

SSU-12 Series RMU

-12kV SF₆ Gas Insulated



- Metal-enclosed switchgear
- High-quality stainless steel shell
- Eco-friendly gas insulation

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1. Company Profile

Quanzhou Tianchi Electric Import and Export Trade Co., Ltd. is a subsidiary of Quanzhou Seven Star Electric Co., Ltd. to develop overseas markets and serve overseas customers more professionally. The company is located in Seven Stars Industrial Park, Jiangnan High-tech Development Zone, Licheng District, Quanzhou, FUJIAN. The company adheres to the business philosophy of "innovation, pragmatism, and win-win" and the service concept of "people-oriented" provide comprehensive and high-quality products for domestic and foreign enterprises.

Seven Stars Electric was established in 1995. It is a national high-tech enterprise dedicated to the research and development and production of power insulation products and high-voltage power transmission and distribution products. In 2012, it was restructured from a state-owned enterprise to a joint-stock enterprise. Jointly invested in the establishment of a subsidiary Quanzhou Seven Stars Electric Co., Ltd. The company's main products include Ring Main Units, smart grid software and hardware production and development (primary and secondary fusion column switches, intelligent station buildings, electric power clairvoyance, etc.), cable branch boxes, low-voltage complete sets of equipment, cable connectors, cold shrinkable cable accessories, insulators, lightning arresters, etc. The company's registered capital is 130 million yuan, fixed assets are 200 million yuan, and the company has more than 600 employees. In 2021, it will achieve a turnover of 810 million yuan and a tax revenue of nearly 30 million yuan. The annual output value in 2022 is expected to exceed 1 billion yuan. The company's products have Sold to Vietnam, Philippines, Brazil, South Africa, Singapore, Malaysia and other countries.

The company has three production bases with a total of more than 60,000 square meters of production plants, including high-voltage insulation workshops, sheet metal processing

workshops, power distribution switch workshops, and power electronics workshops; Fully equipped laboratories for low temperature and electromagnetic compatibility; a complete R&D, production and testing system for power insulation and high-voltage transmission and distribution products with a voltage level of 500kV and below has been formed. Among them, the German CNC punching machine, laser cutting machine, CNC bending machine, shearing machine and other sheet metal processing equipment imported from the power distribution product line, as well as Panasonic robot welding, helium (nitrogen) leak detection, pressure testing and other equipment. In addition to producing core components such as switches and operating mechanisms, it also assembles indoor and outdoor Ring Main Units, high and low voltage complete sets of equipment and other products; has the ability to assemble Ring Main Units, branch boxes, integrated distribution boxes, low-voltage branch boxes, and low-voltage reactive power compensation boxes. 100,000 The production capacity of the unit; the insulation product production line is 10-35kV cable accessories production line, which can produce 100,000 sets per year.



2. Product Overview

The SSU series fully insulated compact ring main unit is an SF6 gas-insulated medium voltage switchgear independently developed by Seven Stars Electric. The product adopts a modular design and can be arranged arbitrarily according to different design schemes. It is a perfect combination of common box units and extended units. It meets the needs of various secondary substations for flexible use of compact switch cabinets. After R&D, design, and manufacturing, it has fully possessed the production capacity of standardized Ring Main Units and obtained relevant third-party inspection reports. Widely used in distribution stations, box-type switching stations, industrial and mining enterprises, airports, railways, commercial areas, residential quarters, high-rise buildings expressways, subways, tunnels and places with harsh natural conditions.

SF6 fully enclosed and fully insulated Ring Main Units use SF6 gas as the arc extinguishing and insulating medium, mainly used as three-phase AC rated voltage 12kV, frequency 50Hz ring network power supply and terminal power supply equipment.

Features of SSU-12 series products:

• High security and reliability

(1) Fully insulated and fully sealed structure, the protection level of the body is IP4X. SF6 includes a closed insulating gas tank, which meets the IP67 protection level, and all live parts and switching functions are placed in it. It can completely prevent operators and operation and maintenance personnel from touching high-voltage components. It is fully insulated and touchable, which is safer and ensures the personal safety of operation and maintenance personnel. At the same time, it can prevent moisture, dust and other harmful substances in the external environment from affecting the insulation level and operating life of live parts, ensuring reliable operation of the equipment throughout its life cycle.

