丰源电力

FY-12 RMU

FENGYUAN POWER

PUBLICITY PAMPHLETS

Escort in safety

Mini Program

Official Website

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FY-12INFLATABLE SWITCHGEAR

HENAN FENGYUAN POWER TECHNOLOGY CO., LTD

■ SUMMARIZE

The HY-12C pneumatic SF6 metal enclosed fully insulated series ring switchgear independently developed by Henan Fengyuan Electric Power Technology Co., Ltd. has been listed as a national high-tech product through the type test of the National High voltage electrical Test Center and the national high-tech technology project. The products are widely used in 10KV/6KV distribution system, and are the preferred switch products for various users in urban and rural areas.

The switchgear is modular unit mode, which can be combined according to different uses; It consists of fixed unit combination and expandable unit to meet the needs of flexible use of compact switchgear in various substations.

The SF-12 inflatable switchgear is a completely sealed system with live parts and switches enclosed in a stainless steel body. The entire switching device is not affected by external environmental conditions, thus ensuring operational reliability and personal safety, and achieving maintenance-free. By selecting an expandable bus, any combination can be achieved to achieve full modularity. Extended bus safety insulation and shielding ensure reliability and safety. SF-12 inflatable switchgear can also provide TV-oriented automation solutions, forming the concept of intelligent switches, and minimize the workload of on-site installation and commissioning.

The SF-12 inflatable switchgear is available in non-expandable standard configuration and expandable standard configuration. Due to the combination of full and half modules and scalability, it has extremely special flexibility. The design life of operation under indoor conditions (20 ° C) is more than 30 years.

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■ MAIN FEATURES OF PRODUCT

- HANDLING SAFETY

Through the following security measures, we can provide users with special security:

- Integrated three-station load switch
- The circuit breaker adopts load switch instead of isolation switch, which is safer and more reliable
- Full density design of charged body
- Mechanical interlock to meet the requirements of five defenses
- Live display provides in-and-out line live indication

- RELIABLE OPERATION

- Fully sealed design, all 10KV switches and bus live bodies are sealed in 3mm stainless steel plate welded air box; With silicone rubber cable plug, realizedThe cable head is fully insulated and sealed, so that it is not affected by
- dust, moisture, small animals and other external environment
- Spring energy storage operating mechanism, manual or electric operation
- The panel analog diagram provides an indication of the switch position
- The cabinet is made of aluminum-zinc plate with electrostatic spraying on the surface to enhance corrosion resistance， Pressure gauge monitors the safe SF6 gas pressure range in the housing

- ECONOMY

- Maintenance-free
- Highly reliable
- The service life is up to 30 years

- FLEXIBLE SCHEME

- A variety of wire entry methods can be achieved left, right, up or forward lines
- A variety of combination methods, each unit can achieve any combination
- The use of insulated bus bars can realize the front and back cabinets or left and right cabinets
- Flexible design scheme

- WIDE APPLICATION

FY-12 series indoor AC high voltage gas insulated metal closed switchgear (hereinafter referred to as "RMU"), the main switch can be used either permanent magnet vacuum circuit breaker or spring mechanism vacuum circuit breaker, the whole cabinet is insulated by sulfur hexafluoride gas, both compact and extensible, suitable for distribution automation. RMU has the characteristics of compact structure, flexible operation, reliable interlocking, etc., and can provide satisfactory technical solutions for various applications (especially in harsh environments) and different user requirements. Sensing technology and the use of the latest protective relays, coupled with advanced technical performance and lightweight and flexible assembly solutions, safety can meet the different needs of users. RMU is suitable for small secondary substations, opening and closing stations, box-type substations, residential areas, industrial and mining enterprises, large shopping malls, especially for airports, subways, railways and other occasions with high demand for electricity.

■ DESCRIPTION OF DESIGN

TECHNICAL NOTE

The FY-12 series inflatable switchgear is mounted on an aluminum-zinc plate frame and the switch unit is housed in an SF6 gas box made of corrosion-resistant and non-magnetic 3mm thick stainless steel plate.
The SF6 gas box is a "sealed pressure system" that operates for 20 years under normal operating conditions. SF6 gas pressure is 0.15～0.4bar during normal operation. The gas box is equipped with a pressure release device to ensure that the gas can be released from the bottom or rear when the pressure is too high.

CONTROLLING GEAR

The operating mechanism of the switch is installed in the front of the gas box, which is treated by special process to prevent rust, convenient manual operation and maintenance, and easy to achieve electric operation.

SWITCHING UNIT

Load switch adopts coaxial rotation double breakpoint mode, through the same operating hole and skateboard function operation, so the switch can only be in one of the three states of "closing, opening, grounding" at any time, to completely avoid misoperation.

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PERFORMANCE INDICATORS

- SF6 gas pressure: The absolute pressure at 20℃ is 1.4bar
  - Annual gas leakage rate: < 0.01%/ year
  - level of protection: IP67
  - Air chamber stainless steel thickness: 3.0mm
- Busbar
  - Busbar inside the switchgear: 400mm²Cu
  - Switchgear ground bus: 150mm²Cu
- Colour
  - Switch cabinet front panel: RAL7035
  - Side panel and cable room front cover plate: RAL7035

- Normal operating environment conditions
  - Maximum temperature: 55℃
  - Minimum temperature: -40℃
  - Maximum mean relative humidity: ≤95%
  - Altitude: ≤2000Meter
- Satisfying criteria

GB/T11022 GB3906 GB1985
GB16926 GB38041 GB1984
GB3309
IEC66056 IEC60129 IEC60265
IEC60298 IEC60420 IEC60694

UNIT DEFINITION

Cell code	Significance
C	Standard single casing coincidence switch unit
F	Load switch-fuse combined electrical unit
V	Circuit-breaker unit
D	Cable entry unit (without switch)
+	Busbar side bushing
–	Busbar top sleeve
SL	Parent unit
M	Meterage unit
PT	PT cell
1K2(4)	Load switch unit with double casing outlet

Note: Contact the manufacturer of the equipment when using the altitude of more than 2000 meters.

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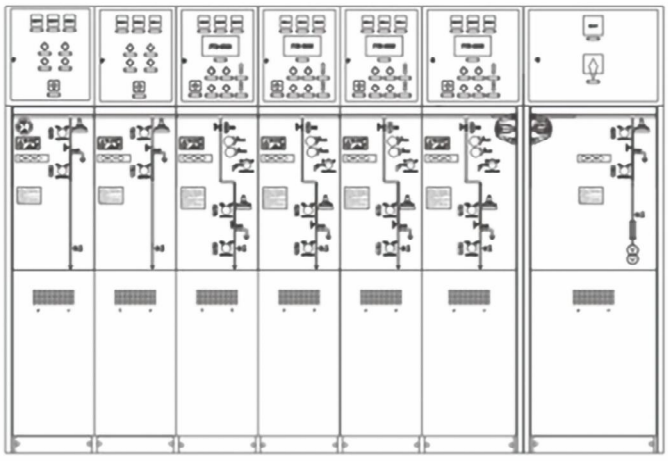
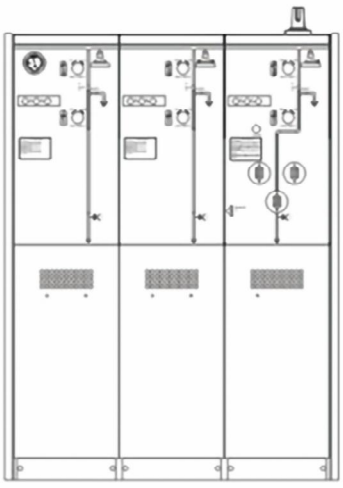
TECHNICAL PARAMETERS

Project		Modular c	Modular F	Modular V/630A		Modular V/1250A	
		Load switch	Composite apparatus	VCB	Isolation ground switch	VCB	Isolation ground switch
Nominal voltage	kV	12	12	12	12	12	12
Rated frequency	Hz	50	50	50	50	50	50
Power frequency withstand voltage (phase/fracture)	kV	42/48	42/48	42/48	42/48	42/48	42/48
lightning impulse withstand voltage	kV	75/85	75/85	75/85	75/85	75/85	75/85
Rated current	A	630	注1)	630	630	1250	1250
Rated closed-loop breaking current	A	630					
Rated cable-charging breaking current	A	135/135					
Rated short circuit closing current (peak)	A	63	80	63	63	80	80
Rated peak withstand current	kA	63		63	63	80	80
Rated short time current	kA/4s	25		25	25	31.5	31.5
Rated short-circuit breaking current	kA	25	注1)	25	25	31.5	31.5
Rated transfer current	A		1750				
Maximum current of fuse	A	-	125				
Loop resistance	-n	≤300	≤600				
Mechanical life	次	5000	5000	10000	5000/3000	10000	5000/3000

Note: Depends on the current rating of the fuse





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NON-EXTENDED STANDARD MODULE

- The following 18 standard combinations are available
- Each module of the FY-12 switchgear has the following configurations
- D Cabinet - Lifting module
- This feature is standard in Cable Connection Module without ground Knife
- Cabinet C - Load switch module
- Standard feature in Load Switch Module
- Cabinet F - load switch fuse combination electrical module
- Standard configuration features in "Load Switch Fuse Combination Electrical modules"
- V cabinet - Vacuum circuit breaker module
- Standard configuration feature in "Vacuum Circuit Breaker"

