Switchgear Panel

MV Switchgear Panel
MV Air-insulated Ring Main Unit (RMU)
LV Switchgear Panel
LV Control Signal Panel

Brief Introduction

About CHINT Electric

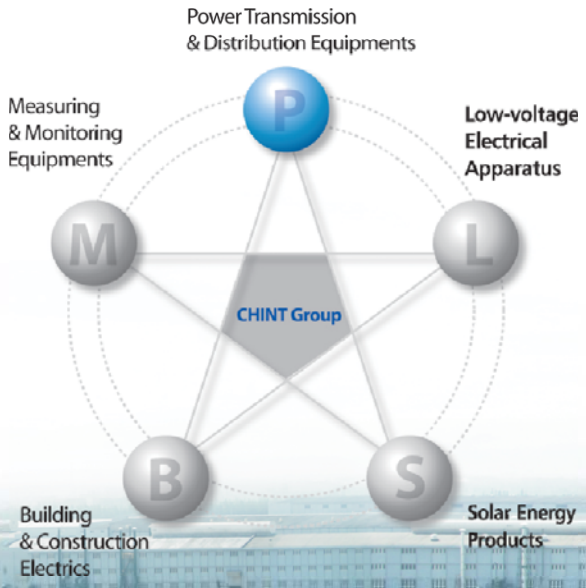
CHINT Electric is a subsidiary of CHINT Group Corporation. With an investment of 450 million USD, CHINT Electric possesses 3800 employees and 5 manufacturing business units with manufactory area of 900,000m^2 located in Shanghai, which is one of the world's largest power transmission & distribution equipments manufactory centers.

New Orders

Around 800 million USD in the year of 2014

Employee

3,800 employees



Product Range

- Power Transformer up to 750kV
- Distribution Transformer up to 35kV
- Dry-type Transformer up to 35kV
- Reactor up to 220kV
- GIS up to 252kV
- HV Circuit Breaker & Disconnector up to 252kV
- VCB 12~40.5kV
- MV & LV Switchgear Panel, Prifabricated Substation up to 40.5kV
- LV Terminal Box, Bus Bar Duct
- Surge Arrester & Insulator up to 500kV, CT & PT up to 220kV
- Power Distribution Automation System
- Cable up to 36kV
- Capacitor
- Turn-key Solution

About CHINT Group

- CHINT is the leading player in the Power Transmission & Distribution industry and Low-voltage electrics industry in China. Founded in 1984 by a few local entrepreneurs and currently hiring 29,000 employees worldwide.
  National Employment Advanced Corporate (China State Council, 2012)
- Ranked in The 2011 BCG 100 New Global Challengers
  (The Boston Consulting Group, 2011)
- CHINT Low-voltage Electrics launched IPO at the Shanghai Stock Exchange of China (2010)
- No.2 in China Electricity Industry's Top 10 Most Competitive Enterprises
  (China Machinery Industry Information Institute, 2009)
- No.3 in China Electricity Industry(China Machinery Industry Information Institute, 2009)
- No.240 in Top 500 Chinese-Companies (China Enterprise Federation, 2009).
- No.1 in Power T&D and the controlling devices (China Machinery Summit, 2009)
- Ranked in Top 100 Best Employers in China (China Entrepreneurs Summit, 2008)
- No.15 in Top 100 Private & Public Companies in China (Forbes, 2006)
- National Quality Management Award(2004) (One of top honours for manufacturing companies in China)
- Worldwide business operation with 2,000 sales offices, agents, distributors, and local partners in domestic Chinese market and distributors & local partners in over 105 countries. International branches or regional offices set up in USA, UAE, Germany, Russia, Brazil, Ukraine, Hong Kong of China, UK and Nigeria.
- CHINT stretches its business to a new frontier of solar energy by setting up a branch company specialized in the solar energy products development.
- The R&D center of CHINT is recognized as the National Level R&D Center run by the companies, which means the R&D level of CHINT Group has reached the leading position in the industry of China.

Sales References

With a worldwide presence in over 129 countries such as, Italy, Germany, Estonia, USA, Russia, Japan, Australia, Saudi Arabia, Poland, Ukraine, Mongolia, Kazakhstan, Pakistan, Indonesia, Thailand, Egypt, Algeria, Morocco, Congo, Tanzania, Mali, Zambia, Kenya, South Africa, Ghana, Nigeria, Colombia, etc, CHINT Electric provides reliable and high-qualified products and solutions to clients engaged in different businesses.






Utility User

Application: *cooperation with National Electricity Companies in over 84 countries for power generation, transmission and distribution.*

Europe

- *EAC-Cyprus*
  Products: Cable.
- *Eesti Energia-Estonia*
  Products: Power transformer.
- *EMS-Serbia*
  Products: Power transformer.
- *ENEL-Italy*
  Products: Distribution transformer, cable.
- *Fingrid-Finland*
  Products: Distribution transformer.
- *HS ORKA HF-Iceland*
  Products: Power transformer.
- *PPC-Greece*
  Products: Power transformer, cable.
- *NEC-Bulgaria*
  Products: VCB.

Latin America

- *BPC-Bhutan*
  Products: Surge arrester.
- *CELEC S.P.-Ecuador*
  Products: Power transformer.
- *CNEL-Ecuador*
  Products: Power transformer.
- *ELCOSA-Honduras*
  Products: Power transformer.
- *Enersis-Chile*
  Products: Power transformer, surge arrester, insulator, SF_6 circuit breaker.
- *ENDESA-Chile*
  Products: Power transformer, surge arrester, insulator, SF_6 circuit breaker.
- *ICE-Costa Rica*
  Products: Power transformer.
- *PREPA-Puerto Rico*
  Products: Surge Arrester.

North America

- *Val Jalbert Mini Hydro Central- Canada*
  Products: Reactor
- *PREPA-Puerto Rico*
  Products : Power transformer; CT&PT
- *APR Energy-America*
  Products: Voltage transformer

Asia-pacific

- *EVN-Vietnam*
  Products: Switch disconnector, power transformer, etc.
- *Kamoki-Pakistan*
  Products: Substation turn-key project.
- *NEA-Nepal*
  Products: Substation turn-key project.
- *NTDC-Pakistan*
  Products: Substation turn-key project.
- *QESCO-Pakistan*
  Products: Surge arrester.
- *TEPCO-Japan*
  Products: Power transformer, circuit breaker, disconnector and CT&PT.
- *NGCP-Philippines*
  Products: Capacitor

More >>>

Africa

- *EEPCO-Ethiopia*
  Products: HV Circuit breaker, disconnector, earthing switch, surge arrester, insulator, CT.
- *KPLC-Kenya*
  Products: Cut-out fuse, surge arrester, insulator.
- *ENE-Angola*
  Products: GIS.
- *JIRAMA-Madagascar*
  Products: Reactor.
- *PHCN-Nigeria*
  Products: Transformer protection & control panel.
- *RECO-Rwanda*
  Products: Distribution transformer, etc.
- *REGIDESO-Burundi*
  Products: Power transformer, distribution transformer.
- *SBEE-Benin*
  Products: Power transformer.
- *SNEL-D.R. Congo*
  Products: Power transformer.
- *SONABEL-Burkina Faso*
  Products: Power transformer, reactor.
- *TANESCO-Tanzania*
  Products: Substation turn-key project.
- *VRA-Ghana*
  Products: MV switchgear, DC panel, disconnector.
- *ZESCO-Zambia*
  Products: CT-VT metering unit.

Middle-east

- *NEPCO-Jordan*
  Products: Power transformer, earthing transformer.
- *ONEC-Oman*
  Products: Power transformer.
- *TEIAS-Turkey*
  Products: Surge arrester, insulator.
- *WARD-Lebanon*
  Products: SF_6 circuit breaker, disconnector, surge arrester, insulator.

CIS

- *ENA-Armenia*
  Products: HV circuit breaker, disconnector, CT, etc.
- *Kiev Boryspil International Airport-Ukraine*
  Products: Power transformer, GIS, etc.
- *TORGOVYIDOM STROJPODSTANZII-Russia*
  Products: Current transformer

More >>>

Global Operation in Over 129 Countries

Industrial End User

Application: *widely applicable for mining, iron-steel, cement, metallurgy, chemical, railway, petroleum, paper, power generation industries, etc.*

Mining Industry

- *BHP Billiton-Australia*
  Products: CT& PT, distribution transformer, etc.
- *Rio Tinto-Australia*
  Products: Distribution transformer, CT.
- *FMG-Australia*
  Products: Power transformer.

Iron-steel Industry

- *JFE Steel-Japan*
  Products: Disconnector.
- *Bao Steel-China*
  Products: Power transformer, MV switchgear panel.

Cement Industry

- *Serebryabskiy Cement Plant-Russia*
  Products: HV capacity compensation device, HV capacitor.
- *Viet Quang Cement Plant-Vietnam*
  Products: Power transformer, HV circuit breaker, disconnector, MV&LV switchgear panel.

Petroleum & Gas Industry

- *Chevron-USA*
  Products: Switchgear panel, distribution transformer.
- *PDVSA-Venezuela*
  Products: Power transformer, distribution transformer.
- *CNPC-China*
  Products: Power transformer, GIS, MV switchgear panel.

Power Rental Industry

- *Aggreko-UK*
  Products: Power transformer.
- *APR Energy-USA*
  Products: Power transformer, HV circuit breaker, disconnector, CT, PT.

Paper Industry

- *VISY-Australia*
  Products: Switchgear panel
- *UPM-Finland*
  Products: MV switchgear panel.

Chemical Industry

- *Saint Gobain-France*
  Products: Power transformer, MV switchgear panel, cable, busduct.
- *INVISTA-USA*
  Products: Distribution transformer, switchgear panel, DC panel.

Power Generation

- *TATA Power-India*
  Products: Power transformer.
- *SIBAYAK Geothermal Power Plant-Indonesia*
  Products: MV&LV switchgear panel, surge arrester, insulator, CT, VCB.

Commercial & Civil Construction

- *Shangri-la Hotel-Philippine*
  Products: Distribution transformer.
- *Kiev Boryspil International Airport-Ukraine*
  Products: GIS.

Shipbuilding Industry

- *Fincantieri-Italy*
  Products: Power transformer.

