RELIABLE

Fully insulated SF6 metal-enclosed switchgear

safe · reliable · intelligent · compact

Hubbell Power Systems, Inc.

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Company introduction

Headquartered in Connecticut, USA, HUBBELL was founded in 1888 by Mr. Harvey Hubbell, who was the same era as Edison, Ford and Westinghouse, and invented the world's first light switch, power plug and socket, so that Edison's light bulb was more widely used, and also played a significant role in promoting the practical use of electricity. After more than a hundred years of development, HUBBELL has become a world-renowned multinational company, listed on the New York Stock Exchange in the United States in 1963 under the stock code HUBB. It has more than 30 factories in the United States, China, Canada, the United Kingdom, Switzerland, Italy, Mexico and other places.

HUBBELL has three business units: POWER SYSTEMS, ELECTRONICS AND LIGHTING. Power system products can cover more than 90% of the products used in transmission towers and more than 75% of the products used on distribution poles. Products include drop fuses, insulators (up to 1,100kV), arresters (up to 750kV), high-voltage disconnectors (up to 765kV), transformer bushings (up to 765kV), circuit breaker bushings (up to 765kV), column switches, ring network cabinets, tank opening and closing stations, cable accessories, live work tools, conventional tools, insulation tools, and various joints, brackets, connectors and other fittings. Products are not only used in power substation, transmission, distribution and other power fields, but also used in communications, pipelines, construction and civil consumption fields.

HUBBELL has established its first wholly owned enterprise in Shanghai Since 2008.Hubbell has established Hubbell's low-, medium- and high-voltage power system Asian manufacturing bases in Dongguan，Anhui and Jiangsu since 2010, , it has opened a new chapter in HUBBELL's development in the Chinese market in 2014.

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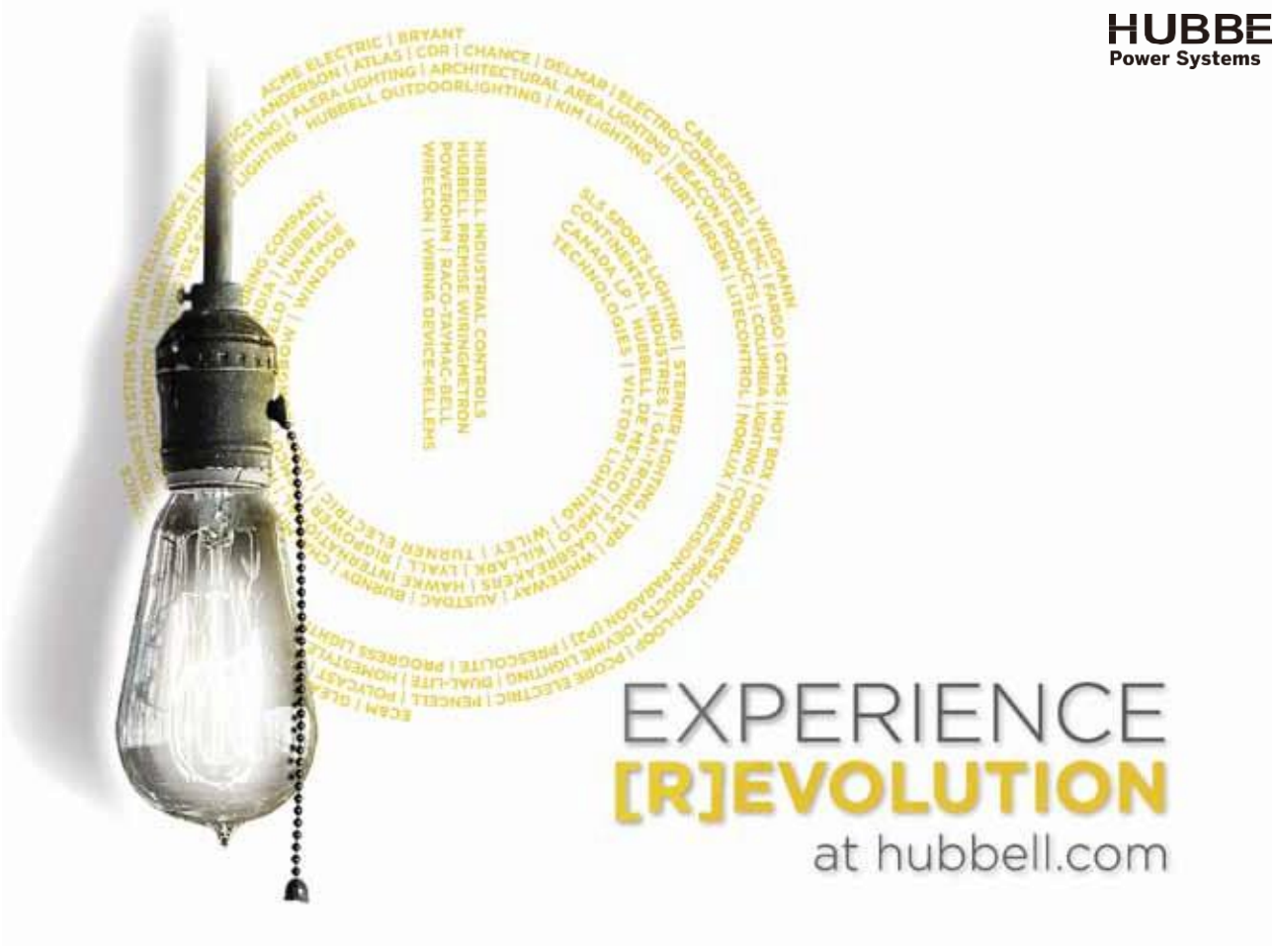

Scope of application

Transmission and distribution systems
Industrial system
Commercial District
Wind power
Factory power supply
Airport port

Product introduction

The RELIABLE series is a completely sealed system which all live parts and switches are enclosed in a stainless-steel tank. The entire switchgear is unaffected by external environmental conditions to ensure operational reliability and personal safety. A combination of various schemes can be realized to achieve full modularity by using expand the busbar, and the extended busbar is fully insulated and shielded to ensure high reliability and safety.

Flexible combination:

The RELIABLE series can be configured with up to six 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 when the modules are more than 6.

Compact structure:

The width of all the modules is 375mm，except for the PT and metering cabinet. The height of the connecting sleeves of all units to the ground is greater than 650mm to make it convenient for on-site cable installation.

Unaffected by the environment:

All high-voltage live parts are in a stainless-steel tank, and the tank is filled with SF6 gas with 1.4 bar standard working pressure. Reliable can be installed in humid, sandy, dusty, salty, mine and any place where surface fouling flashes are easy due to air pollution. It is not necessary to take special precautions. It is not affected by the external environment, and it is maintenance-free.

High reliability for personal safety:

The gas tank，cable cabinet and control cabinet of the ring network cabinet are both metal enclosed independent compartments. The structural design of each compartment meets normal usage conditions and can limit the impact of internal arc in the compartment. And it has reliable interlocking function to prevent mis operation.

Intelligent:

Adopting advanced microcomputer protection device with protection, control, and detection functions. The secondary circuit adopts integrated control technology and supports data transmission function.

Technical characteristics

Good sealing performance

Considering the protection of the environment, the development of HRW air tank unit not only from the product itself, but also from the production process to the lifetime operation of the switch environmental protection, HUBBELL company selects environmentally friendly materials, adopts zero leakage cleaning process, product lifetime sealing, 90%-95% of the material can be recycled after the end of the product life cycle.

Safe explosion-proof function

The air tank unit is designed with 3mm stainless steel plate. all welding work is carried out by computer-controlled robots. The inside of the gas tank is designed with a safe and reliable explosion-proof valve. The internal arc failure caused by special reasons causes the pressure inside the gas tank rises sharply, and the explosion-proof valve will automatically release the pressure to prevent personnel injury.

The gas tank unit passed the 20kA 1s internal combustion arc.

Excellent arc extinguishing ability.

E3 grade load switch. the spindle adopts three-phase linkage design to ensure good contemporaneity of the opening and closing, and the opening speed of the operating mechanism is fast, which can open the arc instantly.

The arc extinguishing grid is made of high-quality metal material, and the arc light generated during the breaking process is spaced and dispersed by the arc extinguishing grid, which effectively ensures the arc extinguishing capacity of the load switch.

The load switch is installed with an arc isolation plate, it can prevent the arc generated during the breaking process and avoid the occurrence of short circuit fault between phases. The arc partition plate adopts HUBBELL's mature injection molding process, which is injection molded with POM material, and has strong arc resistance.

Superior load carrying capacity.

The switch dynamic and static contact adopts 99.9% T2 copper, it adopts forging process. It has greater density and higher hardness, anti-wear and strong load bearing capacity. Locally thickened silver plating is used for the copper parts of the connection and contact parts to provide superior electrical conductivity.

Connecting plastic parts which use HUBBELL mature injection molding process, PC plus glass fiber material injection molding. It includes good insulation, strong heat resistance, good corrosion resistance, high mechanical strength.

The connection of the arm is made of alloy pin shaft to prevent breaking in harsh temperature environments.

Design of high-life fittings

To meet the user's requirements for the service life of the product, the steel casting process is adopted for the moving part arm to increase the mechanical strength. The contact pressure spring adopts a rectangular spring with neutral load, which has the characteristics of high service life, fatigue resistance and no deformation.

Reliable vacuum circuit breaker

The circuit breaker adopts vacuum arc extinguishing, short circuit breaking ability is strong to ensure that the short circuit current is effectively cut off in the event of a short circuit fault. The circuit breaker integrated three-station disconnector can play an effective isolation, fast grounding, to ensure the personal safety of maintenance personnel. After the short circuit recovery, the grounding switch and the disconnector is closed, the power transmission operation is completed instantaneously after the circuit breaker is closed.