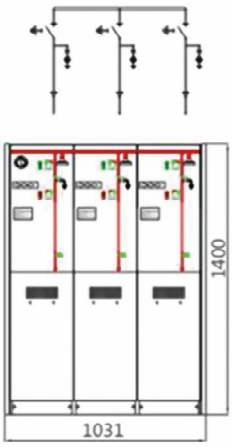
CONFIGURATION

- Capacitive voltage indicator for inlet bushing
- Each chamber is fitted with a gauge measuring SF6 density
- Lifting lugs
- Operating handle

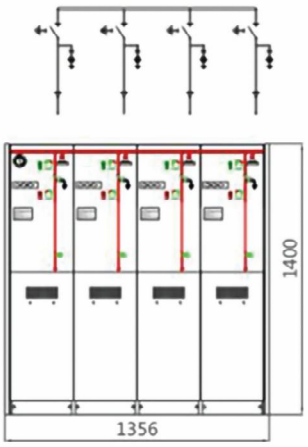
SELECTIVE ASSEMBLY

- Electric operating mechanism
- Cable short circuit and ground fault indicator
- Current transformer and meter
- Remote control
- Microcomputer integrated protection device

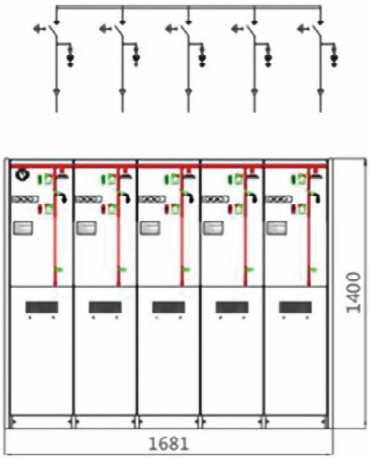
Standard 2-way DF (260kg)



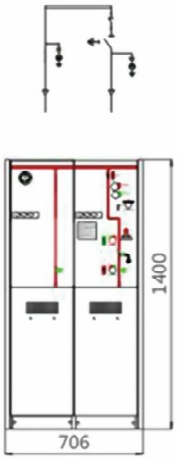
Standard 3-way CCC (300kg)



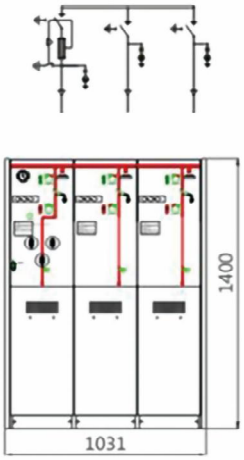
Standard 4-way CCCC (390kg)



Standard 5-way CCCCC (480kg)



Standard 2-way DV (260kg)



Standard 3-way FCC (320kg)

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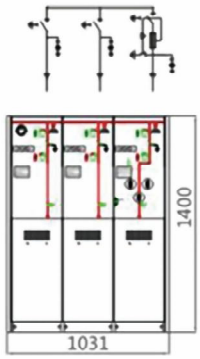
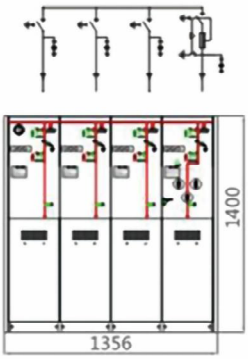
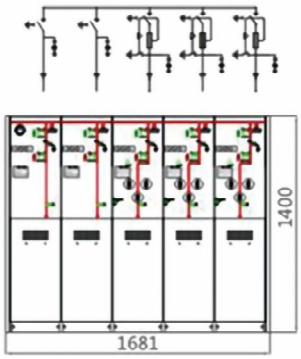


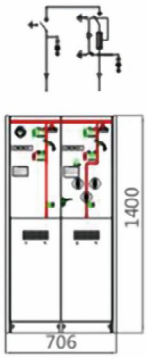
Standard 3-way CCF (320kg)



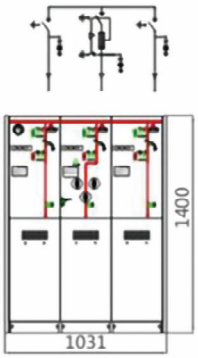
Standard 4-way CCCF (410kg)



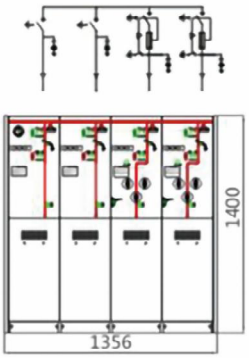
Standard 5-way CCCF (410kg)



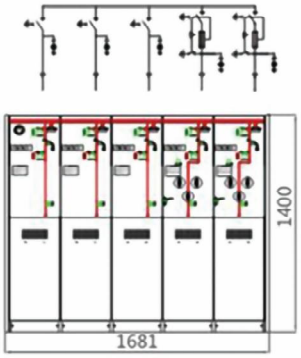
Standard 2-way CF (270kg)



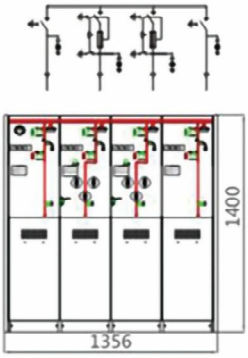
Standard 3-way CFC (320kg)



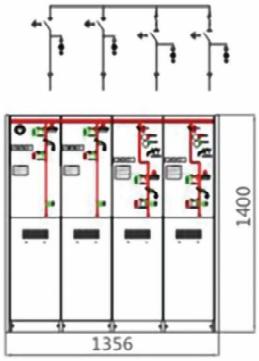
Standard 4-way CCFF (430kg)



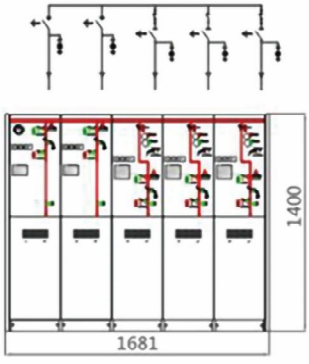
Standard 5-way CCCFF (520kg)



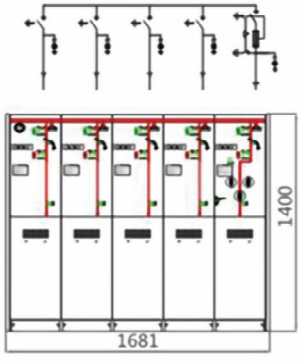
Standard 4-way CFFC (430kg)



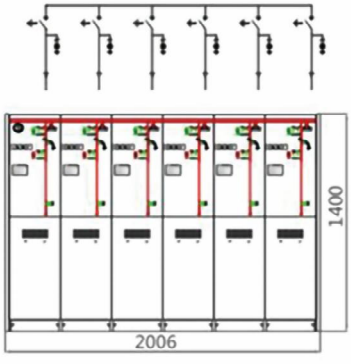
Standard 4-way CCVV (411kg)



Standard 5-way CCVVV (480kg)



Standard 5-way CCCCF (500kg)



Standard 6-way CCCCCC (570kg)

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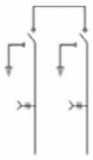
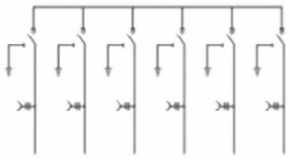
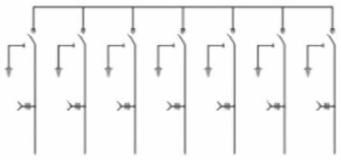
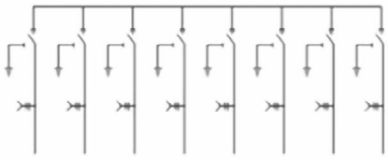
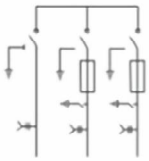
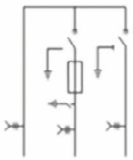
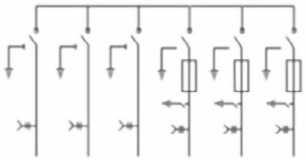
■ COMMON BOX SCHEME

The common combination consists of 2-8 basic modules with a total length of no more than 2800mm. If the length exceeds this limit, it will be extended by extension.
Basic modules can be selected in C, F, V, SL, D

Typical scheme	Model number	External dimension
	CC	Width : 706 Hight : 1400 Deep : 751
	CCCCCC	Width : 2006 Hight : 1400 Deep : 751
	CCCCCCC	Width : 2321 Hight : 1400 Deep : 751
	CCCCCCCC	Width : 2702 Hight : 1400 Deep : 751
	CFF	Width : 1031 Hight : 1400 Deep : 751
	DFC	Width : 1031 Hight : 1400 Deep : 751
	CCCFFF	Width : 2006 Hight : 1400 Deep : 751

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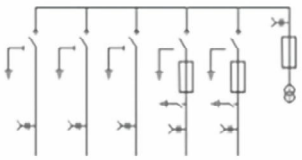
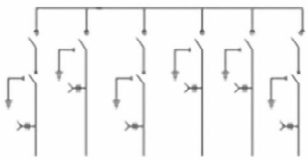
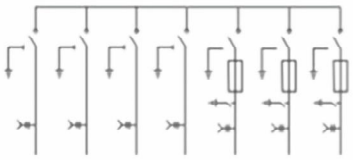
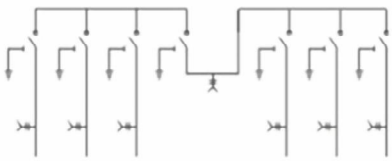
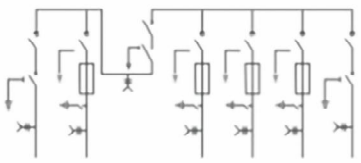
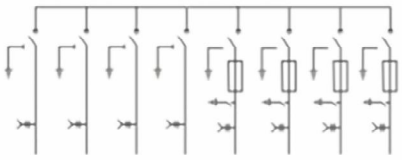
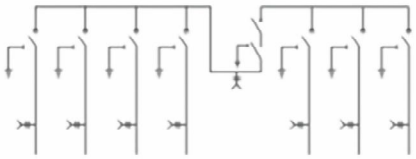
■ COMMON BOX SCHEME

