

# HXGN-12

## 箱型固定式环网开关设备 Case-fixed ring main unit

吾心求索·通享未来

得益于多年的电气产品研发和制造经验，索通电气为您提供结合了先进技术和卓越工程设计的高压开关设备；系列产品符合智能化、安全性和可靠性要求最严苛的标准。该系列能为公共配电、工业和楼宇领域提供极具成本效益的解决方案，提高竞争力。



节能型  
Energy Saving



智能化  
Intellectualization



易维护  
Easy Maintenance



安全性  
Safety

HXGN-12  
箱型固定式环网开关设备  
Case-fixed ring main unit

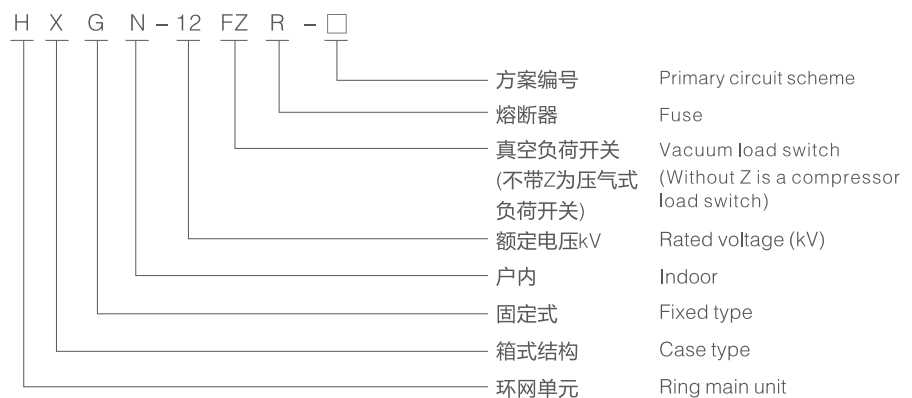


产品概述 General

HXGN-12型箱型固定式金属封闭开关设备(简称环网柜), 额定电压12kV、额定频率50Hz的交流高压成套设备装置, 主要用于三相交流环网, 终端配电网和工业用电设备, 起接受、分配电能和保护等作用, 它也适于装入箱式变电站。本产品符合GB3906《3~35kV交流金属封闭开关设备》、GB/T11022《高压开关设备和控制设备标准的共用技术要求》、IEC60298《额定电压1KV以上52KV及以下交流金属外壳开关设备和控制设备》、IEC60694《高压开关设备和控制设备共用条款》标准的要求。并具有“五防”联锁功能。

HXGN-12 Case-fixed ring main unit (abbr. as RMU), of rated voltage 12KV, rated frequency 50Hz, high voltage AC equipment, mainly used in three phase AC ring main system, termination distribution system, and industrial power distribution, to receive and distribute electricity and protect the circuit, also it can be installed in kiosk substation. Comply with GB3906 AC metal-enclosed switchgear and controlgear for rated voltages above 3 kV and up to and including 35 kV, GB/T11022 Common specifications for high-voltage switchgear and controlgear, IEC60298 AC metal-enclosed switchgear and controlgear for rated voltage above 1 kV and up to and including 52 kV, IEC60694 Common specifications for high-voltage switchgear and controlgear standard.

型号及含义 Model and meaning



正常使用条件 Normal service conditions

- 环境温度：上限+40℃，下限-15℃(特殊工艺下，可达-45℃)；
- 海拔高度不超过2500m(特殊工艺下，可达4000m)；
- 相对湿度日平均值不大于95%，月平均值不大于90%；
- 无火灾、爆炸危险及剧烈振动的场所；
- 周围空气无腐蚀性或可燃性气体，水蒸汽和导电性尘埃等明显污染。
- 注：超出上述正常使用条件时，用户可与制造厂协商确定。
- Ambient air temperature: Maximum air temperature: +40℃,
- Minimum air temperature: -15℃ (Under a special process, up to -45 °C);
- Altitude: ≤ 2500m(Under a special process, up to 4000m);
- Humidity: Daily average value of relative humidity: ≤95%  
Monthly average value of relative humidity: ≤90%
- The ambient air is not significantly polluted by dust, smoke, corrosive and/or flammable gases, vapours or salt.
- Notes: If the operating conditions exceed the normal conditions, please contact our technical department.