Optimizing and adjusting the key components inside the switch, we have improved the service life of the switch operation and ensured that the switch is more reliable, with a circuit breaker operating life of > 10,000 times, a disconnector operation service life of > 3,000 times, and a grounding switch operating life of > 3,000 times.

Intelligence and security

Integration of automation terminal DTU: DTU: DTU integrates remote signaling, telemetry, remote control, and protection, making our products smarter, safer, and more reliable.

Alarm blocking function: If there is an abnormality in the air pressure, the pressure gauge will promptly send out alarm, locking, and overpressure alarm signals to ensure the safe operation of the equipment.

Economic advantages

1：The product is compact and small, which reduces the area occupied by the power distribution cabinet and reduces the construction cost.

2：The air tank adopts fully insulated and fully sealed design, no exposed live body, lifelong maintenance-free, Saving maintenance costs.

3：The control protection reserve has 485 communication interfaces, which can realize the automation of the distribution network and reduce the upgrade cost.

4：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.

5：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.

Terms of use

Ambient temperature		humidity
Maximum temperature	+55℃	Maximum average relative humidity
Minimum temperature	-40℃	24-hour measurement ≤ 95%.
Maximum average temperature	+35℃ (24-hour average temperature)	Measure ≤90% in one month
Altitude	≤ 1000 meters	
Earthquake resistance	The intensity of the earthquake does not exceed 8 degrees	

Special conditions

1. When the equipment is installed at an altitude of > 1000 meters, special instructions are required so that HUBBELL can adjust the gas pressure during manufacturing.
2. If special harsh conditions are involved, be sure to check with HUBBELL.

Reference standards:

- IEC 62271-1 Common specifications for high-voltage switchgear and control gear standards
- IEC 62271-100 High-voltage switchgear and control gear-Part 100: high-voltage alternating-current circuit-breakers.
- ·IEC 62271-102 High-voltage switchgear and control gear-Part 102: alternating current disconnectors and earthing switches
- IEC 62271-105 High-voltage switchgear and control gear-Part 105: alternating current switch-fuse combinations
- IEC 62271-200 High-voltage switchgear and control gear-Part 200: A.C. metal-enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV.
- EC 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)
- Annual leakage rate ≤0.25‰/year
- Degree of protection:
- Gas tank IP67
- Switch cabinet IP41
- Compartment IP2X
- Compartment arc 20kA/1s

Technical parameters

Table1

Technical parameters		Cabinet type unit	C module Load switch	F module Combination appliances	V module breakers
Rated voltage		kV	12	12	12
Rated frequency		Hz	50	50	50
Rated current		A	630	Depends on the current rating of the fuse	630
Power frequency withstand voltage	Interstitial, relative and fractured	kV	42/48	42/48	42/48
Lightning impulse withstand voltage	Interstitial, relative and fractured	kV	95/110	95/110	95/110
Rated closed-loop breaking current		A	630	N/A	N/A
5% rated active load breaking current		A	31.5	N/A	N/A
Rated cable charging and breaking current		A	50	N/A	N/A
The breaking current of the cable charge in the event of a ground fault		A	17.4	N/A	N/A
Rated short-circuit breaking current		kA	N/A	Limited by high-voltage fuses	20
Transfer current		A	N/A	1750	N/A
Grounding switch short-circuit closing capability(50)		times	5	5	5
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	150	400	150
Mechanical life		Times	5000	5000	10000
Grounding switch mechanical life		Times	⩾3000		
Disconnector mechanical life		Times	⩾3000		
SF6 inflation pressure in the air tank (20° C)		Mpa	0.04MPa		
Internal arc burning experiment		20kA 1s			
Whole container partial discharge		Measure ⩽ 20Pc at 1.1ur			

RELIABLE offers the following 16 standard combinations

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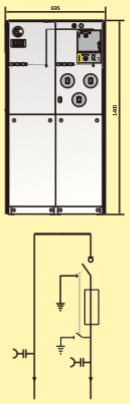

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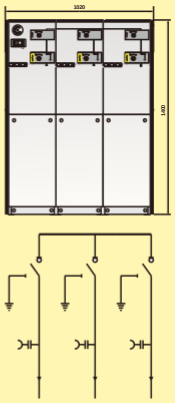

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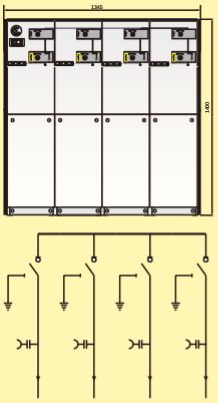

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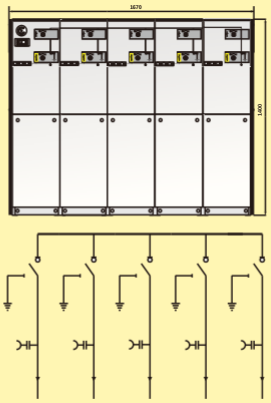

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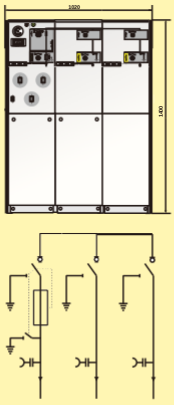

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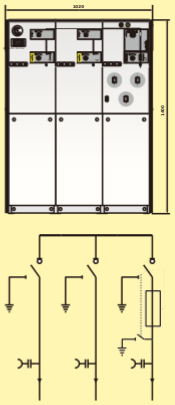

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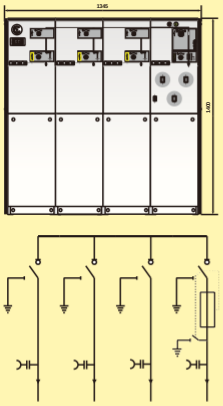

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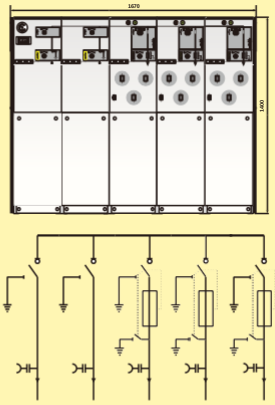

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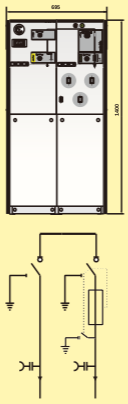

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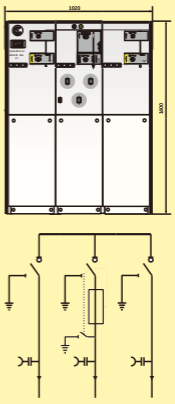

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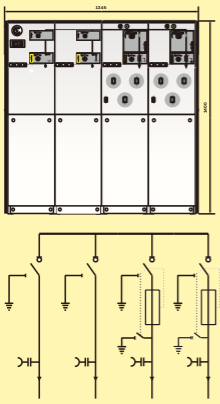

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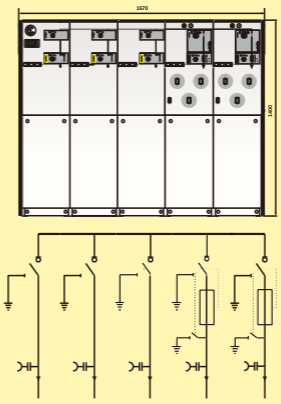

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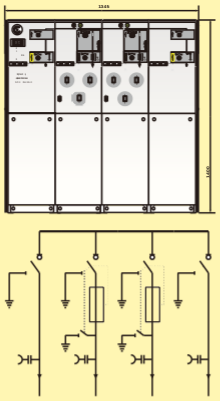

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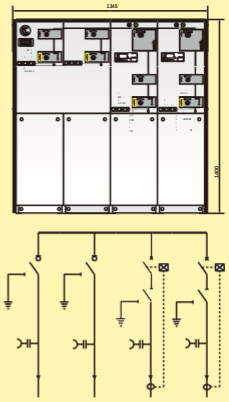

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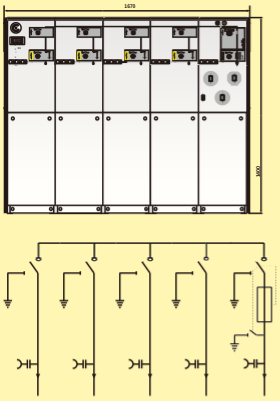

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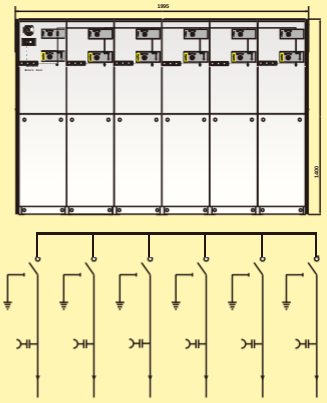


Each module of RELIABLE has the following configuration

- **D Cabinet Configuration**

  Refer to the standard configuration and features of the cable connection module without a cutter
- **C Cabinet Configuration**

  Refer to the standard configuration and features in the load switch module
- **F cabinet configuration**

  Refer to the standard configuration and characteristics in the load switch-fuse module

