POWER DISTRIBUTION SOLUTION PROVIDER

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GTXGN-12

Solid insulation ring main unit

The GTXGN-12 solid insulation ring main unit switchgear is a new generation of environmentally friendly power distribution device with fully sealed epoxy resin encapsulation. It contains no SF6 gas and uses solid insulating media to fully cover core components such as disswitches and arc extinguishing chambers, achieving full insulation, maintenance-free operation and high safety. Its modular design includes three types of functional units: circuit breaker (V), load switch (C), and combined electrical apparatus (F), which can be freely combined and expanded. The arc extinguishing chamber adopts copper-chromium contacts and R-shaped longitudinal magnetic field technology, combined with the primary sealing and discharging process, significantly enhancing the short-circuit current breaking capacity and electrical life. The equipment integrates an intelligent elastic operating mechanism, with a disconnector and main switch interlocking design. It features streamlined components and strong reliability, supporting electric operation and distribution automation. It is suitable for both indoor and outdoor scenarios of 12kV three-phase AC systems (such as industrial and mining enterprises, residential communities, and box-type substations), and takes into account environmental protection, flexibility, and high stability.



Giantele®

○ Model definition and description

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1.Solid insulation ring main switchgear.

2.Design serial number

3.Rated voltage (kV)

4.Rated current (A)

5.Rated breaking short-circuit current (kA)

○ Environmental condition

- Suitable for indoor or outdoor use.
- Ambient air temperature: indoor -10℃ to +25℃, outdoor -60℃ to +60℃.
- Relative humidity of the air: The daily average shall not exceed 95%, and the monthly average shall not exceed 90%.
- The altitude shall not exceed 3,000 meters.
- The surrounding air should not be significantly polluted by dust, water vapor, salt spray, corrosive gases or flammable gases. The outdoor type can be used in harsher environmental conditions.
- There should be no severe vibration at the installation site, and the seismic intensity should not exceed 8 degrees.

○ Conform to the standard

- ″3.6-40.5kV AC Metal-enclosed Switchgear and Controlgear" IEC 62271-200:2003
- "Common Technical Conditions for High Voltage Switchgear and Controlgear Standards" IEC 62271-1:2007
- "High-voltage AC Circuit Breakers" IEC 62271-100:2008
- "High Voltage AC Disconnectors and Grounding Switches" IEC 62271-102:2001
- "3.6kV - 40.5kV High Voltage AC Load Switch" IEC 62271-103:2011
- "3.6kV-40.5kV AC Metal-enclosed Switchgear and Controlgear" IEC 62271-200:2003
- "Common Technical Conditions for High Voltage Switchgear and Controlgear Standards" IEC 62271-1:2007
- "High-voltage AC Circuit Breakers" IEC 62271-100:2008

○ Safety and Protection

- Configure a visual window for the isolation fracture surface to directly observe the three-state positions of the isolation closed position/split position and the grounding closed position. The status of the isolation knife can be confirmed without opening the cabinet, ensuring the safety of maintenance and operational efficiency.
- It is equipped with an internal arc-burning pressure valve. When an arc fault occurs inside, it automatically releases pressure in a directional manner to the cable trench to prevent high-temperature gas or debris from harming personnel. It complies with the requirements of IEC 62271-200 Internal Fault Protection Class (IAC).
- Use solid insulating materials (such as epoxy resin) to replace greenhouse gases and eliminate the risk of the greenhouse effect;

Technical parameters

Name		Unit	Data
Rated voltage		kV	12
Rated current		A	630
Rated short-time withstand current (4s)		kA	25
Rated peak withstand current		kA	50
Rated short-circuit closing current (peak)		kA	50
Rated active load breaking current		A	630
Rated closed loop breaking current		A	630
Rated cable charge breaking current		A	10
Rated breaking transfer current of combined appliances		A	3700
1min power frequency withstand voltage	Phase-to-phase,phase-to-ground, vacuum breaking	kV	42
	Insulation breaking	kV	48
Lightning impact withstand voltage	Phase-to-phase,phase-to-ground, vacuum breaking	kV	75
	Insulation breaking	kV	85
Mechanical life	Circuit breaker	Time	10000
	Insulation knife,grounding knife	Time	3000
Protection grade			IP4X
Shell protection grade			IP4X
Partial discharge		PC	≤20(Measured at 1.2Ur)

