科迅安电气
KE XUN AN DIAN 口

All internal core components are independently developed and produced
Support non-standard customization and OEM outsourcing

630A-1250A-1600A-2000A-2500A-3150A
Complete series of gas insulated switchgear

产品概述 Introduction

In recent years, with the continuous development of society, economy, and switch technology, the complexity of engineering construction has increased. Products that are miniaturized, maintenance free, and intelligent for switch equipment are increasingly favored. Domestic and foreign switch manufacturing companies are vigorously developing medium voltage gas filled cabinets (C-G1S), also known as gas insulated switchgear. The so-called gas insulated switchgear refers to the sealing of high-voltage components such as busbar circuit breakers, isolating switches, power cables, etc. inside a shell filled with lower gas pressure.
The design provided by Kexunan Electrical Technology Co., Ltd. can meet the requirements of various users in the medium voltage distribution system for ring network mode, combination mode, operating conditions, safety protection, transportation, and installation. By using extended busbars to connect the switchgear, a fully modular configuration is achieved to meet various standard and non-standard distribution schemes in the distribution network.

Product features

A. Due to the use of hexafluoride with excellent insulation properties Gas serves as insulation and arc extinguishing medium, so it can reduce the size of the switch cabinet and make it more compact, achieving small typing.

B. High reliability and safety: The conductive part of the main circuit is sealed in SF6 gas, and the high-voltage live conductor is sealed and is not affected by changes in external environmental conditions, allowing the equipment to operate safely for a long time, with high reliability and no risk of electric shock or fire.

C. Independent modular design, the air box is a high-precision aluminum plate that can be installed and detached, and the isolation switch adopts a three-station linear transmission. In order to reduce the clutter of control relays and circuits, a control module with nearly 100 PLC points is designed to achieve The grounding and isolation switches are all electric remote-operated. The modular design of the mechanism switch uses plum blossom fusion joints to connect the opening and closing points, which eliminates the possibility of misoperation of the original rotary isolation switch and grounding switch and changes the contact of the original rotary isolation switch. To solve the problem of unstable and excessive resistance, a shielded voltage equalizing cover is installed outside each contact to completely solve the partialdischarge problem in switch breakpoint production.

D. Convenient application and layout of gas insulated switchgear, As an independent unit, it can meet various main needs through combination.Wiring requirements. Delivered to site in units It can shorten the on-site installation period and improve reliability.

执行标准Execution standards

IEC 62271-200: 2011 High-voltage switchgear and controlgear - Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV
IEC 62271-102:2013 6.2 High-voltage switchgear and controlgear - Part 102: Alternating current disconnectors and earthing switches
IEC 62271-100: 2017.6.2 High-voltage switchgear and controlgear - Part 100: Alternating-current circuit-breakers
GB/T11022-1999 Common technical requirements for high-voltage switchgear and control equipment standards
GB3906-2006 3.6kV~40.5kV AC Metal Enclosed Switchgear and Control Equipment
GB311.1-1997 Insulation Coordination of High Voltage Transmission and Transformation Equipment
GB/T16927.1-1997 High voltage testing technology Part: General test requirements
GB/T16927.2-1997 High voltage testing techniques Part 2: Measurement systems
GB/T7354-2003 Partial discharge measurement
GB1984-1989 AC High Voltage Circuit Breakers
GB3309-1989 Mechanical tests of high-voltage switchgear at room temperature
GB4208-2008 Code for Degree of Protection Provided by Enclosures (IP)
GB12022-2006 Industrial sulfur hexafluoride
GB8905-1988 Guidelines for gas management and inspection in sulfur hexafluoride electrical equipment
GB11023-1989 Test method for sulfur hexafluoride gas sealing of high-voltage switchgear
GB/T13384-1992 General technical requirements for packaging of electromechanical products
GB4207-2003 Solid insulation materials - Determination of relative and resistance to electrical trace index under humid conditions
GB/T14598.3-2006 Electrical relays - Part 5: Insulation of electrical relays
GB/T17626.2-1998 Electromagnetic Compatibility Testing and Measurement Techniques - Electrostatic Discharge Reactance Interference Test
GB/T17626.4-2008 Electromagnetic Compatibility Testing and Measurement Techniques - Electrical Fast Transient Pulse Group Immunity Test
GB/T17626.5-2008 Electromagnetic Compatibility Testing and Measurement Techniques - Surge (Impulse) Immunity Test
GB/T17626.12-1998 Electromagnetic Compatibility Testing and Measurement Techniques - Oscillating Wave Immunity Test