RELIABLE standard portfolio also provides the following configurations

Capacitive voltage indicator for inlet bushing

Each chamber is fitted with a pressure meter that monitors the density of SF6

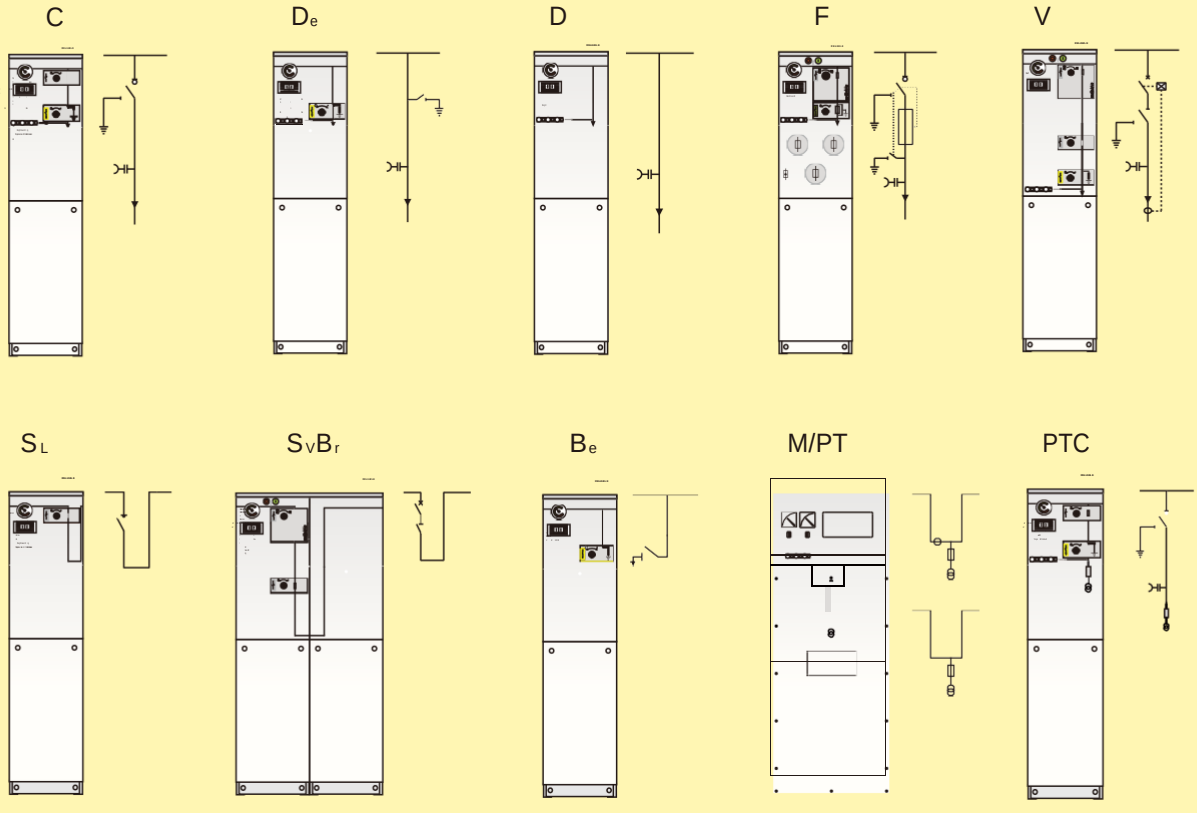
Lifting lugs for lifting

Operating handle

Basic Module

RELIABLE module

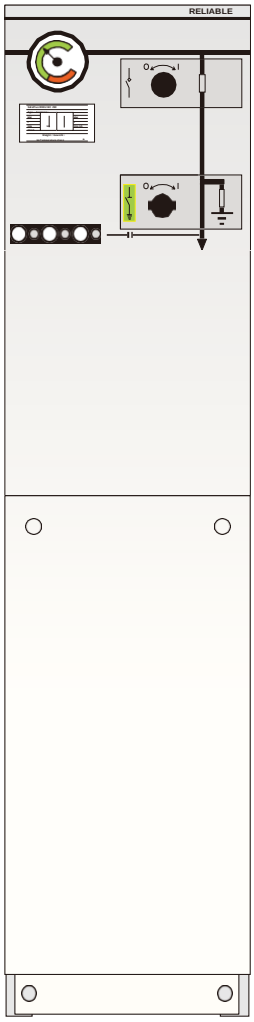
- C Load switch module (Width=325mm)
- De Cable connection module with ground switch (Width =325mm)
- D Cable connection module without ground switch (Width =325mm)
- F Load switch fuse assembly electrical module (Width =325mm)
- V Vacuum circuit breaker module (Width =325mm)
- SL Bus block switch module (load switch) (Width =325mm)
- SvBr Bus block switch module (vacuum breaker) (Width =650mm)
- Be Bus grounding module (Width =325mm)
- M/PT metering module (Width =700mm)
- PTC module (Width =425mm)

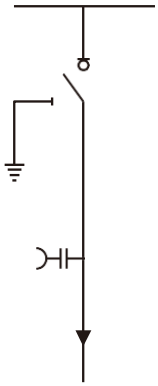


- RELIABLE Module weight scale (These weights do not take into account accessories)
- Standard 1 interval：130Kg
- Standard 6 interval：570-800Kg
- Standard M/PT interval：360-490Kg

The selection of each unit module

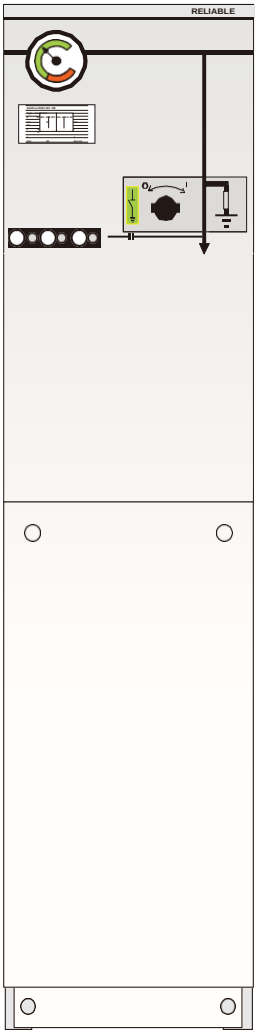
RELIABLE Module- Load switch module C

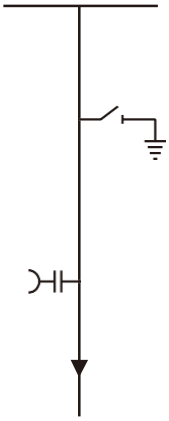




Standard configuration	All-insulated metal enclosed switchgear RELIABLE-C-12/630-20	Load switch (Air tank unit) HRW-C-12/630-20
630A bus	●	●
Load switch/ground switch	●	●
Spring operating mechanism	●	●
Switch position indication	●	●
Padlock device	●	●
630A outlet bushing	●	●
SF6 barometer	●	●
Live display	●	●
Grounding bar	●	●
Cable room door interlock	●	●
Optional configuration		
Reservation extensions	○	○
External bus	○	○
Spring operating mechanism 24/48DC 110/220AC/DC	○	○
Ground fault indicator	○	○
Current transformers	○	○
Touch cable plug	○	○
Touch arrester	○	○
Key interlock	○	○
Live ground block 24/48DC 110/220AC/DC	○	○
Load switch position contact 2NO+2NC	○	○
Ground switch position contact 2NO+2NC	○	○
Pressure gauge with signal 1NO	○	○
Low voltage busbar	○	○

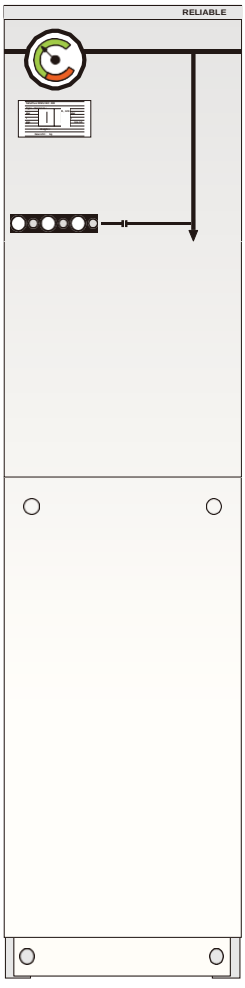
RELIABLE Module- Cable connection module with ground switch De





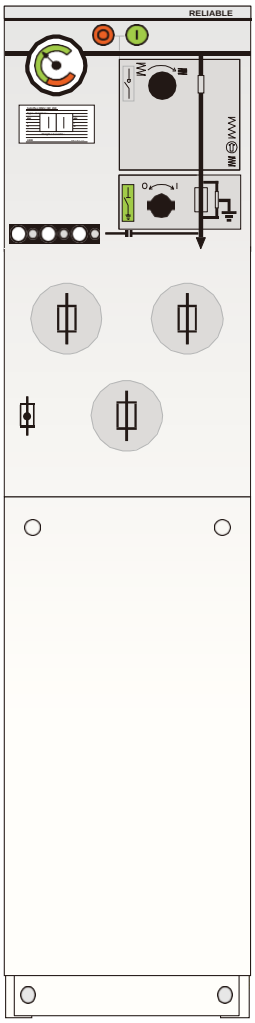
Standard configuration	All-insulated metal enclosed switchgear RELIABLE-De-12/630-20	Cable cabinet with ground switch (Air tank unit) HRW-De-12/630-20
630A bus	●	●
Ground switch	●	●
Spring operating mechanism	●	●
Switch position indication	●	●
Padlock device	●	●
630A outlet bushing	●	●
SF6 barometer	●	●
Live display	●	●
Grounding bar	●	●
Cable room door interlock	●	●
Optional configuration		
Reservation extensions	○	○
External bus	○	○
Ground fault indicator	○	○
Current transformers	○	○
Touch cable plug	○	○
Touch arrester	○	○
Key interlock	○	○
Live ground block 24/48DC 110/220AC/DC	○	○
Ground switch position contact 2NO+2NC	○	○
Pressure gauge with signal 1NO	○	○
Low voltage busbar	○	○

