



24kV SF6 Switchgear

合保电气（芜湖）有限公司
Hubbell Electric (Wuhu) Co., Ltd.



Brief introduction of switchgear

Reliable-24kV SF6-insulated compact switchgear

The Reliable-24 SF6 switchgear is produced by Hubbell. The products are widely used in 20kV power distribution systems and are the selected switch products for various urban and rural user power transformation and distribution systems. Reliable-24 switchgear is a completely sealed system, and its live parts and switches are enclosed in a stainless-steel tank. The whole switch device is not affected by external environmental conditions, thus ensuring operation reliability and personal safety. The switch cabinet is a modular unit mode which can be combined according to different purposes.



Product features

Reliable-24kV SF6-insulated compact switchgear

Safety features

Through the following security measures, we can provide users with special security: Integrated three station load switch.

The circuit breaker uses the load switch instead of the isolating switch, which is safer and reliable.

Reliable interlock;

Live display can provide live instructions for incoming and outcoming lines.

Reliable operation

Fully sealed design, all 20kV switches and busbar live bodies are sealed in the gas tank welded by 3mm stainless steel plate; with silicone rubber cable plug, the cable head is fully insulated and fully sealed so as not to be affected by dust, humidity, small animals and other external environment.

The spring energy storage mechanism can be operated manually or electrically. Panel analog line diagram provides switch position indication.

The cabinet is made of aluminum zinc plate, with electrostatic spraying on the surface to enhance corrosion resistance. Pressure gauge monitors the SF6 gas pressure range in the tank.

Flexible combination

The RELIABLE series can be configured with up to three modules in one gas tank, providing a combination of modules that meet the requirements for the distribution network. Reliable can be expanded with special busbar connection.

Economic Advantage

Reliable-24kV SF6-insulated compact switchgear

- The product is compact and small, which reduces the area occupied by the power distribution cabinet and reduces the construction cost.
- The air tank adopts fully insulated and fully sealed design, no exposed live body, lifelong maintenance-free, Saving maintenance costs.
- The control protection reserve has 485 communication interfaces, which can realize the automation of the distribution network and reduce the upgrade cost.
- The top of the ring network cabinet can be added with a wire sleeve, which can be extended to reduce the investment of disposable equipment.
- The overall design adopts a zero-leakage cleaning process, the product is sealed for life, and 90%-95% of the material can be recycled at the end of the product life cycle.

Ambient Requirement

Maximum temperature	+40°C
Minimum temperature	-25°C
Maximum average temperature	+35° C (24-hour average temperature)
Altitude	≤ 1000 meters
Earthquake resistance	The intensity of the earthquake does not exceed 8 degrees
Humidity	Maximum average relative humidity24-hour measurement ≤ 95%, ≤90% in one month

Technical Parameters

Reliable-24kV SF6-insulated compact switchgear

Technical parameters		Cabinet type	C module	F module	V module
		unit	Load switch	Combination appliances	breakers
Rated voltage		kV	24	24	24
Rated frequency		Hz	50/60	50/60	50/60
Rated current		A	630	Depends on the current rating of the fuse	630
Power frequency withstand voltage	Interstitial, relative and fractured	kV	65/79	65/79	65/79
Lightning impulse withstand voltage		kV	125/145	125/145	125/145
Rated closed-loop breaking current		A	630	N/A	N/A
Transfer current		A	N/A	1400	N/A
Rated short-time withstand current 4s		kA	20	N/A	20
Rated peak withstand current		kA	50	N/A	50
Rated short-circuit closing current (peak)		kA	50	Limited by high-voltage fuses	50
Main loop resistance		μΩ	200	450	200
Mechanical life		times	5000	5000	5000
Grounding switch mechanical life		times	≥3000		
Disconnecter mechanical life		times	≥3000		
SF6 inflation pressure in the air tank (20° C)		MPa	0.04MPa		
the degree of protection		Gas tank IP67 /Enclosure IP4X			
Internal arc burning experiment		20kA 1s（China standard is 20kA/0.5s, our products can achieve 20kA/1s. 20kA/1s will be reflected in the type test reports from STL）			
Whole container partial discharge		Measure ≤ 20Pc at 1.1ur			

Technical Parameters

Reliable-24kV SF6-insulated compact switchgear

Reliable is manufactured and tested in accordance with the latest version of the below IEC regulations.