型式试验 Test Type

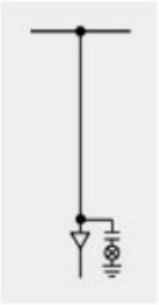
- Insulation test
- Temperature rise test
- Loop resistance measurement
- Short-time withstand current and peak withstand current tests.
- Verification of making and breaking capabilities
- Mechanical operation and mechanical characteristic testing tests
- Protection level detection
- Additional tests on auxiliary and control circuits
- Pressure tolerance test for inflatable compartments
- Sealing test
- Internal arc test
- Electromagnetic compatibility test

Basic Scheme

C	Load switch unit	(Width=600/800mm)
D	Direct unit	(Width=600/800mm)
F	Load switch fuse combination unit	(Width=600/800mm)
G	Isolation switch unit	(Width=600/800mm)
V	Circuit breaker unit	(Width=600/800mm)
CL	Load switch busbar lifting unit	(Width=600/800mm)
VL	Circuit breaker busbar lifting unit	(Width=600/800mm)
Me	Metering Unit	(Width=800/1200mm)

C

D

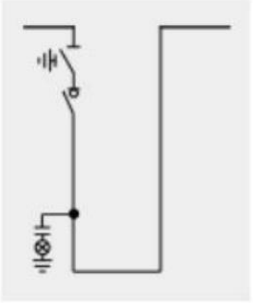


F

G

V

CL



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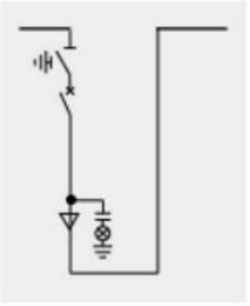

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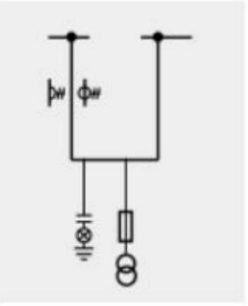


Operation Condition

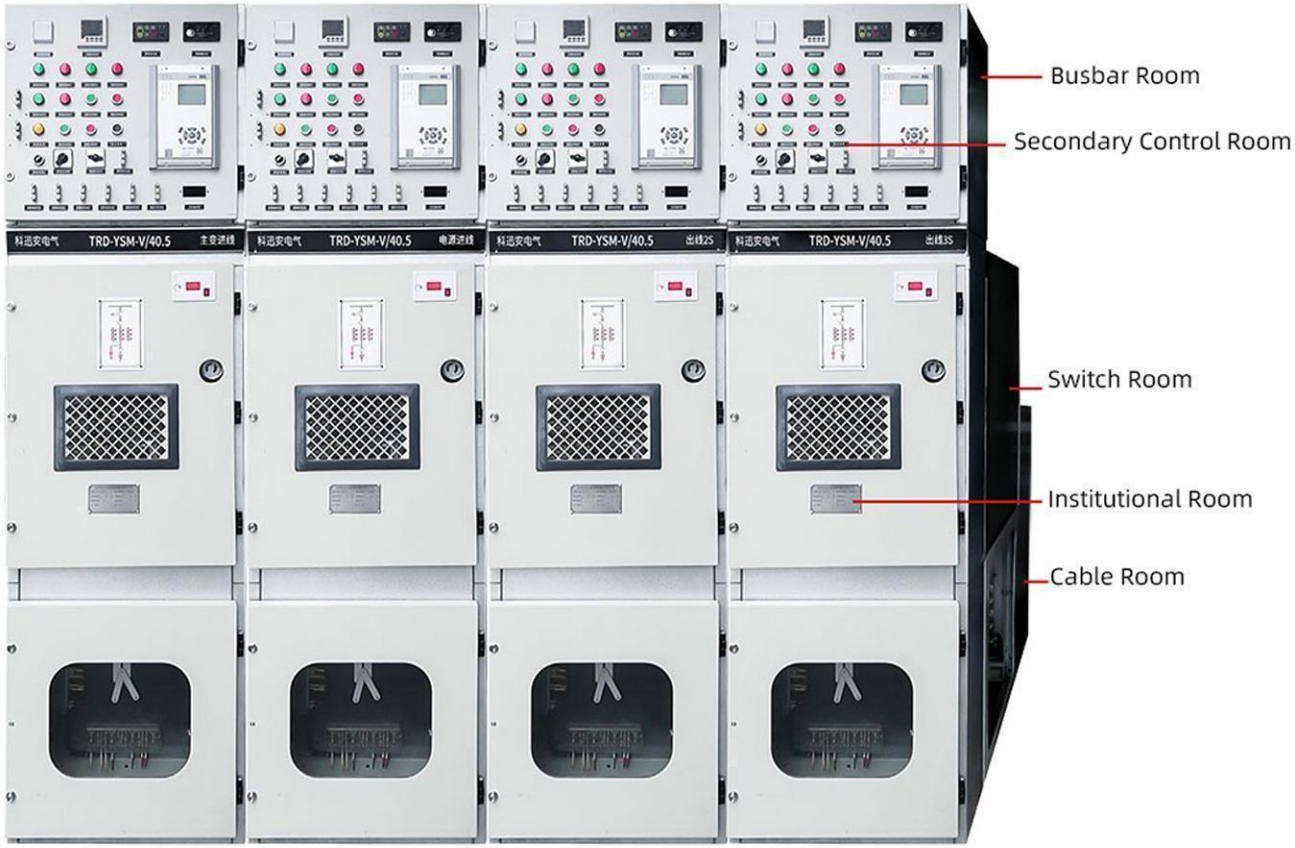
Installation location	Indoor
Environmental temperature (° C)	-15~40
Altitude (m)	⩽ 5000
seismic intensity	⩽ 8 Degrees
Inflation pressure	0.05MPa
Relative annual air leakage rate of each compartment	⩽ 0.2%
The amplitude of electromagnetic interference induced in the secondary system (kV)	⩽ 1.6
The severity of operation without combustible gases, fire and explosion hazards, condensation and pollution in the surrounding area: by the first level regulations in GB3906	