Application field

- In low-temperature and cold regions: There is no application of SFe gas, and there is no need to consider the low-temperature operation of SF gas. It can operate normally at -45℃.
- Plateau areas: There is no need to consider the influence of plateau atmospheric pressure on insulation performance.
- In areas with strong wind and sand: The solid insulation ring main unit has a safety protection level of IP67, and the control loop room is specially treated to ensure long-term operation in areas with strong wind and sand.
- Coastal humid areas: Epoxy resin sealing, moisture-resistant and salt spray corrosion-resistant, ensuring long-term use in coastal areas.
- In areas with high environmental protection requirements: The impact of SF6 gas on atmospheric warming has been highly valued. Solid ring main units eliminate SF6 gas, causing no pollution or harm to the environment or human health.
- In the smart grid: As the main switches can all be electrically operated, by selecting the intelligent controller developed by our company, remote control, remote measurement and remote communication can be carried out on the switchgear and the substation site. It can not only perform decentralized control but also facilitate centralized control.

Structural features of solid insulation ring main unit

- The high-voltage load switch and live components are sealed within an epoxy resin insulating sleeve shell, free of any gas. The vacuum interrupter ensures reliable arc extinction with a compact design. The load switch includes a grounding switch, featuring three positions: Close, Open, and Ground. The grounding blade also functions as an isolation blade.
- The units can be freely combined, with each circuit connected through three high-voltage bushings for convenient cable connections.
- Utilizing imported sealed enclosures, strict sealing measures have been implemented at the connection points of the operating mechanism and high-voltage bushings, ensuring excellent performance.
- The high-voltage bushings and insulation cylinders are made from imported epoxy resin using APG technology. The insulation cylinder and high-voltage bushing are assembled using silicone rubber sleeves to ensure effective sealing.
- Each circuit is equipped with independent operating mechanisms, which are mounted at the front of the cabinet, providing various mechanical interlock functions.
- The load switch and grounding switch are equipped with spring-operated mechanisms. The load switch can be operated manually or electrically, while the grounding switch serves both grounding and isolation purposes and can only be operated manually.
- The circuit breaker can be configured with a permanent magnetic operating mechanism, allowing for electric closing and opening, as well as manual opening, but it cannot be manually closed. The circuit breaker can also be equipped with a spring mechanism, enabling both manual and electric operation, with a reserved interface for distribution automation.

Structural features of solid insulation ring main unit

Potential transformer capacity kVA	Fuse model	Fuse rated current(A)	
		Voltage class 12kV	Voltage class 6.3kV
100	XRNT-12kV	10	16
125	XRNT-12kV	10	20
160	XRNT-12kV	16	20
200	XRNT-12kV	20	25
250	XRNT-12kV	25	31.5
315	XRNT-12kV	31.5	40
400	XRNT-12kV	40	50
500	XRNT-12kV	50	63
630	XRNT-12kV	63	80
800	XRNT-12kV	80	100
1000	XRNT-12kV	100	125
1250	XRNT-12kV	125	-

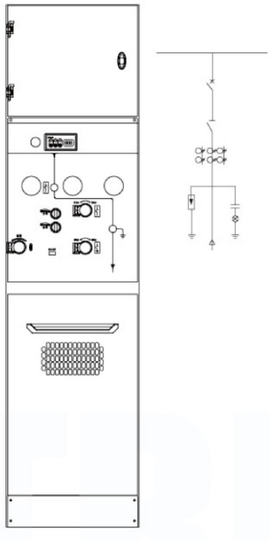
○ Standard module - Circuit breaker cabinet

Standard configuration

- Insulated busbars 630 and 1250A
- Vacuum circuit breaker
- Operating mechanism of vacuum circuit breaker
- Isolation/grounding switch
- Isolation/grounding switch operating mechanism
- The circuit breaker and the grounding switch are mechanically interlocked
- Circuit breakers and grounding switches have independent position displays
- The outgoing bushing is located at the front horizontal position and is connected to the cable head in front
- The live indicator is integrated with the nuclear phase hole and complies with the ISO61958 standard
- The microcomputer protection device for the grounding busbar meets the five-prevention interlock requirements

Optional configuration

- Auxiliary contact
- Program lock
- Heater
- Connect the lightning arrester at the back
- Then connect the cable head
- Live grounding interlock of the incoming line
- Ground fault indicator
- Bushing current transformers, ammeters, active power meters and reactive power meters