IEC 62271-1	Common specifications for high-voltage switchgear and controlgear standards
IEC 62271-100	High-voltage switchgear and controlgear-Part 100: high-voltage alternating-current circuit-breakers
IEC 62271-102	High-voltage switchgear and controlgear-Part 102: alternating current disconnectors and earthing switches
IEC 62271-105	High-voltage switchgear and controlgear-Part 105: alternating current switch-fuse combinations
IEC 62271-200	High-voltage switchgear and controlgear-Part 200: A.C. metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV
IEC 62271-103	High-voltage switches-Part 1: switches for rated voltages above 1 kV and less than 52 kV
IEC 60529	Degrees of protection provided by enclosures (IP code)

Voltage detection system (VDS)	IEC 61243-5
Voltage presence indication systems (VPIS)	IEC 62271-206, IEC 61958
Bushings	CENELEC EN 50180 / EN 50181, IEC 61243-5, IEC 62271-206, IEC 60137, EDF HN 52-S-61
Electronic protection relays	IEC 60255
Instrument transformers-general requirements	IEC 61869-1
Current instrument transformers	IEC 61869-2
Voltage instrument transformers	IEC 61869-3
Current sensors	IEC 60044-8
Voltage sensors	IEC 60044-7
Combined bushings sensors	IEC 60044-7, IEC 60044-8, CENELEC EN 50181, IEC 62271-206, IEC 61243-5
MV fuses	IEC 60282-1
Cable connection	CENELEC EN 50180, CENELEC EN 50181, IEC 60137, IEC 60502-4

Reliable-24kV SF6-insulated compact switchgear



Dimension

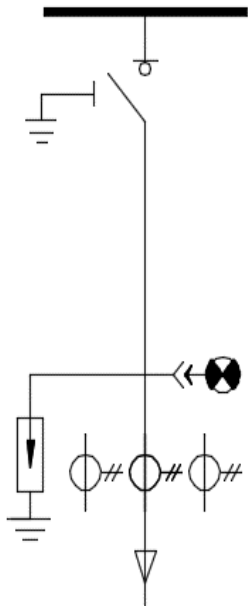
Reliable-24kV SF6-insulated compact switchgear

RMU	Dimension
4 panel: 4 LBS(CCCC)	W×D×H: 1662×755×1455
4 panel: 3 LBS + 1 LBS-fuse(CCCF)	W×D×H: 1662×755×1455

