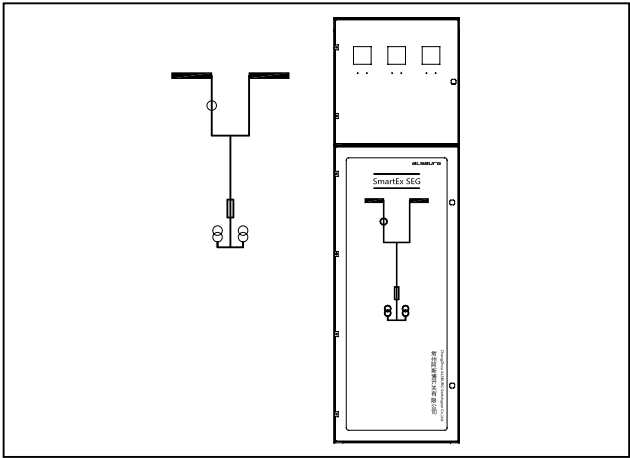
标准配置 Standard configuration	功能描述 Functional description
630A真空断路器 三工位或二工位隔离开关 带电指示器 630A vacuum circuit breaker Three-position or two-position isolating switch Potential indicator	配有真空断路器并串联三工位或二工位隔离开关，装配自供电保护装置用于线路、变压器的控制和保护。 Equipped with vacuum circuit breaker and connected in series with three-position or two-position isolating switch, equipped with self-powered protective device for control and protection of circuit and transformer.



计量柜，M柜型

Measuring Cabinet, M Cabinet Type

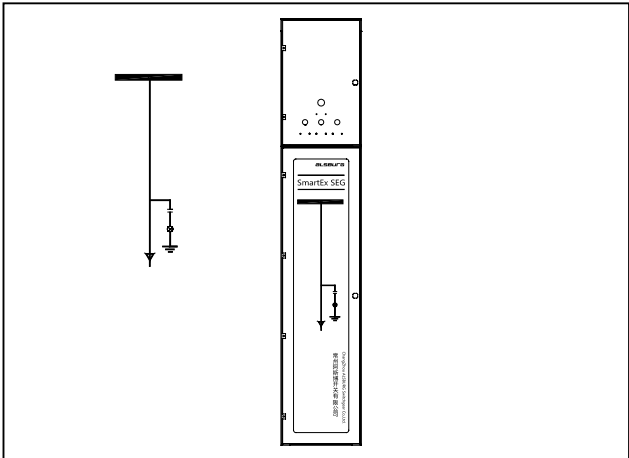
标准配置 Standard configuration	功能描述 Functional description
2只0.2级单相计量PT 2只0.2级单相计量CT 高度为500mm的低压室 Two grade 0.2 single-phase measuring PT Two grade 0.2 single-phase measuring CT Low-pressure chamber with a height of 500mm	配有常规电流互感器和电压互感器，可与其他任何一种柜体方便组合用于电能计量 Equipped with conventional current transformer and voltage transformer, can be easily combined with any type of cabinet for electric energy metering.



直连柜型，D柜型

Directly Attached Cabinet, D Cabinet Type

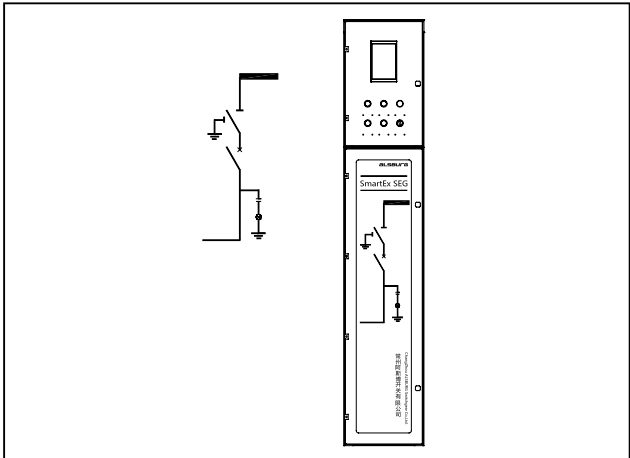
标准配置 Standard configuration	功能描述 Functional description
带电指示器 630A套管 柜门锁 Potential indicator 630A casing Cabinet door lock	电缆接头与母线直接连接，用于进出线电缆的连接 Cable joint is connected with bus directly, for connecting incoming and outgoing cable.



