



VSS -12

Solid-Insulated Ring Main Unit



Stock Code: 300062

Address: 20 Jinzhou North Road, Jinshan Industrial Park, Cangshan District, Fuzhou, Fujian Province
Fax: 0086-591-86550380 86550208
P.C.: 350002
Official Website: www.ceepower.com/en/
Email: ceescb@ceepower.com



Scan the QR Code to
Access the Official Website

Innovate in Energy, Serve the Society through Industry

CONTENTS

Company Introduction	02
Foreword	03
Product Introduction	04
Basic Unit	09
Configuration Plan	14
Technical Highlights	15
Distribution Automation	17
Transformer & Line Protection	19
Auxiliary Components	20
Application Solutions	22
Dimensions and Foundation Layout	25

Company Introduction

Founded in 1999, Ceepower Co., Ltd. (Ceepower) is one of the leading providers of energy internet system solutions in China. Listed on the Shenzhen Stock Exchange since March 2010 under Stock Code 300062, Ceepower is the first company from Fuzhou to enter the Growth Enterprise Market.

With over 25 years of expertise, Ceepower has established a comprehensive industrial chain in R&D, production, investment, construction, and service in the power and energy sector, with a strong presence in smart grids, rail transit, and renewable energy. Leveraging extensive experience and cutting-edge technologies, Ceepower has expanded into an enterprise with multiple wholly-owned and controlled subsidiaries and more than 1,000 employees worldwide. The company holds over 200 patents and software copyrights, contributing significantly to national and industry standards.

Currently, Ceepower is aligning with the "Dual-Carbon" strategy, reinforcing its core strength in intelligent electrical equipment and renewable energy manufacturing. The company is committed to innovation and high-quality growth, aiming to be at the forefront of the energy internet solutions industry.

Energy Internet System Solutions Provider



Foreword

Application of RMUs

Ring Main Unit (RMU) is an emerging and rapidly developing component in smart grid distribution systems. It's extensively used in urban commercial districts, residential areas, and industrial zones, playing a crucial role in the national economy and daily life. Ensuring the reliability and stability of RMUs is essential due to their significant impact on maintaining a continuous and safe power supply.



Environmental Concerns with SF6 Gas

SF6 gas-insulated RMUs are prevalent but environmentally problematic. SF6 is a greenhouse gas identified by the Kyoto Protocol as one of six gases to be reduced. The protocol mandates developed countries to cut emissions of these gases by an average of 5.2% from 1990 levels by 2008-2012. SF6 equipment has potential leakage issues, contributing to environmental degradation and increasing the risk of explosions due to pressure build-up in case of inter-phase short circuits. There is also an expectation that SF6 gas usage may be banned post-2030 due to these environmental concerns.



Transition to Solid Insulation

The evolution from oil insulation to SF6 insulation marked a significant technological advancement. The ongoing transition from SF6 to solid insulation in RMUs reflects a blend of technological innovation and environmental awareness. This transition aligns with global trends toward eco-friendly solutions in power distribution.



Product Introduction

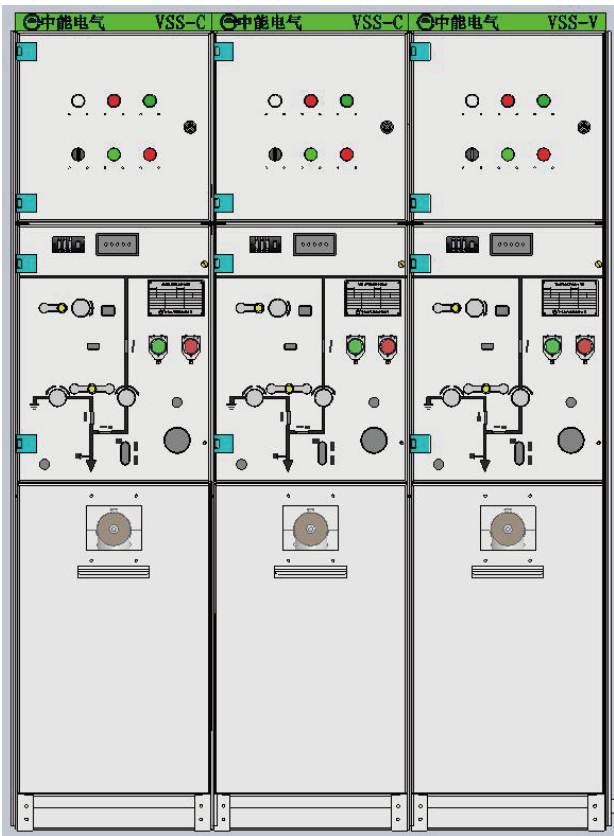
VSS Series Solid-Insulated Ring Main Units (RMUs)

use solid insulation materials as the primary insulating medium. Vacuum interrupters are encapsulated in epoxy resin (using APG technology) within the cabinet. The three-position switch (isolation, earthing) employs a coaxial knife-gate rotating mechanism, connected with soft links to form an integrated switch unit. This unit is then assembled with insulated busbars and other insulating connectors to create a fully insulated, sealed, and condensation-resistant RMU that can be directly and reliably earthed.



The design of the solid-insulated RMU meets the requirements of modern resilient and smart grids, featuring full insulation, full sealing, modularity, and compactness. The main circuit uses a common-box structure, which prevents inter-phase short circuits during operation and significantly reduces maintenance costs while enhancing maintenance efficiency.

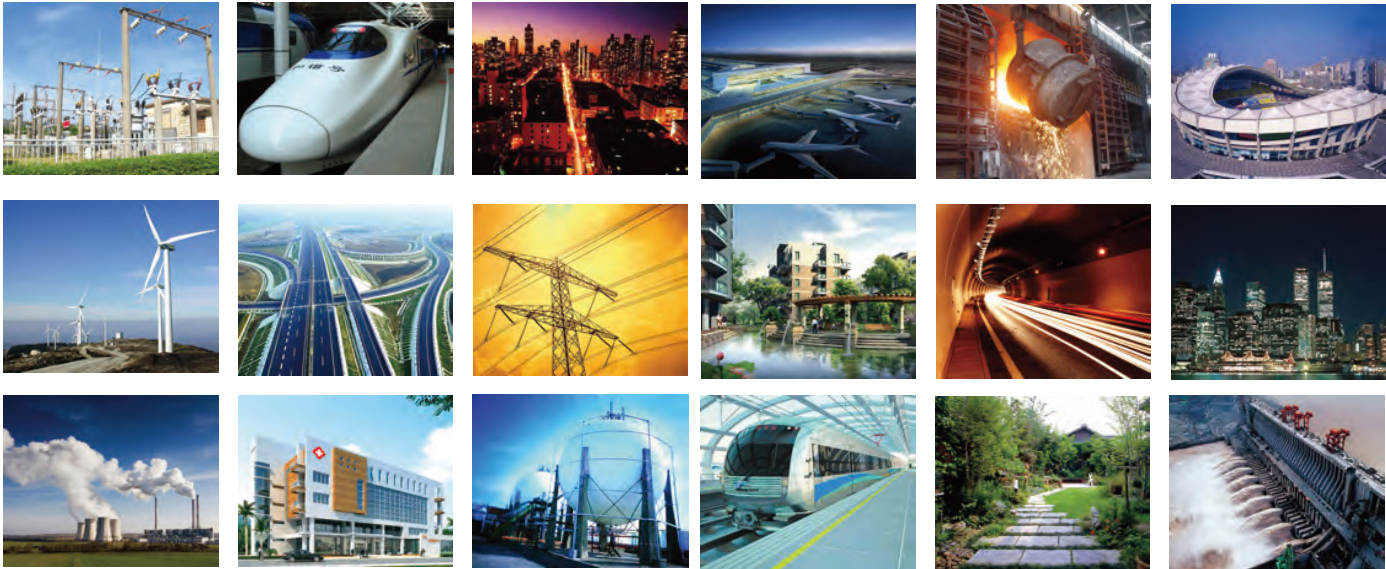
By eliminating SF6 gas and related gas-tight components, the solid-insulated RMU resolves the risk of explosions caused by pressure increases during internal switch short circuits. It also avoids harmful emissions from SF6 gas decomposition and leakage, making it an eco-friendly switchgear product. Compared to SF6 RMUs, the solid-insulated RMU demonstrates superior resistance to harsh environments, performing better in extreme cold, high altitudes, humid conditions, and strong winds. Additionally, it incorporates online monitoring functions for insulation, temperature rise, and mechanical characteristics to meet the requirements of smart grids.