# HXGN-12

类型1:安装FN12-12, FZN25-12负荷开关

Type1: With FN2-12, FZN25-12 load switch



## 主要技术参数 Technical specifications

FN12-12, FZN25-12负荷开关技术参数 Main technical data of FN12-12, FZN25-12				
名称 Description	单位 Unit	FN12-12	FZN25-12	
额定电压 Rated voltage		12		
1min工频耐受电压 Rated power frequency withstand voltage(1min)	KV	对地及相间42；隔离断口48 To earth and between phase: 42; Across the isolating distances: 48		
雷电冲击电压(峰值) Rated lightning impulse withstand voltage		对地及相间75；隔离断口85 To earth and between phase: 75; Across the isolating distances: 85		
额定频率 Rated frequency	Hz	50		
负荷开关 Load switch	额定电流 Rated current	A	630	
	额定电流下电寿命 Electrical endurance under rated current	次	≥ 100	
	开断空载变压器容量 Capactiy of breaking non-load transformer	kVA	1250	1600
	额定热稳定电流 Rated short-time withstand current	kA/s	20/4；接地开关20/2 20/4; Earthing switch 20/2	
	额定动稳定电流(峰值) Rated peak withstand current	kA	50	
	额定短路关合电流(峰值) Rated short-circuit making current		50	
	熔断器额定电流 Fuse Rated current	A	125	
组合电器 Switch-fuse combination	额定转移电流 Rated transfer current	A	1200	2000
	额定短路开断电流 Rated short-circuit breaking current	kA	31.5	
	配用熔断器型号 Equipped with fuses		S□LAJ-12	
机械寿命 Mechanical endurance	次	2000	10000	
辅助回路1min工频耐压 1min power frequency withstand voltage of auxiliary circuit	kV	2		
电动操动机构工作电压 Working voltage of motor actuator mechanism	V	交直流220；110 AC, DC 220; 110		
防护等级 Degree of protection		IP4X		

## 结构特点 Structural features

- 采用全组装结构，轻巧美观，可任意组合安装，便于无限扩展延伸。
  - 既可配FN12-12型压气式负荷开关、组合电器，也可配FZN25-12型真空负荷开关、组合电器。体积小，免维修，三相联动结构，具有明显的隔离断口。
  - 负荷开关、组合电器，其安装方式灵活，可左右侧装、正装、倒装(FZN25不可倒装)。
  - 可手动和电动操作，可具有远方遥控功能。
  - 设有完善可靠的机械联动、联锁装置，完全达到“五防”功能。
    - a、负荷开关合闸时，接地开关无法合闸，前门无法打开；
    - b、负荷开关分闸时，接地开关可以合闸，当接地开关处于合闸时，前门可以打开；
    - c、接地开关合闸时，负荷开关无法合闸，前门板可以打开；
    - d、接地开关分闸时，负荷开关可以分、合闸，前门板无法打开；
    - e、电缆下进线时，在进线有电时，无论负荷开关处于合闸或分闸位置电磁锁控制前门板，使其无法打开。(除用专用钥匙紧急解锁外)
  - 负荷开关采用联动防护绝缘活门或透明绝缘罩，遮挡带电触头，确保人身安全。
  - 采用正面操作维护，可靠墙安装。
  - 前面门装有观察窗，可清楚观察柜内元件工作状态。
- 
- Full assembly structure, light and beautiful figure, they can be combined at random for extension unlimitedly.
  - FN12-12 air-compressed load switch (or with fuse), or FZN25-12 vacuum load break switch (or with fuse) can be assembled as main switch. Small size, free of maintenance, three-phase operated together, with obvious crossing break,
  - Load switch (or with fuse) can be installed at random, on left or right side of switchgear, vertically or reversely (FZN25 can't be installed reversely)
  - Manual and electric operation is available, with remote control function
  - Complete and reliable mechanical interlocks, to realize five-prevent functions
    - a、When load break switch is in ON position, earth switch can't be closed, front door can't be opened.
    - b、When load break switch is in OFF position, earth switch can be closed, after earth switch closed, front door can be opened.
    - c、When earth switch is closed, load switch can't be closed, front door can be opened.
    - d、When earth switch is opened, load switch can be closed or opened, front door can't be opened.
    - e、If cable enters from downside, when the cable is electrified, no matter load switch is in ON or OFF position, electromagnetic lock will control the front door unable to be opened. (Except the operator uses emergency key to unlock)
  - Load switch adopted the protective shutter or transparent insulation cover to protect electric contacts from electric touch.
  - Operate and maintain from the front, it is allowed to mount near wall
  - Inspection window provided in front door, to inspect the working status of components inside