Typical scheme	Model number	External dimension
	CCCFFPT	Width : 2006 Hight : 1400 Deep : 751
	VCVCCV	Width : 2006 Hight : 1400 Deep : 751
	CCCCFFF	Width : 2377 Hight : 1400 Deep : 751
	CCCSLCCC	Width : 2702 Hight : 1400 Deep : 751
	VFDVFFFV	Width : 2702 Hight : 1400 Deep : 751
	CCCCFFFF	Width : 2700 Hight : 1400 Deep : 751
	CCCCDVCCC	Width : 3027 Hight : 1400 Deep : 751

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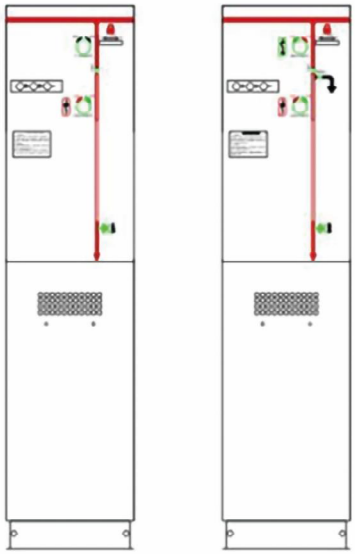
EXPANSION MODULE - LOAD SWITCH MODULE C



STANDARD CONFIGURATION AND FEATURES

630A bus

Three-station load/ground switch

Three-station single-spring operating mechanism with two independent load switch and ground switch operating shaft

Load switch and ground switch position indication

Outlet bushing, Series 630A bolt type bushing, horizontally arranged at the front

Capacitive voltage indicator indicating live bushing

For all switching functions, there is a convenient mounting padlock device on the panel

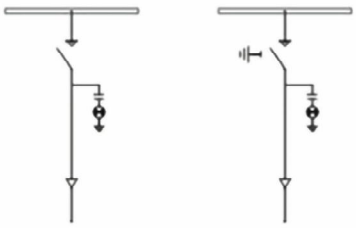
SF6 Gas pressure gauge (only one in each SF6 tank)

Ground bus

Interlock of ground switch with front panel of cable room

Switch cabinet front panel

Side panel and cable room front cover plate



OPTIONAL CONFIGURATION AND FEATURES

Reserved busbar expansion

External bus

Motor load switch operation, 48 v / 24 v/DC 110 v / 220 VDC/AC

Short circuit and ground fault indicator

Measure ring current transformer and ammeter

Measuring ring current transformer and kilowatt-hour meter

A zinc oxide lightning arrester or double cable head can be installed at the cable inlet bushing

Key interlock

Incoming line live ground block (when the casing is live block ground switch) 110V/220VAC/DC

Auxiliary contact

Load switch position 2NO+2NC

Ground switch position 2NO+2NC

Pressure gauge 1NO with signal

Interrupter 1NO with signal contact point

Secondary devices may be installed in

Secondary line compartment at the top of the switchgear

Low pressure box at the top of the switch cabinet

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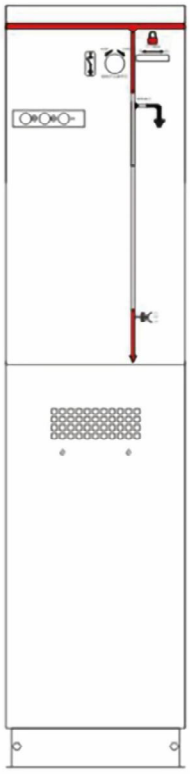
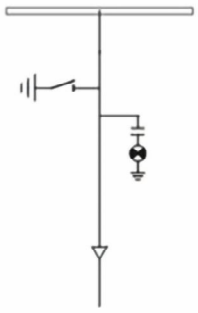
EXPANSION MODULE - CABLE CONNECTION MODULE DE WITH GROUND KNIFE





STANDARD CONFIGURATION AND FEATURES

630A bus

Earthing switch

Two-station single-spring operating mechanism

Ground switch position indication

Outlet bushing, Series 630A bolt type bushing, horizontally arranged at the front

Capacitive voltage indicator indicating live bushing

For all switching functions, there is a convenient mounting padlock device on the panel

SF6 Gas pressure gauge (only one in each SF6 tank)

Ground bus

Interlock of ground switch with front panel of cable room

OPTIONAL CONFIGURATION AND FEATURES

Reserved busbar expansion

External bus

Short circuit and ground fault indicator

Measure ring current transformer and ammeter

Measuring ring current transformer and kilowatt-hour meter

A lightning arrester or double cable head can be installed at the cable inlet bushing

Key interlock

Incoming line live ground block (when the casing is live block ground switch) 110V/220VAC/DC

Auxiliary contact

The position of the ground switch is 2NO+2NC

Pressure gauge 1NO with signal

Interrupter 1NO with signal contact

Secondary devices may be installed in

Secondary line compartment at the top of the switchgear

Low pressure box at the top of the switch cabinet

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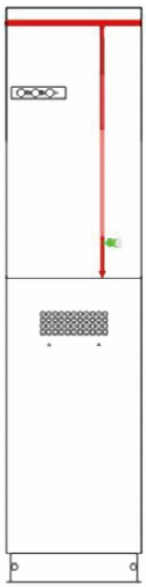
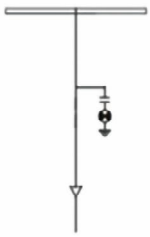
EXPANSION MODULE - CABLES WITHOUT GROUND KNIVES CONNECT TO MODULE D





STANDARD CONFIGURATION AND FEATURES

- 630A bus
- Outlet bushing, Series 630A bolt type bushing, horizontally arranged at the front
- Capacitive voltage indicator indicating live bushing
- SF6 Gas pressure gauge (only one in each SF6 tank)
- Ground bus

OPTIONAL CONFIGURATION AND FEATURES

- Reserved busbar expansion
- External bus
- Short circuit and ground fault indicator
- Measure ring current transformer and ammeter
- Measuring ring current transformer and kilowatt-hour meter
- A lightning arrester or double cable head can be installed at the cable inlet bushing
- Secondary devices may be installed in

  Secondary line compartment at the top of the switchgear

  Low pressure box at the top of the switch cabinet

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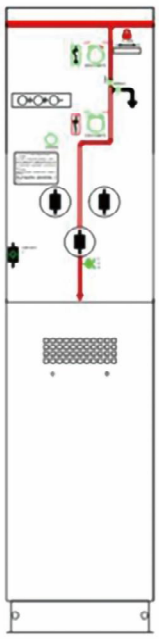
EXPANSION MODULE - LOAD SWITCH FUSE COMBINATION ELECTRICAL MODULE F

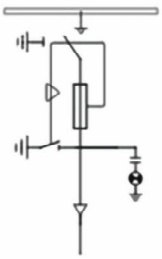


STANDARD CONFIGURATION AND FEATURES

- 630A bus
- The first end of the fuse is mechanically linked with the ground switch at the end of the fuse for the three-station load switch
- Three station double spring operating structure, with two independent load switch and ground switch operating shaft
- Load switch and ground switch position indication
- The fuse cartridge
- The fuse is placed horizontally
- Fuse trip indication
- Outlet bushing located horizontally at the front, Series 200A insert bushing
- Capacitive voltage indicator indicating live bushing
- For all switching functions, there is a convenient mounting padlock device on the panel
- SF6 Gas pressure gauge (only one in each SF6 tank)
- Ground bus
- Fuse parameters for transformer protection

  12KV, ma×125A fuse

  24KV, ma×63A fuse
- Interlock of ground switch with front panel of cable room



OPTIONAL CONFIGURATION AND FEATURES

- Reserved busbar expansion
- External bus
- Load switch operation motor 24V/48VDC,110V/220VDC/AC
- Parallel tripping coils 24V/48VDC,110V/220VDC/AC
- Parallel closing coil 24V/48VDC,110V/220VDC/AC
- Measure ring current transformer and ammeter
- Measuring ring current transformer and kilowatt-hour meter
- Incoming live ground lock

  110V/220V AC/DC
- Auxiliary contact

  Load switch position 2NO=2NC

  Ground switch position 2NO+2NC

  Fuse blown 1

  Pressure gauge 1NO with signal

  Interrupter 1NO with signal contact
- Secondary devices may be installed in

  Secondary line compartment at the top of the switchgear

  Low pressure box at the top of the switch cabinet

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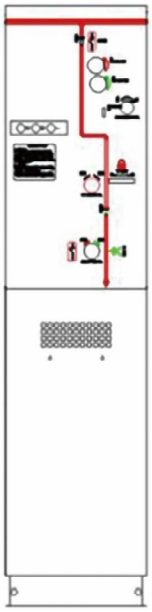