Product Introduction

Application Fields

- Electrical Industry**
Distribution Substations, Compact Distribution Substations, Wind Power Stations
- Infrastructure**
Landscaping, Commercial Services, Public Health, Municipal Engineering
- Industrial Enterprises**
Petrochemical, Steel Smelting, Industrial Parks
- Buildings and Residential**
Hospitals, Stadiums, High-rise Buildings, Residential Communities
- Commercial Areas**
Shopping Centers, Hotels
- Rail Transit**
Urban Subway, Light Rail Projects, Airports, Highways



Product Introduction

Operating Environment

- Ambient Temperature:** -25°C to +45°C (daily average temperature not exceeding 35°C)
- Relative Humidity:** Daily average not exceeding 95%; monthly average not exceeding 90%
- Altitude:** Not exceeding 4000 meters (high voltage parts not affected by altitude)
- Seismic Intensity:** Not exceeding level 9
- Usage Locations:** Indoor/Outdoor
- Installation Environment:** Free from explosive and corrosive gases, severe vibration; pollution level not exceeding Grade III

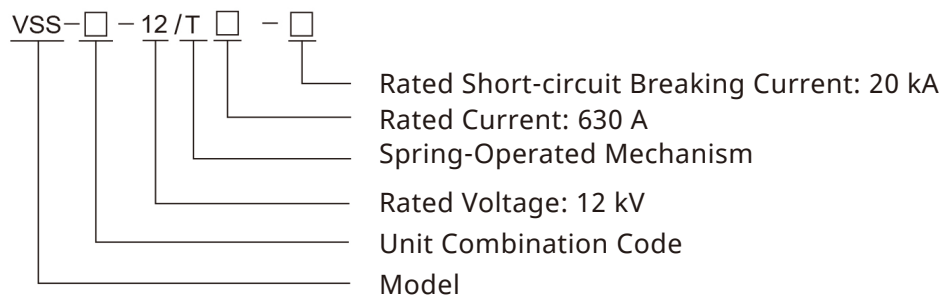
Product Features

- Solid Insulation**
Eco-friendly and no risk of explosion due to internal switch short circuit and pressure rise.
- Three-Position Switch**
Manage isolates, breaks, and grounds, integrated with vacuum interrupter via conductive components. Epoxy resin (APG process) sealed pole unit.
- Sealed Pole Unit**
Fully sealed pole unit with an IP67 protection rating, and the service life reaches up to 30 years.
- Convenient Common-Box Design**
Easy to install, inspect, and maintain and able to prevent phase-to-phase short circuits.
- Adaptable to Extreme Environments**
The primary circuit is insulated by vacuum and solid materials, suitable for use in high-altitude and cold regions without additional adjustments.
- Visible Isolation Break**
Allows direct observation of isolation breaks, ensuring safety.
- Compact Design**
Integrated operation mechanisms for three-position switch and circuit breaker, reliable interlock.
- Embedded Sensors**
Voltage and current sensors can be embedded in the switch pole, supporting smart grid automation.
- Modular Design**
Switch body, insulated busbar, and connection components allow flexible configuration according to user needs.

RMU Comparison Table			
Item	Solid-Insulation Embedded Pole RMU	SF6 Gas Insulation RMU	Solid Insulation RMU
Insulation Type	Air, Resin	SF6	Epoxy Resin
Connecting Part Strength	Average	Average	Good
Volume	Large	Small	Small
Weight	Heavy	Light	Light
Hazardous Gas	None	Present	None
Maintenance	Requires Maintenance	Regular Maintenance	Maintenance-Free
Operating Environment	Restricted	Unrestricted	Unrestricted

Product Introduction

Naming Rule



Standards Compliance

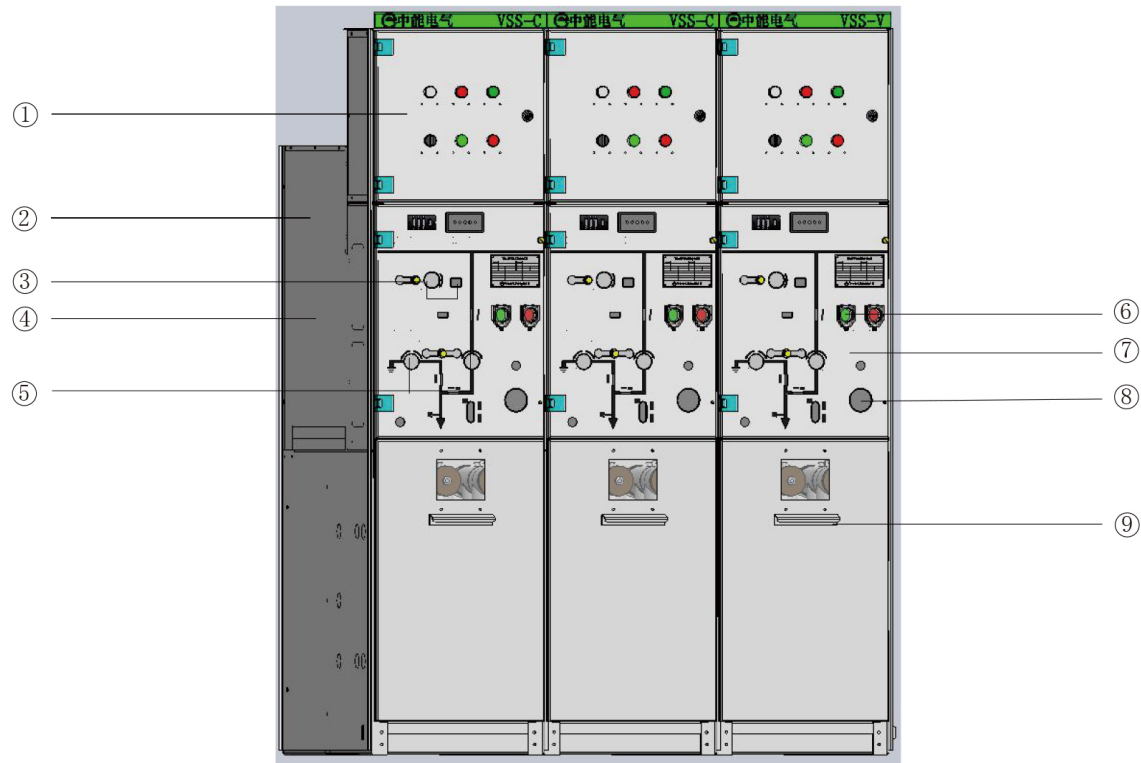
- GB 3804-2004: 3.6 kV~40.5 kV High Voltage AC Load Switch
- GB 1984-2014: High Voltage AC Circuit Breakers
- GB 1985-2014: High Voltage AC Isolating Switches and Earthing Switches
- GB 3906-2006: 3.6 kV~40.5 kV AC Metal-enclosed Switchgear and Controlgear
- GB/T 11022-2011: Common Technical Requirements for High Voltage Switchgear and Controlgear Standards
- GB 4208-2008: Degrees of Protection Provided by Enclosures (IP Code)
- DL/T404-2007: Technical Conditions for Ordering 3.6 kV~40.5 kV AC High Voltage Switchgear
- Q/GDW 730-2012: Technical Conditions for 12 kV Solid-insulated Ring Main Unit