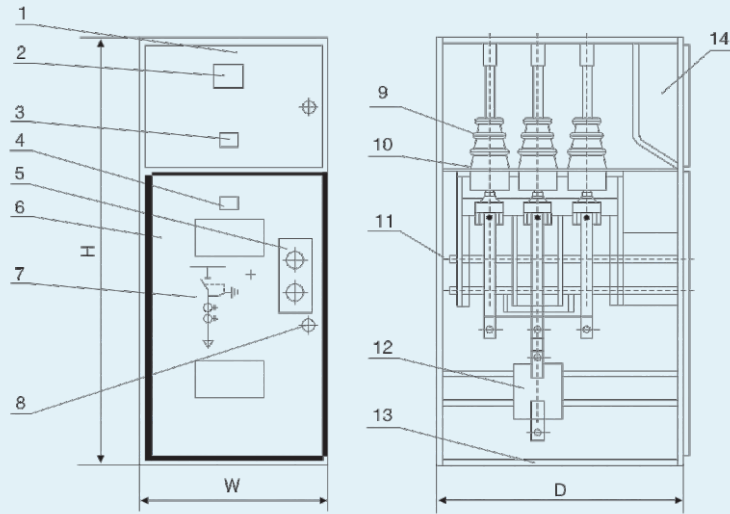
# HXGN-12

类型1:安装FN12-12, FZN25-12负荷开关  
 Type1: With FN2-12, FZN25-12 Load Switch



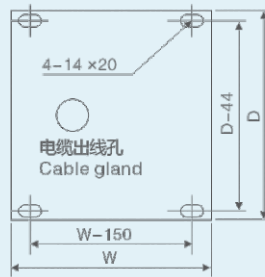
## 结构及尺寸 Structure and Dimensions

HXGN□-12 外形尺寸及结构图 HXGN□-12 Switchgear layout dimensions



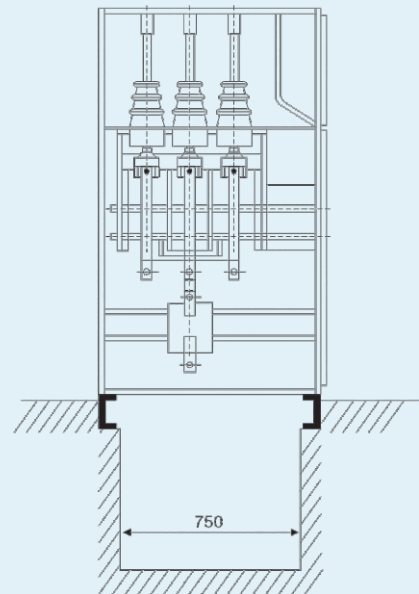
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|-----------------------------|-----------------------|-------------------------------|
| 1. 仪表门 Meter Door           | 6. 下门 Under door      | 11. 骨架 Foundation frame       |
| 2. 仪表 Meter                 | 7. 模拟牌 Analog cards   | 12. 电流互感器 Current transformer |
| 3. DXN显示器 DXN display       | 8. 门锁 Lock            | 13. 电缆支架 Cable support        |
| 4. 铭牌 Nameplate             | 9. 负荷开关 Load switch   | 14. 继电器室 Relay compartment    |
| 5. 操作机构 Operating mechanism | 10. 中隔板 The clapboard |                               |

HXGN□-12 环网柜安装及基础示意图 HXGN□-12 RMU installation foundation plans



安装尺寸  
Dimensions

柜宽W	柜深D	柜高H
600	900	2000
650	900	2000
700	900	2000
800	900	2000



基础施工图 Layout plan

一次线路方案 Typical primary schemes

方案号 No.	01	02	03	04	05	06	07
一次方案接线图 Primary circuit scheme							
主要电器元件 Main components	用途 Application	电缆出线 Cable outgoing feeder					
	FN12-12D/630-20	1		1		1	
	FN25-12D/630-20						
	FN12-12(R)D/125-31.5		1		1		1
	FN25-12(R)D/125-31.5						
	S□LAJ-12		3		3		3
	母线穿墙套管 Bus wall bushing	3	3	3	3		
	RN2-10						
	LZJ-10, LZZJ-10					2	2
	JDZ-10						
	HY5W□			3	3		
	GSN-10	1	1	1	1	1	1

方案号 No.	08	09	10	11	12	13	14
一次方案接线图 Primary circuit scheme							
主要电器元件 Main components	用途 Application	电缆出线 Cable outgoing feeder	电缆进出线 Cable incoming/outgoing feeder		联络 Communicating	电缆进线 Cable incoming feeder	
	FN12-12D/630-20				1	1	
	FN25-12D/630-20						
	FN12-12(R)D/125-31.5	1					1
	FN25-12(R)D/125-31.5					1	
	S□LAJ-12	3					3
	母线穿墙套管 Bus wall bushing				3	3	
	RN2-10						
	LZJ-10, LZZJ-10	2					
	JDZ-10						
	HY5W□	3		3			
	GSN-10	1	1	1	1	1	1