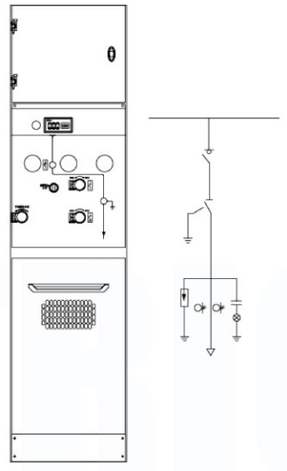
○ Standard module - Load switch cabinet

Standard configuration

- 630A insulated busbar
- Vacuum load switch
- Vacuum load switch operating mechanism
- Isolation/grounding switch
- Isolation/grounding switch operating mechanism
- The load switch and the grounding switch are mechanically interlocked
- The load switch and the grounding switch have independent position displays
- The outgoing bushing is located at the front horizontal position and is connected to the cable head in front
- The live indicator is integrated with the nuclear phase hole and complies with the ISO61958 standard
- Grounding busbar

Optional configuration

- Load switch operating mechanism energy storage motor
- Opening coil
- Closing coil
- Auxiliary contact
- Program lock
- Heater
- Connect the lightning arrester at the back
- Then connect the cable head
- Live grounding interlock of the incoming line
- Ground fault indicator
- Bushing current transformers, ammeters, active power meters and reactive power meters



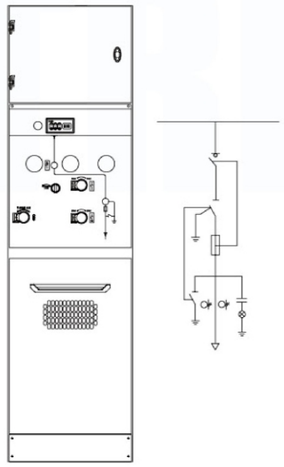
○ Load switch fuse combination electrical cabinet

Standard configuration

- 630A busbar
- Vacuum load switch
- Vacuum load switch operating mechanism
- Isolation/grounding switch isolation/grounding switch operating mechanism
- The load switch and the grounding switch are mechanically interlocked
- The load switch and the grounding switch have independent position displays
- The outgoing bushing is located at the front and is connected to the cable head in front
- The live indicator is integrated with the nuclear phase hole and complies with the ISO61958 standard
- The fuse tube placed horizontally
- Fuse
- Grounding busbar
- Meet the five-prevention interlocking requirements
- Auxiliary grounding device

Optional configuration

- Load switch operating mechanism energy storage motor
- Opening coil
- Closing coil
- Auxiliary contact
- Program lock
- Heater
- Connect the lightning arrester at the back
- Then connect the cable head
- Live grounding interlock of the incoming line
- Ground fault indicator
- Bushing current transformers, ammeters, active power meters and reactive power meters



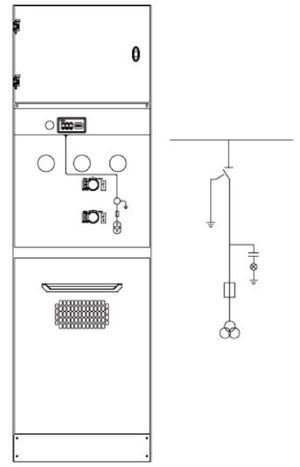
○ PT cabinet with disconnector (fully insulated type)

Standard configuration

- 630A insulated busbar
- Isolation grounding switch
- Isolation grounding switch operating mechanism
- Isolation/grounding switch
- The outgoing bushing is located at the front horizontal position, and the 630A is connected to the cable head at the front
- The live indicator is integrated with the nuclear phase hole and complies with the ISO61958 standard
- Meet the five-prevention interlocking requirements
- Solid-insulated voltage transformer
- Elbow joint (with cable)
- Voltage transformer protection fuse
- Grounding busbar
- Meet the five-prevention interlocking requirements

Optional configuration

- Heater
- Voltmeter



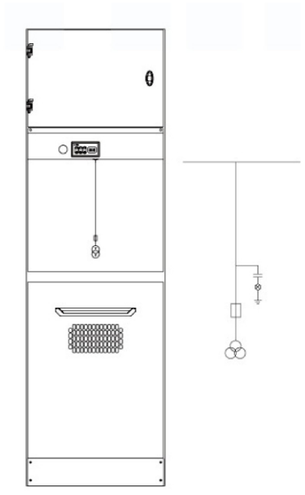
○ PT cabinet without disconnector (standard type)

Standard configuration

- 630A insulated busbar
- The live indicator is integrated with the nuclear phase hole and complies with the ISO61958 standard
- Solid-insulated voltage transformer
- Elbow joint (with cable)
- Voltage transformer protection fuse
- Grounding busbar
- Meet the five-prevention interlocking requirements