More >>>

Engineering & Contracting

- *EIFFAGE-France*
  Products: Power transformer, reactor.
- *FLUOR-USA*
  Products: Power transformer.
- *SMS Siemag-Germany*
  Products: Distribution transformer, switchgear panel
- *Bouygues Group-France*
  Products: Disconnector, current transformer
- *Isolux Corsan-Spain*
  Products: Reactor, capacitor, surge arrester

More >>>

Turn-key Project

- *Kamoki-Pakistan*
  Projects: 230kV substation EPC.
- *Saint Gobain-France*
  Projects: 35kV substation EPC.
- *NEA-Nepal*
  Projects: 132kV and 33kV substation EPC.
- *SMCO-D.R. Congo*
  Projects: 220kV substation EPC.
- *TANESCO-Tanzania*
  Projects: 35kV and 66kV substation EPC.
- *NTDC-Pakistan*
  Projects: 220kV substation EPC.
- *Rohri-Pakistan*
  Projects: 220kV substation EPC
- *Mabuki-Tanzania*
  Projects: 220kV,132kV and 33kV substation EPC
- *KPLC-Kenya*
  Projects: 132kV and 33kV substation EPC
- *Dodoma-Tanzania*
  Projects: 220kV substation EPC
- *Mbeya-Tanzania*
  Projects: 220kV substation EPC
- *Shikapur-Pakistan*
  Projects: 220kV substation EPC

More >>>

Sales References

MV/LV Switchgear Panel

CHINT T&D MV/LV switchgear panels are widely adopted by Utility Users from Tanzania, Ghana, Nigeria, Mongolia, etc.; Industrial End Users from USA, France, Finland, Australia, Vietnam, Algeria, Indonesia, Russia Kenya etc. like Chevron, Saint Gobain, VISY Paper and Engineering Companies from Australia, Romania, Vietnam, Mongolia, etc.




Utility User

- Volta River Authority (VRA) - Ghana
- Power Holding Company Of Nigeria (PHCN) - Nigeria
- Mongolia Energy Company - Mongolia
- Tanzania Electric Supply Company (TANESCO) - Tanzania
- Eesti Energia - Estonia

Industrial End User

- Chevron - USA
- Saint Gobain - France
- VISY Paper - Australia
- Anping Cement Plant - Vietnam
- Invista - Shanghai Qingpu Project
- UPM - Kymmene Corp. Finland
- SINOPEC - Algeria Shengli Oilfield Engineering Project

※ Note: Contact us for more information.





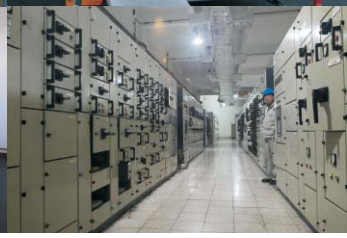



Table of Contents

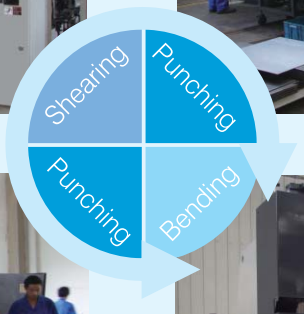
1. Metal Sheet Process

CHINT Electric has world level facilities for manufacturing of switchgears: flexible sheet metal processing production line, laser cutting production line, CNC bending machines, and industrial wastewater treatment recycling facilities and so on. The equipment level ranks at the forefront in the industry.

Metal Sheet Processing

▼ FMS-C3000-type metal sheet processing line

▼ SKYY31530C-type CNC turret pressure machine



▲ M-2048LT CNC multi-station pressure

▲ PPEB220-30-5 CNC bending machine

2. Production Process

Assembly

Wiring

Storage

Inspection

Finished products

3. Quality Management, Certification and Sales Service

3.1 Quality Management

Quality Control Management

- **QC System**
  - *Quality Management System: ISO9001*
  - *Environmental Management System: ISO14001*
  - *Occupational Health & Safety Management: OHSAS18001*
  - *Survey Management System: ISO10012*
- **QC Policy**
  - *To create a world famous brand and to provide satisfied products and solutions for customers.*
- **QC Activities**
  - *An independent and systematic QC system, 30 quality control points for each key procedures.*
  - *Training of total quality control philosophy for new employees each year..*
  - *"Quality Month" in May each year to improve quality awareness.*
  - *Internal audit in April every year.*
- **QC Review**
  - *Scheme the quality improvement each year.*
  - *Record and analyze quality loss each month to correct and prevent significant defects.*
- **QC Honors**
  - *National Quality Management Award.*
  - *China Top Quality Management Award.*

Quality Control Application

- **Raw Material**
  - *All the suppliers for raw materials are strictly selected.*
  - *Materials outsourced are strictly tested.*
- **Process Control**
  - *Quality inspectors are responsible for process inspection and final quality inspection.*
  - *Quality engineers are responsible for random inspections and quality auditing.*
- **Delivery & Test**
  - *Finished products are strictly tested before delivery.*
  - *Third party inspection and end user inspection are scheduled before delivery.*
- **Zero Defect**
  - *We adopt the Zero Defect Theory from Philip B. Crosby to make things right from the beginning.*

QC System Certification





Test Report and Certification

Quality Management Procudure

Lightning impulse ▲ testing platform

▲ On-site test

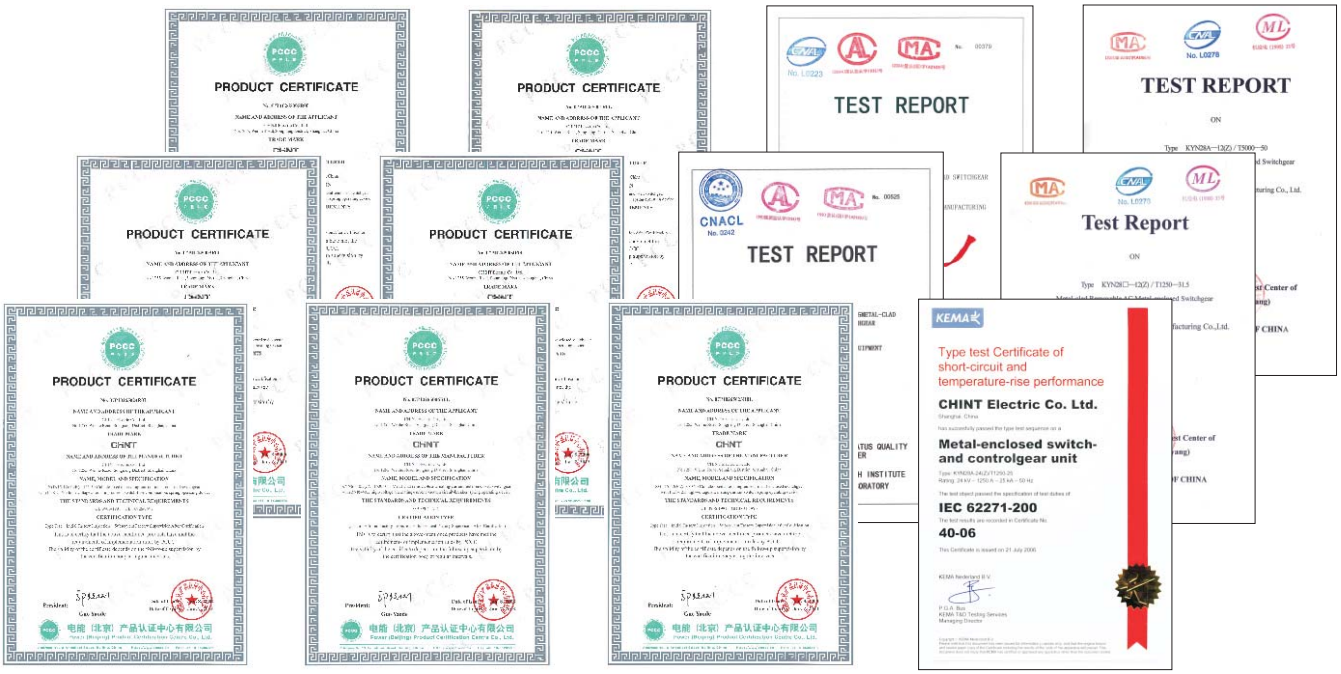
Power frequency withstand ▲ voltage testing platform

▲ Remote monitoring

▲ Temperature rise test

3.2 Certification

CHINT T&D's products are evaluated by STL (Short-Circuit Testing Liaison) laboratories such as KEMA, CESI and other international certification like PCT (GOST),TUV; and tested by CNAS (ilac member in China) laboratories such as CTQC, SEPTDTD, etc.



3.3 Sales Service

Customer-oriented Support System

- **Sales Service Team**
  - Multi-language service team.
  - Experienced engineers and sales representatives are chosen to provide professional service and support.
  - Customer-oriented solutions are provided.
- **Customer Oriented**
  - Customized products and solutions are available according to clients' requirements.
  - Customized products meet local standards like AS standard in Australia, etc.
  - Regular internal inspection and supervision on contract execution.
- **Functional Service**
  - Quick-response logistics and finance system to support contract.
  - Strategic collaboration with global renowned logistics service provider to improve global transportation solutions even in tough conditions.
  - Service tracking system and termly customer feedback evaluation system.
- **Punctual Delivery**
  - Large scale production capacity ensures short manufacturing period.
  - Shortest delivery time on special requirements.

After-sales Service

- **After-sales Service Team**
  - Standard procedures with feedback collection, problem tracking and problem shooting.
  - In-time and efficient solutions to solve problems.
  - Systematical service improvement through problem feedback and tracking.
- **After-sales Service Network**
  - Professional engineers are sent abroad for on-site service, installation guidance, maintenance and handing emergencies.
  - Local service partners are selected for installation and maintenance supports.
  - Global service network being built in order to provide convenient local after-sales service to different customers.

Test Report and Certification

4. Typical Product

MV (12kV~40.5kV) Metalclad Switchgear Panel, Withdrawable Type

KYN28A-24(Z) AC Metal-enclosed Switchgear Panel, Withdrawable Type

1 General

1.1 Ratings: system voltage 24kV, rated current up to 1250A, AC 50/60Hz.
1.2 Application: applicable for power receiving and distribution of power plant and substations for control, protection and measurement.
1.3 Standards: IEC 62271-200

2 Type Designation

K Y N 28A-24 (Z)

- (Z) — Vacuum circuit breaker
- 24 — Rated voltage (kV)
- 28A — Design No.
- N — Indoor
- Y — Withdrawal type
- K — Metalclad type

3 Working Condition

3.1 Ambient air temperature: -15℃～+40℃ (-25℃～+45℃ available as customized products)
3.2 Altitude: ≤1000m
3.3 Relative Humidity: Daily average ≤95%
Monthly average ≤90%
3.4 Earthquake intensity: ≤magnitude 8
3.5 Applicable in the places without corrosive or flammable gas and steam pollution.
※ Note: Customized products are available.