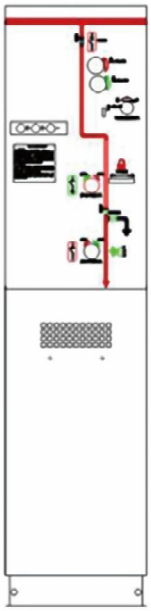

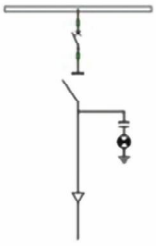

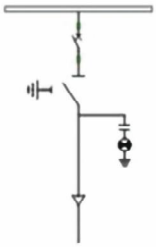

EXPANSION MODULE - VACUUM CIRCUIT BREAKER MODULE V/630A

STANDARD CONFIGURATION AND FEATURES

- 630A bus
- 630A breaker unit for transformer/line protection
- Vacuum circuit breaker two-station double-spring operating mechanism
- Vacuum breaker lower three-station isolation/ground switch
- Three-station isolation/ground switch single-spring operating mechanism
- Vacuum circuit breaker and three-station switch mechanical interlock
- Vacuum circuit breaker and three-station switch position indication
- Electronic protective relay
- Trip coil (for relay action)
- Outlet bushing, Series 630A bolt type bushing, horizontally arranged at the front
- Capacitive voltage indicator indicating live bushing
- For all switching functions, there is a convenient mounting padlock device on the panel
- SF6 Gas pressure gauge (only one in each SF6 tank)
- Ground bus
- Interlock of ground switch with front panel of cable room

OPTIONAL CONFIGURATION AND FEATURES

- Reserved busbar expansion
- External bus
- Vacuum circuit breaker operation motor 24V/48V DC,110V/220VDC/AC
- Parallel tripping coils 24V/48V DC,110V/220VDC/AC
- Parallel closing coil 24V/48V DC,110V/220VDC/AC
- Measure ring current transformer and ammeter
- Measuring ring current transformer and kilowatt-hour meter
- Key interlock
- Incoming line live ground lock (when the casing is live to block the ground switch) 110V/220V AV/DC
- Auxiliary contact

  Vacuum circuit breaker 2NO+2NC

  Isolation switch position 2NO+2NC

  Ground switch position 2NO+2NC

  Vacuum circuit breaker trip signal 1NO

  Pressure gauge 1NO with signal

  Interrupter 1NO with signal contact
- Secondary devices may be installed in

  Secondary line compartment at the top of the switchgear

  Low pressure box at the top of the switch cabinet
- Other relays

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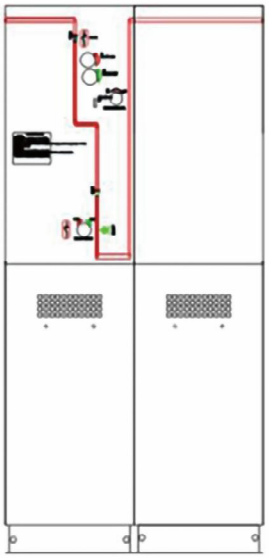
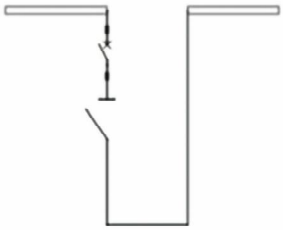
EXPANSION MODULE - BUS BLOCK SWITCH MODULE CIRCUIT BREAKER SVBR



STANDARD CONFIGURATION AND FEATURES

- 630A bus
- 630A vacuum circuit breaker
- The vacuum circuit breaker has a two-station double-spring operating mechanism
- Vacuum breaker lower isolation switch
- Isolation switch single-spring operating mechanism
- Vacuum circuit breakers and isolation switches are mechanically interlocked
- Vacuum circuit breaker and isolation switch position indication
- For all switching functions, there is a convenient mounting padlock device on the panel
- SF6 Gas pressure gauge (only one in each SF6 tank)
- The SvBr is always connected to the bus lift cabinet



OPTIONAL CONFIGURATION AND FEATURES

- Reserved busbar expansion
- External bus
- Vacuum circuit breaker operation with electric motor 24V/48VDC, 110V/220VDC/AC
- Parallel tripping coils 24V/48V DC,110V/220VDC/AC
- Parallel closing coil 24V/48V DC,110V/220VDC/AC
- Key interlock
- Auxiliary contact
  - Position of the vacuum circuit breaker 2NO+2N
  - Load switch position 2NO+2NC
- Secondary devices may be installed in
  - Secondary line compartment at the top of the switchgear
  - Low pressure box at the top of the switch cabinet

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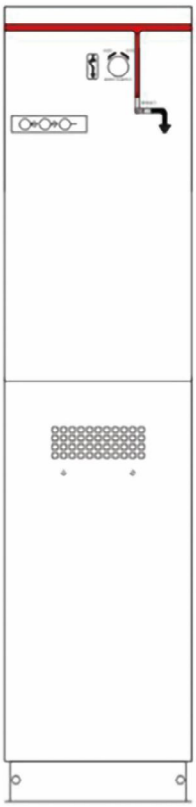
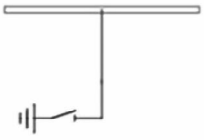
EXPANSION MODULE - BUS GROUND MODULE BE





STANDARD CONFIGURATION AND FEATURES

- 630A bus
- Earthing switch
- Two-station single-spring operating mechanism
- Ground switch position indication
- For all switching functions, there is a convenient mounting padlock device on the panel
- SF6 Gas pressure gauge (only one in each SF6 tank)
- Ground bus

OPTIONAL CONFIGURATION AND FEATURES

- Reserved busbar expansion
- External bus
- Key interlock
- Auxiliary contact
  - Ground switch position 2NP+2NC
  - Pressure gauge 1NO with signal
- Secondary devices may be installed in
  - Secondary line compartment at the top of the switchgear
  - Low pressure box at the top of the switch cabinet

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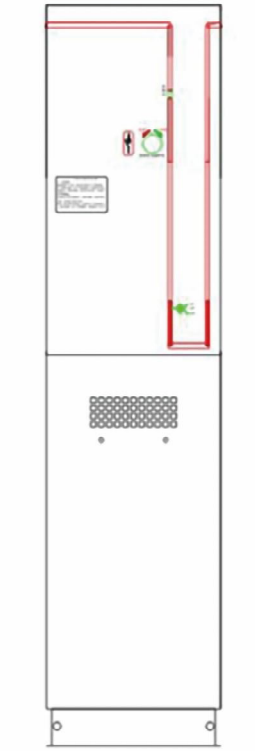
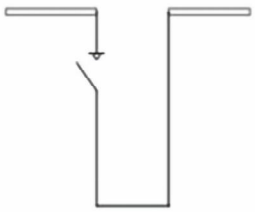
EXPANSION MODULE - BUS BLOCK SWITCH MODULE (LOAD SWITCH) SL





STANDARD CONFIGURATION AND FEATURES

- 630A bus
- Disconnecting switch
- Single spring operating mechanism
- Switch position indication
- For all switching functions there is a convenient mounting padlock device on the panel
- SF6 Gas pressure gauge (only one in each SF6 tank)

OPTIONAL CONFIGURATION AND FEATURES

- Reserved busbar expansion
- External bus
- Load switch operation with electric motor 24V/48VDC,110V/220VDC/AC
- Key interlock
- Auxiliary contact

  Ground switch position 2NP+2NC
- Secondary devices may be installed in

  Secondary line compartment at the top of the switchgear

  Low pressure box at the top of the switch cabinet

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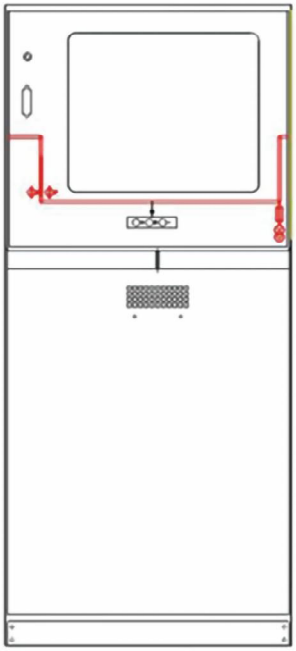
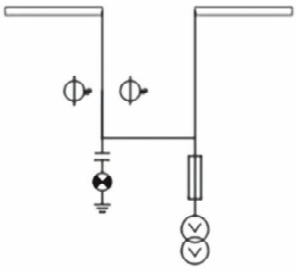
■ EXPANSION MODULE - METERING MODULE M





STANDARD CONFIGURATION AND FEATURES

- 2 current transformers
- 2 voltage transformers
- 6 630A through-wall bushings for SCR (M) -12 inflation cabinet external bus connection, up and out
- Fuses to protect PT
- Width × height × depth =750×1900×820mm

OPTIONAL CONFIGURATION AND FEATURES

- 3 current transformers
- 3 voltage transformers
- zinc oxide arrester
- Capacitive voltage indicator indicating electrical charge of switchgear
- Low-pressure component

  1 Voltmeter with only transfer switch

  1 Ammeter with only transfer switch

  1 Only the watt-hour meter

  One reactive watt-hour meter

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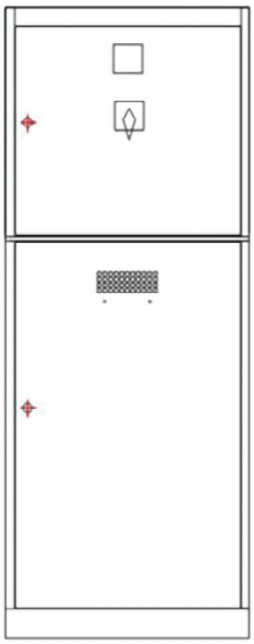
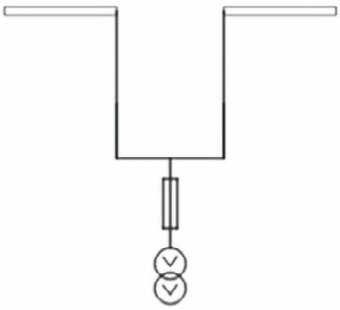
EXPANSION MODULE -PT MODULE P