Specifications

Item	Unit	Basic Unit	
		Load Switch	Circuit Breaker
Rated Voltage	kV	12	12
Rated Current	A	630	630
1-min Power Frequency Withstand Voltage	kV	42/48	42/48
Lightning Impulse Withstand Voltage	kV	75/85	75/85
Rated Short-circuit Breaking Current	kA	—	20
Rated Short-time Withstand Current	kA	20	20
Rated Short-circuit Duration	S	4	4
Rated Peak Withstand Current	kA	50	50
Rated Short-circuit Making Current	kA	50	50
Pole Unit Protection Rating	—	IP67	
Enclosure Protection Rating	—	IP4X	
Phase Spacing of Switch Pole Units	mm	130	
Cabinet Dimensions	mm	440*850*2000	

Product Introduction

Product Structure



- ① **Instrument Compartment:** For installing monitoring and indicating instruments.
- ② **Busbar Compartment:** Busbars are installed on the same plane, expandable to both sides for easy interconnection.
- ③ **CB Energy Storage Operation and Indication:** The handle operated to charge the CB mechanism, with an indication for energy storage status.
- ④ **Switch Compartment:** Contains main circuit vacuum interrupters and three-position switches with conductive connectors.
- ⑤ **Isolation and Earthing Switch Operation Aperture:** The handle operated to control the load switch for opening and closing operations.
- ⑥ **CB Control Buttons and Indicators:** After energy storage, control the load switch via buttons for opening and closing operations.
- ⑦ **Mechanism Compartment:** Houses the operating mechanism, indicating operation positions.
- ⑧ **Observation Window:** Allows viewing of the switch isolation state.
- ⑨ **Cable Compartment:** Connects incoming and outgoing cables via fully insulated, sealed connectors (cable connector).

Basic Unit

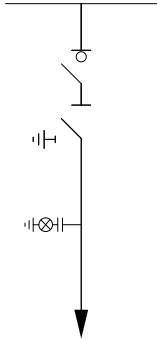
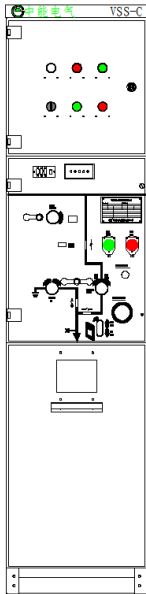
C Unit: Load Switch Unit with Three-Position Switch (Isolating, Earthing) and Vacuum Load Break Switch, mainly used for connection, branching, and control in ring main cable lines.

Standard Components

- 630 A Insulated Busbar System
- 630 A Vacuum Load Break Switch
- Spring-Operated Mechanism for Vacuum Load Break Switch
- 630 A Three-Position Switch (Isolating, Earthing)
- Three-Position Switch Operating Mechanism
- Mechanical Interlock and Position Indicator for Vacuum Load Break Switch and Three-Position Switch
- Cable Connection Bushings (with sensor functionality)
- Live Line Indicator
- Interlock Device between Three-Position Switch and Front Lower Door
- Cabinet Enclosure
- Grounding Busbar
- Operating Handle (one handle per unit)

Optional Components

- Motor-Operated Mechanism
- Short Circuit and Earth Fault Indicator
- Separable Connectors (Cable Connector)
- Surge Arrester
- Live Line Grounding Interlock Device for Infeeds
- Keyed Mechanical Interlock
- Ring Current Transformer and Metering
- Auxiliary Switch



Basic Unit

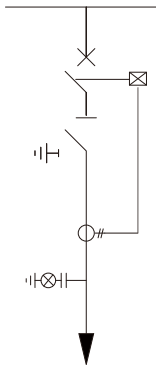
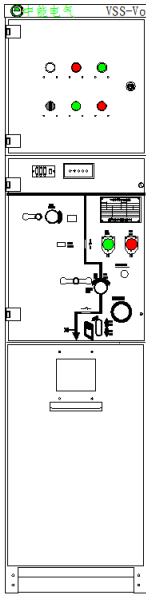
V Unit: Circuit Breaker Unit with Three-Position Switch (Isolating, Earthing) and Vacuum Circuit Breaker, mainly used for connection, branching, and control in ring main cable lines.

Standard Components

- 630 A Insulated Busbar System
- 630 A Vacuum Circuit Breaker
- Spring-Operated Mechanism for Vacuum Circuit Breaker
- 630 A Three-Position Switch (Isolating, Earthing)
- Three-Position Switch Operating Mechanism
- Mechanical Interlock and Position Indicator for Vacuum Circuit Breaker and Three-Position Switch
- Cable Connection Bushings (with sensor functionality)
- Live Line Indicator
- Interlock Device between Three-Position and Switch and Front Lower Door
- Cabinet Enclosure
- Grounding Busbar
- Operating Handle (one handle per unit)

Optional Components

- Motor-Operated Mechanism
- Short Circuit and Earth Fault Indicator
- Separable Connectors (Cable Connector)
- Surge Arrester
- Live Line Earthing Locking Device for Infeeds
- Keyed Mechanical Interlock
- Ring Current Transformer and Metering
- Auxiliary Switch



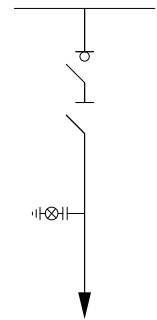
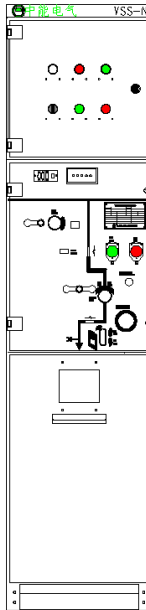
N Unit: Load Switch Unit with Two-Position Isolator Switch and Vacuum Load Break Switch, mainly used for connection, branching, and control in ring main cable lines.

Standard Components

- 630 A Insulated Busbar System
- 630 A Vacuum Load Break Switch
- Spring-Operated Mechanism for Vacuum Load Break Switch
- 630 A Two-Position Isolator Switch
- Two-Position Switch Operating Mechanism
- Mechanical Interlock and Position Indicator for Vacuum Load Break Switch and Two-Position Switch
- Cable Connection Bushings (with sensor functionality)
- Live Line Indicator
- Interlock Device between Two-Position Switch and Front Lower Door
- Cabinet Enclosure
- Grounding Busbar
- Operating Handle (one handle per unit)

Optional Components

- Motor-Operated Mechanism
- Short Circuit and Earth Fault Indicator
- Separable Connectors (Cable Connector)
- Surge Arrester
- Keyed Mechanical Interlock
- Ring Current Transformer and Metering
- Auxiliary Switch



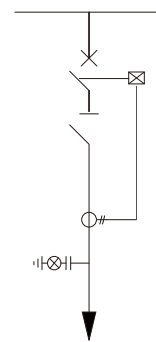
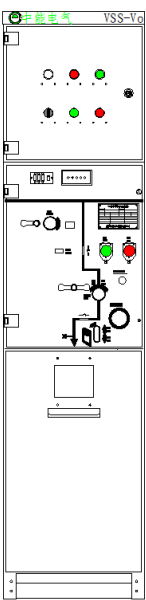
Vo Unit: Circuit Breaker Unit with Two-Position Isolator Switch and Vacuum Circuit Breaker, mainly used for connection, branching, and control in ring main cable lines.