## 一次线路方案 Typical primary schemes

方案号 No.	15	16	17	18	19	20	21	
一次方案接线图 Primary circuit scheme								
主要电器元件 Main components	用途 Application	联络 Communicating			高压计量电缆进出线 HV metering & cable incoming/outgoing feeder	PT进线 PT+ incoming feeder	高压计量 HV metering	
	FN12-12D/630-20	1		1				
	FN25-12D/630-20							
	FN12-12(R)D/125-31.5		1		1			
	FN25-12(R)D/125-31.5							
	S□LAJ-12		3		3			
	母线穿墙套管 Bus wall bushing	3	3	3	3		3	
	RN2-10					3	3	3
	LZJ-10. LZZJ-10			2	2	2		
	JDZ-10					2	2	2
	HY5W□	3	3	3	3			
GSN-10	1	1	1	1	1	1		

方案号 No.	22	23	24	25	26	27	28	
一次方案接线图 Primary circuit scheme								
主要电器元件 Main components	用途 Application	计量联络 Metering & communicating	PT柜 PT panel	PT柜 PT panel	联络 Communicating	高压计量电缆进出线 HV metering & cable incoming/outgoing feeder	高压计量联络 HV metering & communicating	
	FN12-12D/630-20		1	1		1		
	FN25-12D/630-20							
	FN12-12(R)D/125-31.5						1	
	FN25-12(R)D/125-31.5					1		
	S□LAJ-12						3	3
	母线穿墙套管 Bus wall bushing	3			3			3
	RN2-10	3	3	3		3	3	3
	LZJ-10. LZZJ-10	2				2	2	2
	JDZ-10	2	2	2		2	2	2
	HY5W□			3				
GSN-10	1	1	1	1	1	1	1	

一次线路方案 Typical primary schemes

方案号 No.		29	30	31	32	33	34	35	
一次方案接线图 Primary circuit scheme									
主要 电器 元件 Main components	用途 Application	联络 Communicating		电缆进线 Cable incoming feeder					
	FN12-12D/630-20	1		1		1	1		
	FN25-12D/630-20								
	FN12-12(R)D/125-31.5		1		1			1	
	FN25-12(R)D/125-31.5								
	S□LAJ-12		3		3			3	
	母线穿墙套管 Bus wall bushing	3							
	RN2-10								
	LZJ-10, LZZJ-10	2	2	2			2	2	
	JDZ-10								
	HY5W□		3	3	3	3			
	GSN-10	1	2	2	2	2	2	2	

方案号 No.		36	37	38	39	40	41	42
一次方案接线图 Primary circuit scheme								
主要 电器 元件 Main components	用途 Application	电缆进出线 Cable incoming/outgoing feeder						
	FN12-12D/630-20	1		1		1		1
	FN25-12D/630-20							
	FN12-12(R)D/125-31.5		1		1		1	
	FN25-12(R)D/125-31.5							
	S□LAJ-12		3		3		3	
	母线穿墙套管 Bus wall bushing							
	RN2-10							
	LZJ-10, LZZJ-10					2	2	2
	JDZ-10							
	HY5W□			3	3	3		3
	GSN-10	1	1	1	1	1	1	1

# HXGN-12

## 一次线路方案 Typical primary schemes

方案号 No.		43	44	45	46	47	48	49	
一次方案接线图 Primary circuit scheme									
主要电器元件 Main components	用途 Application	电缆进出线 Cable incoming/ outgoing feeder	联络 Communicating						
	FN12-12D/630-20		1		1	1			
	FN25-12D/630-20								
	FN12-12(R)D/125-31.5	1		1			1		
	FN25-12(R)D/125-31.5								
	S□LAJ-12	3		3			3		
	母线穿墙套管 Bus wall bushing		3	3	3	3	3		
	RN2-10								
	LZJ-10, LZJJ-10	2	2	2		2	2		
	JDZ-10								
	HY5W□	3				3	3		
GSN-10	1	1	1	1	1	1			

方案号 No.		50	51					
一次方案接线图 Primary circuit scheme								
主要电器元件 Main components	用途 Application	联络 Communicating						
	FN12-12D/630-20	1						
	FN25-12D/630-20							
	FN12-12(R)D/125-31.5		1					
	FN25-12(R)D/125-31.5							
	S□LAJ-12		3					
	母线穿墙套管 Bus wall bushing	3	3					
	RN2-10							
	LZJ-10, LZJJ-10							
	JDZ-10							
	HY5W□	3	3					
GSN-10	1	1						