母联断路器柜，VL柜型

Bus tie Circuit Breaker Cabinet, VL Cabinet Type

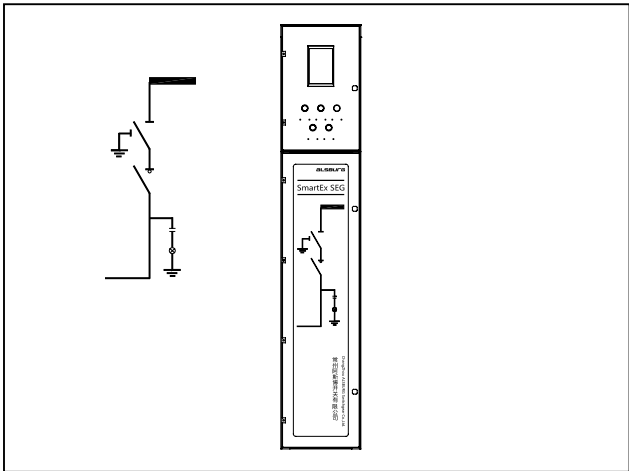
标准配置 Standard configuration	功能描述 Functional description
带电指示器 630A真空断路器 三工位或二工位隔离刀 Potential indicator 630A vacuum circuit breaker Three-position or two-position knife isolating switch	配有三工位或二工位隔离刀和真空断路器，可以带负荷操作。 Equipped with three-position or two-position knife isolating switch and vacuum circuit breaker, able to operate under load.



母联负荷开关柜，CL柜型

Bus Tie Circuit Breaker Cabinet, CL Cabinet Type

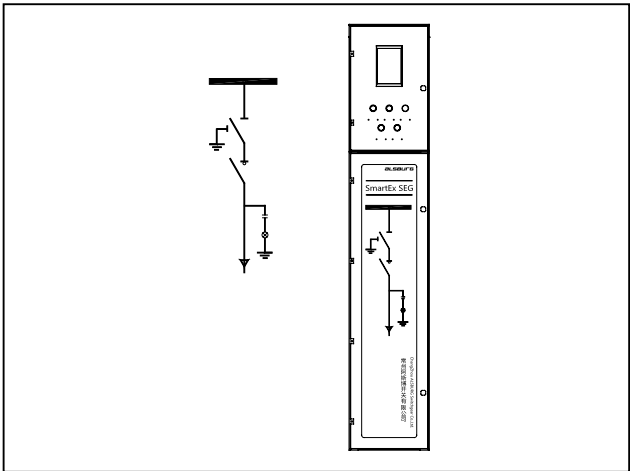
标准配置 Standard configuration	功能描述 Functional description
带电指示器 630A负荷开关 三工位隔离刀 Potential indicator 630A load switch Three-position knife isolating switch	配有三工位隔离开关，可以带负荷接通和断开母线线用于母线的联络 Equipped with three-position isolating switch, able to connect and disconnect main bus under load for bus contact.