(2) The structure is simple, the operation is flexible, and the reliable mechanical and electrical interlocking can ensure the personal safety of the operator.

(3) Mechanical stability of circuit breaker and load switch mechanism ≥ 10000 times.

(4) Low gas leakage rate and remote monitoring of SF6 gas pressure in the gas tank ensure that the product works in a safe condition.

(5) The perfect design of anti-ignition arc can prevent the high temperature and high pressure gas generated in the event of internal failure of the product to harm personnel.



• Compact product structure and maintenance-free design

(1) The SSU-12 series adopts a compact spacer unit, which allows the product to be installed on both sides of the road in the city, and can also be easily transported to the basement to help customers save land use costs.

(2) The live parts are sealed in the gas tank, and these parts do not need maintenance during the entire life cycle. The maintenance-free design can help customers save operation and maintenance costs.

• Modular design, flexible function selection

The SSU-12 series adopts a modular design, and each functional unit can be flexibly combined according to project requirements. Each functional unit can be designed as a separate gas tank, or each functional unit can be designed as a common gas tank structure to meet the needs of intelligent upgrade interfaces and protection plan

• Self-powered microcomputer protection device

SSU-12 series circuit breakers comply with GB1984 and IEC62271-100, and have microcomputer protection devices and current transformers. The self-powered microcomputer protection device is based on digital technology and does not require an external power supply.

• Easy installation and maintenance-free

(1) The product unit/module can be installed after leaving the factory.

(2) All units/modules have been routinely tested before shipment.

(3) No special tools are required to install these devices.

(4) The product is easy to install and maintenance-free.

3. Technical Parameters

• **Normal environmental conditions**

The SSU-12 series is generally operated/served under normal environmental conditions, complying with IEC standard.

• **Environmental temperature**

- Max. temperature +55°C
- Max. temperature (24-hour average) +35°C
- Min. temperature -40°C **Note 2)**

• **Humidity**

- Max. average relative humidity
- 24 hours measurement ≤95%
- 1 month measurement ≤90%

• **Installation altitude**

Generally ≤ 2500 meters Special > 2500 meters **Note 1)**

• **Gas pressure**

0.135MPa at 20°C. (at standard inflation pressure)

• **Arcing test**

20 kA 1s

• **Color**

- Switchgear front panel(can be customized according to customers)

• **Special conditions**

Note 1): Please consult when the electrical equipment is installed at an altitude of 2500m or more.

Note 2): When it is lower than -25 degrees, you need to inform.

Main technical parameters

Item	Explanation	Unit	Module K	Module T	Module V	
			Load Switch	load switch Fuse Combination Appliance	Circuit Breaker	
Rated Voltage		Ur KV	12	12	12	
Rated Current		Ir A	630	≤125 Note 1)	630	
Rated Frequency		Fr Hz	50/60	50/60	50/60	
Temperature rise test			1.1Ir	125A	1.1Ir	
Insulation Level						
Industrial Frequency 50Hz/Min	Phase-to-phase	Ud	KV rms	42	42	42
	phase-to-earth					
Industrial Frequency 50Hz/Min	Across the interrupter	Ud	KV rms	48	48	48
	Across isolating distance					
Lightning Impulse Withstand	Phase-to-phase	Up	KV peak	75	75	75
	Phase-to-earth					
	Across the interrupter	Up	KV peak	85	85	85
	Across isolating distance					
Cubicle Internal Arc Withstand	IAC level			AFLR	AFLR	AFLR
	Burning arc/time		KA/s	20/1	20/0.5	20/1

Note 1) Depends on the high voltage fuse

Item	Explanation	Unit	Module K	Module T	Module V
			load switch	load switch Fuse Combination Appliance	Circuit Breaker
Breaking capacity					
Rated Short-Circuit Breaking Current		Isc KA	-	31.5	20
Rated Short-Circuit Closing Current		Isc KA peak	-	80	50
Short-Time Withstand Current		Ik KA rms	20/4s	-	20/4s
Peak Withstand Current		I _p KA	50	-	50
Closed-loop breaking current		A	630	-	-
Rated active load breaking current		A	630	-	-
5% Rated active load breaking current		A	31.5	-	-
Cable charge breaking current		A	10	-	-
Protection level	Shell			IP4X	
	Gas tank			IP67	
Mechanical Endurance	Circuit Breaker	Freq	-	-	10000
	Load switch	Freq	5000	5000	5000 isolating switch
	Earth switch	Freq	5000	5000	5000
SF6 gas pressure/gauge pressure at 20°C		MPa		0.13	
Operation order Duty Cycle				O-t1-CO-t2-CO	