Standard Components

- 630 A Insulated Busbar System
- 630 A Vacuum Circuit Breaker
- Spring-Operated Mechanism for Vacuum Circuit Breaker
- 630 A Two-Position Isolator Switch
- Two-Position Switch Operating Mechanism
- Mechanical Interlock and Position Indicator for Vacuum Circuit Breaker and Two-Position Switch
- Cable Connection Bushings (with sensor functionality)
- Live Line Indicator
- Interlock Device between Two-Position Switch and Front Lower Door
- Cabinet Enclosure
- Grounding Busbar
- Operating Handle (one handle per unit)

Optional Components

- Motor-Operated Mechanism
- Short Circuit and Earth Fault Indicator
- Separable Connectors (Cable Connector)
- Surge Arrester
- Keyed Mechanical Interlock
- Ring Current Transformer and Metering
- Auxiliary Switch



Basic Unit

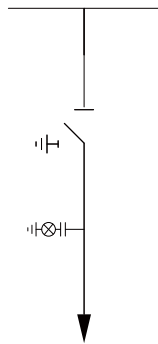
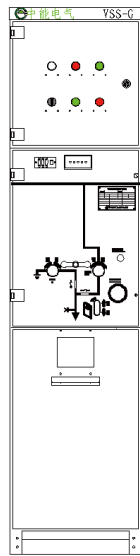
G Unit: Isolation Unit with Three-Position Switch (Isolating, Earthing), mainly used for connection, branching, and control in ring main cable lines.

Standard Components

- 630 A Insulated Busbar System
- 630 A Three-Position Switch (Isolating, Earthing)
- Three-Position Switch Operating Mechanism
- Mechanical Interlock and Position Indicator for Three-Position Switch
- Cable Connection Bushings (with sensor functionality)
- Live Line Indicator
- Interlock Device between Three-Position Switch and Front Lower Door
- Grounding Busbar
- Operating Handle (one handle per unit)

Optional Components

- Short Circuit and Earth Fault Indicator
- Separable Connectors (Cable Connector)
- Surge Arrester
- Keyed Mechanical Interlock
- Ring Current Transformer and Metering
- Auxiliary Switch



Basic Unit

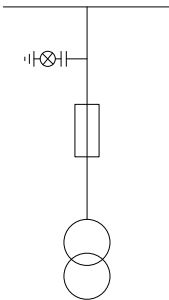
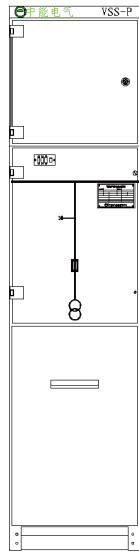
P Unit: Busbar/Incoming PT Unit, a voltage transformer unit with fully insulated, fully sealed construction, using fully insulated, fully sealed, fully shielded separable connectors to connect with the voltage transformer.

Standard Components

- Separable Connectors (Cable Connector)
- Voltage Transformer
- Protection Fuse
- Capacitive Voltage Indicator for Live Bushing (with phase testing port)
- Cabinet Enclosure
- Grounding Busbar

Optional Components

- Metering
- Power Module
- Battery Pack



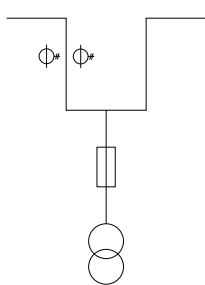
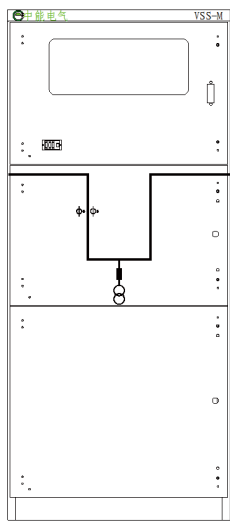
M Unit: Metering Unit, designed with air insulation, allowing easy replacement of current transformers with different ratios as needed.

Standard Components

- 630 A Busbar
- Voltage Transformers (two units)
- Current Transformers (two units)
- Protection Fuse for PT
- Cabinet Enclosure
- Grounding Busbar

Optional Components

- Metering



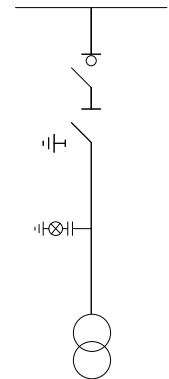
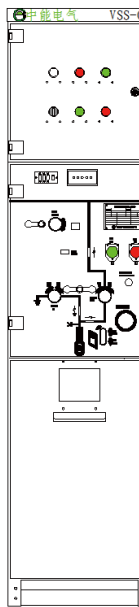
CP Unit: Load Switch Unit with Three-Position Switch (Isolating, Earthing) and Vacuum Load Break Switch, using fully insulated, fully sealed, fully shielded separable connectors to connect with the voltage transformer.

Standard Components

- 630 A Insulated Busbar System
- 630 A Vacuum Load Break Switch
- Spring-Operated Mechanism for Vacuum Load Break Switch
- 630 A Three-Position Switch (Isolating, Earthing)
- Three-Position Switch Operating Mechanism
- Mechanical Interlock and Position Indicator for Vacuum Load Break Switch and Three-Position Switch
- Voltage Transformer
- Protection Fuse for PT
- Cable Connection Bushings (with sensor functionality)
- Live Line Indicator
- Interlock Device between Three-Position Switch and Front Lower Door
- Grounding Busbar
- Operating Handle (one handle per unit)

Optional Components

- Motor-Operated Mechanism
- Short Circuit and Earth Fault Indicator
- Separable Connectors (Cable Connector)
- Surge Arrester
- Live Line Earthing Locking Device for Infeeds
- Keyed Mechanical Interlock
- Ring Current Transformer and Metering
- Switch
- Power Module
- Battery Pack



Basic Unit

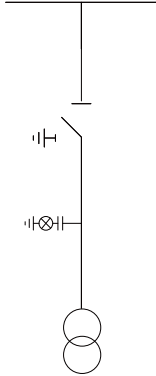
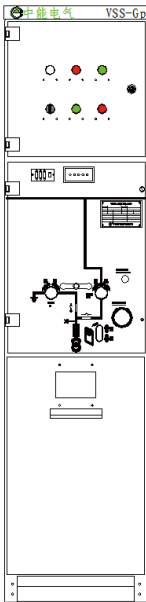
GP Unit: Switch Unit with Three-Position Switch (Isolating, Earthing), connected to the voltage transformer using fully insulated, fully sealed, fully shielded separable connectors.

Standard Components

- 630 A Insulated Busbar System
- 630 A Three-Position Switch (Isolating, Earthing)
- Three-Position Switch Operating Mechanism
- Mechanical Interlock and Position Indicator for Three-Position Switch
- Voltage Transformer
- Protection Fuse for PT
- Cable Connection Bushings (with sensor functionality)
- Live Line Indicator
- Interlock Device between Three-Position Switch and Front Lower Door
- Grounding Busbar
- Operating Handle (one handle per unit)

Optional Components

- Motor-Operated Mechanism
- Short Circuit and Earth Fault Indicator
- Separable Connectors (Cable Connector)
- Surge Arrester
- Live Line Earthing Locking Device for Infeeds
- Keyed Mechanical Interlock
- Ring Current Transformer and Metering
- Switch
- Power Module
- Battery Pack



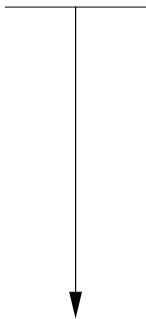
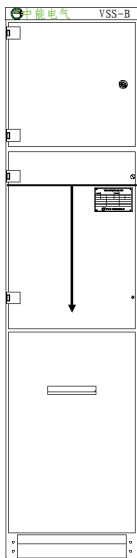
B Unit: Cable Connection Unit (No Switch), designed for easy expansion of incoming and outgoing lines.