负荷开关柜型，C柜型

Load Switch Cabinet, C Cabinet Type

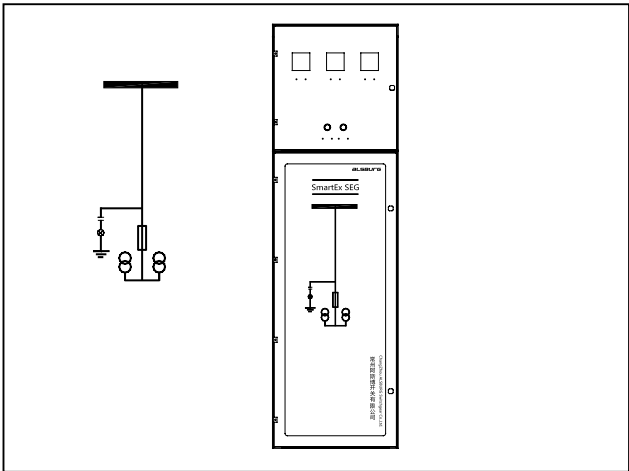
标准配置 Standard configuration	功能描述 Functional description
630A真空负荷开关 三工位或二工位隔离开关 带电指示器 Potential indicator 630A vacuum load switch Three-position or two-position isolating switch Potential indicator	配有真空负荷开关并且串联三工位或二工位隔离开关，用于接通或断开进出线电缆，具有开断正常负荷能力，同时具备短路关合能力。 Equipped with vacuum load switch and connected in series with three-position or two-position isolating switch, for connecting or disconnecting incoming and outgoing cable, with the capability of breaking normal load, and short-circuit making capability.



PT柜型，P1柜型

PT Cabinet Type, P1 Cabinet Type

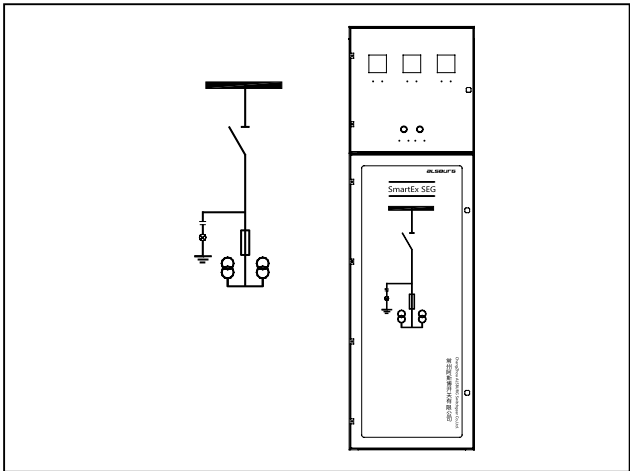
标准配置 Standard configuration	功能描述 Functional description
带电指示器 2只0.2级单相计量PT Potential indicator Two grade 0.2 single-phase measuring PT	配有电压互感器，可以进行电压测量和提供操作控制电压 Equipped with voltage transformer, able to perform voltage measurement and provide operation control voltage.