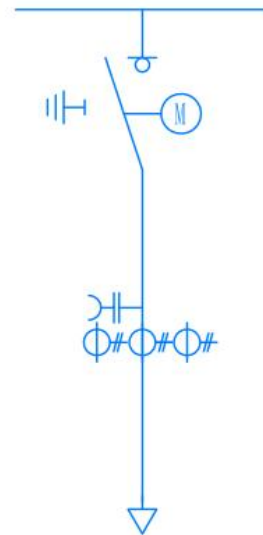
4. Function & Configuration

Main functional units

– Load switch unit

Standard configurations:

- 630A load switch
- 630A busbar
- Earthing switch
- pressure gauge
- Powered monitor
- Operating handle
- Cable bracket
- Five-proof interlock
- Cable viewing window



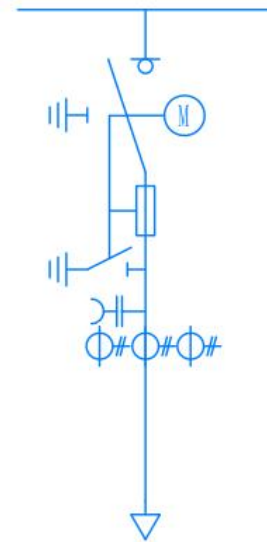
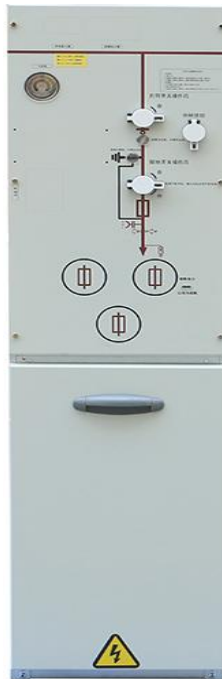
Optional configuration:

- Left outgoing lines
- Right outgoing lines
- Both sides outgoing lines
- Three cable outlet (deepen cabinet door)
- Electric operating mechanism
- Short circuit and earth fault indicators
- busbar connector

– Load switch fuse combination electrical unit

Standard configuration:

- 630A load switch
- 630A busbar
- Earthing switch
- pressure gauge
- Powered monitor
- Operating handle
- Cable bracket
- Five-proof interlock
- Cable viewing window
- Fuse cylinder



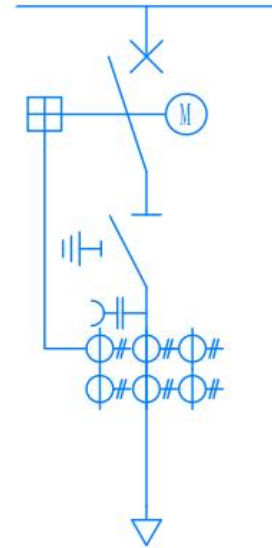
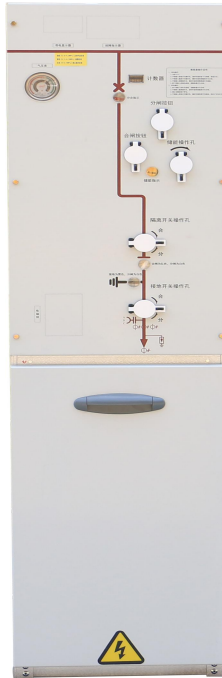
Optional configuration:

- Left outgoing lines
- Right outgoing lines
- Both sides outgoing lines
- Three cable outlet (deepen cabinet door)
- Electric operating mechanism
- Electric shunt trip
- Short circuit and earth fault indicators
- busbar connector

– Circuit breaker unit

Standard configuration:

- 630A/1250A circuit breaker
- 630A/1250A busbar
- pressure gauge
- Powered monitor
- Operating handle
- Five-proof interlock
- Closing and opening coil
- Current Transformer