STANDARD CONFIGURATION AND FEATURES

- 2 voltage transformers
- Fuses to protect PT
- 1 Voltmeter with only transfer switch
- ❋ In/out, 3 (6) through-wall bushings for external busbar connection of switchgear
  ❋Width × height × depth =650×1900×820mm
- ❋ Lower cable inlet/outlet
  ❋Width × height × depth =650×1900×820mm



OPTIONAL CONFIGURATION AND FEATURES

- lightning arrester
- Capacitive voltage indicator indicating electrical charge of switchgear
- 24V DC charger and battery
- Disconnecting switch

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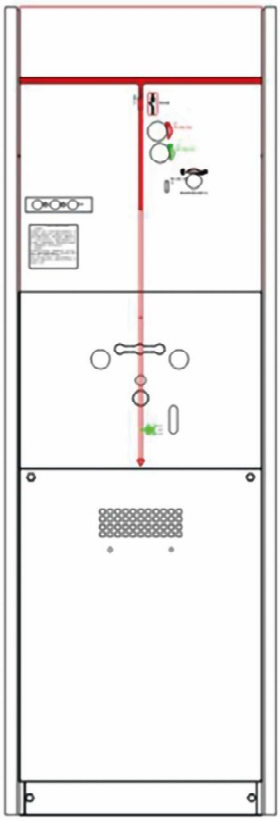

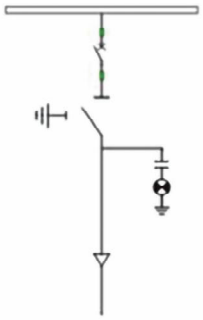

EXPANSION MODULE - VACUUM CIRCUIT BREAKER MODULE V/1250A

STANDARD CONFIGURATION AND FEATURES

- 1250A bus
- 1250A vacuum circuit breaker for line protection
- Vacuum breaker lower three-station isolation/grounding switch manual operation
- Vacuum breaker upper three-station isolation/grounding switch electrically operated
- Protection and Control unit (with protective CT)
- Shunt trip coil 110/220/48V
- Switching coil 110/220/48V
- Outlet bushing located horizontally at the front
- 1250A series bolt-type bushing
- Capacitive voltage indicator indicating live bushing
- 1250A reserved bus expansion
- SF6 Gas pressure gauge (only one place in SF6 tank)
- Width × height × depth =475×2100×751mm
- Closing sequence: 0-0.3s-CO-180s-CO

OPTIONAL CONFIGURATION AND FEATURES

- Install zinc oxide lightning arrester at the inlet cable
- Electric current transducer
- Voltage transducer

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■ REMOTE CONTROL AND MONITORING UNIT

The FY-12 inflatable switchgear equipped with integrated remote control, telemetry and remote communication automation modules realizes the exclusive application of ring switchgear. The integrated automation of the distribution system can be realized by connecting each unit with the superior dispatching center by means of communication. Distribution network automation enables dispatching operators to understand the operation of the entire distribution network without leaving the house, quickly achieve fault location, automatic or artificial fault isolation and network reconstruction, which greatly reduces the power outage area and time, and reduces the loss caused by faults. In addition, the load monitoring and allocation can be carried out conveniently, which is conducive to the rational utilization of the network.

The switchgear is matched with the distribution network automation system. The system is an open design, including two parts: sub-station and automatic terminal module. The automation terminal is a distributed modular design with high reliability. At the same time, its compact shape makes it easy to install in compact switchgear.

OPTIONAL CONFIGURATION AND FEATURES

16 switching inputs (single remote signal)

8 analog inputs (telemetry), including 4 currents (AC5A)

4 voltages (3*100VDC/220VAC)

6 switch output (remote control, can be used for up to 3 switches)

Type C dry contact, 250V AC8A/30V DC8A

1 RS485 communication port for remote communication, up to 1200m

SELECTION FUNCTION

Calculation function of feeders P, Q, Kwh, F, etc

Current protection function, can be applied to switching output or communication output

■ INCOMING/OUTGOING CABLE PROTECTION

USE VACUUM CIRCUIT BREAKER MODULES

Transformer or line vacuum circuit breaker. With protective relay and current transformer. When vacuum circuit breakers are selected as protection, the standard relay is the FTB-3000 integrated protection relay or the passive protection type.

- Passive over current/short circuit/ ground protection relay
  - Voltage range: DC (18-265V) or AC (80-265V)
  - ASG type protection CT: secondary current 5A
  - Digital display of setting current measurements and recorded fault data
  - Setting panel button or computer Settings
  - Sections can be provided to protect passive signal nodes
  - Continuous self-test and alarm output of internal faults (software and hardware)
- Low voltage pass section I>
  - Time limit operation current 0.5-5.01n Operation time 0.05-300s
  - Inverse time action current 0.5-2.5InIDMT inverse time action mode
- High value overflow section I>
  - Operation current 0.5-40 In Operation time 0.04-300s
- Low fixed zero sequence overflow section Io>
  - Fixed time action current 0.1-0.81n Action time 0.05-300s
  - Inverse time action current 0.1-0.8InIDMT inverse time action mode
- High zero sequence overflow section Io>
  - Operation current 0.1-10 In Operation time 0.05-300s

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FY -12 PRODUCT CONCEPTUAL DIAGRAM

①SF6 barometer

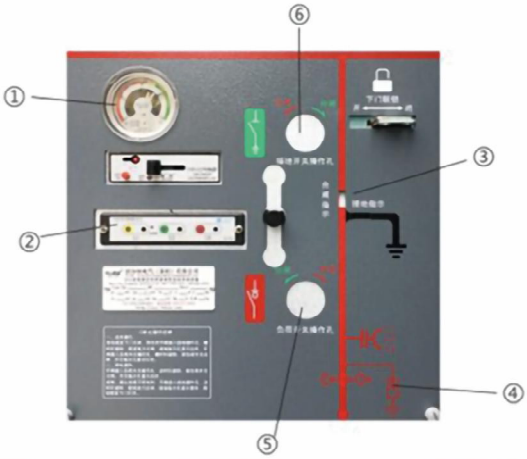
②Charged displayer

③Closing and opening position indication

④Earthing position indication

⑤Load switch operating hole

⑥Ground switch operation hole

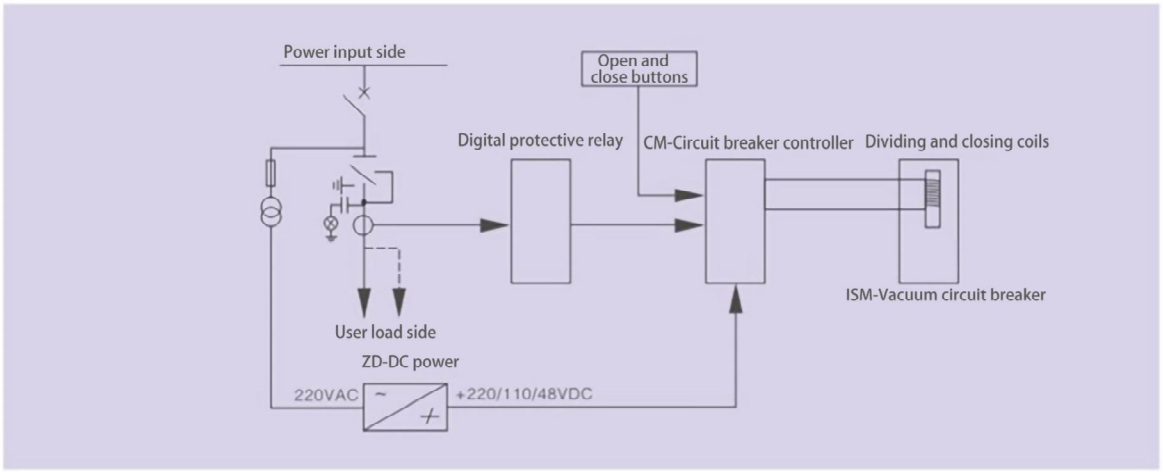


Switching in

Separating brake

Ground connection

PRODUCT SCHEMATIC DIAGRAM



TRANSFORMER/LINE PROTECTION

The FY-12 inflatable cabinet offers two types of transformer protection: load switch fuse combination appliances and circuit breakers with relay protection

USE LOAD SWITCH FUSES TO COMBINE ELECTRICAL MODULES

Transformer protection is a combination of current limiting high voltage fuse and load switch. The fuse chamber will be mounted behind a separate, latched housing located at the front of the unit. The load switch uses a spring energy storage mechanism that can be triggered by the fuse firing pin.

To facilitate the replacement of the fuse. The end cover of the fuse chamber can be removed using an operating handle. The trip mechanism of the fuse is in front, which ensures the waterproof performance of the whole system.