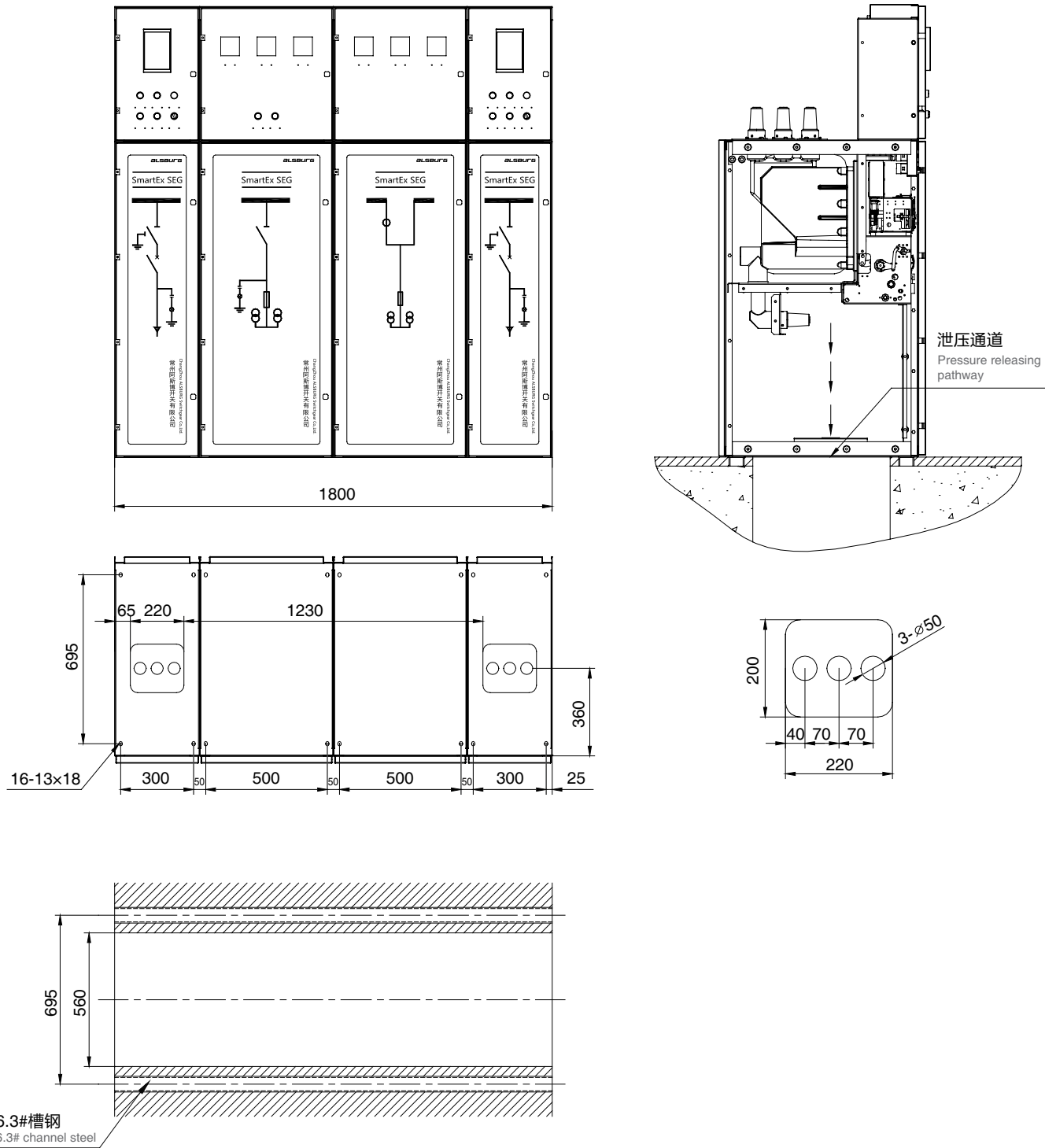
PT柜型，P2柜型

PT Cabinet Type, P2 Cabinet Type

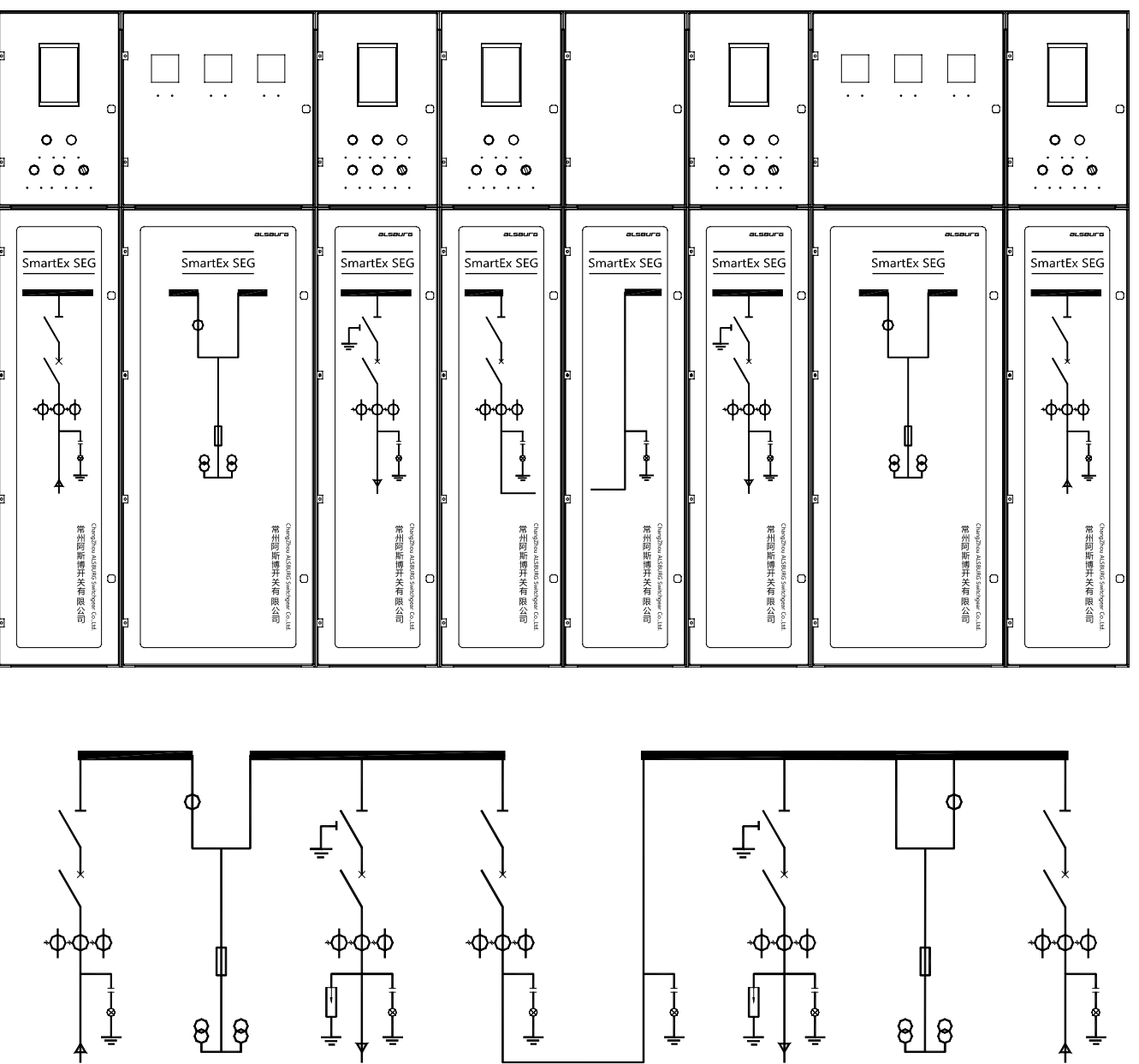
标准配置 Standard configuration	功能描述 Functional description
带电指示器 2只0.2级单相计量PT 二工位隔离刀 Potential indicator Two grade 0.2 single-phase measuring PT Two-position knife