4 Main Technical Parameter

Item	Unit	Data
		CB fitted
		NV1-24
Rated voltage	kV	24
1 min power frequency withstand voltage	kV	(50)65
Rated impulse withstand voltage (peak)	kV	125
Rated frequency	Hz	50(60)
Rated current	A	630 1250 1600 2000 2500 3150
Rated current of branch bus	A	630 1250 1600 2000 2500 3150
Rated short time withstand current	kA	16 20 25 31.5
Rated peak withstand current	kA	40 50 63 80
Rated short circuit continuous time	s	4
Protection level		Shell: IP4X, IP2X when CPT and CB door are open
Weight	kg	840,1440(rated current ≥1600A)

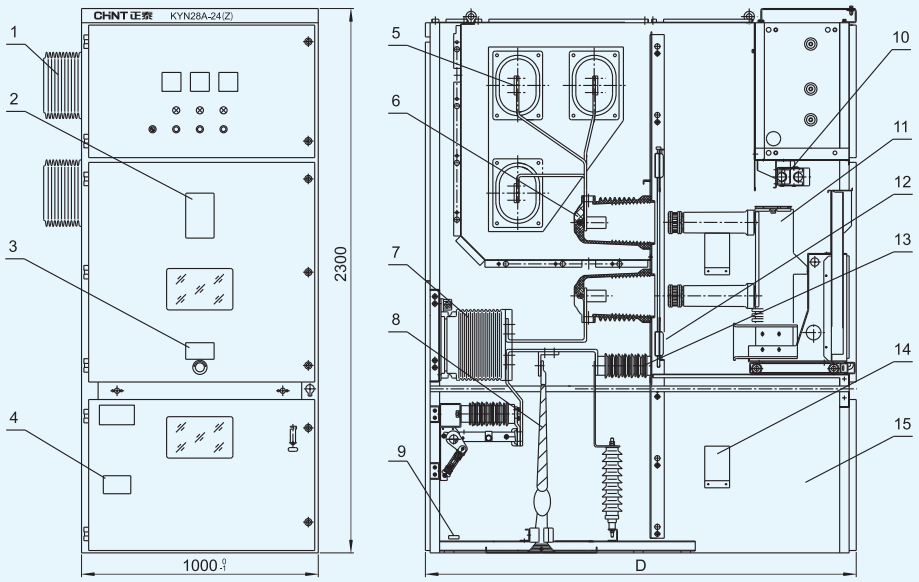
5 Construction

5.1 Compact Design

The switchgear is featured for its outstanding insulation level in its compact design with no necessity of the compund insulation and inter-phase clapboard.

5.2 Reliable structure and easy installation

Switchgear panel construction (unit:mm)

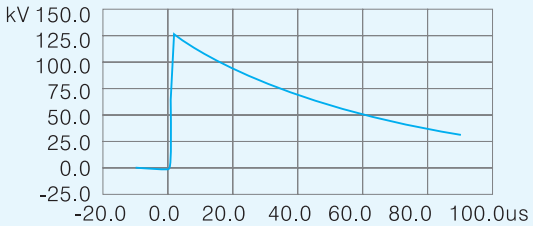


1.Passing bushing 2. Primary diagram 3. Nameplate 4. Lighting lamp 5. Main bus 6. Contact box 7. CT 8. Incoming cable 9. Earthing bus bar 10. Secondary interlocking device 11. Valve mechanism 12. CB trolley 13. Insulator 14. Heater 15. Frame

Depth D (mm)	Cable outgoing feeder	1820
	Overhead incoming and out going feeder	2150

5.3 Anti-lightning impulse capability

Oscillogram-lightning impulse voltage test



Upk=125.33kV

T1=1.11us

T2=45.45us

5.4 Trolley

The frame of trolley adoptes thin steel plate processed by CNC machine tool. The trolley co-ordinates insulatively with the switchgear so as to make the mechanical irrterlock safe and reliable. There are CB trolley, PT trolley and seperating trolley as per the application. Trolleys with the same specifications are inter-changeable.

In the switchgear, the trolley could be locked at three positions of breaking, testing and operating to ensure a reliable interlock.

The trolley is featured by compactness, which is convenient for check and maintenance.

Variety of trolleies

NV1-24 Circuit breaker with trolley

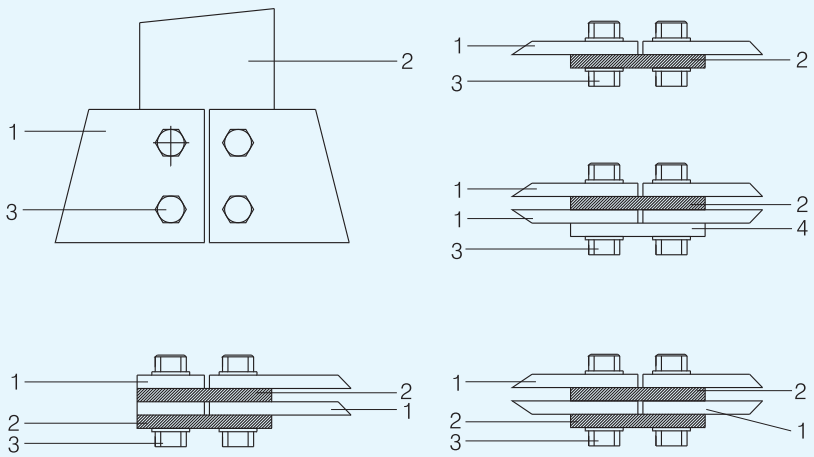
Isolation trolley

Voltage transformer with trolley

5.5 Bus Seperating

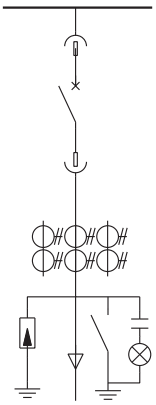
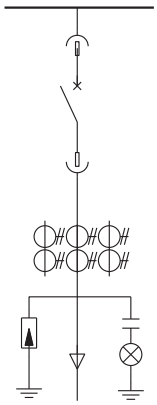
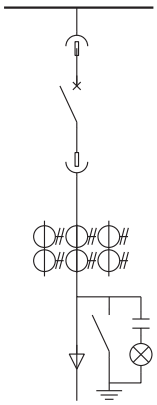
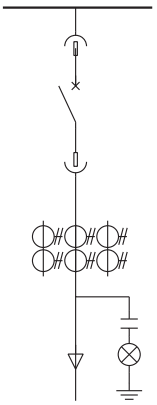
Two bus bars' connection could be applied under with trolley big current. The branch bus is connected to the static contact box and main bus without other supporters. Bus of the neighboring switchgear is fixed by the bush which could separate the failure arc from spreading.

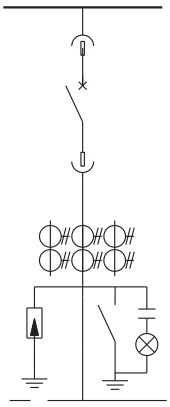
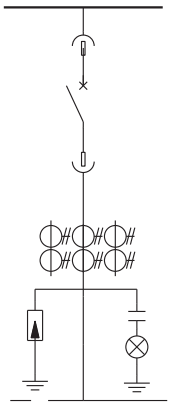
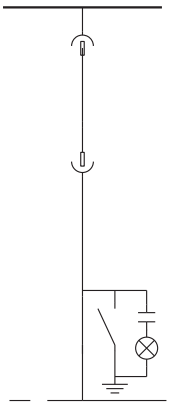
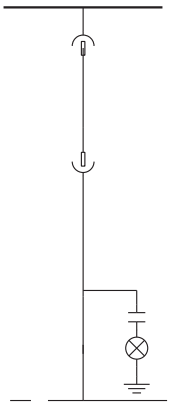
Connection mode of the main bus bar and brach bus bar

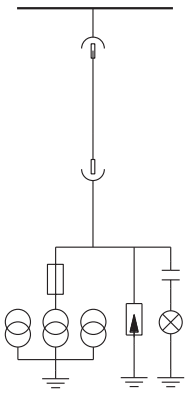
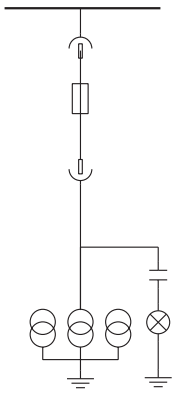
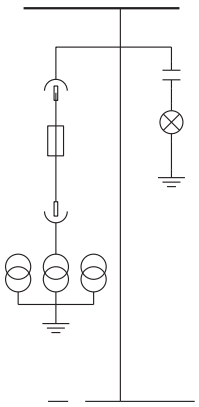
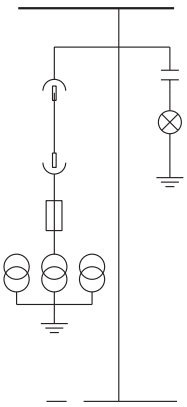


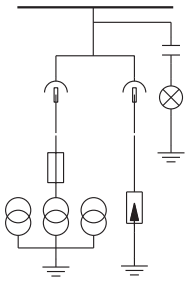
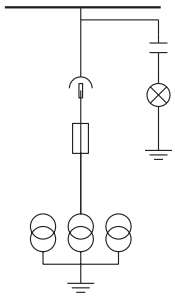
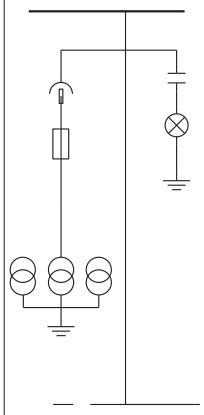
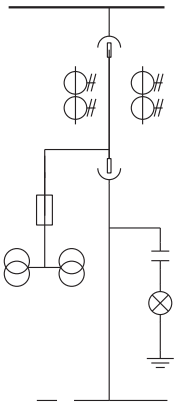
1. Main bus 2. Branch bus 3. Screw 4. Spacer

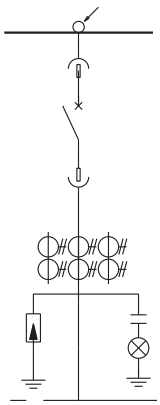
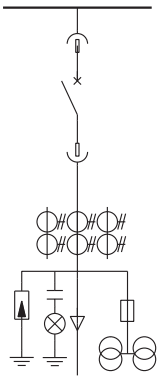
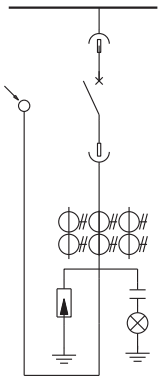
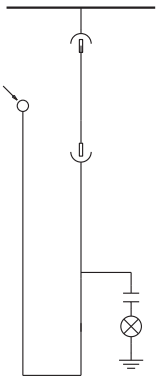
6 Single Line Diagram (Unit:mm)