Technical Parameter

Item	Unit	C-unit Load switch	F-uint Combination appliances	V-unit VCB	Isolating switch	Vacuum circuit breaker
Rated Voltage	kV	40.5	40.5	40.5	40.5	40.5
Rated current	A	630	125	630-3150	630-3150	630-3150
Rated frequency	Hz	50	50	50	50	50
Main circuit anode	μΩ	⩽ 200 ⩽ 60	⩽ 400 ⩽ 60	⩽ 200 ⩽ 60	⩽ 200 ⩽ 60	⩽ 200 ⩽ 60
Rated short-term power frequency withstand voltage	kV	95	95	95	95	95
Rated lightning impulse withstand voltage	kV	185	185	185	185	185
Rated short-circuit breaking current	kA	20-25	31.5	20-40	20-40	20-40
Rated short-circuit making current	kA	50	80	80	80	80
Rated short-term power frequency withstand voltage (break)	次	118	118	115	118	118
Rated lightning impulse withstand voltage (break)	kA	215	215	215	215	215
Rated short-circuit duration	s	4	4	4	4	4
Rated peak withstand current	kA	50	80	80	80	80
Three phase closing asynchrony /Three phase opening asynchrony	ms	⩽ 5	⩽ 3	⩽ 2		
Rated transfer current	A	1750				
Internal arc test (AFLR Class)	kA/s	31.5kA/0.5s(including busbar room, switch room, cable room)				
partial discharge	pC	⩽ 10				
Protection level		IP67	IP67	IP67		
Mechanical lifespan	Times	10000	10000	10000	3000	3000

Grounding and Separation

The C-GIS gas-insulated high-voltage switchgear comes in various current levels,such as 630A,1250A, 1600A,2000A,2500A,3150A,etc.The size of the cabinet can be customized to suit specific requirements. The outershell is made from an aluminum zinc-coated plate,while the gas box is welded using 304 high-quality stainlesssteel plates.Each unit can be expanded and combined independently based on the design plan.The cabinet isdivided into different rooms:a secondary control room,busbar room,circuit breaker room,circuit breaker operatingmechanism room,and cable room.The cable connection height can reach 700mm,making maintenance and installationconvenient.The cabinet is also equipped with a comprehensive grounding protection system.The switchgear comprisesisolated functional compartments,such as switch rooms,busbar rooms,cable rooms,and secondary circuit channels.A grounding metal partition separates each functional compartment and operates independently.