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■ TRANSFORMER/LINE PROTECTION

FUSION-TRANSFORMER COMPARISON TABLE

100%	TRANSFORMER RATED CAPACITY (KVA)															
UN(kV)	25	50	75	100	125	160	200	315	400	500	630	800	1000	1250	1600	
3	16	25	25	40	40	50	50	100	125	160	160					
3.3	16	25	25	40	40	50	50	80	100	125	160					
4.15	10	16	25	25	40	40	50	63	80	100	125	160				
5	10	16	25	25	25	40	40	50	63	80	100	125	160			7.2kV
5.5	6	16	16	25	25	25	40	50	63	80	100	125	160			
6	6	16	16	25	25	25	40	50	50	80	100	125	160	160		
6.6	6	16	16	25	25	25	40	50	50	63	80	100	125	160		
10	6	10	10	16	16	25	25	40	40	50	50	80	80	125	125	
11	6	10	10	16	16	25	25	25	40	50	50	63	80	100	125	12kV
12	6	10	10	16	16	16	25	25	40	40	50	63	80	100	125	
13.8	6	10	10	10	16	16	25	25	25	40	50	50	63	80	100	
15	6	10	10	10	16	16	16	25	25	40	40	50	63	80	100	17.5kV
17.5	6	10	6	10	10	16	16	25	25	25	40	50	50	63	80	
20	6	10	6	10	10	16	16	25	25	25	40	40	50	63	63	
22	6	6	6	6	10	10	16	16	25	25	25	40	50	50	63	24kV
24	6	6	6	6	10	10	16	16	25	25	25	40	40	50	63	

120%	TRANSFORMER RATED CAPACITY (KVA)															
UN(kV)	25	50	75	100	125	160	200	315	400	500	630	800	1000	1250	1600	
3	16	25	25	40	40	50	50	100	125	160	160					
3.3	16	25	25	40	40	50	50	80	100	125	160					
4.15	10	16	25	25	40	40	50	63	80	100	125	160				
5	10	16	25	25	25	40	40	50	63	80	100	125	160			7.2kV
5.5	6	16	16	25	25	25	40	50	63	80	100	125	160			
6	6	16	16	25	25	25	40	50	50	80	100	125	160	160		
6.6	6	16	16	25	25	25	40	50	50	63	80	100	125	160		
10	6	10	10	16	16	25	25	40	40	50	50	80	80	125	125	
11	6	10	10	16	16	25	25	25	40	50	50	63	80	100	125	12kV
12	6	10	10	16	16	16	25	25	40	40	50	63	80	100	125	
13.8	6	10	10	10	16	16	25	25	25	40	50	50	63	80	100	
15	6	10	10	10	16	16	16	25	25	40	40	50	63	80	100	17.5kV
17.5	6	10	6	10	10	16	16	25	25	25	40	50	50	63	80	
20	6	10	6	10	10	16	16	25	25	25	40	40	50	63	63	
22	6	6	6	6	10	10	16	16	25	25	25	40	50	50	63	24kV
24	6	6	6	6	10	10	16	16	25	25	25	40	40	50	63	

The data in this table are based on the use of XRNT type fuses at maximum 20% overload and under normal operating conditions

FY-12 RMU

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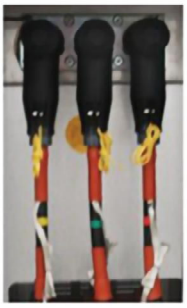


◆ CABLE VAULT

The cable installation space of the inflation cabinet is ample, the cable connection height is 600mm, and the cable room of each unit is separated by aluminum zinc plate, which is easy to maintain and repair. Most of the remaining space can be installed current transformers and other control and protection devices.

The cable connection adopts prefabricated cable connector. The connector can be selected shielded type, unshielded type, and lightning arrester can also be installed.

For double cable entry and installation of lightning arrester, the cable room cover must be deepened, and the bottom of the cable room is equipped with a ground busbar.

◆ PRESSURE RELIEF CHAMBER

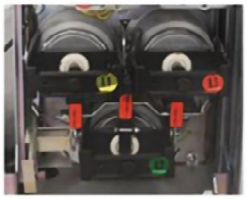
The pressure release chamber is open and located at the lower back of the cabinet. And completely isolated from other compartments, the lower part of the air box is provided with a pressure relief valve, the number of which is equivalent to the number of circuits, when a major accident occurs and the protection device fails, the high pressure gas in the air box releases the pressure through the pressure relief valve, so as to ensure the safety of the operator and adjacent equipment.

◆ SWITCH - BUS ROOM

In addition to the fuse sealing chamber, other parts of the stainless steel air box constitute the switch-bus chamber. The three-phase load switch is installed into the air box after debugging as an integral part. The switch structure is rotary three-station, with both isolation and grounding functions. The static contact head of the switch is equipped with a metal fence, and it is curved, which enhances the effect of traveling when extinguishing arc. In order to optimize the electric field distribution in the weather, the main bus is designed as a rectangular copper bar with rounded corners of R5, and the loop bus and transformer circuit bus are Φ20 and Φ10 copper bars, respectively. The parts that may cause local electric field tips, such as the busbar connection and fixing, are equipped with metal shields to uniform the electric field and improve the insulation strength。

◆ OPERATING MECHANISM ROOM

The operating mechanism room is located in the upper part of the inflation cabinet, and the mechanism roller is tightly matched with the switch operating disc and fixed by bolts. The mechanism is divided into a single spring (incoming wire mechanism) and a double spring (outgoing wire mechanism) to form a ring circuit and a transformer circuit switch, respectively. The springs are disc springs, which have the characteristics of high assembly accuracy, low operating force, long life and high stability.



◆ THE FUSE ROOM

The fuse chamber (fuse seal compartment) is located in the middle of the inflation cabinet, in an air box filled with SF6 gas. The sealing bin of the fuse is composed of an epoxy resin insulated cylinder cast by APG process and an upper conductive pole and a lower conductive pole (end cap). The upper and lower conductive poles are provided with a switch. There is a fuse action indicator on the front door for easy observation and maintenance. Use the handle to twist the opening cover for easy replacement of the fuse.

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Potential transformer

■ ACCESSORY

VACUUM CIRCUIT BREAKER UNIT: V

◆ VOLTAGE TRANSFORMER

FY-12 series switchgear can be configured with 10KV fully closed voltage transformer as required to meet the requirements of distribution network automation. Can be used to provide voltagesignals for metering/measurement, switching electric operating mechanism power supply.

- ◇ Single/three phase can be selected as required
- ◇ Ratio: 10/0.1/0.22KV
- ◇ Accuracy (AC100V) :0.2 or 0.5 grade

◆ SPECIAL BUS BAR FOR COMBINING CABINETS

Fully insulated, fully sealed structure

Special bus bar for combining cabinets

◆ FUSIBLE CUTOUT

Users can configure according to the needs of use or our company according to the use of standards recommended configuration and provided.

Our company recommends the use of HVHRC fuse, which is a backup fuse with temperature safety device to prevent equipment damage caused by abnormal overheating in the fuse barrel, please indicate the rated capacity of the transformer, working voltage and rated current of the fuse when ordering.

◆ PROTECTION RELAY FTB-3000

Passive digital self-powered multifunctional time overcurrent protection relay is adopted. Compact design, strong adaptability, in line with VDE requirements -0435-303, IEC255,VDE0843.

- ◇ No additional power is required
- ◇ Built-in security protection operation mode
- ◇ The setting range is wide and the operation procedure is simple
- ◇ The signal is processed by microprocessor to achieve high precision parameter measurement
- ◇ Internal self-detection (watchdog) design, reliable operation
- ◇ Protection function Optional
- ◇ Fixed Time Overcurrent Protection (DMT)
- ◇ Inverse Time Overcurrent Protection (IDMT)
- ◇ Inverse time curve optional:

General inverse time

Extraordinary inverse time

Polar inverse time

Microcomputer Protection

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■ COMMON ACCESSORY STYLES


Cable type current transformer


JDZ12-10R voltage transformer


JSZV12-10R voltage transformer


European cable front connector


European cable rear connector


European rear connection arrester


PI type front connector


Isolated bus


PI type lightning arrester


Full range protection for small fuses


Panel type fault indicator


Cable type fault indicator

◆ AUXILIARY CONTACT

All load switches and ground switches can be configured with auxiliary contacts indicating the switch position and installed inside the operating mechanism.

◆ REMOTE CONTROL AND TELEMETRY UNITS

The FY-12 series switchgear can be equipped with an integrated remote monitoring unit, which is pre-assembled in the factory.


Pressure indicator

CHARGED DISPLAYER

The inlet and outlet bushings of the switching unit are provided with capacitive voltage indicating devices. Each charged display itself also has a three-phase voltage nuclear phase extraction point, and a nuclear phase device can be configured

◆ for nuclear phase.

SHORT CIRCUIT/GROUND FAULT INDICATOR

For easy fault finding, the switch unit can be equipped with a short circuit/ground fault indicator.

CABLE CONNECTION

◆ The FY-12 series switchgear is equipped with DIN47636 standard casing. Cable compartment door and ground switch interlock. Depending on how many circuits

◆ appear, different switch wiring units can be selected.

PRESSURE INDICATING INSTRUMENT

FY-12 series switchgear is equipped with SF6 gas pressure gauge

KEY LOCK

◆ The FY-12 series switchgear can be configured with key locks for load switches and ground switches.

◆ RING LATCH

The FY-12 series switchgear can be configured with a padlock to prevent non-per-

◆ sonnel operation.

SECONDARY LINE CELL/INSTRUMENT BOX

◆ FY-12 series switchgear can be equipped with secondary wire chamber/instrument box for installing secondary accessories and instruments.

◆ LIGHTNING ARRESTER


Cable connection

FY-12 series switchgear can be configured with T-type silicone plug metal zinc

◇ oxide arrester

◇ Continuous operation voltage 13.6KV

◇ U1mA.DC reference voltage ≥25KV

◆ 0.75U1mA.DC leakage current < 50uA

DETACHABLE CONNECTOR

◆ T-shaped front plug and rear plug, PT plug, complete the cable connection at the same time can be installed plug-in metal zinc oxide arrester π plug.

CURRENT TRANSFORMER

◇ FY-12 series switchgear can be configured as required through the core current

◇ transformer for metering/measurement.