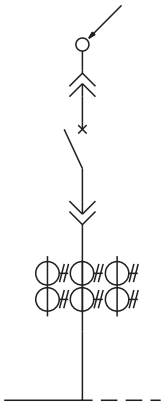
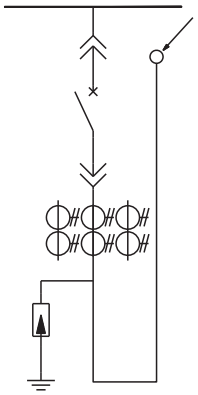
Program No.	001	002	003	004
Single line diagram				
Switchgear Dimension (Width × depth × Height)	1000X1820X2300	1000X1820X2300	1000X1820X2300	1000X1820X2300
Rated current (A)	630~3150A			
Main electrical components: VCB (NV1-24)	1	1	1	1
Main electrical components: CT LZZBJ77-20	2~3	2~3	2~3	2~3
Main electrical components: PT JDZ77-20				
Main electrical components: High-voltage fuse				
Main electrical components: Earthing switch JN15-24	1		1	
Main electrical components: Surge arrester	3	3	3	3
Application	Outgoing cabinet	Incoming cabinet	Outgoing cabinet	Incoming cabinet
Note				

Program No.	005	006	007	008
Single line diagram				
Switchgear Dimension (Width × depth × Height)	1000X1820X2300	1000X1820X2300	1000X1820X2300	1000X1820X2300
Rated current (A)	630~3150A			
Main electrical components: VCB (NV1-24)	1	1	Isolation handcart	Isolation handcart
Main electrical components: CT LZZBJ77-20	2~3	2~3		
Main electrical components: PT JDZ77-20				
Main electrical components: High-voltage fuse				
Main electrical components: Earthing switch JN15-24	1		1	
Main electrical components: Surge arrester	3	3		
Application	Communication	Communication	Isolation cabinet	Isolation cabinet
Note				

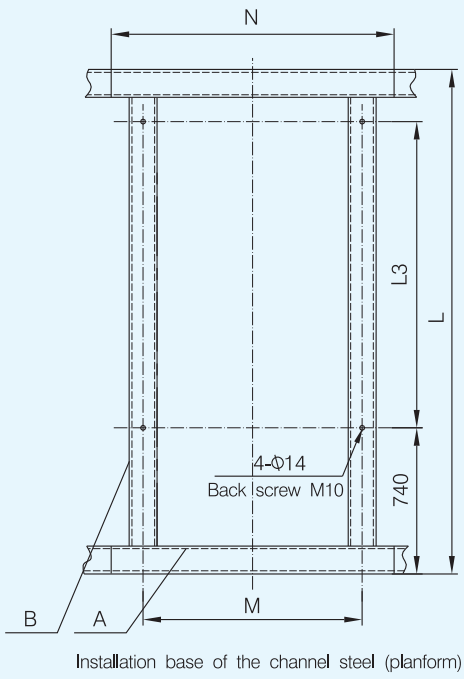
Program No.		009	010	011	012
Single line diagram					
Switchgear Dimension (Width×depth×Height)		1000X1820X2300	1000X1820X2300	1000X1820X2300	1000X1820X2300
Main electrical components	Rated current (A)	630~3150A			
	VCB (NV1-24)	Isolation handcart	Fuse handcart	Fuse handcart	Isolation handcart
	CT LZZBJ77-20	2~3	2~3	2~3	2~3
	PT JDZ77-20				
	High-voltage fuse	3			3
	Earthing switch JN15-24				
	Surge arrester	3			
Application		PT & Surge arrester cabinet	PT cabinet	PT cabinet	PT cabinet
Note					

Program No.		013	014	015	016
Single line diagram					
Switchgear Dimension (Width×depth×Height)		1000X1820X2300	1000X1820X2300	1000X1820X2300	1000X1820X2300
Main electrical components	Rated current (A)	630~3150A			
	VCB (NV1-24)	Isolation handcart	Fuse handcart	Fuse handcart	Isolation handcart
	CT handcart				2
	PT handcart	2~3	2~3	2~3	2
	High-voltage fuse	3	3	3	3
	Earthing switch JN15-24				
	Surge arrester	3			
Application		PT & Surge arrester cabinet	PT cabinet	PT cabinet	Metering cabinet
Note					

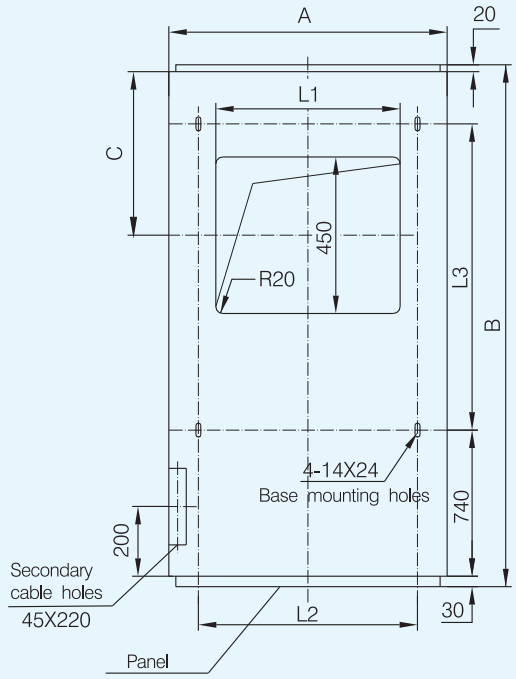
Program No.		017	018	019	020
Single line diagram					
Switchgear Dimension (Width×depth×Height)		1000X1820X2300	1000X1820X2300	1000X1820X2300	1000X1820X2300
Main electrical components	Rated current (A)	630~3150A			
	VCB (NV1-24)	1	1	1	Isolation handcart
	CT LZZBJ77-20	2~3	2~3	2~3	2~3
	PT JDZ77-20				
	High-voltage fuse		3		3
	Earthing switch JN15-24				
	Surge arrester	3	3	3	3
Application		Incoming cabinet	Incoming cabinet	Isolation cabinet	Isolation cabinet
Note					

Program No.		021	022	023	024
Single line diagram					
Switchgear Dimension (Width×depth×Height)		1000X2150X2300	1000X2150X2300		
Main electrical components	Rated current (A)	630~3150A			
	VCB (NV1-24)	1	1		
	CT LZZB9-24	2~3	3		
	PT				
	High-voltage fuse				
	Earthing switch				
	Surge arrester		3		
Application		Communicating	Overhead incoming feeder		
Note					

7 Installation Dimension (Unit: mm)



Installation base of the channel steel (planform)



Dimension of the bottom plate (planform)

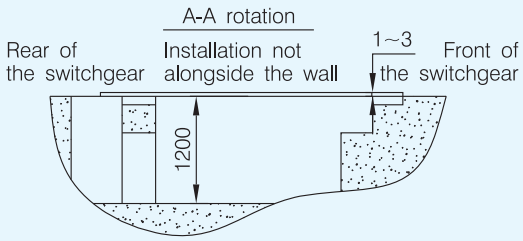
※ Note: 1. Depth of the cable duct should be ⩾1200mm

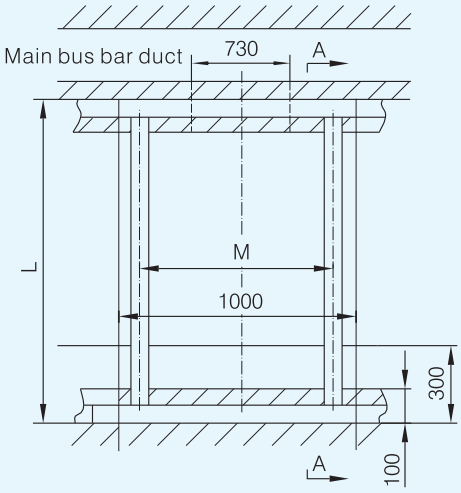
2. The A, B channel steel (8#) in the installation base figure is 1~3mm above the ground.

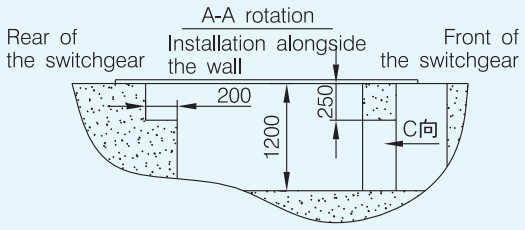
8 Installtion Foundation Scheme (Unit: mm)

Dimension unit: mm

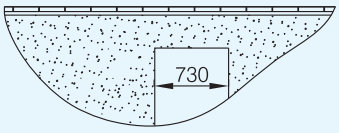
Switchgear width A	Switchgear depth B	L	M	N	L1	L2	L3	C
1000	1820	1770	830	1000	730	830	880	470
	2150	2100						800







C direction view



9 Ordering Information

Please specify the following information when ordering:

9.1 The secondary connection diagram and the terminals allocation diagram.

9.2 Name, model, specification and list of adopted components

9.3 Quantity of main bus bar.

9.4 Type and quantity of extra accessories and spare parts, if needed.

9.5 Customized products are available.

KYN28A-12(Z) AC Metal-enclosed Switchgear Panel, Withdrawable Type

KYN28A-12(Z)(GZS1)

KYN28A-12(Z)(NB)

1 General

1.1 Ratings: system voltage 3.6~12kV, rated current up to 3150A, AC 50/60Hz.

1.2 Application: applicable for power receiving and distribution and for control, protection and measurement of circuit.

1.3 Standards: IEC 62271-200

2 Type Designation

K Y N 28A-12 (Z) (□)

- Original GZS1 / Compact NB
- VCB
- Rated voltage(kV)
- Design No.
- Indoor
- Withdrawable type
- Metal-clad type

3 Working Condition

3.1 Ambient air temperature: -15℃~+40℃ (-25℃~+45℃ available as customized products)

3.2 Altitude:≤4000m

3.3 Relative humidity:

Daily average ≤95%, daily average water vapor pressure ≤2.2kPa

Monthly average ≤90%, monthly average water vapor pressure ≤1.8kPa

3.4 Earthquake intensity: ≤ magnitude 8

3.5 Applicable in places without corrosive, flammable gas and steam and places no regular severe shock.

※ Note: Customized products available.