isolating switch	配有电压互感器，可以进行电压测量和提供操作控制电压 Equipped with voltage transformer, able to perform voltage measurement and provide operation control voltage.



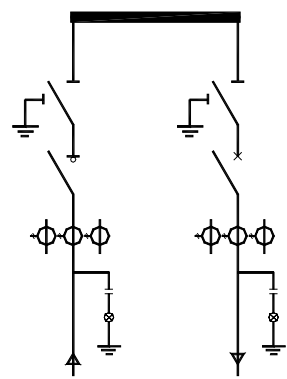
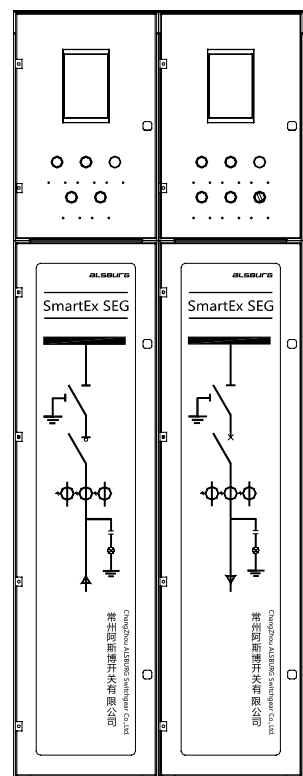
V - PT - M - V组合
V - PT - M - V combination