Assembly Diagram Of Inflatable Switchgear

Grounding and Separation

一 Secondary control room

The cabinet is located directly below the secondary control room and has boards for installing components and brackets for fixing terminal blocks. The secondary control room allows for the installation of various devices, such as wiring terminals, small busbar terminals, and comprehensive protection devices. These devices enable the system to perform functions such as remote control, telemetry, remote signaling, and local monitoring. Circular holes on the left and right side panels and terminals make it easy to connect the cabinet with small busbars

Secondary control room

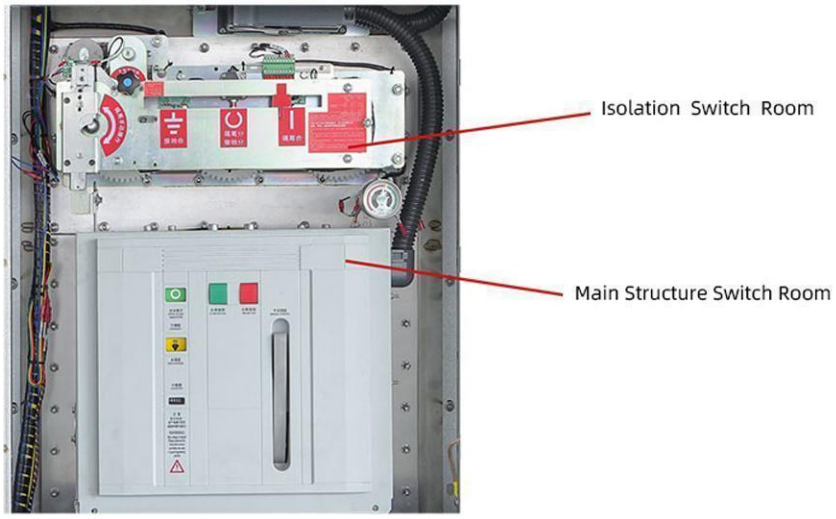
二 Busbar Compartment

The upper air box contains both the busbar room and the isolation mechanism. The circuit cabinets and busbars on the left and right sides are securely linked together through cabinet merging once the cabinet is placed on the ground support.

Grounding and Separation

三 Switch Room

The gas-insulated switch cabinet has a plate-type structure with two chambers, one above the other, located in the center of the cabinet. The upper chamber contains a three-position isolation switch, while the lower chamber is equipped with a vacuum circuit breaker. The busbar, isolation switch, and circuit breaker are arranged in a vertical manner. The single chamber structure is simple, inexpensive, and easy to manufacture but has lower reliability due to the components' close proximity. On the other hand, the multi-chamber structure ensures high safety by avoiding mutual interference between components and allowing for easy replacement. However, it is a more complex, challenging to manufacture, and expensive option



四 Institutional Room

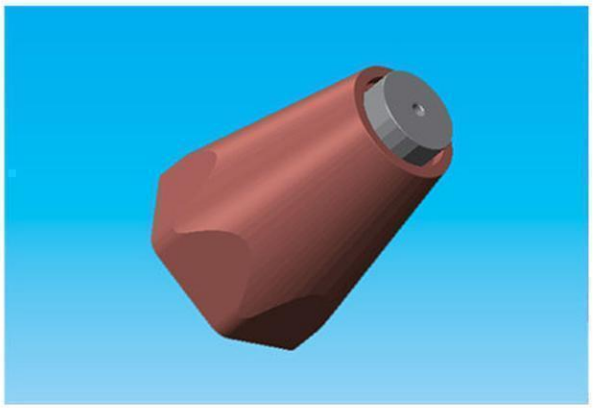
The spring-operated mechanism is situated in a flat plane, with the isolation and circuit breaker mechanisms separated independently. It is integrated with the insulation rod of the vacuum arc extinguishing chamber before and after, makingthe transmission process simpler. The mechanism's output characteristics better align with the circuit breaker's openingand closing attributes, resulting in reduced power usage and enhanced mechanical reliability and flexibility.

Grounding and Separation

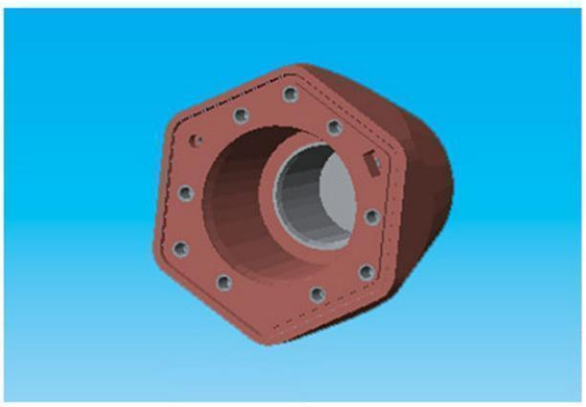
五 Cable Room

The cabinet sits above the cable room and has a separate pressure relief pathway. The distance from the ground to the cable connection terminals can be as high as 700mm. In compliance with regulations, grounding interlocks are present in the cable room, allowing for the installation of two cables and lightning arresters in each circuit. Furthermore, the internal cone insertion method connects the incoming and outgoing cables and lightning arresters.

电缆室
Cable Room



Cable Connector



Cabinet Connector