4 Feature

4.1 KYN28A-12(Z)(GZS1) and KYN28A-12(Z)(NB) available.

4.2 Reliable "anti-5" mechanical latch, convenient and safe maintenance,

4.3 Both VCB of ZN63□ -12 developed by our company and VD4, VB2 AND 3AH manufactured by other companies around the world can be matched with the switchgear.

5 Main Technical Parameter

Item			Unit	Data
Rated voltage			kV	3.6, 7.2, 12
Rated frequency			Hz	50
Rated current of circuit breaker			A	630, 1250, 1600, 2000, 2500, 3150, 4000, 5000
Rated current of switchgear			A	630, 1250, 1600, 2000, 2500, 3150, 4000, 5000
Rated short time withstand current (4s)			kA	16, 20, 25, 31.5, 40, 50
Rated withstand current (peak)			kA	40, 50, 63, 80, 100, 125
Rated short circuit breaking current			kA	16, 20, 25, 31.5, 40, 50
Rated short circuit closing current (peak)			kA	40, 50, 63, 80, 100, 125
Rated insulation level	1min power frequency withstand voltage	Between poles, pole to earth	kV	24, 32, 42
		Between open contacts	kV	24, 32, 48
	Lightning impulse withstand voltage(peak)	Between poles, pole to earth	kV	40, 60, 75
		Between open contacts	kV	46, 70, 85
Protection level				Shell: IP4X; IP2X when the CPT and CB doors are open.

※ Note: 1. The short circuit capacity of the current transformer should be separately considered.
2. See technical parameters of ZN63A-12 in related catalogues of our company.

6 Construction

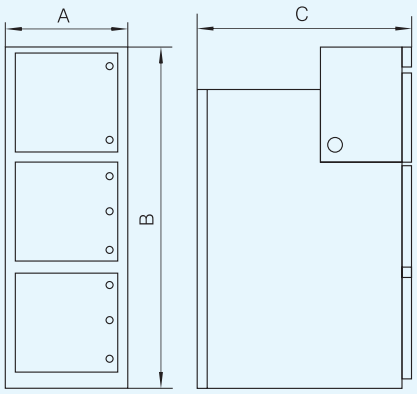
The switchgear is composed of panel body and middle-mounted removable part .
The panel body is divided into four separate compartments.
Overhead incoming and outgoing feeder, cable incoming and outgoing feeder, and combining schemes.
Installation and maintenance can be operated at the front of the switchgear, so it can be double arranged back to back and can be installed against the wall, which improves the product's safety, flexibility and saves space

6.1 KYN28A-12(Z)(GZS1) Switchgear Panel

Ratings:

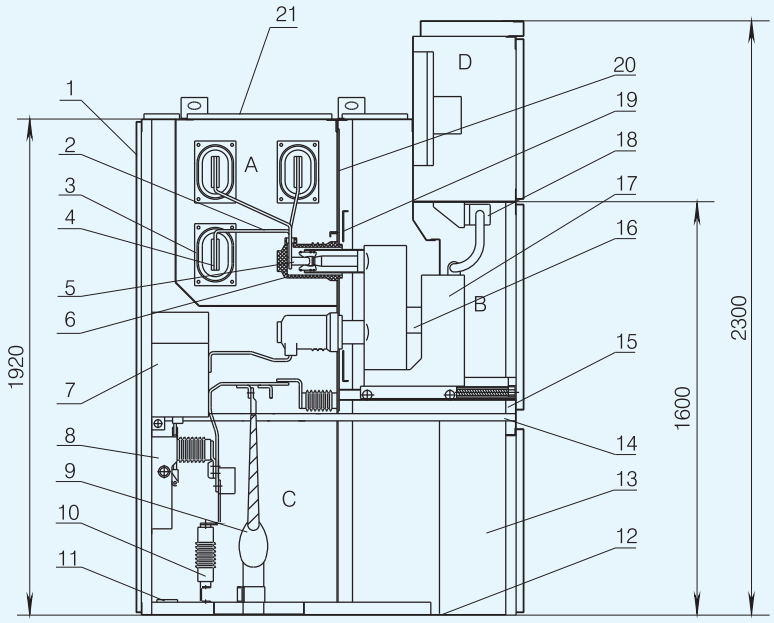
1. Rated current ⩽3150A, altitude ⩽4000m.
2. Switchgear for altitude 3000m-4000m: Rated current⩽1250A, short circuit breaking current ⩽31.5kA, switchgear width =1000m.

KYN28A-12(Z)(GZS1) Switchgear Panel layout dimensions



HeightB(mm)		2300
Width A(mm)	Rated current of branch bus⩽1250A, heat stable current ⩽31.5kA	650
	Rated current of branch bus⩽1250A, heat stable current ⩽40kA	800
	Rated current branch bus ⩾1600A	1000
Depth C(mm)	Cable outgoing feeder	1500
	Overheaded incoming and outgoing feeder	1660

KYN28A-12(Z)(GZS1) construction diagram (Unit:mm)



A. Busbar compartment
B. Circuit breaker trolley compartment
C. Cable compartment
D. Relay instrument compartment

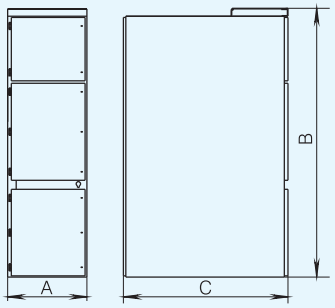
1. Shell
2. Small branch bus
3. Bus bushing
4. Main bus
5. Static contact assembly
6. Contact box
7. CT
8. Earthing switch
9. Cable
10. Surge arrester
11. Earthing main busbar
12. Base board
13. Control mini bus
14. Earthing switch operation
15. Withdraw able level board
16. Heating device
17. Circuit break handcart
18. Secondary Plug
19. Board (valve)
20. Detachable partition
21. Pressure releasing channel

6.2 KYN28A-12(Z)(NB) Switchgear Panel

Ratings:

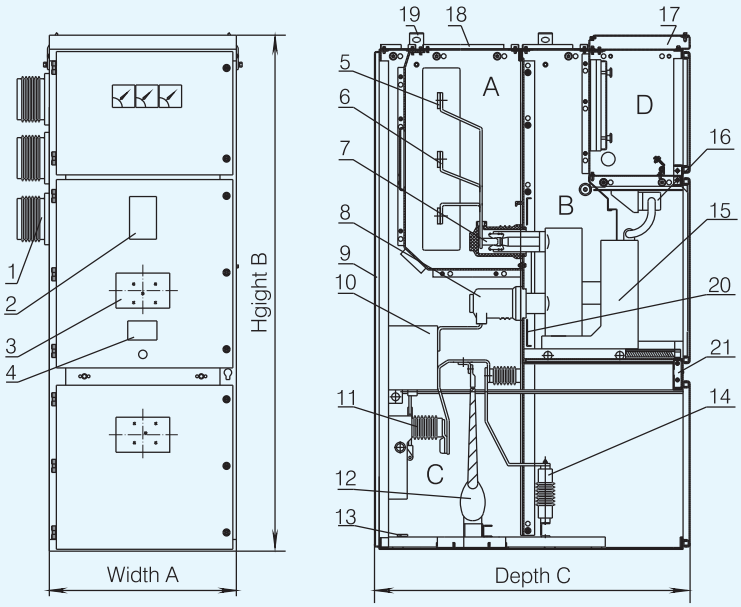
1. Rated current ≤5000A, altitude ≤1000m.
2. Switchgear for R ated current 4000A～5000A: layout dimension 1000×1550(1660)×2300 (flat top switchgear).

KYN28A-12(Z)(NB) Switchgear panel layout dimensions



Height B (mm)		2200
	Rated current 4000A～5000A	2300
Width A (mm)	Rated current of branch bus≤1250A, heat stable current ≤31.5kA	650
	Rated current of branch bus≤1250A, heat stable current ≤40kA	800
	Rated current branch bus ≥1600A	1000
Depth C (mm)	Cable outgoing feeder, Overheaded incoming and outgoing feeder	1350
	Rated current 4000A～5000A	1550(1660)

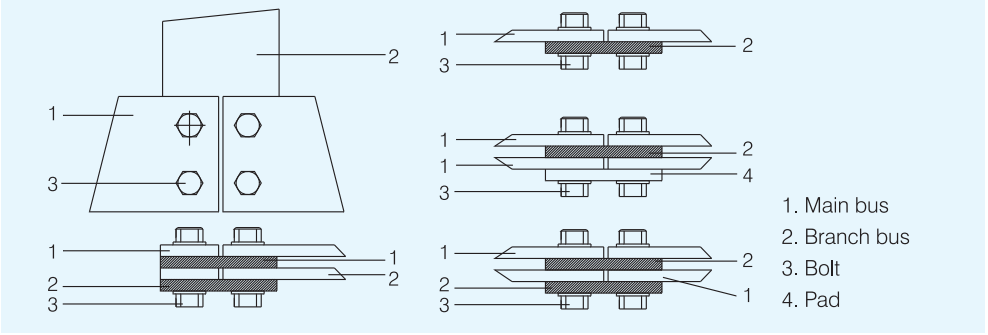
KYN28A-12(Z)(NB) Switchgear panel construction diagram



A. Busbar compartment
B. Circuit breaker trolley compartment
C. Cable compartment
D. Relay instrument compartment

1. Busbushing 2. Simulate buswinding 3. View window of the trolly commpartment
4. Nameplate 5. Main bus 6. Branch bus 7. Static contact 8. Contact box 9. Rear plate
10. CT 11. Earthing switch 12. Cable 13. Main earthing bus 14. Arrester 15. Trolley
16. Air plug 17. Secondary mini busbar compartment 18. Pressure releasing plate
19. Lifting ring 20. Partition 21. Withdrawable horizontal partition