类型2:安装FLN36-12型SF6负荷开关  
Type2: With FLN36-12 SF6 Load Switch



主要技术参数 Technical specifications

FLN36-12型SF6负荷开关主要技术参数 Main technical data of FLN36-12			
名称 Description	单位 Unit	FLN <sup>36</sup> <sub>48</sub> -12D/T630-20	FLRN <sup>36</sup> <sub>48</sub> -12D/T125-31.5
接地回路额定短时耐受电流 Rated short-time withstand current of earthing circuit	kA	20	20
额定短路持续时间 Rated short-circuit duration	s	2	2
额定峰值耐受电流 Rated peak withstand current	kA	50	50
额定短路关合电流 Rated short-circuit breaking current	kA	50	50
额定有功负载开断电流 Rated active load breaking current	A	630	630
额定闭环开断电流 Rated closed loop breaking current	A	630	630
额定电缆充电电流 Rated cable charging breaking current	A	10	10
额定开断空载变压器容量 Rated capacity of breaking non-load transformer	kVA	1250	1250
额定转移开断电流 Rated short-circuit transfer current	A	-	1700
机械寿命 Mechanical endurance	次times	5000	5000

结构特点 Structural features

- 柜体用敷铝锌钢板加工后组装成形，尺寸精确、外形美观、体积小、高强度、耐腐蚀防护等级高。
- SF6负荷开关柜有两种型号：HXGN-12(F)型和HXGN-12(FR)型，前者为负荷开关柜，后者为负荷开关—熔断器组合电器柜。
- 开关柜分为母线室、开关室、电缆室和机构仪表室。
- 主母线可向两侧任意扩展，既可以三个开关组成一个环网供电单元，也可以扩展成四个以上开关柜的终端变电站。
- 电缆室可以装电流互感器、电压互感器、避雷器和下接地开关等，电缆头离地高，便于连接电缆。
- 机构仪表室装有负荷开关主轴直接连结的分、合闸机械指示器，可以清楚地显示负荷开关的分、合闸或接地位置。
- 电缆进线端装有带电显示绝缘子，机构仪表室上有带电显示装置，可清楚显示电缆室是否带电。此外，操作机构与门有完善的“五防”联锁，确保人身安全和不会发生误操作。
- 开关柜后部设有内部故障时定向安全泄压装置。
- 开关柜尺寸小、重量轻、安装使用方便，防护等级达到IP3X。
- The switchgear body made of Al and Zn coated steel sheet, accurate dimensions, beautiful figure, small size, high strength, anti-corrosion, high protection grade.
- The switchgear with SF6 load switch has two models: HXGN-12(F) and HXGN-12(FR), the front is load switch panel, the later is fuse switch panel.
- The switchgear divided into: busbar compartment, switch compartment, cable compartment, mechanism and meter compartment.
- Main busbar can be extended from two ends at random, that's means three load switch switchgears can form RMU, or four or more switchgears form termination substation.
- CT, PT, arrester and downside earth switch and etc assembled in cable compartment, terminal for cable is very high, make convenient to connect cable.
- Mechanism and meter compartment has ON/OFF mechanical indicator connected to main shaft of load switch, clearly show the positions of load switch: ON, OFF, EARTH
- Cable incoming side assembled with sensing insulator, connected to voltage indicator in the mechanism and meter compartment, to show cable compartment is electrified or not. Moreover, complete five-prevent function between operating mechanism and switchgear door is provided, to ensure the safety of operator and avoid wrong operation.
- The back of switchgear has directional safety relief device for air pressure resulted from inner fault.
- The switchgear has the features of small size, light weight, easy to install and operate, protection grade up to IP3X