Standard Components

- Separable Connectors (Cable Connector)
- Cable Connection Bushings (with sensor functionality)
- Live Line Indicator
- Cabinet Enclosure
- Grounding Busbar

Optional Components

- Short Circuit and Earth Fault Indicator
- Additional Separable Connectors (Cable Connector)
- Surge Arrester
- Current Transformer



Configuration Plan

Item	01	02	03	04	05	06	07	08	09
Basic Unit									
Unit Name	C Unit	N Unit	V Unit	Vo Unit	G Unit	M Unit	P Unit	CP Unit	B Unit
Dimension (Length x Width x Height)	440 * 850 *2000					800 * 850 *1380	440 * 850 *2000		
Isolator/Earth Switch		Two-Position		Two-Position					
Vacuum Load Switch/ Vacuum Circuit Breaker									
Live Line Indicator									
Voltage Transformer									
Current Transformer									
Digital Relay Protection Device									
Motor-Operated Mechanism									
Operating Handle									
Protection Fuse									
Auxiliary Switch									
Metering									
Cable Connection Accessories									
Cabinet Enclosur									
FTU and Communication Device									

NOTE: represents basic configuration and represents optional configuration

Technical Highlights

Advanced Casting Technology

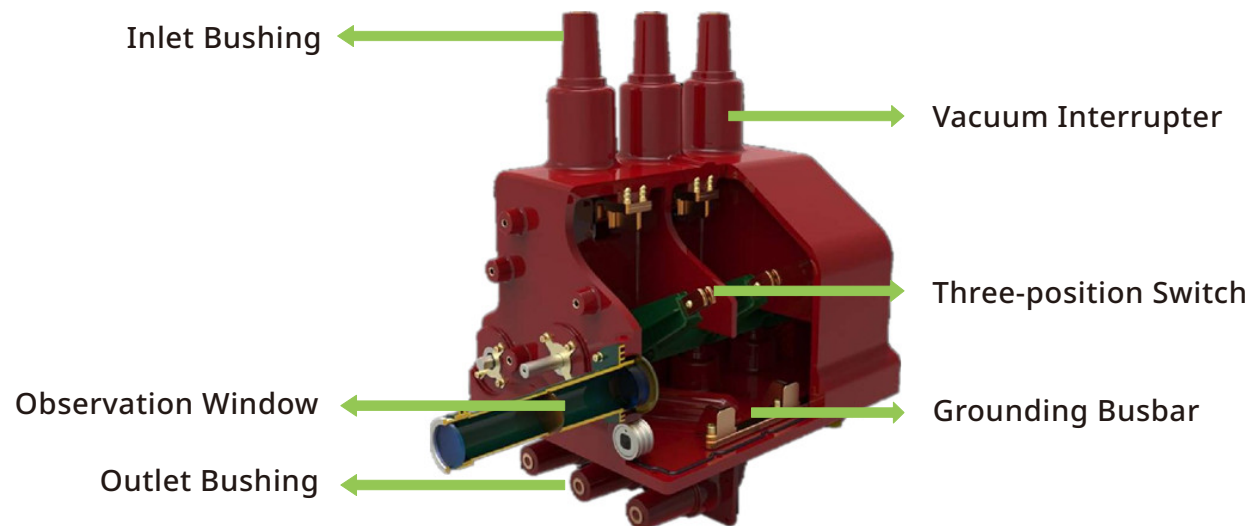
The VSS series ring main unit (RMU) is based on solid encapsulation and vacuum insulation technologies. Using epoxy resin (APG process), it integrates the three-position switch (isolation, grounding), vacuum interrupter, and primary conductive parts into a single switch unit. This unit, combined with insulated busbars and other connectors, forms a fully insulated, fully enclosed, and condensation-proof RMU.

The three-position switch features an in-house development unit pole with optimized electrical connections and structure. Using electromagnetic field analysis software, the electromagnetic field is evenly distributed, making the unit pole structure more reasonable mechanically and electrically. Observation windows allow visual confirmation of the isolation port, preventing misoperation and ensuring full insulation.

Through independent development, a three-position switch, vacuum circuit breaker, transmission device, and operation mechanism with reliable interlocking have been designed.

The transmission mechanism and operation mechanism are connected by professional sealing devices to achieve full sealing, providing IP67 protection level, and equipped with professional pressure relief and explosion-proof devices.

Superior Solid-insulated Pole Structure



Technical Highlights

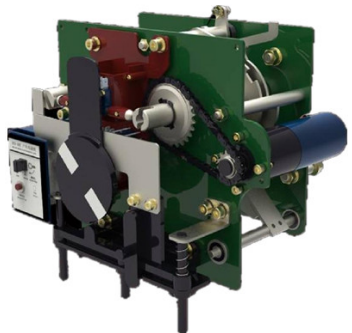
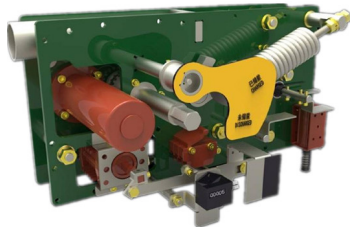
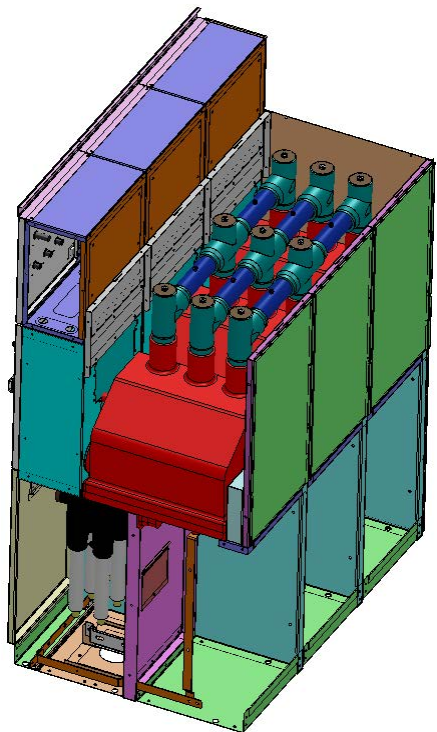
Reliable Operation Mechanism

Long-term statistics and analysis from the power sector indicate that operation mechanism failures account for 30-70% of various faults in medium and high voltage switchgear. The reliability of the operation mechanism is crucial for the solid-insulated RMUs.

The VSS series solid-insulated RMU adopts a spring-operated mechanism, proven stable over decades of industry use. The motor-operated mechanism is composed of mechanical and electric modules, with the electric module pre-connected with wires and circuit boards. This design allows for convenient electric upgrades of manual mechanisms, and also facilitates the replacement of wiring and the maintenance and inspection of circuit boards in motor-operated mechanisms. Each unit undergoes approximately 300 mechanical tests before shipment to ensure optimal coordination between the switch body and operation mechanism.

Modular Design

Adhering to modular design principles, the RMU enables unit-based modularization of solid-insulated poles, insulated busbars, intermediate connection devices, and insulated outlet bushings. Specialized sealing devices ensure seamless transitions and connections, providing flexible solutions to meet various requirements.



Distribution Automation

DTU and Communication Devices

The ELE series ring main unit (RMU) supports to be equipped with the CEE-STD9000 series distribution automation terminal unit. The Distribution Terminal Unit (DTU) adopts advanced digital signal processing, high-speed industrial communication, multi-CPU integration, embedded industrial chipsets, and a real-time multitasking OS, featuring high stability, reliability, real-time performance, strong environmental adaptability, and powerful functionality. It connects RMUs to SCADA systems via various networks (such as fiber optic, power line carrier, audio cable, GPRS) to enable remote control, telemetry, and teleindication. When paired with master station software, it also provides fault isolation, recovery, and network reconfiguration for the distribution network.

Key Functions of the CEE-STD9000 DTU

- **Data Acquisition and Processing:** Supports up to 16 circuits, each with 3-channel telemetry, 7-channel teleindication, and 1-channel remote control.
- **Parameter Setting:** Parameters can be set remotely or locally, and the program can be updated remotely.
- **Self-diagnosis and Recovery:** Periodically check internal chips, alerts higher levels to internal conditions, and features program recovery.
- **Fault Detection:** Quickly detects faults (overcurrent, overload, single-phase grounding), reports them to the master or substation for fault isolation.
- **Fault Recording:** Records up to 64 analog channels, capturing pre-fault and post-fault waveforms for detailed analysis. (Manual recording can last for up to 1000 cycles, 20 seconds. During fault recording, it captures 3 cycles before the fault and 2 cycles after the fault.). Supports recording waveforms in detail by using the maintenance software.
- **Maintenance:** Includes a local maintenance interface, event logging, and power loss data retention.