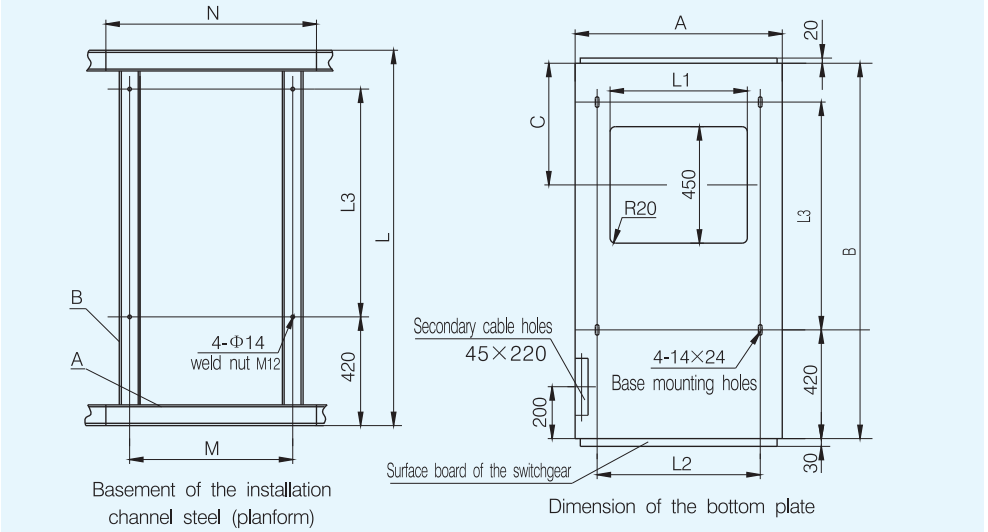
7 The Connecting Form of the Bus and Branch Busbar



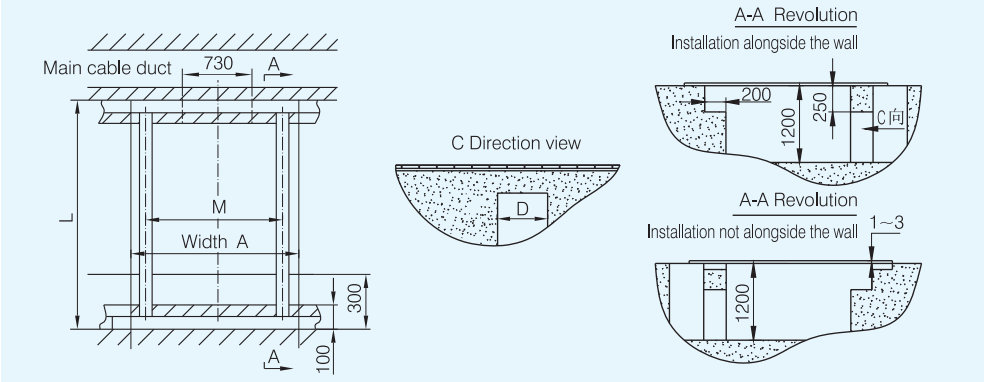
8 Installation Base Scheme

8.1 KYN28A-12(Z)(GZS1) Switchgear Panel

KYN28A-12(Z)(GZS1) Installation dimension (Unit:mm)



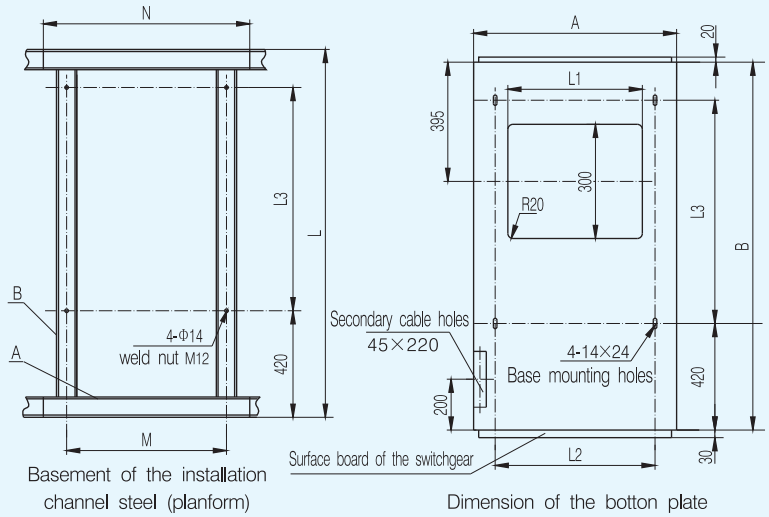
KYN28A-12(Z)(GZS1) Foundation diagram (Unit:mm)



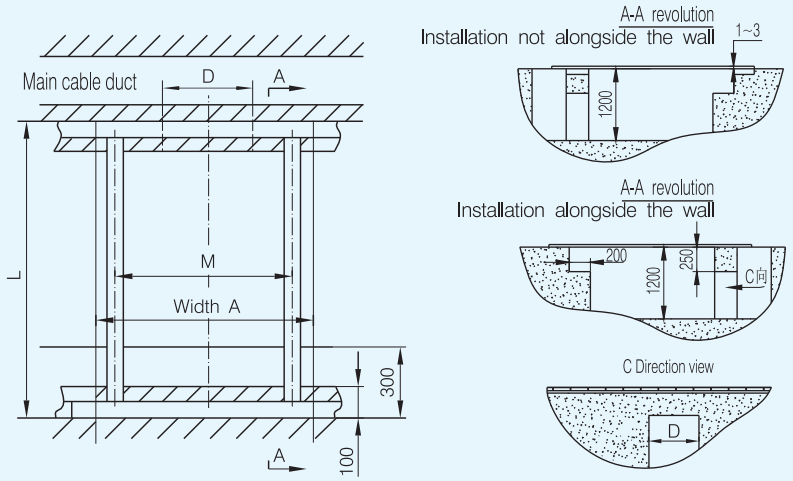
Widith A	Depth B	M	N	D	L1	L2	L3	C	L
650	1500 Cable	480	650	430	380	480	880	470	1450
	1660 Overhead							630	1610
800	1500 Cable	630	800	580	530	630	880	470	1450
	1660 Overhead							630	1610
1000	1500 Cable	830	1000	730	730	830	880	470	1450
	1660 Overhead							630	1610

8.2 KYN28A-12(Z)(NB) Switchgear Panel

KYN28A-12(Z)(NB) Installation dimension (Unit:mm)

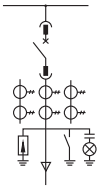
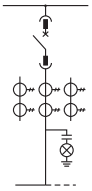
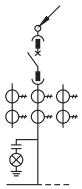
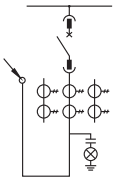
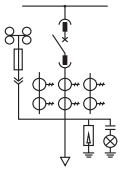
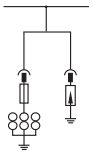


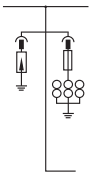
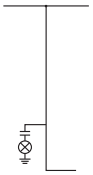
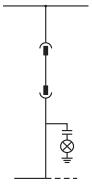
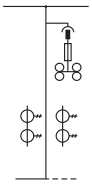
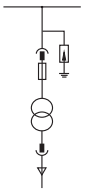
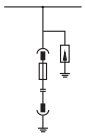
KYN28A-12(Z)(NB) Foundation diagram (Unit:mm)



Widith A	Depth B	M	N	D	L1	L2	L3	L
650	1350 Cable	480	650	430	380	480	730	1300
800	1350 Cable	630	800	580	530	630	730	1300
1000	1350 Cable	830	1000	730	730	830	730	1300

9 Single Line Diagram

Program No.		01	02	03	04	05	06
Single line diagram							
Dimensions(W×D×H(GZS1)/D×H(N B))mm		650 800 1000 × 1500×2300 / 1350×2200	650 800 1000 × 1500×2300 / 1350×2200	650 800 1000 × 1500×2300 / 1350×2200	650 800 1000 × 1660×2300 / 1550×2200	650 800 1000 × 1500×2300 / 1350×2200	650 800 × 1500×2300 / 1350×2200
Main electrical components	Rated current(A)	630~5000					
	VCBZN63A or VD4	1	1	1	1	1	
	CT LZZBJ9 series	3	3	3	3	3	
	Earthing switch JN15	1					
	Surge arrester HY5W	3				3	3
	PT					JDZ10-10 | 2	JDZX10-10 | 3
	HV capacitor RN2-10					3	3
Circuit name		Receiving, Feeding	Communication	Overheaded incoming feeder	Overheaded incoming and outgoing feeder	Cable incoming feeder + PT	Voltage measurement + surge arrester

Program No.		07	08	09	10	11	12
Single line diagram							
Dimensions(W×D×H(GZS1)/D×H(N B))mm		650 800 1000 × 1500×2300 / 1350×2200	650 800 1000 × 1500×2300 / 1350×2200	650 800 1000 × 1500×2300 / 1350×2200	650 800 1000 × 1500×2300 / 1350×2200	800 1000 × 1500×2300 / 1350×2200	800 1000 × 1500×2300 / 1350×2200
Main electrical components	Rated current(A)	630~5000					
	CT LZZBJ9 series				2		
	Surge arrester HY5W	3				3	3
	PT	JDZX10-10 | 3			JDZ10-10 | 2		3
	HV capacitor RN2-10	3			3	RN3-10 | 3	3
	Transformer					1	
	Capacitor						3
Circuit name		Voltage measurement +surge arrester+busbar	Busbar	Disconnection+ communication	Measurement + communication	Transformer	Capacitor panel

10 Ordering Information

Please specify the following information when ordering:

10.1 Main circuit program number and single line system diagram, allocation diagram and layout diagram should be supplied.

10.2 Main circuit diagram, busbar bar diagram for main circuit, allocation diagram should be supplied.

10.3 Secondary wiring diagram and terminals allocation diagram should be supplied.

10.4 Electrical equipments list.

10.5 Span an height dimension should be supplied if bus bridge nedded.

10.6 Spare parts and their quantity.

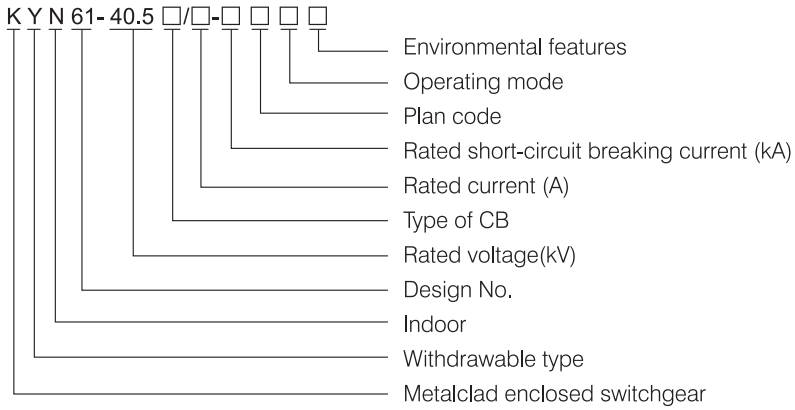
10.7 Customized products are available.