Optional configuration:

- Left outgoing lines
- Right outgoing lines
- Both sides outgoing lines
- Three cable outlet (deepen cabinet door)
- Electric operating mechanism
- Short circuit and earth fault indicators
- Microcomputer protection device
- busbar connector

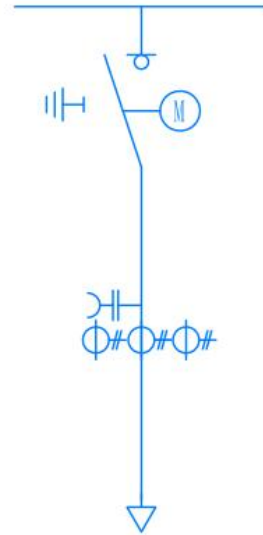
– Busbar segmentation unit

Standard configuration:

- 630A load switch
- 630A busbar
- pressure gauge
- Powered monitor
- Operating handle
- Five-proof interlock
- Cable viewing window

Optional configuration:

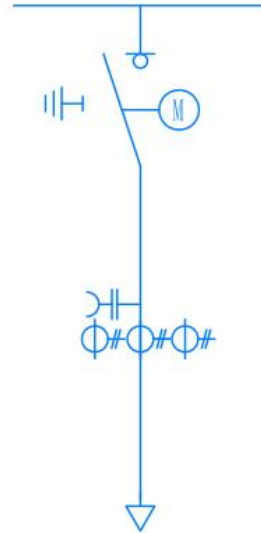
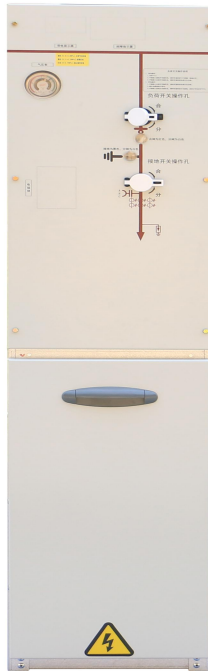
- Left outgoing lines
- Right outgoing lines
- Both sides outgoing lines
- Electric operating mechanism



– Voltage transformer unit

Standard configuration:

- 630A load switch
- 630A busbar
- Earthing switch
- pressure gauge
- Powered monitor
- Operating handle
- Voltage Transformer
- Five-proof interlock
- Cable viewing window
- Voltmeter



Optional configuration:

- Left outgoing lines
- Right outgoing lines
- Both sides outgoing lines
- Electric operating mechanism
- UPS power supply

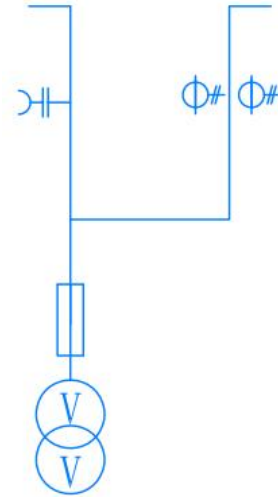
– Metering unit

Standard configuration:

- 630A Busbar
- Specialized door locks
- Powered monitor

Optional configuration:

- Metering voltage transformer
- Metering current transformer
- electricity meter
- Pressure loss meter