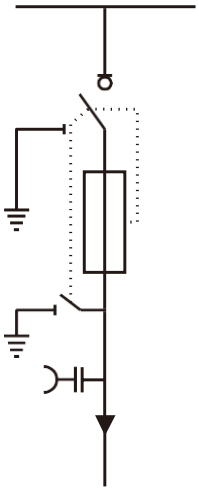
RELIABLE - Cable connection module without ground switch D



Standard configuration	All-insulated metal enclosed switchgear RELIABLE-D-12/630-20	Cable cabinet without ground switch (Air tank unit) HRW-D-12/630-20
630A bus	●	●
630A outlet bushing	●	●
SF6 barometer	●	●
Live display	●	●
Grounding bar	●	●
Optional configuration		
Reservation extensions	○	○
External bus	○	○
Ground fault indicator	○	○
Current transformers	○	○
Touch cable plug	○	○
Touch arrester	○	○
Low voltage busbar	○	○

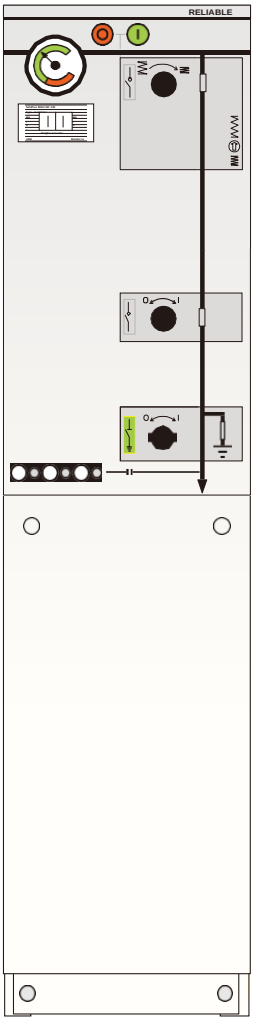
RELIABLE - Load Switch - Fuse combination module F

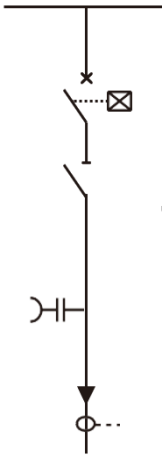




Standard configuration	All-insulated metal enclosed switchgear RELIABLE-F-12/125-31.5	Load switch-fuse combination (Air tank unit) HRW-C-F/125-31.5
630A bus	●	●
Load switch/ground switch	●	●
Spring operating mechanism	●	●
Switch position indication	●	●
Fuse insulation cylinder	●	●
Fuse 12KV/125A	●	●
Fuse position indication	●	●
Padlock device	●	●
200A outlet bushing	●	●
SF6 barometer	●	●
Live display	●	●
Grounding bar	●	●
Cable room door interlock	●	●
Optional configuration		
Reservation extensions	○	○
External bus	○	○
Spring operating mechanism 24/48DC 110/220AC/DC	○	○
Trip coil 24/48DC 110/220AC/DC	○	○
Closing coil 24/48DC 110/220AC/DC	○	○
Ground fault indicator	○	○
Current transformers	○	○
Touch cable plug	○	○
Touch arrester	○	○
Key interlock	○	○
Live ground block 24/48DC 110/220AC/DC	○	○
Load switch position contact 2NO+2NC	○	○
Ground switch position contact 2NO+2NC	○	○
Fuse failure signal 1NO	○	○
Pressure gauge with signal 1NO	○	○
Low voltage busbar	○	○

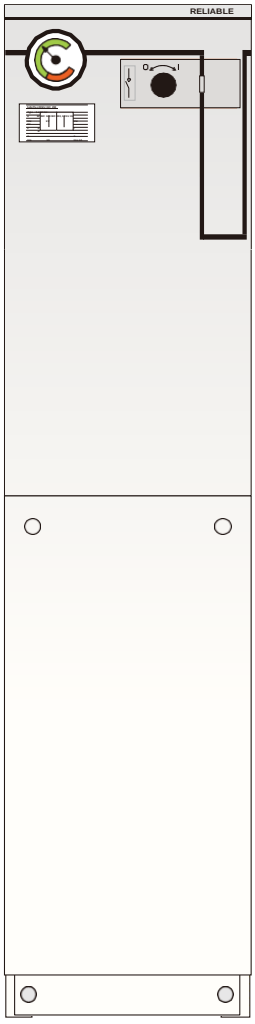
RELIABLE Module-Vacuum circuit breaker module V

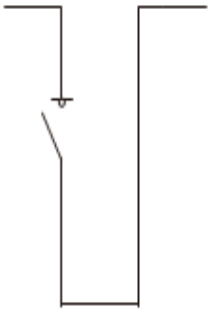




Standard configuration	All-insulated metal enclosed switchgear RELIABLE-V-12/630-20	Circuit breaker (Air tank unit) HRW-V-12/630-20
630A bus	●	●
Vacuum circuit breaker	●	●
Circuit breaker mechanism	●	●
Disconnecting switch	●	●
Isolation mechanism	●	●
Split indication	●	●
Padlock device	●	●
Outlet sleeve	●	●
SF6 barometer	●	●
Live display	●	●
Grounding bar	●	●
Door interlocking	●	●
Protector 24/48DC 110/220AC/DC	●	●
Optional configuration		
Reservation extensions	○	○
External bus	○	○
Electric mechanism 24/48DC 110/220AC/DC	○	○
Split and close the coil 24/48DC 110/220AC/DC	○	○
Ground fault indicator	○	○
Current transformers	○	○
Touch cable plug	○	○
Touch arrester	○	○
Key interlock	○	○
Live ground block 24/48DC 110/220AC/DC	○	○
Disconnecting switch position 2NO+2NC	○	○
Ground switch position contact 2NO+2NC	○	○
Pressure gauge with signal 1NO	○	○
Low voltage busbar	○	○

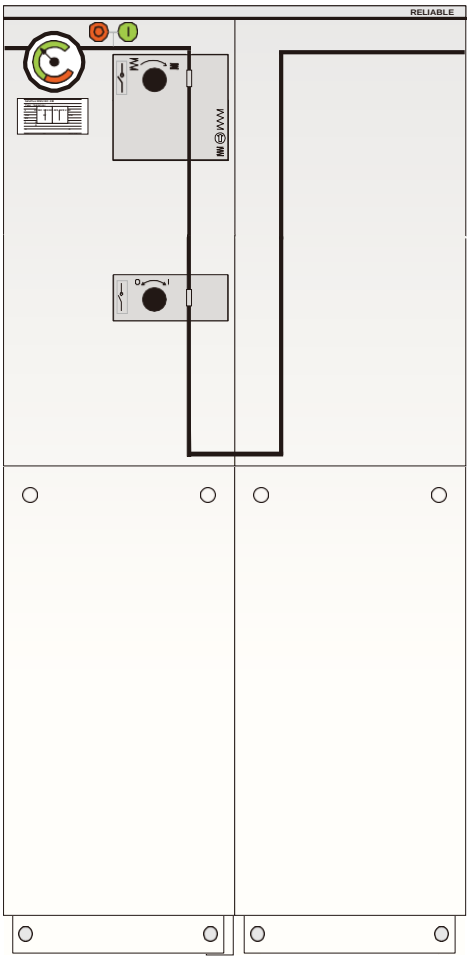
RELIABLE Module-Bus block switch module （load switch）SL



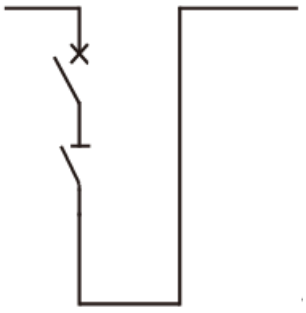


Standard configuration	All-insulated metal enclosed switchgear RELIABLE-SL-12/630-20	Bus block switch (Air tank unit) HRW-SL-12/630-20
630A bus	●	●
Load switch	●	●
Spring operating mechanism	●	●
Switch position indication	●	●
Padlock device	●	●
SF6 barometer	●	●
Optional configuration		
Reservation extensions	○	○
External bus	○	○
Spring operating mechanism 24/48DC 110/220AC/DC	○	○
Key interlock	○	○
Load switch position contact 2NO+2NC	○	○
Low voltage busbar	○	○

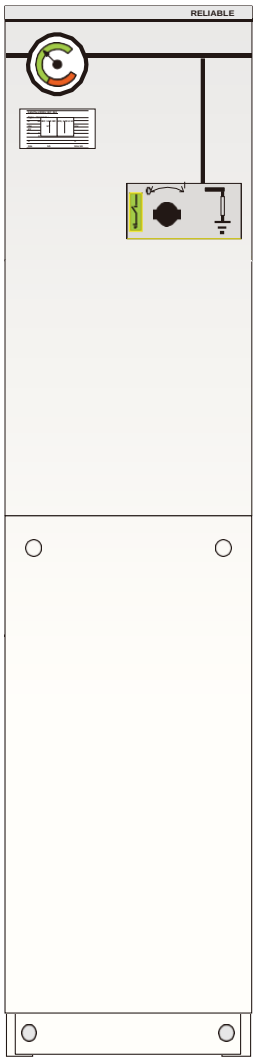
RELIABLE Module-Bus block switch module (vacuum breaker) SvBr

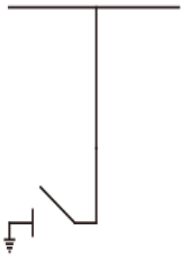


Standard configuration	All-insulated metal enclosed switchgear RELIABLE-SvBr-12/630-20	Bus section breaker (Air tank unit) HRW-SvBr-12/630-20
630A bus	●	●
Vacuum circuit breaker	●	●
Circuit breaker mechanism	●	●
Disconnecting switch	●	●
Isolation mechanism	●	●
Breaker position indication	●	●
Padlock device	●	●
SF6 barometer	●	●
Connect the busbars	●	●
Optional configuration		
Reservation extensions	○	○
External bus	○	○
Electric mechanism 24/48DC 110/220AC/DC	○	○
Split and close the coil 24/48DC 110/220AC/DC	○	○
Key interlock	○	○
Disconnecting switch position 2NO+2NC	○	○
Ground switch position contact 2NO+2NC	○	○
Pressure gauge with signal 1NO	○	○
Low voltage busbar	○	○