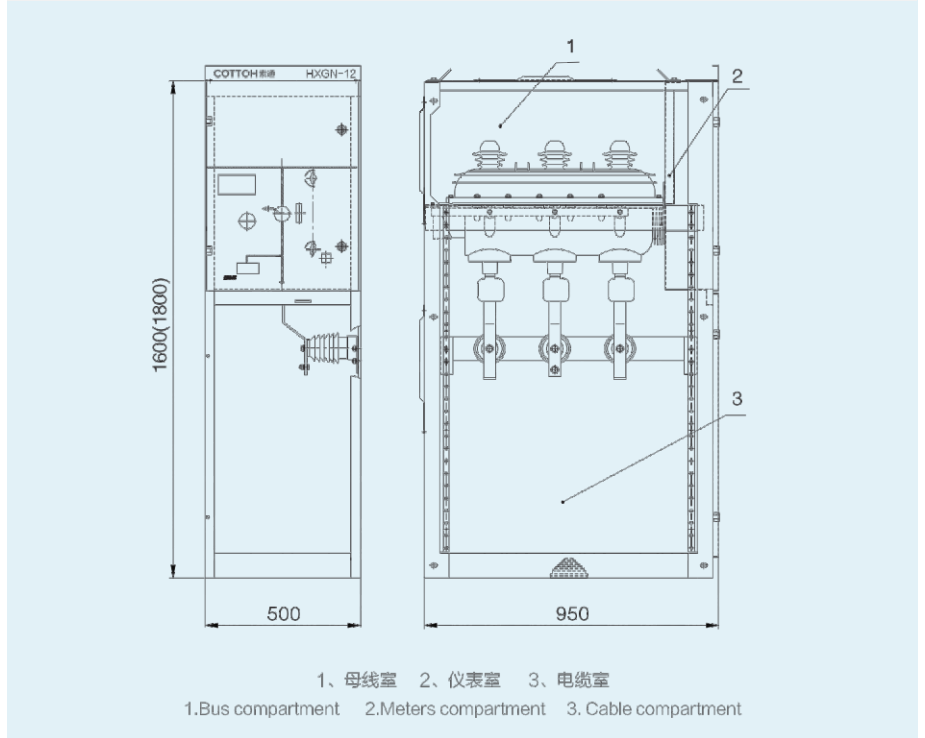
# HXGN-12

类型2:安装FLN36-12型SF6负荷开关  
 Type2: With FLN36-12 SF6 Load Switch

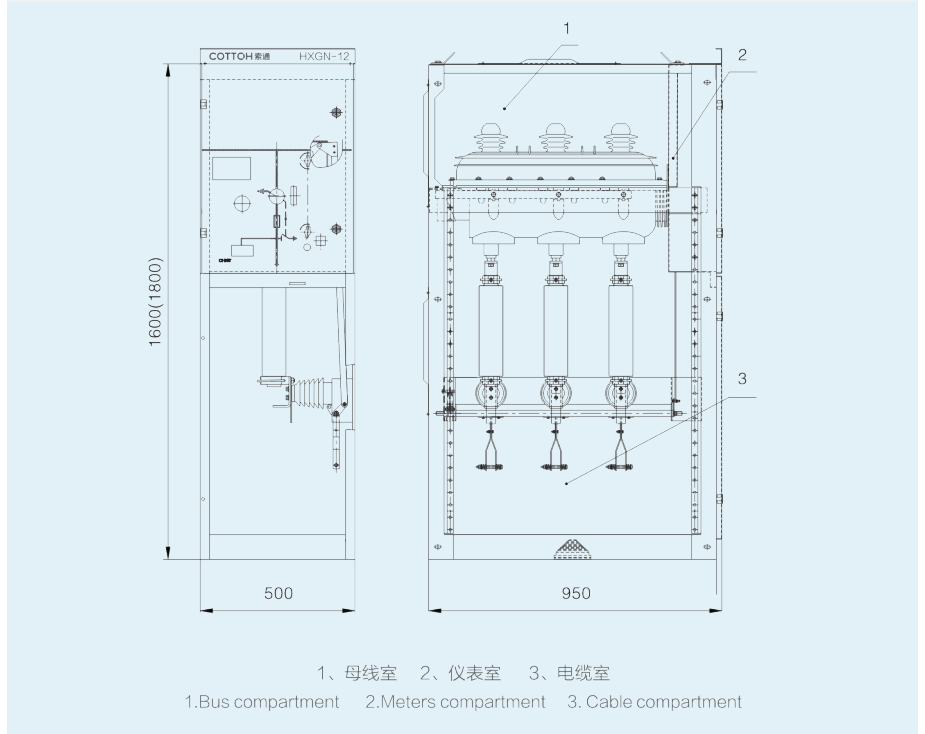


## 结构及尺寸 Structure and Dimensions

HXGN-12环网柜(负荷开关柜)外形尺寸 HXGN-12 Ring Main Unit (Load switchgear) dimensions

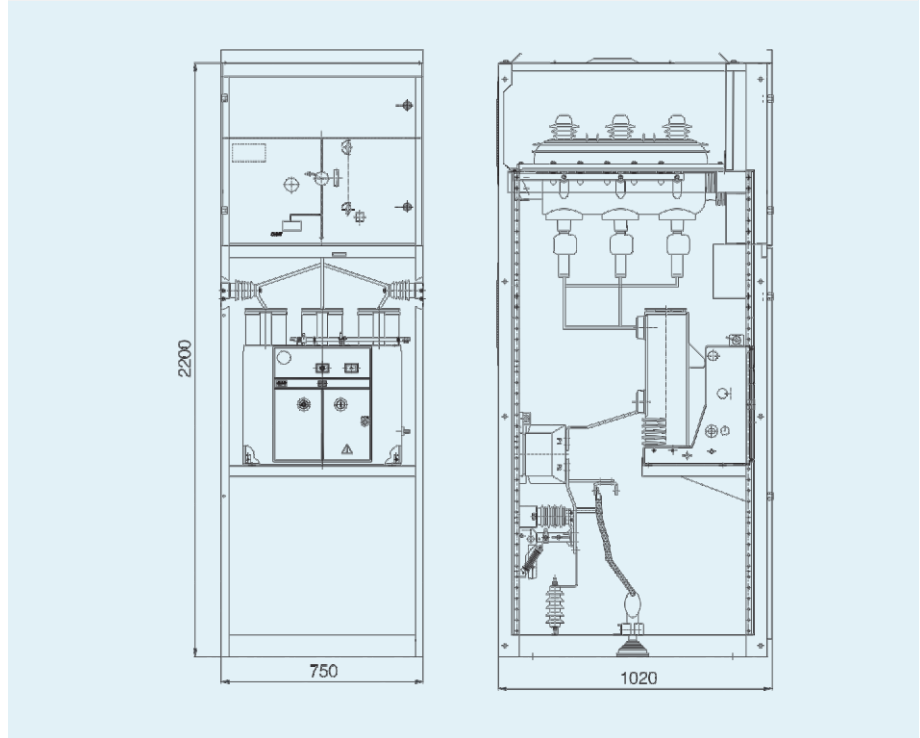


HXGN-12环网柜(组合电器柜)外形尺寸 HXGN-12 Ring Main Unit (Combination switchgear) dimensions

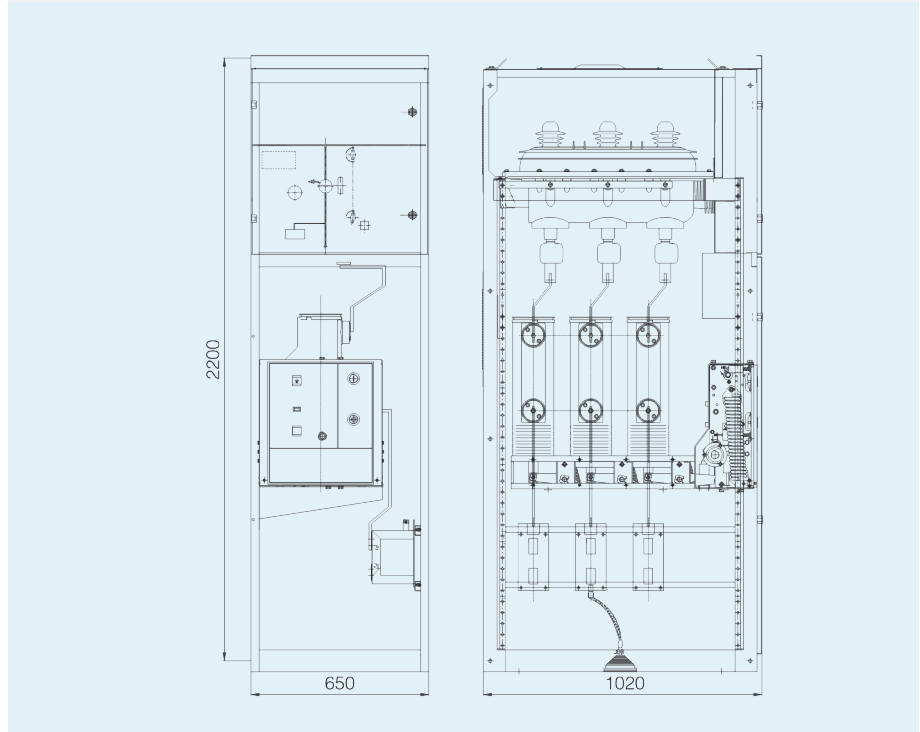


结构及尺寸 Structure and Dimensions

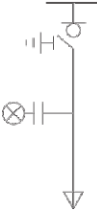

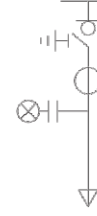

断路器正装 Breaker front mounting







断路器侧装 Breaker side mounting



## 一次线路方案 Typical primary schemes

方案号 No.	01	02	03	04	
主电路方案图 Primary circuit scheme					
主要电器元件 Main components	FLN <sup>36</sup> <sub>48</sub> -12D负荷开关 Load switch	1	1	1	1
	SFLAJ-12熔断器 Fuse				
	LZJ-10电流互感器 Current transformer			1/2/3	1/2/3
	JDZ-10电压互感器 Voltage transformer				
	HY5W避雷器 Surge arrester		3		
	RN2-10熔断器 Fuse				