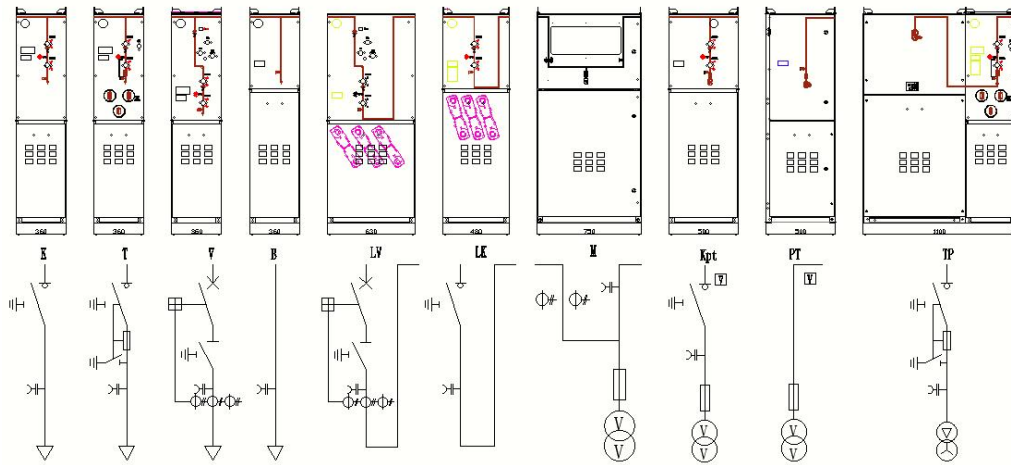
model specifications size

- Conventional SF6 Ring Main Unit

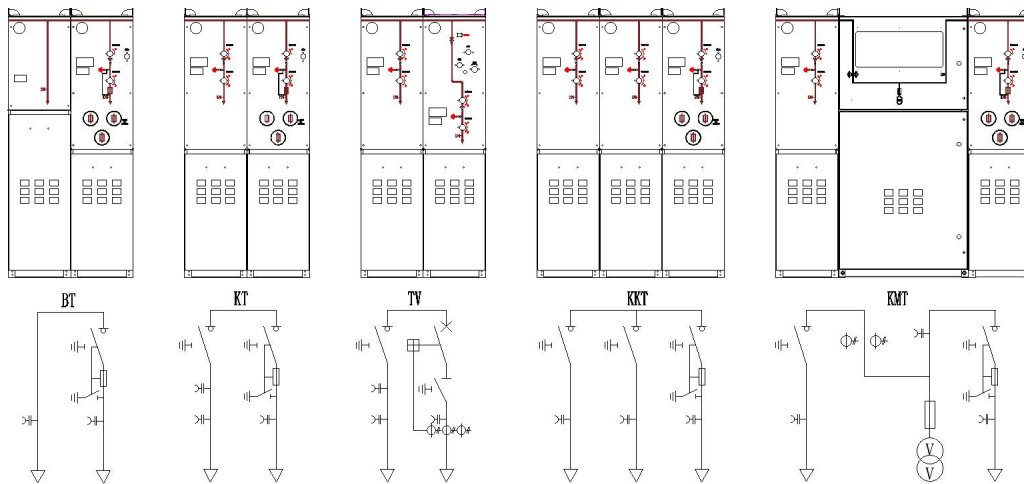
SSU-K	Load switch unit	(Size: 360*750*1500)
SSU-T	Load switch fuse combination unit	(Size: 360*750*1500)
SSU-V	Circuit breaker unit	(Size: 420*750*1500)
SSU-B	Cable connection unit	(Size: 360*750*1500)
SSU-LV	Circuit breaker contact unit	(Size: 630*750*1500)
SSU-M	Metering unit	(Size: 750*850*1500)
SSU-Kpt	PT unit with switch	(Size: 500*750*1500)
SSU-TP	Station Variable	(Size: 1100*750*1500)

Note: The above dimensions do not include the low pressure box dimensions.