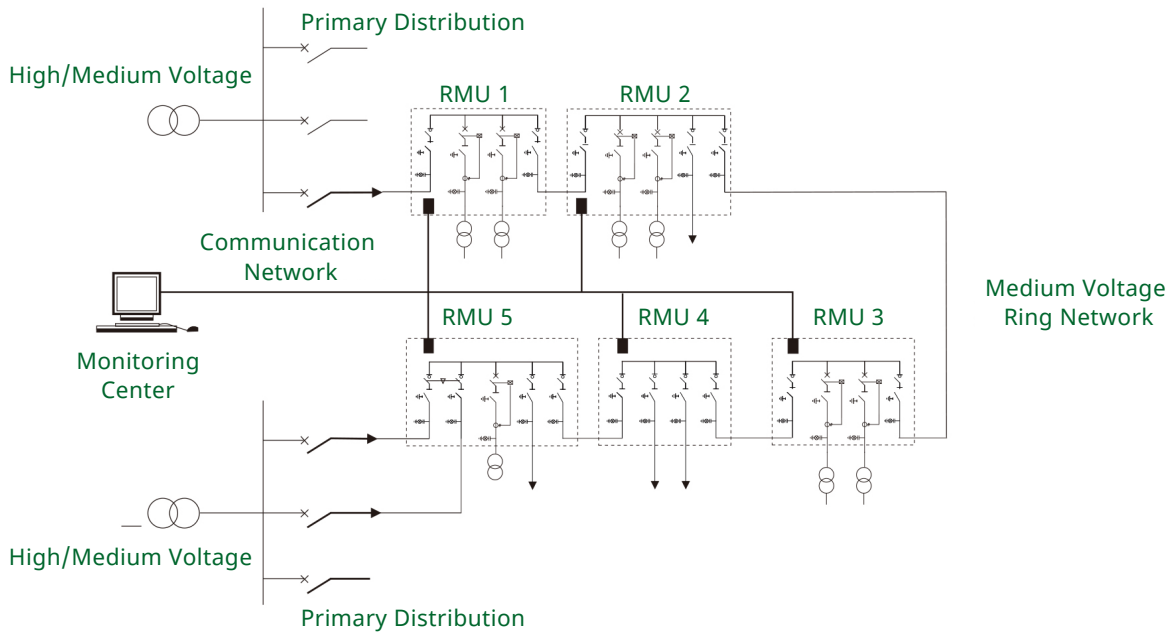


CEE-STD9000

Distribution Automation

Ring Network Automation System

A typical ring network distribution system is composed of five ring main units:



Each unit of the ring main unit (RMU) is equipped with an motor-operated mechanism, with each RMU configured with an MCU970 distribution automation terminal and optical terminal , connecting to the control master station via fiber optics.

System Capabilities

- (A) Remotely control the opening, closing, or interlocking of load switches or circuit breakers from the control master or substation, or perform these operations locally.
- (B) Obtain the status of switch contacts, fuse status, circuit breaker protection, and grounding switch contact from the control master or substation.
- (C) Retrieve electrical parameters for each circuit, such as voltage, current, zero-sequence voltage, zero-sequence current, power, power factor, and frequency from the control master or substation.
- (D) Optimize configuration parameters of each distribution automation terminal from the control master or substation.
- (E) Synchronize the clocks of the master station, substation, and each distribution automation terminal.
- (F) Acquire fault/abnormal information from the distribution automation terminals, and utilize the master or substation software to achieve fault isolation, restore power to non-fault areas, and optimize and reconfigure network load.

Transformer & Line Protection

Circuit Breaker Protection

The VSS series switchgear provides transformer protection with circuit breakers (with relay protection). These breakers provide ideal short-circuit protection, especially for small to medium transformers. Vacuum circuit breakers are sensitive to minor overcurrents and are also suitable for protecting large transformers and main lines.

The VSS circuit breaker unit (V unit) can be equipped with SEG WIC1, ST260N series protection relays, or other models, providing overcurrent protection for high-capacity transformers and mainlines.

These CT-powered relays feature inverse and definite time characteristics, are compact, and resistant to electromagnetic interference, making them ideal for compact RMU breaker units.

Specifications

Timed Overcurrent Protection	0.9 - 2.5 x Is
Operating Time	0.04 - 300 s
Inverse-Time Overcurrent Protection	0.9 - 2.5 x Is N - INV V - INV E - INV LI - NI - INV HV - FUSE Curve Action
Short-Circuit Fault Protection	Timed Overcurrent 1 - 20 x Is
Operating Time	0.04 - 3 s
Ground Fault Protection	Timed Overcurrent 0.2 - 2.5 x Is
Operating Time	0.1S - 20 s

WIC1 Protection Relay Parameter Settings

Primary Rated Current Selection Table (The corresponding values for different CT models are set using DIP1-1, 2, 3, 4.)																
DIP1-1	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
DIP1-2	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON
DIP1-3	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON
DIP1-4	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON
AMZ-W2	16	18	20	22	24	26	28	30	32	34	36	40	44	48	52	56
AMZ-W3	32	36	40	44	48	52	56	60	64	68	72	80	88	96	104	112
AMZ-W4	64	72	80	88	96	104	112	120	128	136	144	160	176	192	208	224
AMZ-W5	128	144	160	176	192	208	224	240	256	272	288	320	352	384	416	228

I > Features Selections								
DIP1-5	OFF	ON	OFF	ON	OFF	ON	OFF	ON
DIP1-6	OFF	OFF	ON	ON	OFF	OFF	ON	ON
DIP1-7	OFF	OFF	OFF	OFF	ON	ON	ON	ON
DIP1-8	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
I > Features	Definite Time	Normal Inverse Time	Strong Inverse Time	Ultra-Strong Inverse Time	Long Inverse Time	RI Curve	HV Fuse	FR Fuse

Auxiliary Components

Operating Power Supply

Using three-phase or single-phase fully insulated and fully sealed bushing-type voltage transformers(VTs), the power supply connects to the RMU's power or bus side bushings through insulated, sealed, and shielded separable connectors and power cables. The primary side of the VT has current-limiting fuse protection.

Four Power Supply Configurations are Available:

- (A) Directly provide 220 VAC from the VT secondary side.
- (B) Add UPS on the VT's secondary side for uninterrupted 220 VAC, with UPS providing power during high-voltage outages.
- (C) Add a rectifier switch power supply on the VT's secondary side, providing DC power for motor-operated mechanism of RMU.
- (D) Add a high-frequency rectifier switch power supply and sealed lead-acid battery on the VT's secondary side, providing DC power for motor-operated mechanism of RMU, and managing intelligent charging with the battery supplying power during outages.

Main Specifications:

Voltage Transformer			
JDZR15-10/JSZV12-10R	Transformation Ratio: 10 / 0.1 / 0.22 kV	Accuracy Class: 0.5	
Rated Output: 30 /50 VA	Maximum Output: 300 / 500 VA		

Current-Limiting Fuse

XRNP-12 Rated Voltage: 12 kV	Rated Current: 0.5 A
Breaking Current: 50 kA	

Uninterruptible Power Supply (UPS)

Input Voltage: 220 VAC	Output Voltage: 220 VAC
Rated Output Capacity: 1000 VA	

Rectifier Power Module

Input Voltage: 220 VAC	Output Voltage: 24 VDC (48 VDC) (110 VDC)
Rated Output Capacity: 300 W	

Battery

Rated Voltage: 12 V
Nominal Capacity: 7 Ah, 10 Ah,17 Ah. 24 Ah. 40 Ah

Auxiliary Components

Motor Module

The DC motor reduction mechanism and control unit use a modular design, which can be installed either at the factory or on-site by the customer. After installing the motor operating mechanism, all functional units can seamlessly integrate into the remote control and power distribution automation system. For all grounding switches from different units, manual operation is required, and they have the capability to close fault currents.