◇ Secondary output 5A

◇ Accuracy 0.2 or 0.5

◇ Circuit breaker unit adopts built-in CT

◇ Epoxy casting

Moisture-proof design of secondary outlet line

Casing mounting

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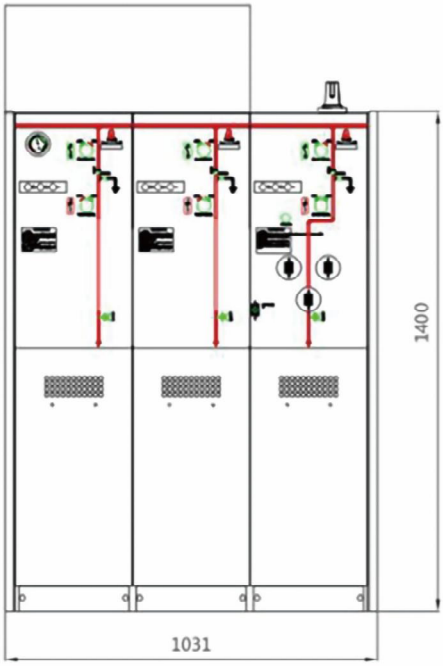
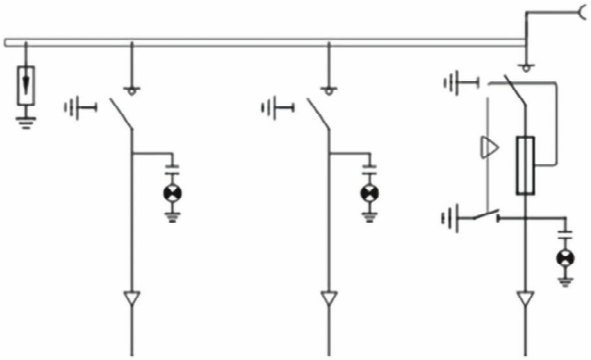
■ PROJECT INSTRUCTION

SOLUTION 1: SA+CCF+

The bus is installed with lightning arrester and left for expansion.

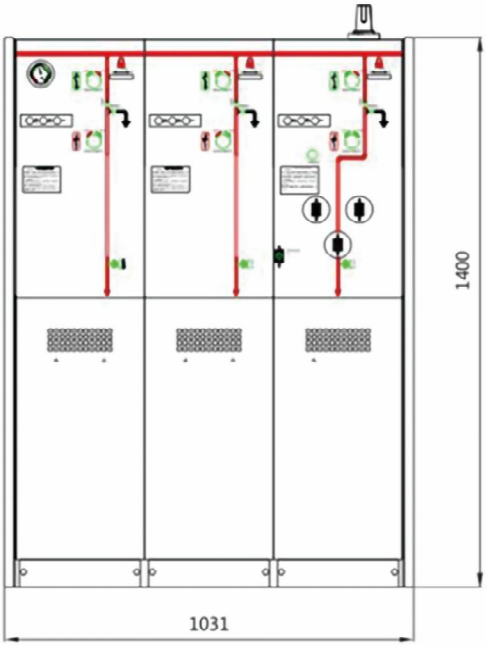
Note: The number of switch units is not less than 3

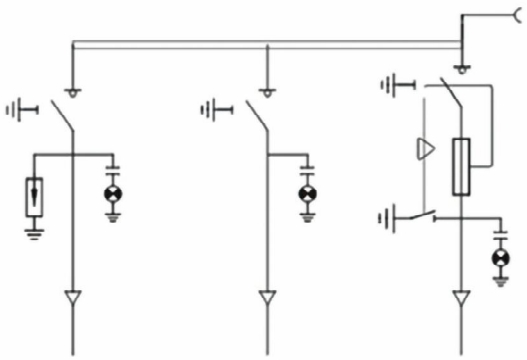




OPTION 2 CCF+

Install arrester on incoming line and leave expansion





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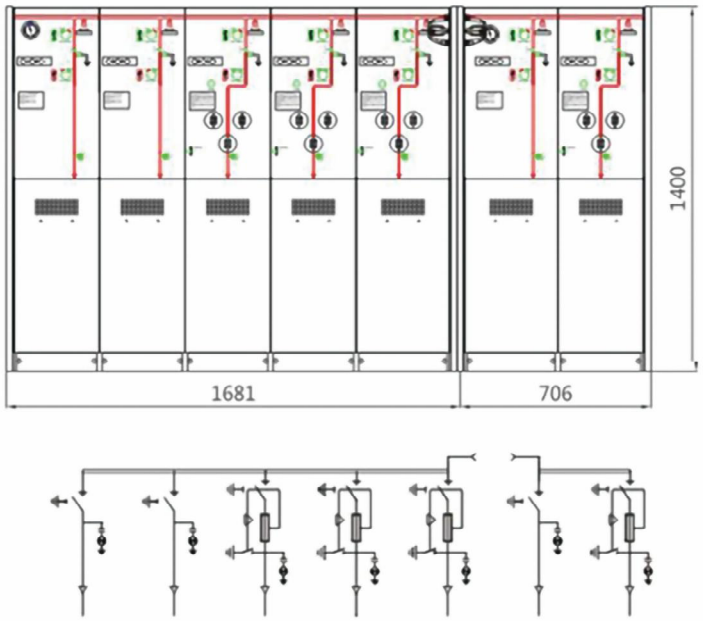
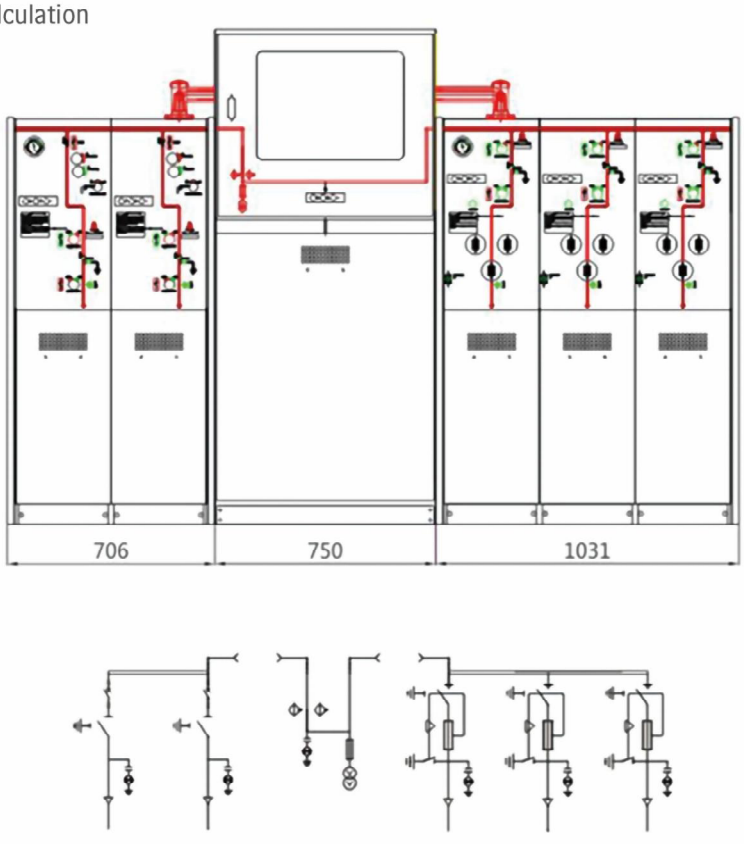
SCHEME 3 CCFFF=CF

A group of up to 6 units, more than 6 units need to expand the bus connection.



SCHEME FOUR VV=M=FFF

High voltage side calculation



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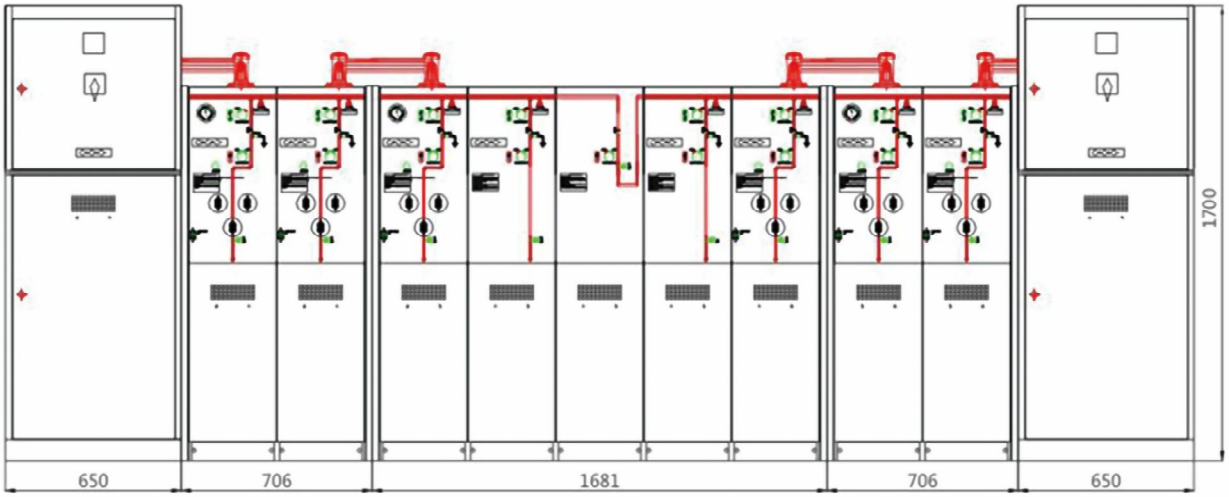
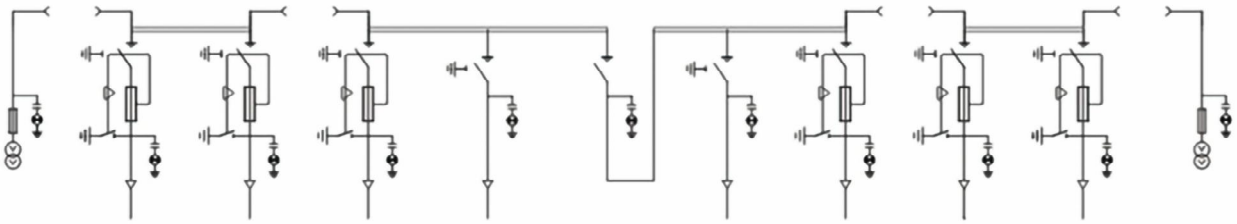
SCHEME 5 PT=FF=FCSLCF=FF=PT