开关柜宽度(mm) Switchgear width	375 500	375 500	375 500	375 500	
用途 Application	进线 馈线 Incoming, feeding	进线 馈线 Incoming, feeding	进线 馈线 Incoming, feeding	进线 联络 Incoming, communicating	

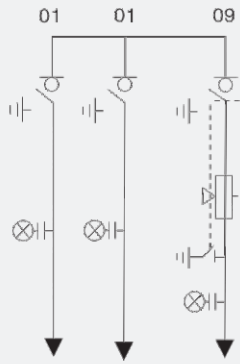
方案号 No.	05	06	07	08	
主电路方案图 Primary circuit scheme					
主要电器元件 Main components	FLN <sup>36</sup> <sub>48</sub> -12D负荷开关 Load switch	1	1	1	2
	SFLAJ-12熔断器 Fuse				
	LZJ-10电流互感器 Current transformer			1/2/3	
	JDZ-10电压互感器 Voltage transformer			1/2/3	
	HY5W避雷器 Surge arrester		3		
	RN2-10熔断器 Fuse			2/3	
开关柜宽度(mm) Switchgear width	375 500	375 500	500 750	750	
用途 Application	进线 Incoming	进线 Incoming	进线 馈线 Incoming, feeding	双电源进线 Dual power incoming	

一次线路方案 Typical primary schemes

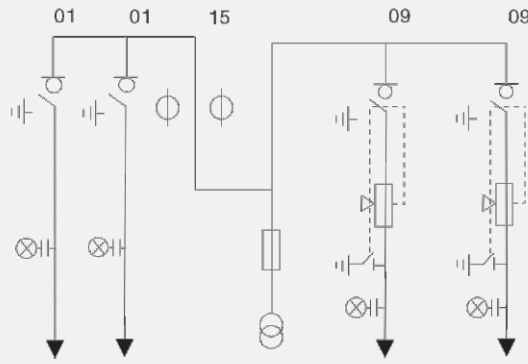
方案号 No.		01	02	03	04
主电路方案图 Primary circuit scheme					
主要 电器 元件 Main components	FLN <sup>36</sup> <sub>48</sub> -12D 负荷开关 Load switch	1	1	1	1
	SFLAJ-12 熔断器 Fuse				
	LZJ-10 电流互感器 Current transformer			1/2/3	1/2/3
	JDZ-10 电压互感器 Voltage transformer				