Function Unit Description

Reliable-24kV SF6-insulated compact switchgear

C-Load switch module

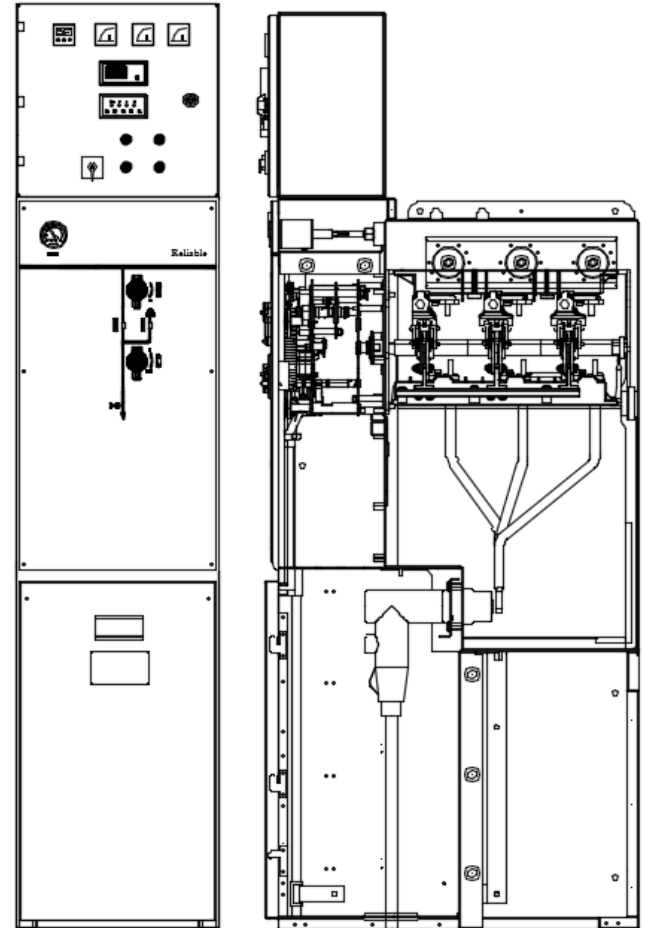


Standard configuration

- Gas tank
- Three-station load switch
- Three-station load switch operating mechanism
- Density meter with alarm contact
- Potential indicator
- 630A Internal bus
- Cable room with interlock with ground switch
- Low voltage chamber

Optional accessories

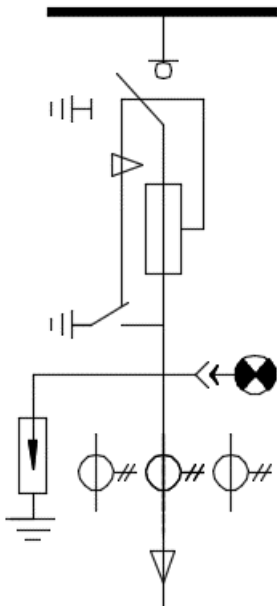
- Incoming line arrester
- Front cable accessories
- Short circuit and ground fault indicator
- Current transformer



Function Unit Description

Reliable-24kV SF6-insulated compact switchgear

F-Fuse combination module

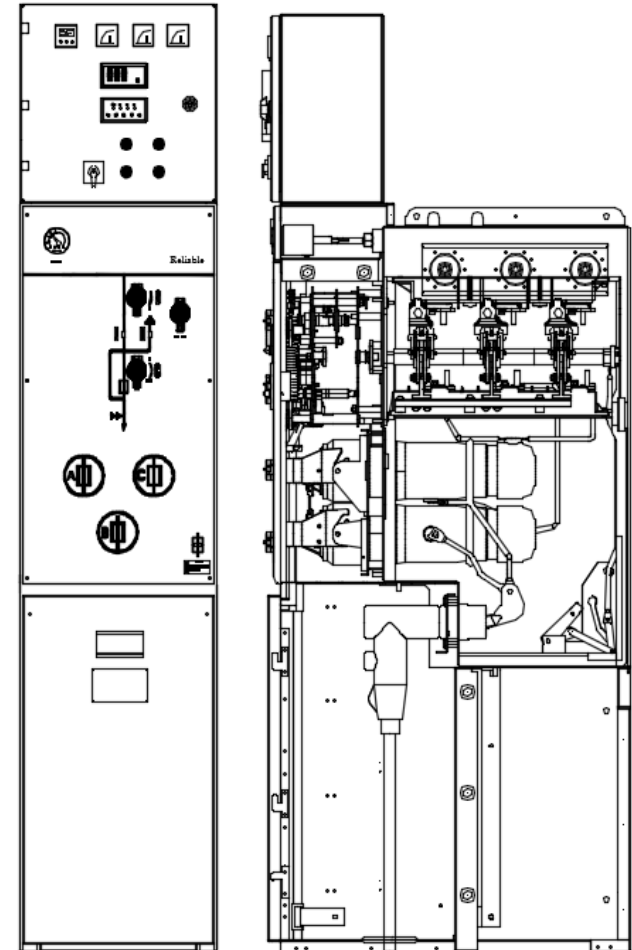


Standard configuration

- Gas tank
- Three-station load switch
- Three-station load switch operating mechanism
- Density meter with alarm contact
- Potential indicator
- 630A Internal bus
- Maximum 63A fuse
- Cable room with interlock with ground switch
- Low voltage chamber