Current Measurement

Bushing-type or split-type current transformers can be installed on each power cable or inlet/outlet bushing for current measurement and fault current detection.

Auxiliary Contacts

Auxiliary contacts indicate the status change of functional units or auxiliary components through the position state (open or closed) of the microswitch contacts. They serve as status monitoring and control signals and are essential components in electrical control circuits.

Short-Circuit and Ground Fault Indicator

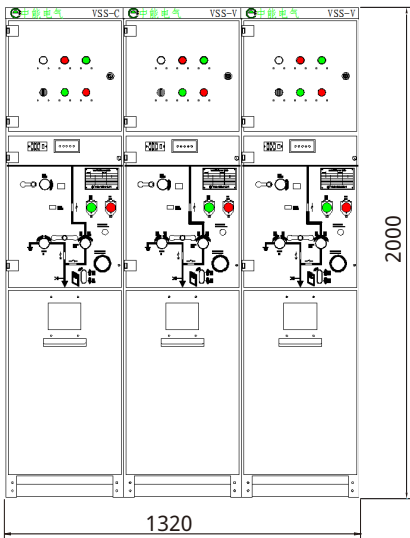
The DJD-1 type short-circuit and ground fault indicator consists of three short-circuit fault sensors, one ground fault sensor, and a display unit mounted on the panel. It issues an alarm when a fault current occurs in any switch circuit, aiding in the quick location of the fault. The device can be manually reset (with a reset button on the display unit) or automatically reset at a pre-set time (1, 4, 8, 12, 16, 24, 48 hours selectable).

Main Technical Parameters:

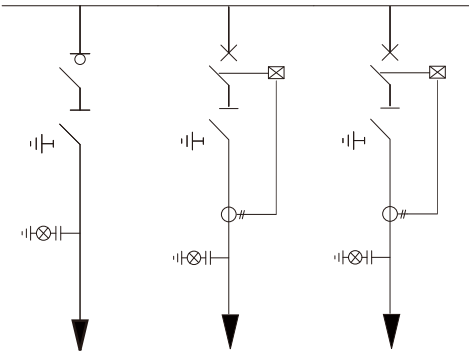
- Ground Fault Alarm Current:** 3~200 A $\pm 10\%$
- Short-Circuit Alarm Current:** 150~1500 A $\pm 10\%$
- Operating Environment:** -18 °C~+60 °C
- Operating Current:** 3.6 V lithium battery (valid for at least 5 years)
- Automatic Reset Time:** 1, 4, 8, 12, 16, 24, 48 hours selectable (default 4 hours)
- Protection Level:** IP54
- Remote Relay Output Capacity:** 220 VAC / 0.3 A; 30 VDC / 1 A
- Standby Current of Indicator:** ≤ 10 μ A
- Indication State Current of Indicator:** ≤ 0.8 mA
- Maximum Withstand Current of Short-Circuit Sensor:** 20 kA, 3 s

Application Solutions

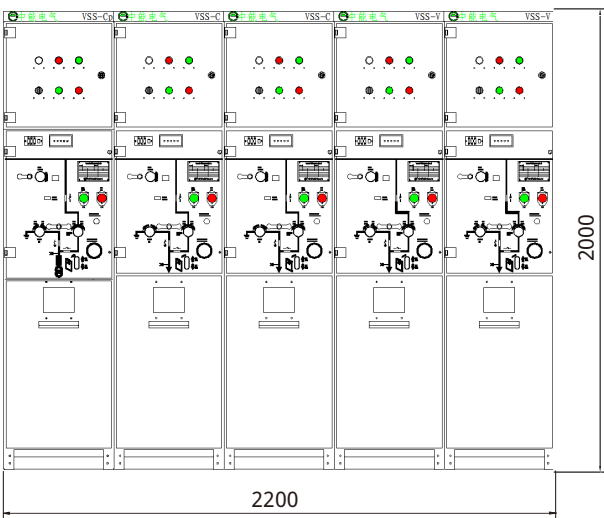
Solution 1: C-V-V Units Combination



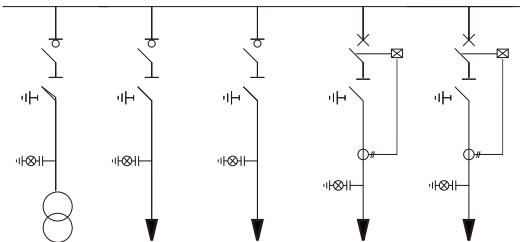
Note: The above dimensions are for reference only. Actual dimensions may vary.



Solution 2: CP-C-C-V-V Units Combination

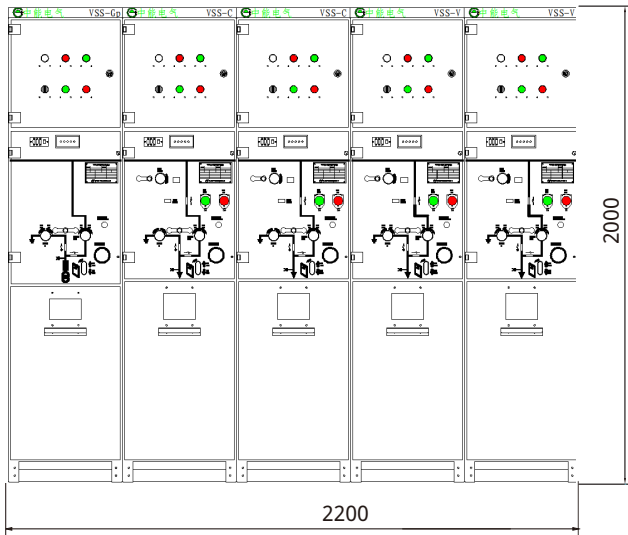


Note: The above dimensions are for reference only. Actual dimensions may vary.

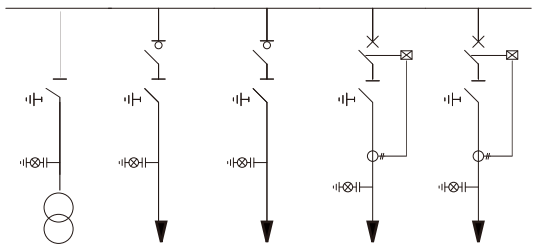


Application Solutions

Solution 3: GP-C-C-V-V Units Combination

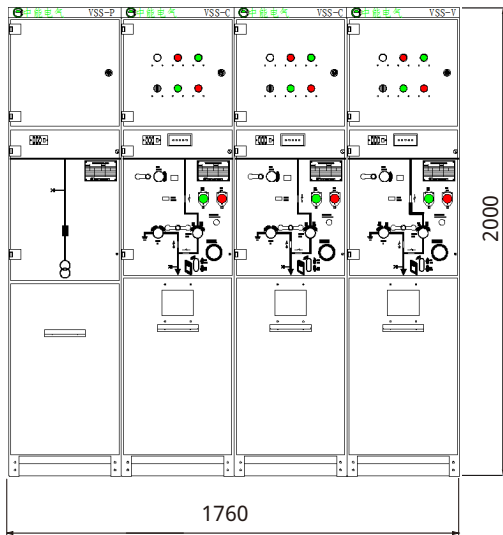


Note: The above dimensions are for reference only. Actual dimensions may vary.