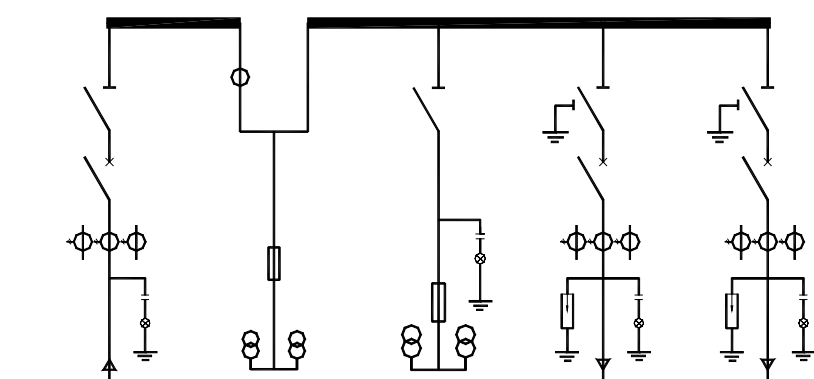
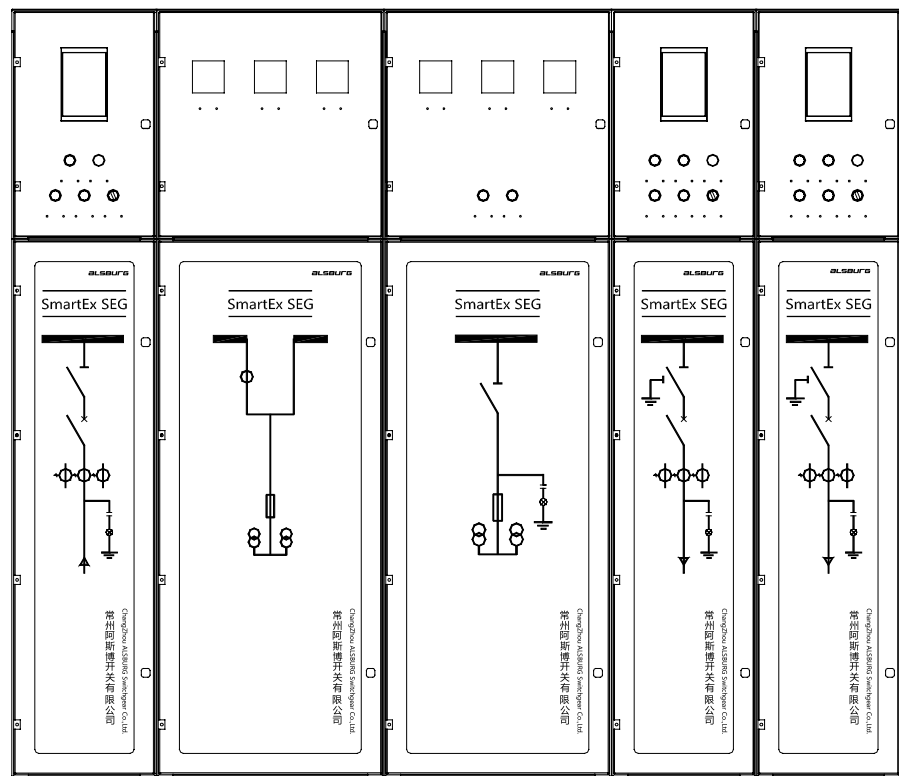
V - M - V - VL - B - V - M - V组合
V - M - V - VL - B - V - M - V combination