Optional accessories

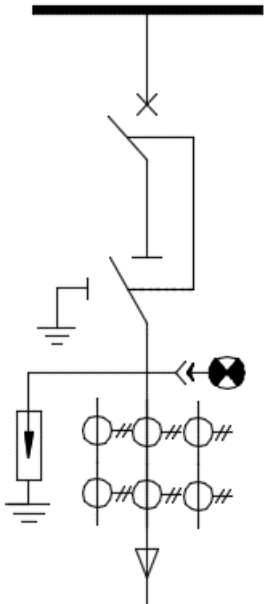
- Incoming line arrester
- Front cable accessories
- Short circuit and ground fault indicator
- Current transformer



Function Unit Description

Reliable-24kV SF6-insulated compact switchgear

V-Circuit breaker module

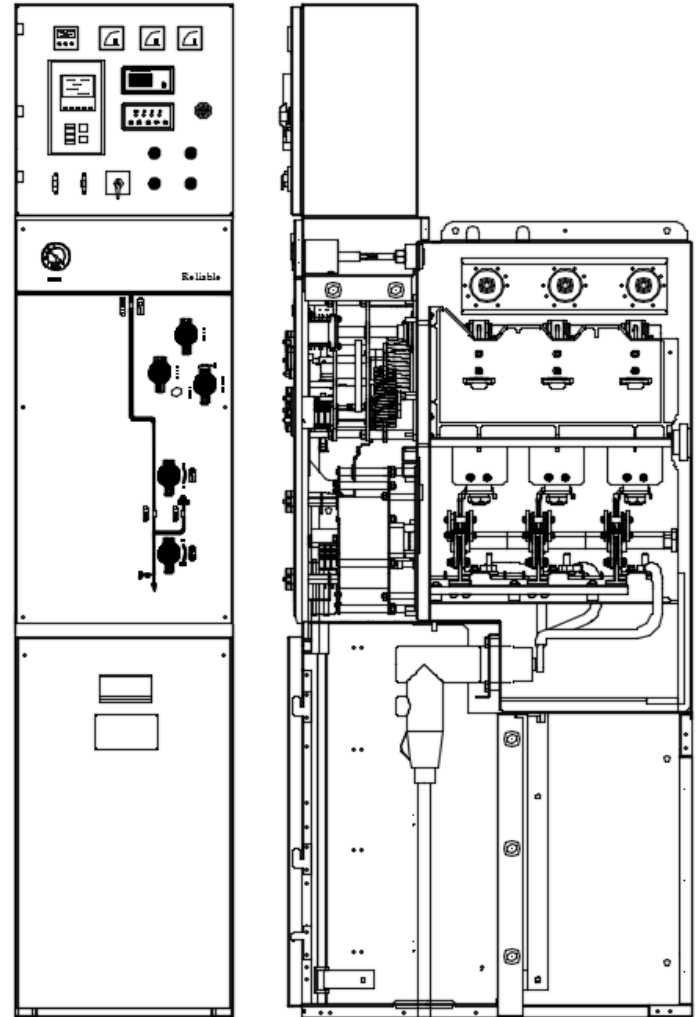


Standard configuration

- Gas tank
- 630A vacuum circuit breaker
- Vacuum circuit breaker with manual operation mechanism
- Three-station isolated ground switch
- Three-station isolated ground switch with manual operation mechanism
- Microcomputer integrated protection device
- Density meter with alarm contact
- Potential indicator
- 630A Internal bus
- Cable room with interlock with ground switch
- Low voltage chamber