Optional configuration

- Heater
- Voltmeter



○ Standard Module - Metering Cabinet (Ordinary Type)

Standard configuration

- 630A, 1250A insulated busbars
- Ordinary PT and CT voltage transformers, current transformers
- Voltage transformer protection fuse
- Electricity meter
- The live indicator is integrated with the nuclear phase hole

Optional configuration

- Metering interlock device
- Heater
- Voltmeter
- Active power meter
- Reactive power meter
- Voltage conversion switch

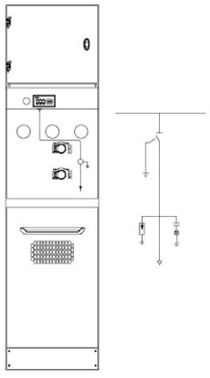
○ Standard module - Isolated switch cabinet

Standard configuration

- Busbars 630A and 1250A
- Isolation/grounding switch
- Isolation/grounding switch operating mechanism
- The grounding switch has a position indication
- The outgoing bushing is located at the front horizontal position and is connected to the cable head in front
- The live indicator is integrated with the nuclear phase hole and complies with the ISO61958 standard
- Grounding busbar
- Meet the five-prevention interlocking requirements

Optional configuration

- Auxiliary contact
- Heater
- Connect the lightning arrester at the back
- Then connect the cable head
- Live grounding interlock of the incoming line
- Ground fault indicator
- Bushing current transformers, ammeters, active power meters and reactive power meters



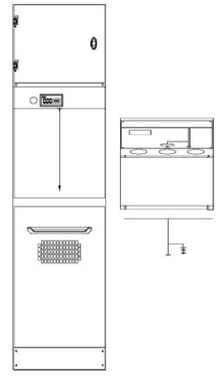
○ Standard module - Lifting cabinet

Standard configuration

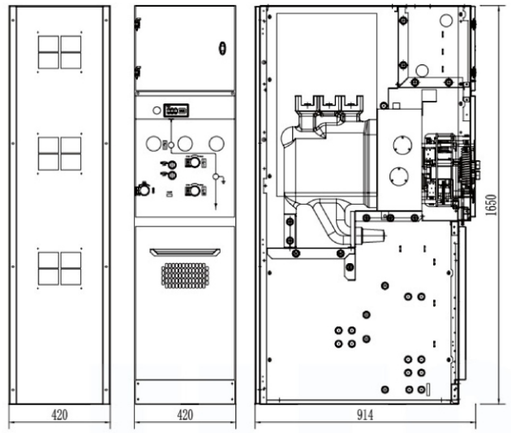
- 630A and 1250A insulated busbars
- The outgoing bushing is located at the front horizontal position and is connected to the cable head (with cable) at the front.
- The live indicator is integrated with the nuclear phase hole and complies with the ISO61958 standard
- Grounding busbar

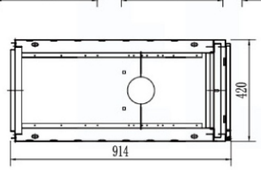
Optional configuration

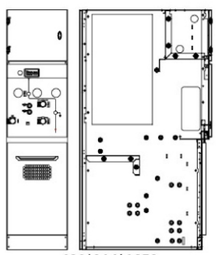
- Heater
- Connect the lightning arrester at the back
- Then connect the cable head
- Ground fault indicator
- Bushing current transformers, ammeters, active power meters and reactive power meters



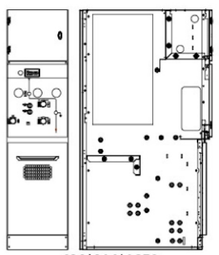
○ Product size



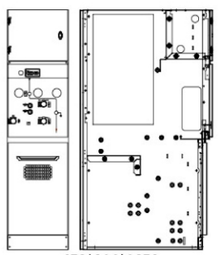




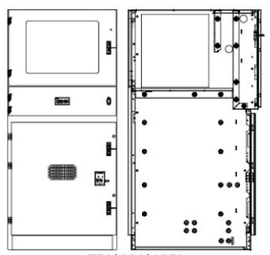
420*914*1650
断路器柜
Circuit breaker cabinet



420*914*1650
负荷开关柜
Load switch cabinet



450*914*1650
负荷开关熔断器组合电器柜
Load switch fuse combined appliance cabinet



750*914*1650
计量柜
Metering cabinet