Single bus segment with bus PT





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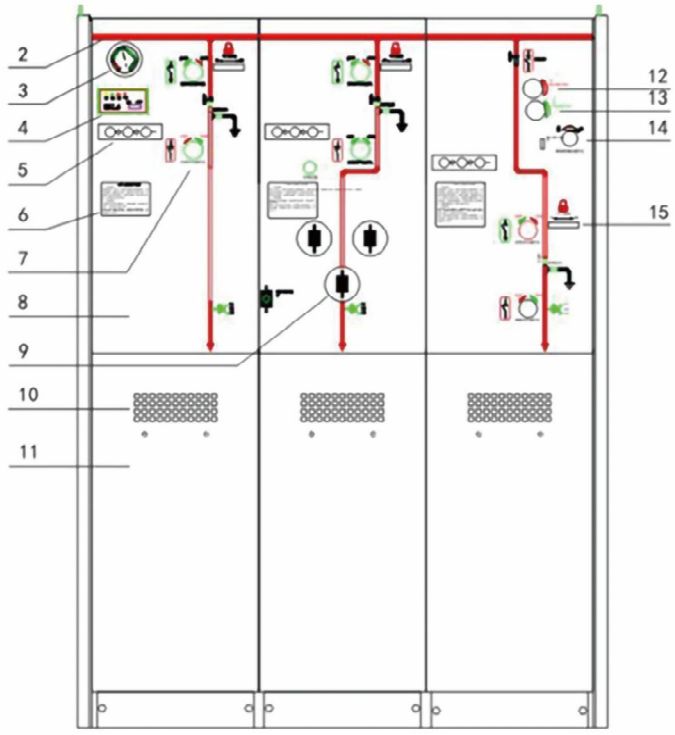
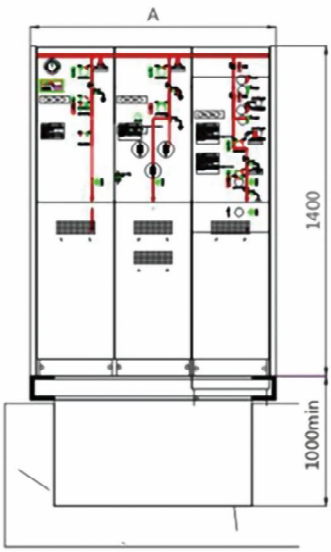
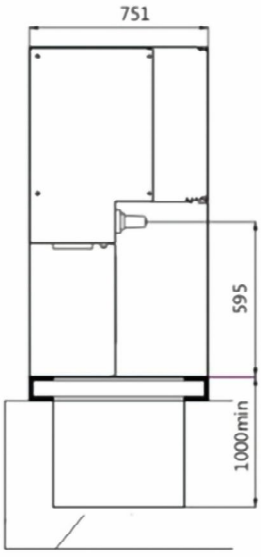
■ STRUCTURE AND SIZE OF FY-12 SWITCH

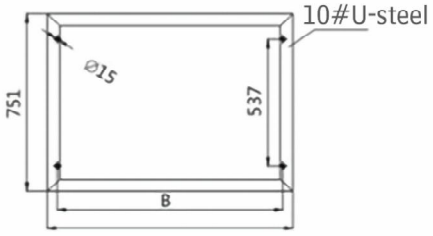


1. Hanging ring /P2. Analog circuit diagram
3. Pressure indicator
4. Short-circuit grounding fault indicator
5. Capacitive voltage indicator
6. Operation instructions
7. Operating mechanism /P8. Gas box /P9. Fuse Chamber /P10. Lower door observation window
11. Cable room /P12. Opening knob /P13. Closing knob /P14. Circuit breaker energy storage operating hole
15. Lower door interlock padlock device





Unit No	A(mm)	B(mm)	C(mm)
1unit	381	297	381
2unit	706	622	706
3unit	1031	947	1031
4unit	1356	1272	1356
5unit	1681	1559	1681
6unit	2006	1992	2006



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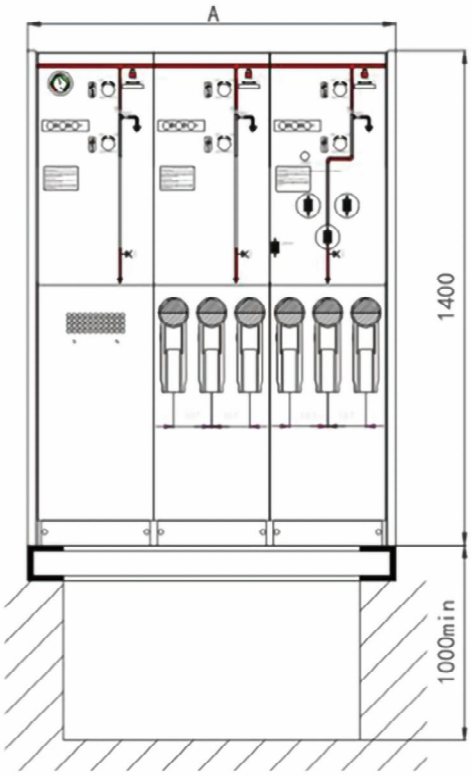
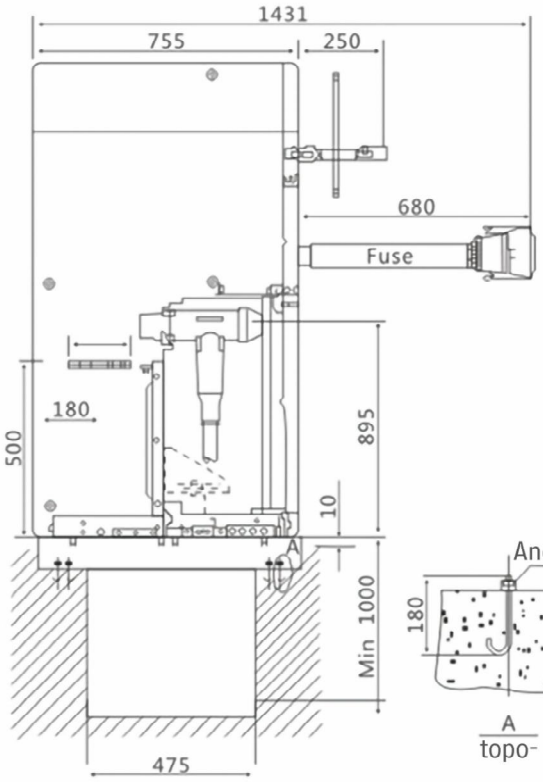
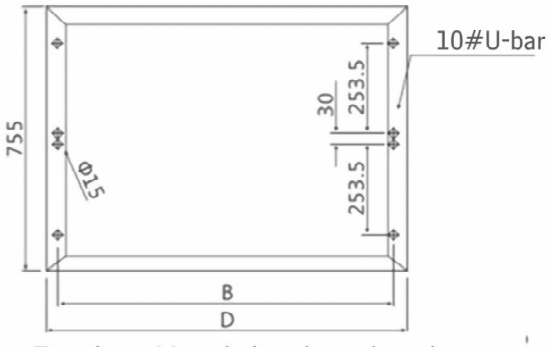
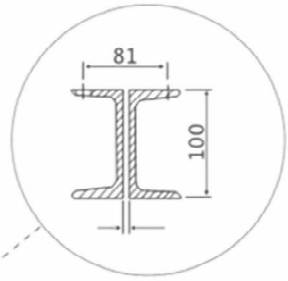
■ STRUCTURE AND DIMENSIONS OF FY-12 SWITCH CABINET

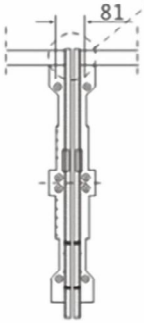




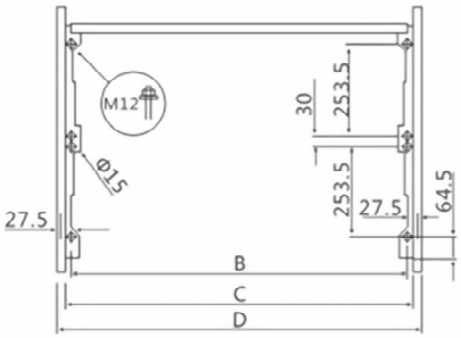


Top view of foundation channel steel





Expansion module connection diagram



Support floor plan

Unit No	A(mm)	B(mm)	C(mm)	D(mm)
1unit	381	297	381	381
2unit	706	622	706	706
3unit	1031	947	1031	1031
4unit	1356	1272	1356	1356
5unit	1681	1559	1681	1681
6unit	2006	1992	2006	2006