	HY5W 避雷器 Surge arrester		3		
	RN2-10 熔断器 Fuse				
开关柜宽度(mm) Switchgear width	375 500	375 500	375 500	375 500	
用途 Application	进线 馈线 Incoming,feeding	进线 馈线 Incoming,feeding	进线 馈线 Incoming,feeding	进线 联络 Incoming,communicating	

方案号 No.		05	06	07	08
主电路方案图 Primary circuit scheme					
主要 电器 元件 Main components	FLN <sup>36</sup> <sub>48</sub> -12D 负荷开关 Load switch	1	1	1	2
	SFLAJ-12 熔断器 Fuse				
	LZJ-10 电流互感器 Current transformer			1/2/3	
	JDZ-10 电压互感器 Voltage transformer			1/2/3	
	HY5W 避雷器 Surge arrester		3		
	RN2-10 熔断器 Fuse			2/3	
开关柜宽度(mm) Switchgear width	375 500	375 500	500 750	750	
用途 Application	进线 Incoming	进线 Incoming	进线 馈线 Incoming,feeding	双电源进线 Dual power incoming	

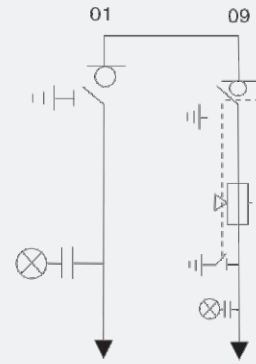
## 方案应用举例 Application Schemes



● 环网供电  
Ring network power supply



● 环网供电带计量  
Ring network with metering



● 终端供电  
Terminal power supply

几种常用开关柜的一次接线方案和组合方案示例

Example of primary circuit scheme and combination scheme of several common switchgears