KYN61-40.5(Z) AC Metal-enclosed Switchgear Panel, Withdrawable Type

1 General

1.1 Ratings: system voltage 40.5kV, rated current up to 2000A, AC 50/60Hz.
1.2 Application: applicable for power receiving and distribution of power plant and substations for control, protection and measurement.
1.3 Standard: IEC 62271-200

2 Type Designation



3 Working Condition

3.1 Ambient air temperature: -15℃～+40℃ (-25℃～+45℃ available as customized products)
3.2 Altitude: ≤1000m
3.3 Relative humidity: Daily average ≤95%
Monthly average ≤90%
3.4 Earthquake intensity: ≤magnitude 8
3.5 Applicable in the places without corrosive and flammable gas.
※ Note: Customized products are available.

4 Main Technical Parameter

4.1 Switchgear Panel Parameters

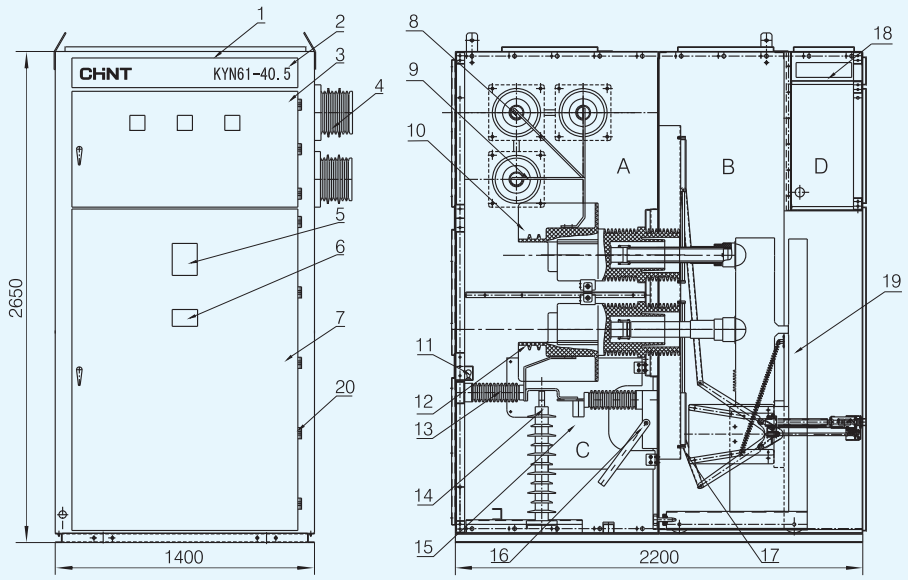
Item		Unit	Data
Rated voltage		kV	40.5
Rated current	Rated current of main bus bar	A	1250,1600,2000,(2500)
	Rated current of matched VCB	A	1250,1600,2000,(2500)
	1min power frequency withstand voltage	KV	95
	Lightning withstand voltage	kV	185
	Power frequency withstands voltage of auxiliary circuit and control circuit	V/1min	2000
Rated frequency		Hz	50
Rated short-circuit breaking current		kA	20 25 31.5
Rated short-time withstand current/ Rated short-circuit continuous time		kA/4s	20 25 31.5
Rated withstands current (peak)		kA	50 63 80*
Rated short-circuit making current		kA	50 63 80*
Rated voltage of control circuit		V	DC：110 220； AC：110 220
Protection level	Switchgear shell		IP4X
	Compartments (door opened)		IP2X

4.2 VCB Parameter

Item		Unit	Data
Rated voltage		kV	40.5
Rated current		A	1250,1600,2000,(2500)
Rated frequency		Hz	50
Rated short-time breaking current		kA	20 25 31.5
Rated short-circuit making current		kA	50 63 80
Rated peak withstand current		kA	50 63 80
Rated short-time withstand current/Rated short-circuit continuous time		kA/4s	20 25 31.5
Rated insulation level	1min power frequency withstand voltage (rms)	kV	95
	Thundering withstand voltage(rms)	kV	185
	Power frequency withstand voltage of auxiliary circuit and control circuit	V/1min	2000
Mechanical life		Times	10000
Making time	Electro-magnetic mechanism	s	≤0.2
	Spring mechanism	s	≤0.15
Breaking time		s	≤0.07
Rated operation sequence			open-0.3s-close open-180s-close

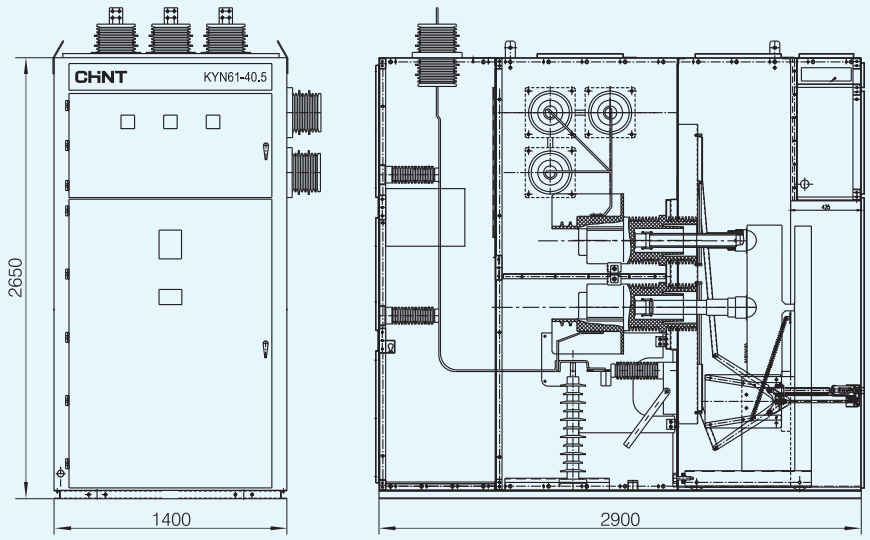
5 Construction

Steel construction switchgear panel (Unit:mm)

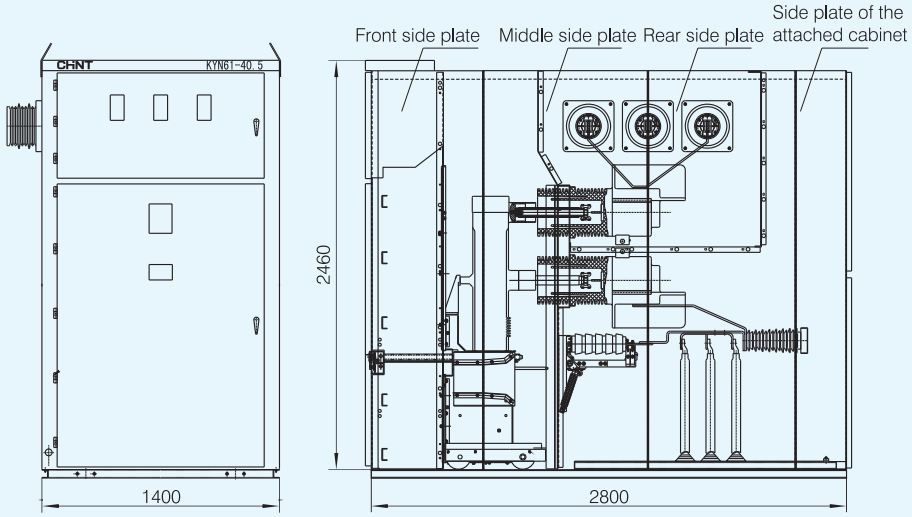


A. Bus compartment B. Trolley C. Cable compartment D. Relay meters compartment
1. Assembly 2. Mini bus compartment covering plate 3. Meters compartment door
4. Bus bushing 5. Analog bus 6. Nameplate 7. Trolley compartment door 8. Main bus
9. Branch bus 10. Contact box 11. Lamb 12. CT 13. Insulator
14. Oxide zinc surge arrester 15. Insulating plate 16. Earthing switch 17. Valve assembly
18. Mini bus terminal 19. VCB trolley 20. Hinge

Steel construction switchgear with an accessory cabinet (overheaded incoming feeder) switchgear (Unit:mm)

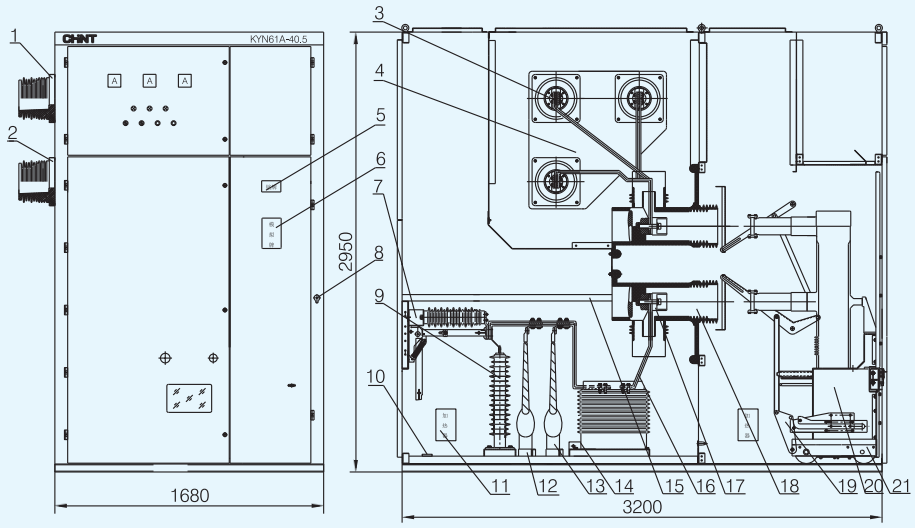


Aluminum-zinc deposited construction with an accessory cabinet switchgear (Unit:mm)