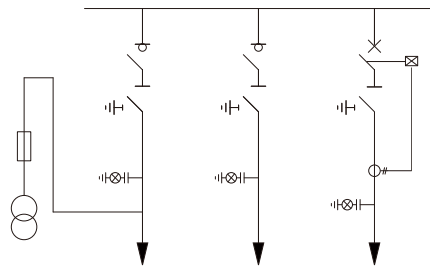


Application Solutions

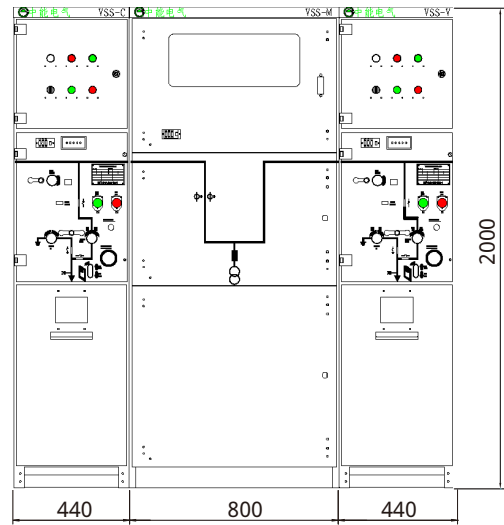
Solution 5: P-C-C-V Units Combination



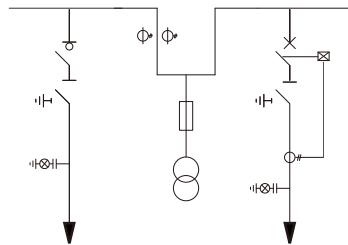
Note: The above dimensions are for reference only. Actual dimensions may vary.



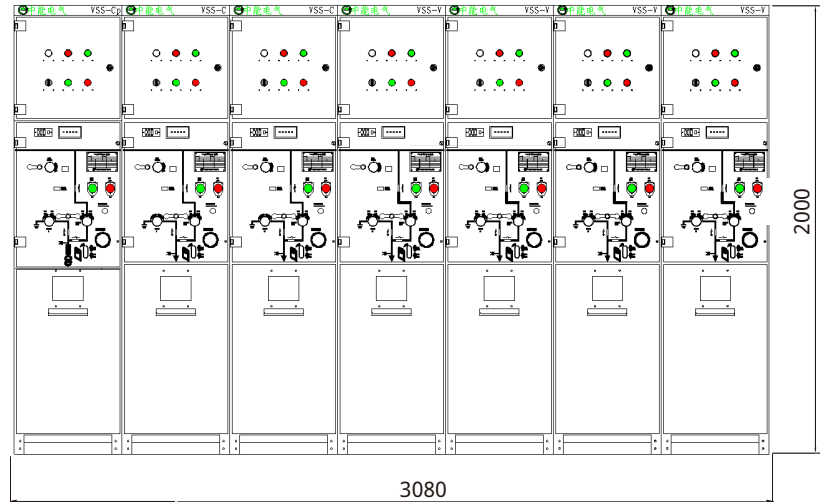
Solution 4: C-M-V Units Combination



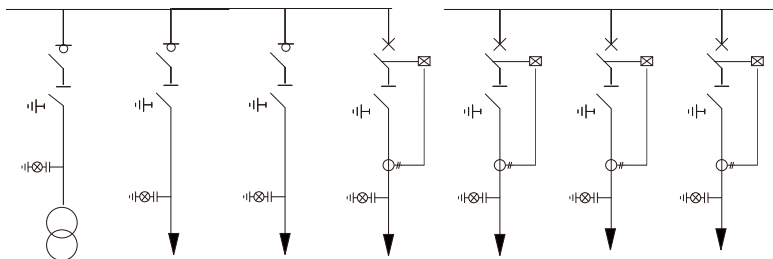
Note: The above dimensions are for reference only. Actual dimensions may vary.



Solution 6: CP-C-C-V-V-V-V Units Combination



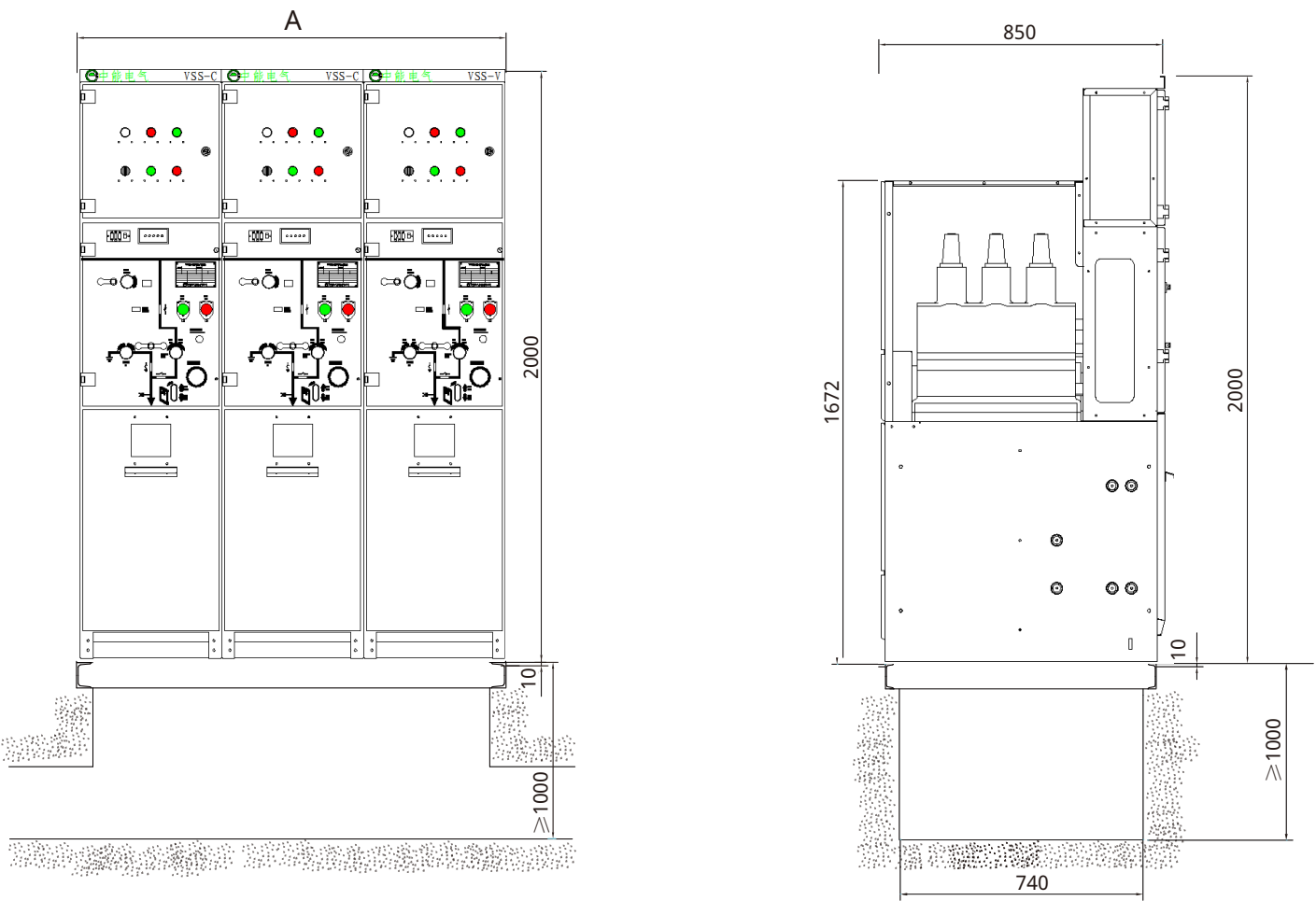
Note: The above dimensions are for reference only. Actual dimensions may vary.



Dimensions and Foundation Layout



Notes Section



Unit	1 Unit	2 Units	3 Units	4 Units	5 Units
A	440	880	1320	1760	2200