Optional accessories

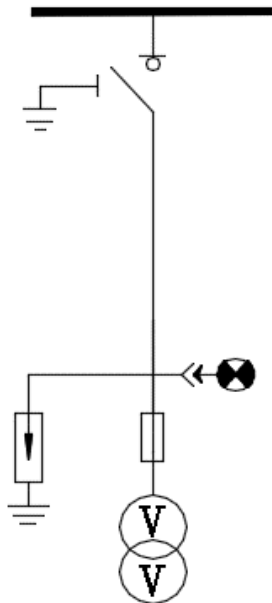
- Incoming line arrester
- Front cable accessories
- Short circuit and ground fault indicator
- Current transformer



Function Unit Description

Reliable-24kV SF6-insulated compact switchgear

PT-Load switch with PT module

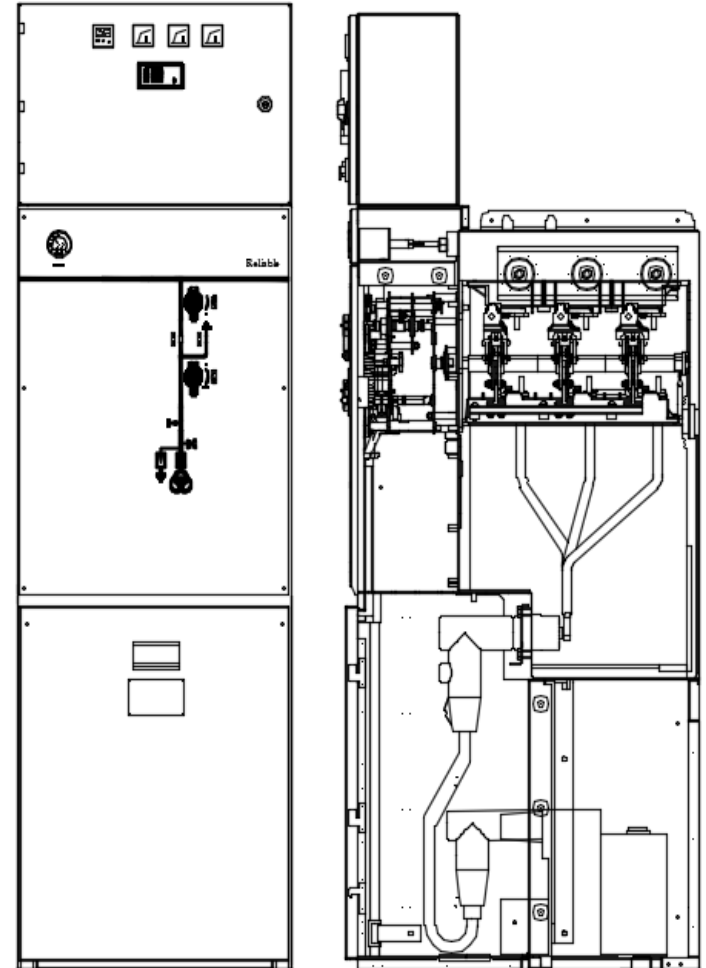


Standard configuration

- Gas tank
- Three-station load switch
- Three-station load switch operating mechanism
- Density meter with alarm contact
- Potential indicator
- 630A Internal bus
- Cable room with interlock with ground switch
- Voltage transformer
- Low voltage chamber

Optional accessories

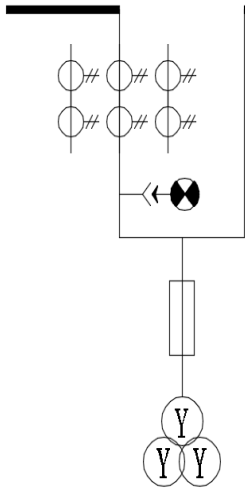
- Incoming line arrester



Function Unit Description

Reliable-24kV SF6-insulated compact switchgear

M-Measuring module



Standard configuration

Potential indicator
630A Internal bus
Low voltage chamber
Voltage transformers:JDZ11-20
Current transformers:LZZBJ9-20
Fuses to protect PT

Optional accessories

Electric energy meter
Ammeter
Voltmeter