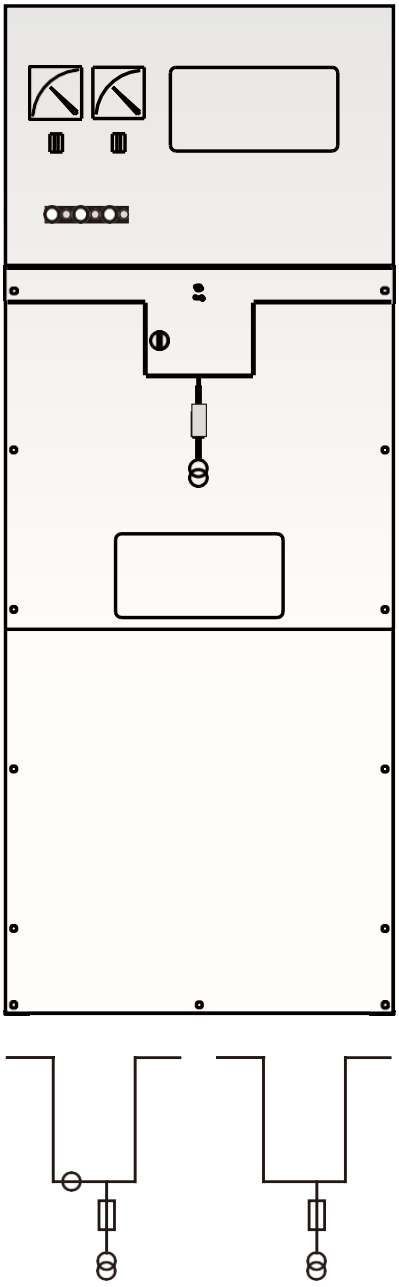
RELIABLE Module-Bus ground switch module Be





Standard configuration	All-insulated metal enclosed switchgear RELIABLE-Be-12/630-20	Bus ground switch (Air tank unit) HRW-Be-12/630-20
630A bus	●	●
Grounding switch	●	●
Spring operating mechanism	●	●
Ground switch indication	●	●
Padlock device	●	●
SF6 barometer	●	●
Grounding bar	●	●
Optional configuration		
Reservation extensions	○	○
External bus	○	○
Key interlock	○	○
Ground switch position contact 2NO+2NC	○	○
Pressure gauge with signal 1NO	○	○
Low voltage busbar	○	○

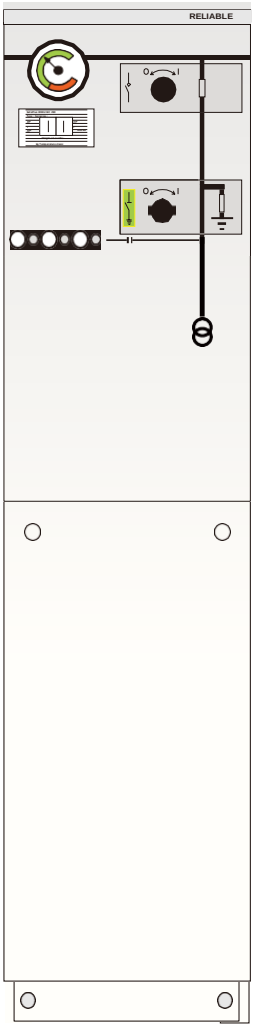
RELIABLE Module-Measuring tank module M



Standard configuration	All-insulated metal enclosed switchgear RELIABLE-M-12/630-20
Current transformers(2EA)	●
Voltage transformer(2EA)	●
Outlet sleeve(6EA)	●
Connect the busbars	●
PT fuse	●
Voltmeter	●
Ammeter	●
Cabinet size（W*D*H）	700X755X1880mm
Optional configuration	
Current transformers(3EA)	○
Voltage transformer(3EA)	○
Arrester	○
Live display	○
Kilowatt-hour meter	○
Low voltage busbar	○

Standard configuration	All-insulated metal enclosed switchgear RELIABLE-PT-12/630-20
Voltage transformer(2EA)	●
PT fuse	●
Voltmeter	●
Outlet sleeve(6EA)	●
Cabinet size（W*D*H）	475X755X1880mm
Optional configuration	
Arrester	○
Live display	○
Accumulator	○
Low voltage busbar	○

RELIABLE Module-PTC-With disconnector PTC module



Standard configuration	All-insulated metal enclosed switchgear RELIABLE-PTC-12/630-20	Circuit breaker (Air tank unit) HRW-PTC-12/630-20
630A bus	●	●
Load switch	●	●
Three-station spring	●	●
operating mechanism	●	●
Split indication	●	●
Padlock device	●	●
Outlet sleeve	●	●
SF6 barometer	●	●
Live display	●	○
Grounding bar	●	○
Door interlocking	●	○
PT transformers	●	○
PT fuse	●	○
Voltmeter	●	○
Optional configuration		
Reservation extensions	○	○
External bus	○	○
Load switch mechanism 24/48DC 110/220AC/DC	○	○
Touchable cable plugging head	○	○
Touch arrester connector	○	○
Switch position:2NO+2NC Trip signal with signal pressuregauge:1NO	○	○
Low voltage busbar	○	○
Accumulator	○	○

Outdoor box

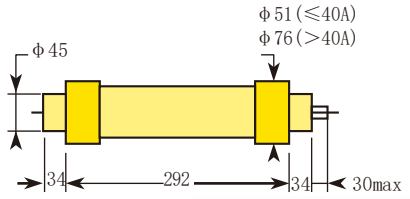
HUB-12 Outdoor box peculiarity

RELIABLE/ HUB-12

- The box material is all made of surface sprayed stainless steel plate, with strong corrosion resistance. The box parts are sheet metal, riveted and bolted with each other, without the welding process that is easy to deform. The product is light in weight and beautiful and generous.
- There are no removable fasteners on the surface of the box, and the anti-theft is good. The box has IP43 protection level and good rain resistance.
- The top cover is an air-sandwich double-layer structure with vents; The air inlet is located at the box panel; The air outlet is set at the top of the box and hidden under the eaves to form bottom-up air convection, so that the box has good heat insulation and ventilation effect, and the top cover is not less than 3 degrees of drainage inclination.
- The box has a low plate of the sealed chamber of the cable inlet to prevent moisture from entering the cable trench.
- The door and lifting lug are sealed with sealing strips, and the side doors can be designed as open as needed, and the door locks are made of rainproof structure. The limited pull hook when the door is opened makes the door easy to secure.
- The switch in the box is a fully insulated and fully sealed ring network cabinet, and the cable head can be optionally equipped with a waterproof touchable cable joint, which has a waterproof function.

Transformer fuse protection scheme

RELIABLE can provide two transformer protection methods: 1. Load switch-fuse combination electrical appliance, 2. Circuit breaker with microcomputer integrated protection device.



Replacement of fuses

· According to the requirements of IEC standards, when the one-phase fuse is blown out, the three-phase fuse must be replaced at the same time.

Transformer fuse protection scheme

· Load switch fuse combination appliances provide transformer loop protection. The following factors should be considered when choosing a fuse to protect the transformer needs.
· Operating voltage
· Transformer rated capacity.
· The fuse dissipates heat.
·Fuse technical specifications.

The fuse and transformer mating relationship, the list is as follows:

XRNT fuse-transformer comparison table

100%	Rated capacity of transformer(KVA)																C E F
U_N(kV)	25	50	75	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	
3	16	25	25	40	4 0	50	50	80	100	125	160	160					
3.3	16	25	25	40	40	50	50	63	80	100	125	160					
4.15	10	16	25	25	40	40	50	50	63	80	100	125	160				
5	10	16	25	25	2 5	40	40	50	50	6 3	80	100	160	160			
5.5	6	16	16	25	25	25	40	50	50	63	80	100	125	160			
6	6	16	16	25	25	25	40	40	50	50	80	100	125	160	160		
6.6	6	16	16	25	25	25	40	40	50	50	63	80	100	125	160		
10	6	10	10	16	16	25	25	25	40	40	50	50	80	80	125	125	
11	6	6	10	16	16	25	25	25	25	40	50	50	63	80	100	125	12kV
12	6	6	10	16	16	16	25	25	25	40	40	50	63	80	100	125	

· This table is based on the use of CEF type fuses and under normal conditions without overload.
· Ambient temperature -40°∽+40°
· With fuses of other brands, parameters may change.