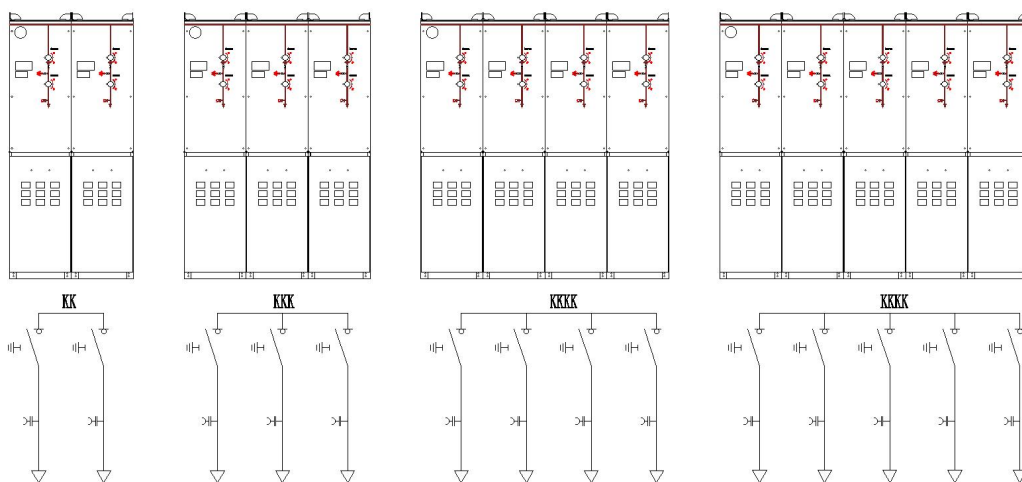
Reference plan



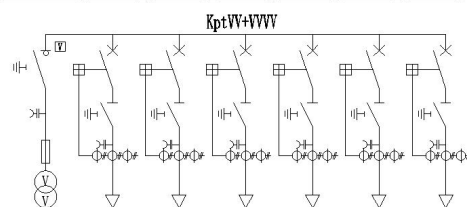
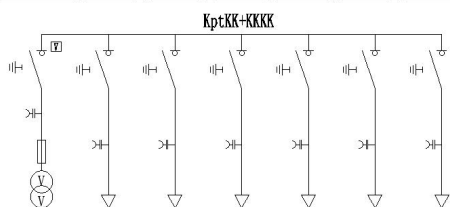
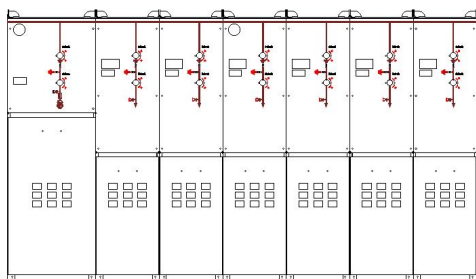
(1)



(2)



(3)



(4)

5. Transport & Storage

Transport and Handling

Weight of standard SSU-12 series unit approx. 230 kg These weights do not take into account additional accessories.

The SSU-12 series is equipped with a lifting ring and can also be moved with a fork lift shovel.

Unpacking and Inspection

Check the following items after opening the box:
Before opening the box, the user should check whether the packaging of the Ring Main Unit sand the transportation process is damaged or even damaged Ring Main Unit, open the box should be carried out in a dry place not subject to rain; when unpacking, pay attention to the protection of products to avoid damage.



1. Random file :

- ① Product certificate
- ② Factory test report
- ③ Installation and Operation Guide
- ④ Primary System Diagram
- ⑤ Secondary schematic
- ⑥ Packing list

2. Operation handle 1 only

3. Check whether the accessories are consistent with the packing list, and make on-site records.

4. For the mechanical part to carry out functional tests. Any defects and omissions must be declared immediately to the supplier

5. Confirm the appearance, components have no damage, the product has no accumulation of water, condensation, mixed with foreign objects and other phenomena.

6. Whether the specifications and control voltage etc. indicated on the nameplate are consistent with the specified contents. If there is an error, you can contact our company.

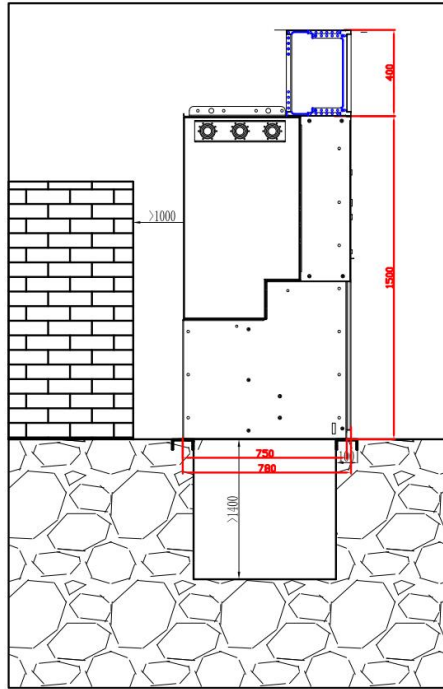
7. Please confirm the specifications of the product and the environmental conditions of use before use.

8. whether the screws are loose, the main circuit part of the fastening is reliable.

9. Do not use this product outside the specified conditions of use. To prevent malfunction and cause accidental disaster.

6. Equipment Installation

Indoor Installation Basics



Outdoor Installation Basics