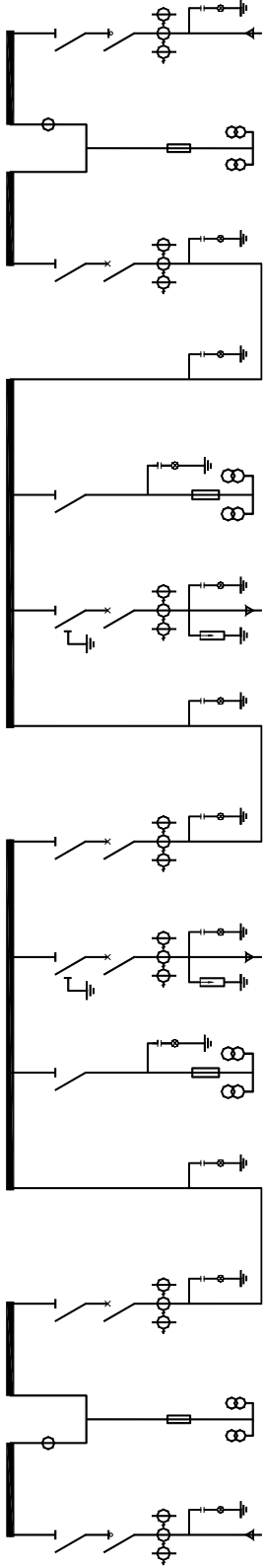
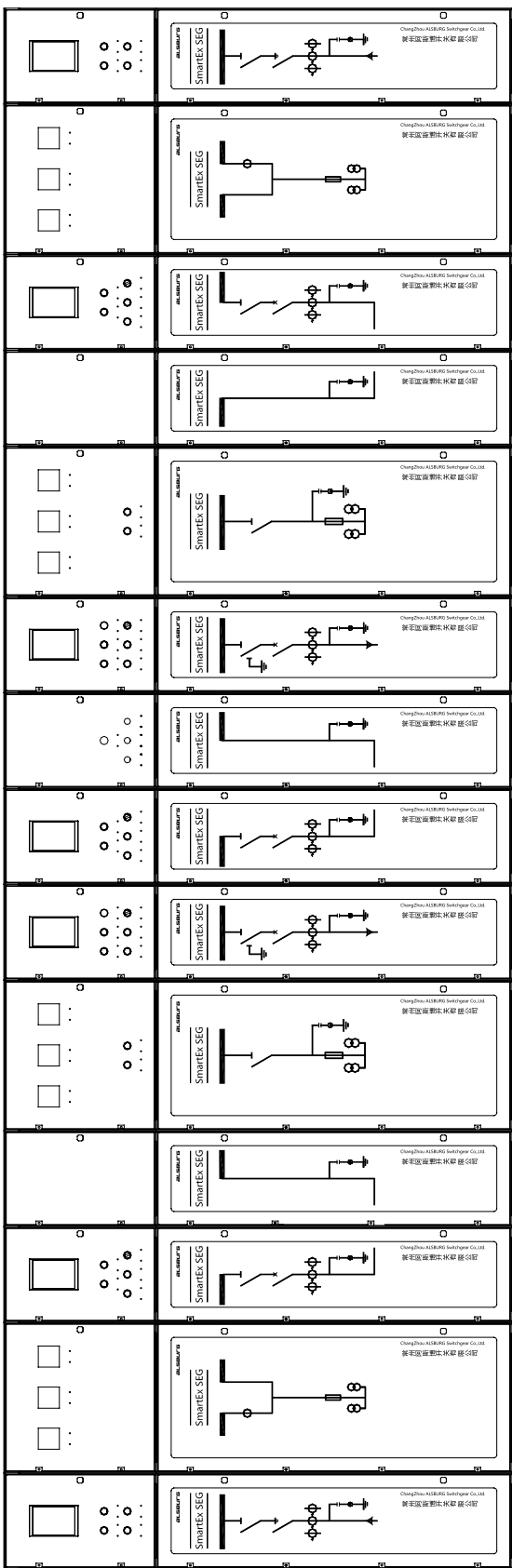
C - V组合
C - V combination



V - M - P2 - V - V组合
V - M - P2 - V - V combination



C - M - VL - B - P2 - V - VL - B - V - P2 - B - VL - M - C组合
C - M - VL - B - P2 - V - VL - B - V - P2 - B - VL - M - C combination



ALSBURG

常州阿斯博开关有限公司
Changzhou ALSBURG Switchgear Co.,Ltd.

江苏省常州市武进高新技术产业开发区龙惠路6号 邮编: 213166

No.6 Longhui Road, Wujin Hi-Tech Industrial Zone, Changzhou, Jiangsu 213166

销售电话(Sales Tel): 0519-88239288 88239088

技术支持(Technical Advisory): 0519-88239788

售后服务热线(Service Hotline): 0519-88239688

传真(Fax): 0519-88239388

邮箱(Email): alsburg@163.com

网址: <http://www.alsburg.cn>



微信公众号
WeChat public number



阿斯博官网
Alsburg official website