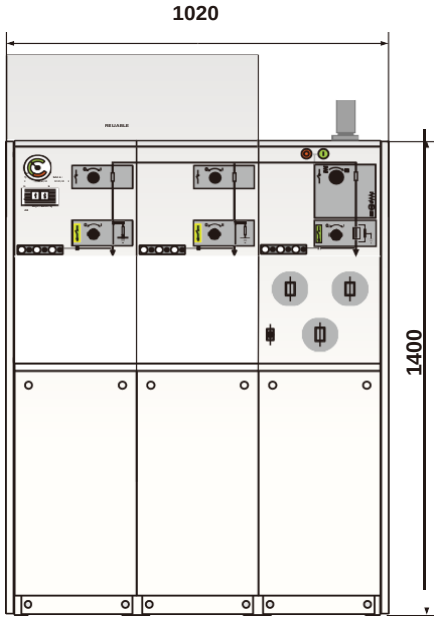
120%	Rated capacity of transformer(KVA)																C E F
U_N(kV)	25	50	75	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	
3	16	2 5	25	40	40	5 0	63	80	100	125	160						
3.3	16	25	25	40	40	50	63	80	80	100	125						
4.15	10	16	25	25	40	40	50	63	80	80	100	125					7.2kV
5	10	1 6	25	25	25	4 0	40	50	63	80	80	125	160				
5.5	6	16	16	25	25	25	40	50	50	80	80	100	125	160			
6	6	16	16	25	25	25	40	40	50	63	80	100	125	160			
6.6	6	16	16	25	25	25	40	40	50	63	80	80	100	125			
10	6	10	10	16	16	2 5	25	25	40	4 0	50	63	8 0	80	125		
11	6	6	10	16	16	25	25	25	25	40	50	50	80	80	100	125	12kV
12	6	6	10	16	16	16	25	25	25	40	40	50	63	80	100	125	

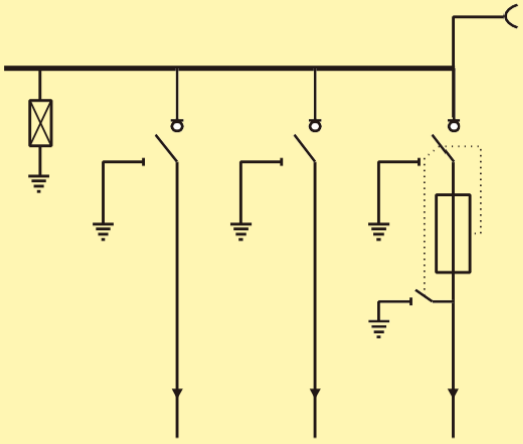
· This table is based on the use of CEF type fuses and under normal conditions without overload.
· Ambient temperature -40°∽+40°
· With fuses of other brands, parameters may change.

Customer solutions

Option 1: SA + CCF + ……

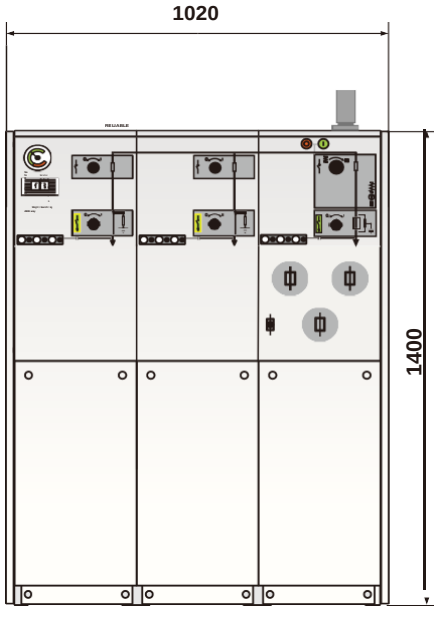
The busbar is equipped with a surge arrester and reserved for expansion.
Note: The number of switching units is not less than 3

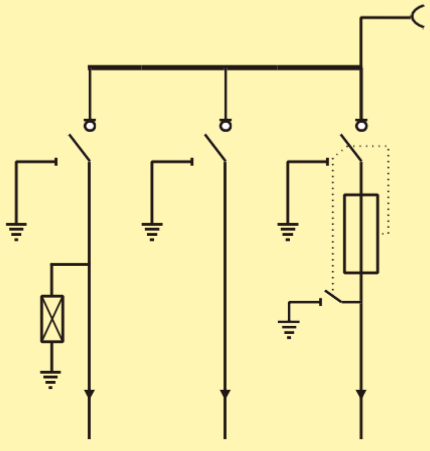




Option 2: CCF + ……

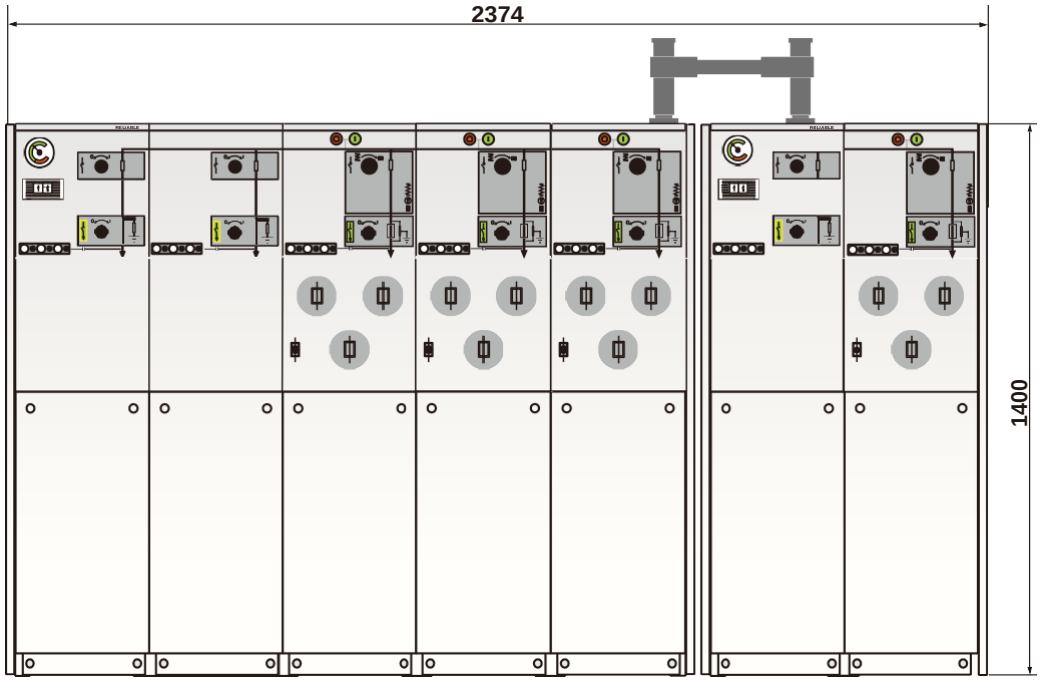
Install the arrester in the line and reserve the extension.

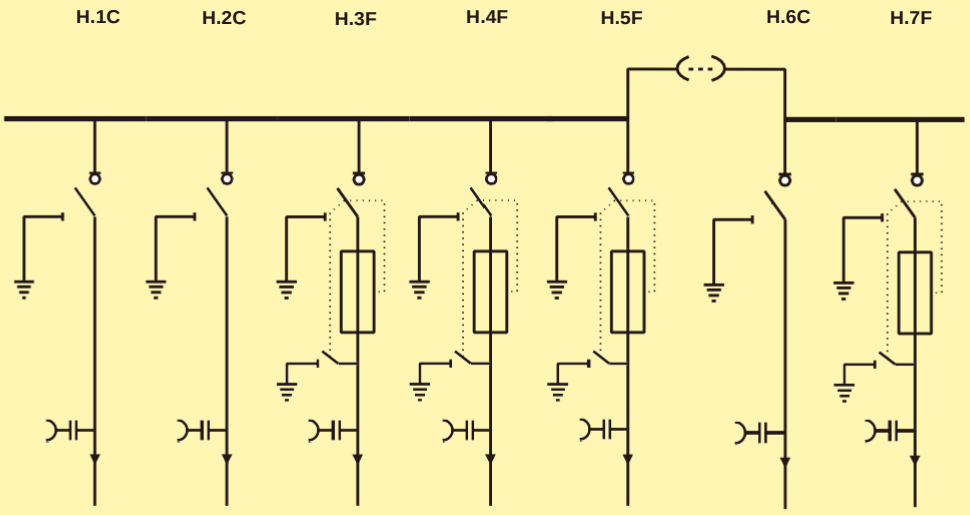




Option 3: CCFFF + CF

One is up to six units, beyond which the busbar connection needs to be extended.

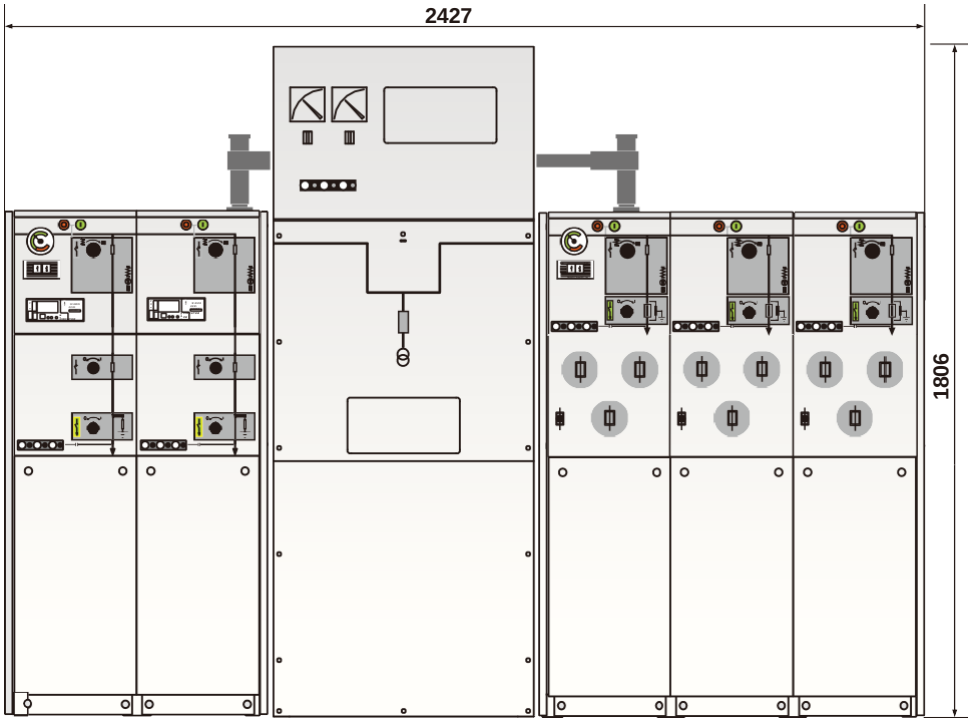


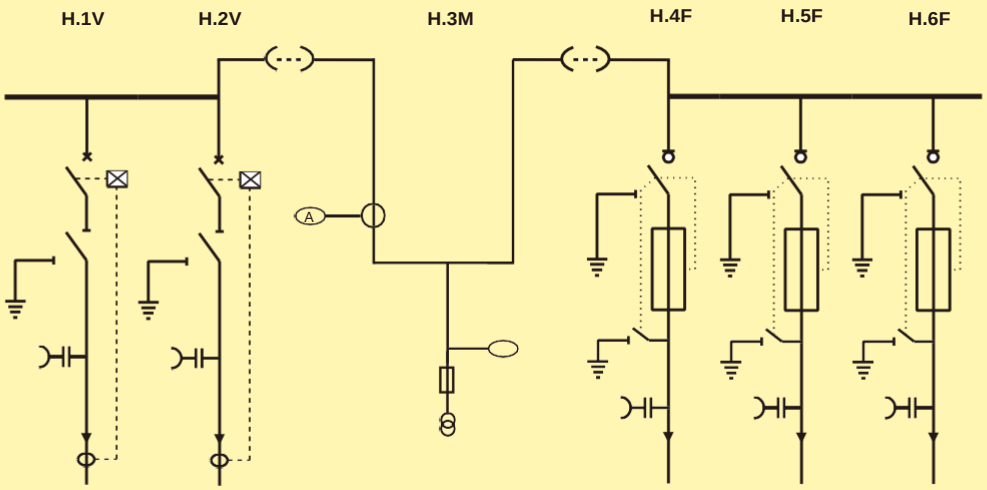


Customer solutions

Option 4: VV + M + FFF

High-side metering

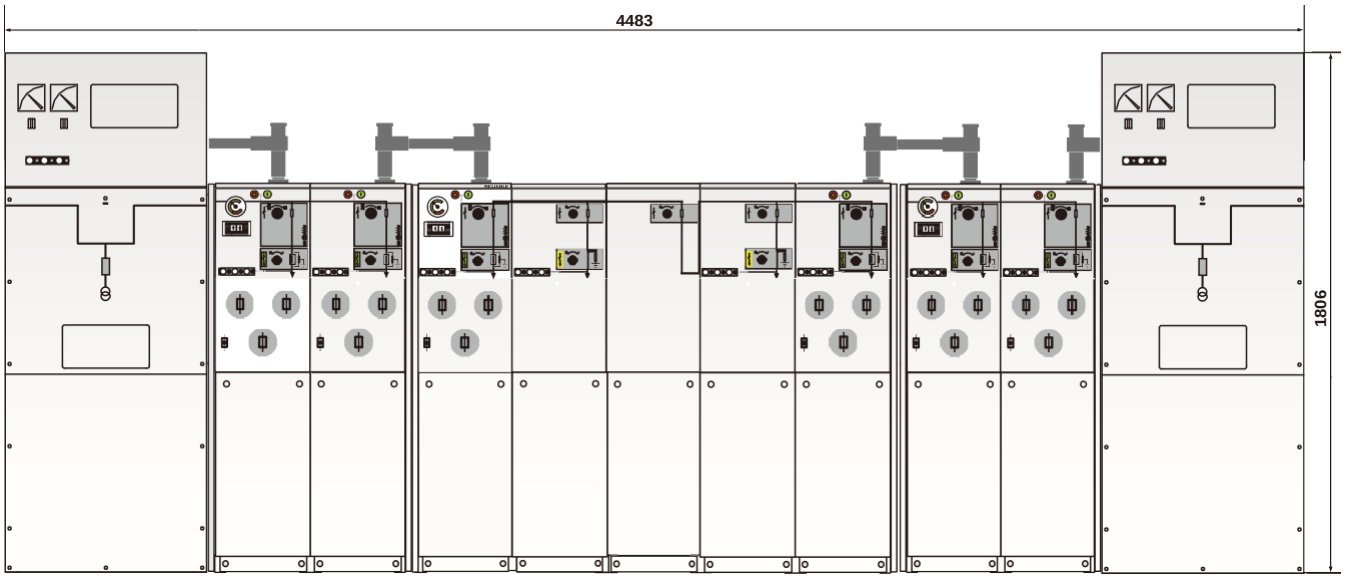


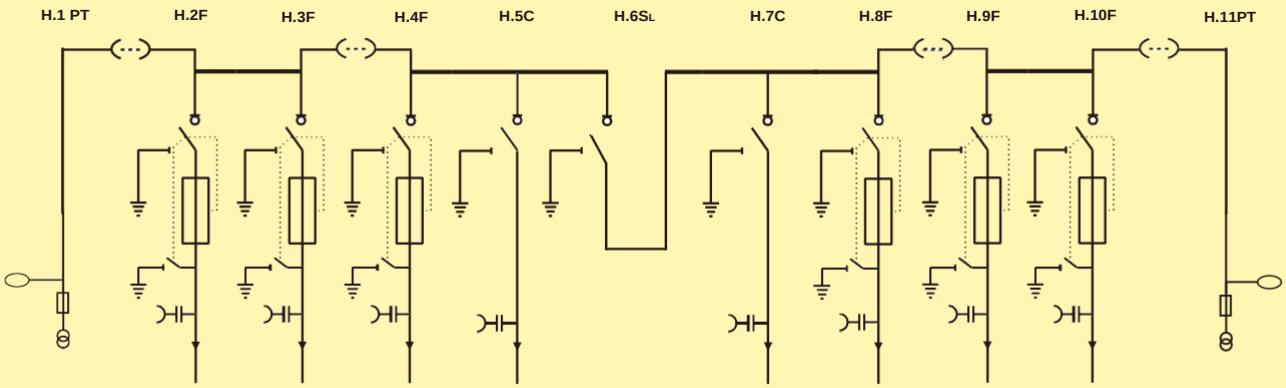


Customer solutions

Option 5: PT + FF + FCSLCF + FF + PT

Single busbar segmented busbar PT

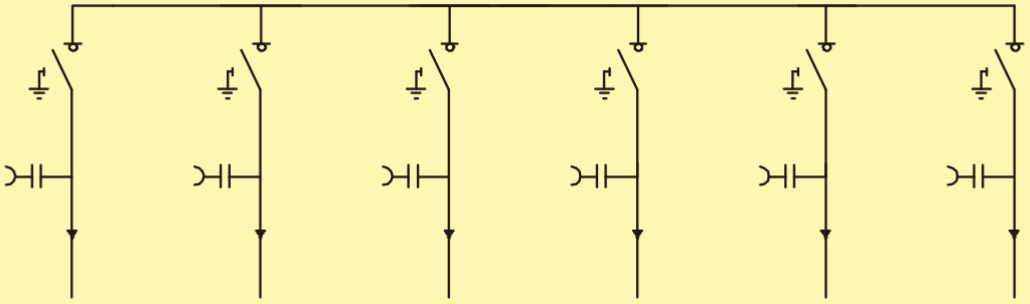




Customer solutions

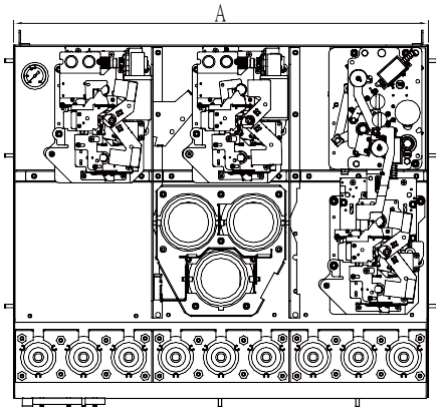
Option 6: CCCCCC

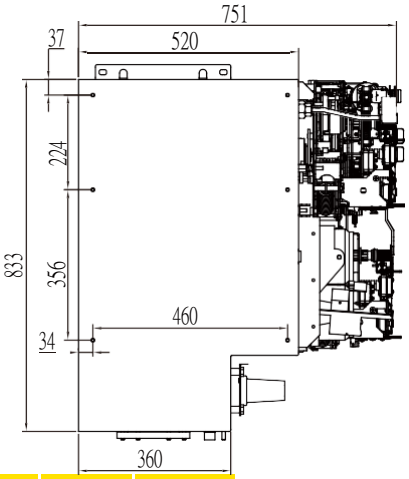
RELIABLE six units in a common box

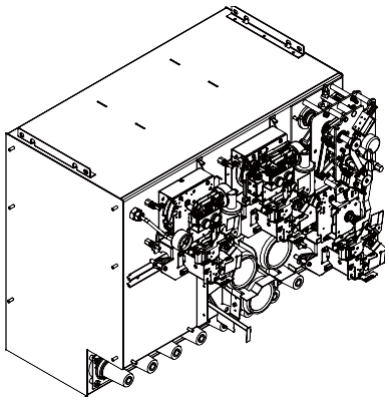


Form factor

HRW gas box unit dimensions

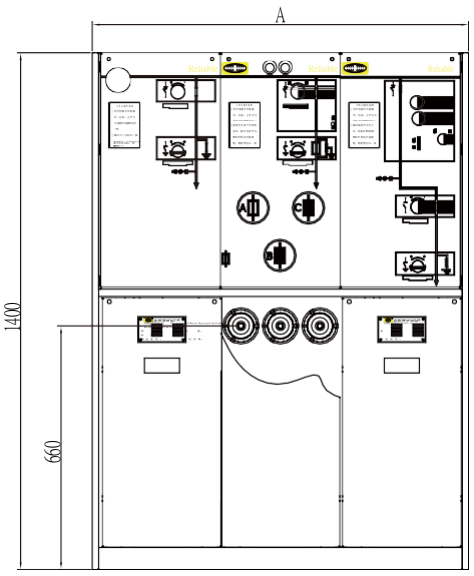


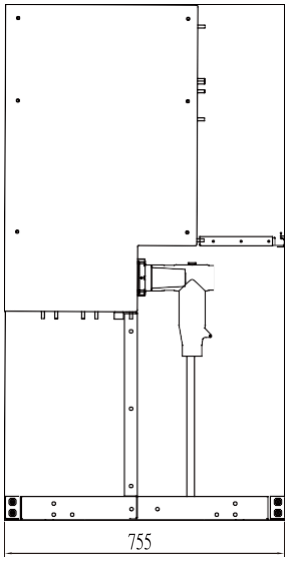




unit	一	二	三	四	五	六
A(mm)	331	656	981	1306	1631	1956

RELIABLE basic module form factor

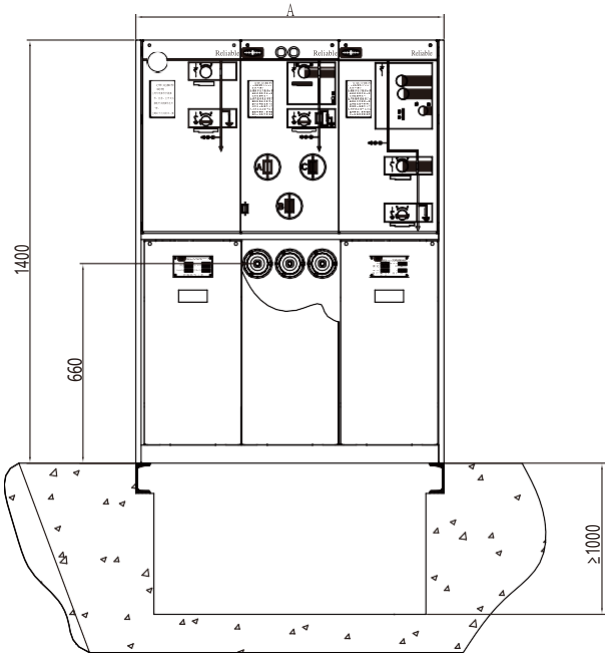


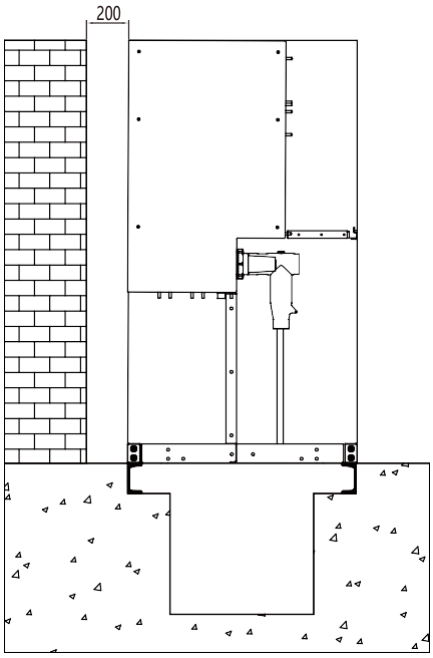


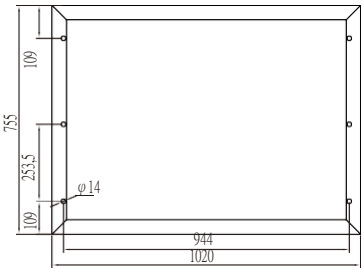
number	unit	A/mm	remark
1	一	370	
2	二	695	
3	三	1020	
4	四	1345	
5	五	1670	
6	六	1995	

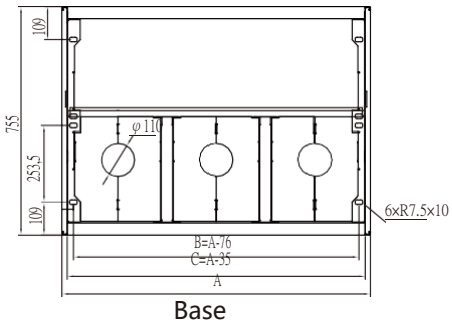
Install the base

RELIABLE basic module installation base diagram







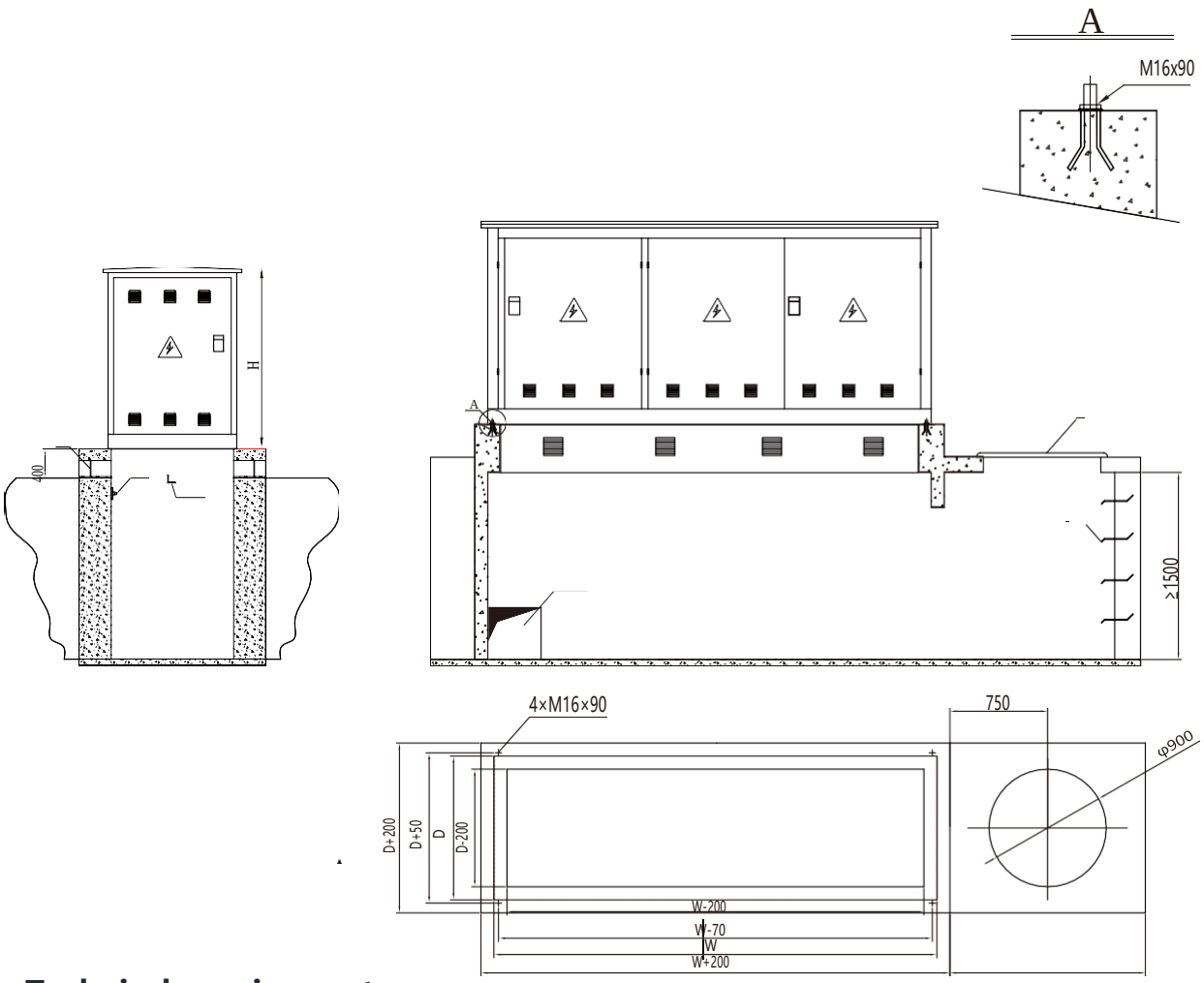


Base

unit	A	B	C
1	370	294	335
2	695	619	660
3	1020	944	985
4	1345	1269	1310
5	1670	1594	1635
6	1995	1919	1960

Install

HUB-12 outdoor box installation base diagram



Technical requirements:

1. The dotted line in the figure is the cabinet body, and W, D and H are the length, width, and height of the cabinet.
2. The material of the foundation, beam and cover plate is C20 reinforced concrete, and the foundation is horizontal and can bear the load evenly.
3. The branch box relates to 4 M16 bolts with the foundation and embedded in the foundation.
4. The grounding flat steel is introduced into the box, which is convenient to connect with the box, and the grounding resistance meets the requirements of the power department.
5. It is recommended that the cable retention frame use 5×50 angle steel, and punch holes according to the hoop used by the actual cable.
6. The size of the cable well and cover plate can be constructed according to the actual situation of different places, and waterproof needs to be considered.
7. Drainage should be considered in the cable trench, and the floor of the cable room should be slightly inclined to the drainage trough to avoid water accumulation.
8. Users can adjust according to their own needs; this figure is for reference only.

Relevant qualifications

Product inspection report、foreign approval certificate

Production equipment

Automated robotic welding equipment

1. CNC sheet metal machining center
2. CNC sheet metal bending equipment
3. Automatic injection molding machine
4. CNC sheet metal shearing equipment
5. Vacuum helium leak detection equipment
6. No partial discharge test laboratory