※ Note: depth of overhead incoming cabinet is 3300mm

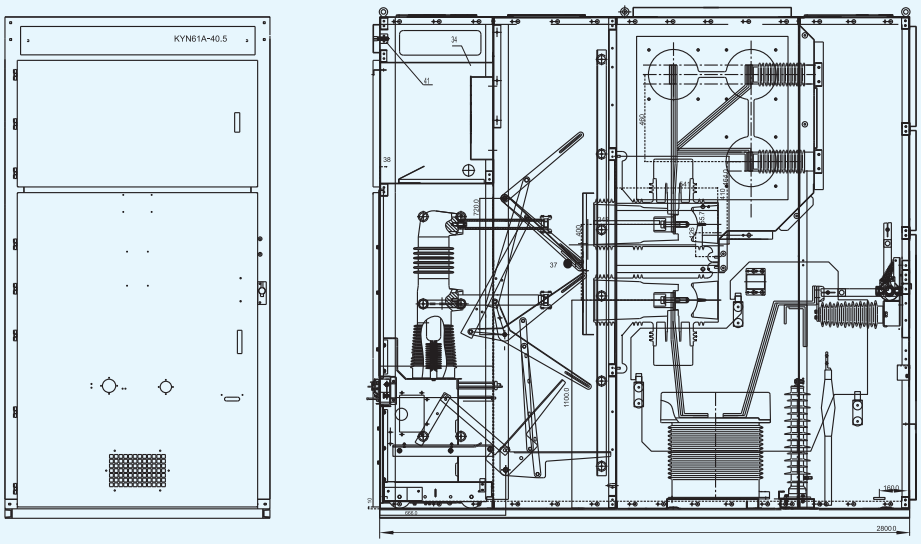
KYN61-40.5(Z) (G)(1680mm wide type panel)



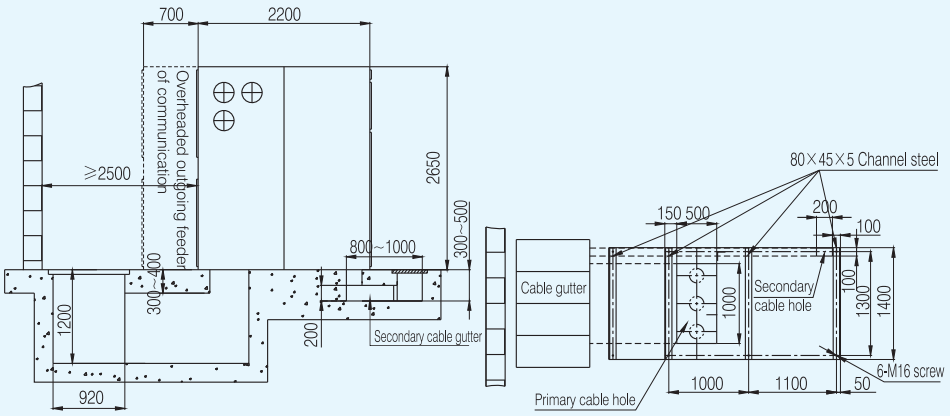
1. 35kV Bushing
2. Panel body assembly
3. Main bus and branch bus assembly
4. Main bus clapboard
5. Nameplate
6. Imitating plate
7. Earthing switch
8. Seal plate
9. Surge arrester
10. Earthing bus assembly
11. Heater
12. Cable clamp
13. Primary HV cable and cable head
14. Current transformer
15. Earthing switch operating interlocking mechanism
16. Lower branch bus
17. Primary static contact
18. 35kV Contact box
19. Valve mechanism assembly
20. Secondary socket and interlocking assembly
21. VCB (with trolley)

6 Installation Base and Dimension (Unit:mm)

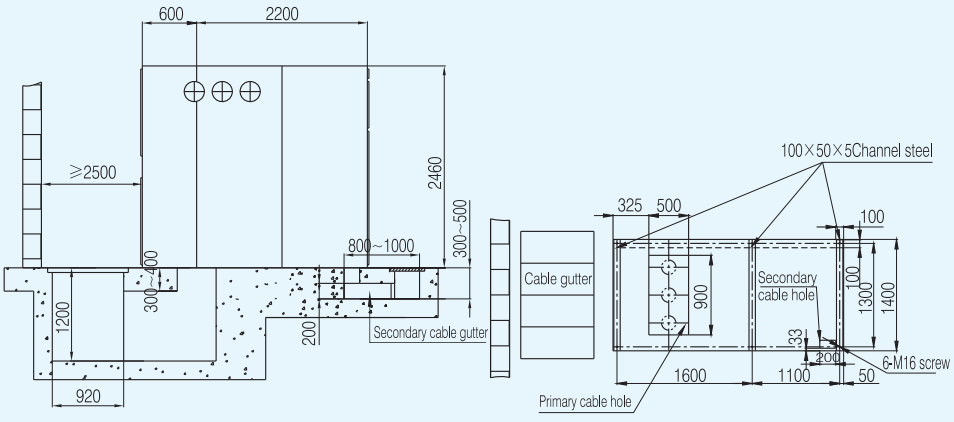
KYN61-40.5 Structure diagram



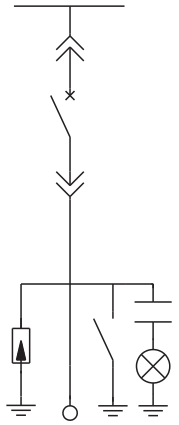
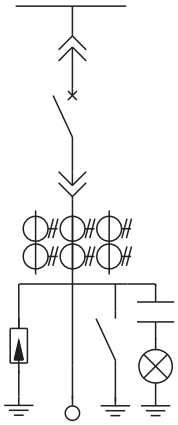
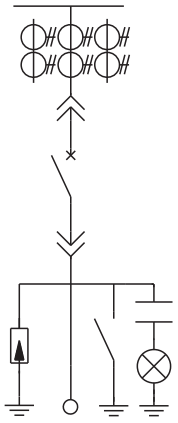
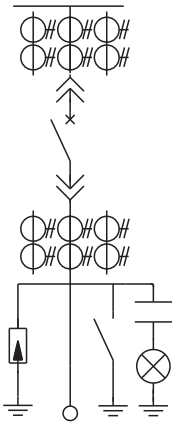
Steel construction switchgear installation foundation diagram

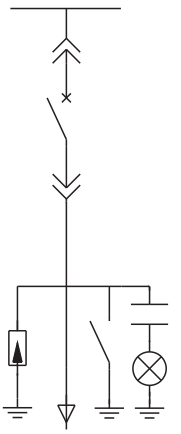
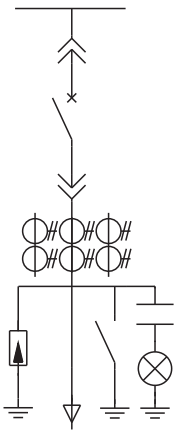
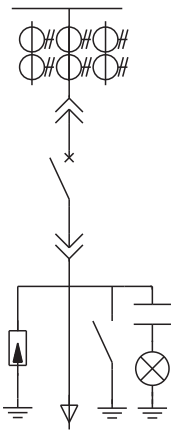
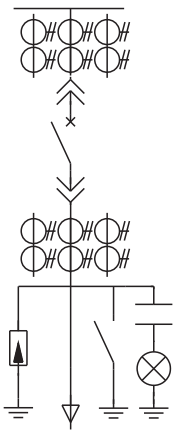


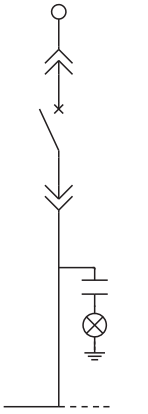
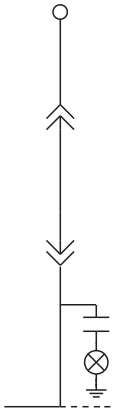
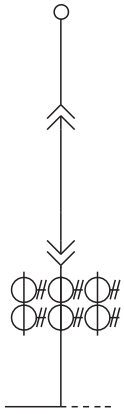
Aluminum-zinc deposited construction switchgear installation foundation diagram

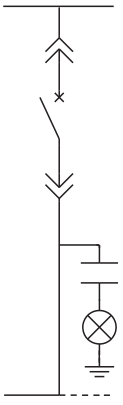
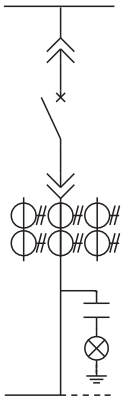
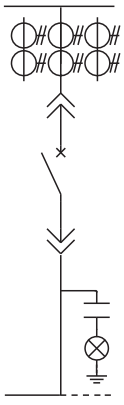
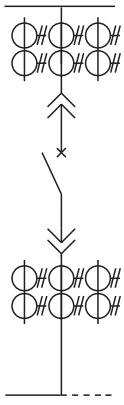


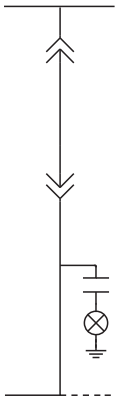
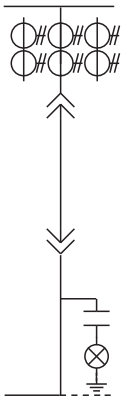
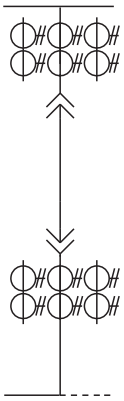
7 Single Line Diagram

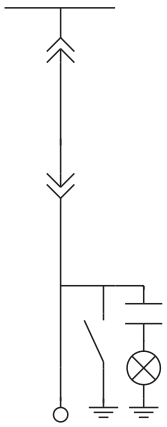
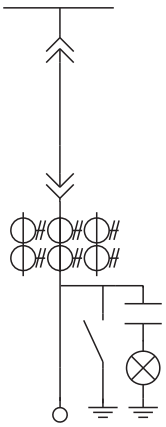
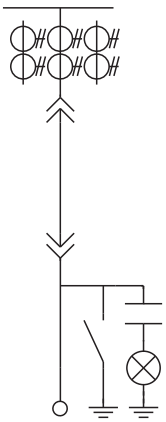
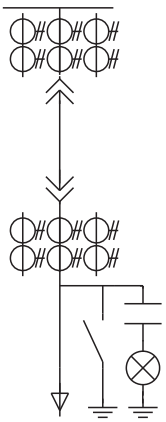
Program No.		001	002	003	004
	Single line diagram				
Main electrical components	VCB ZN85(NV3)-40.5	1	1	1	1
	CT LDJ□-35/LZZB8-35		1-3	1-3	4-6
	PT				
	HV Capacitor				
	Earthing switch	0-1	0-1	0-1	0-1
	Live Monitor	0-1	0-1	0-1	0-1
	Surge arrester	0/3	0/3	0/3	0/3
	Application	Overhead incoming and outgoing feeder	Overhead incoming and outgoing feeder	Overhead incoming and outgoing feeder	Overhead incoming and outgoing feeder

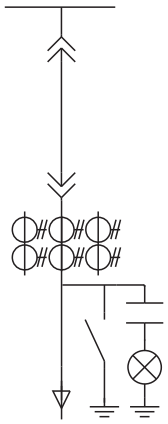
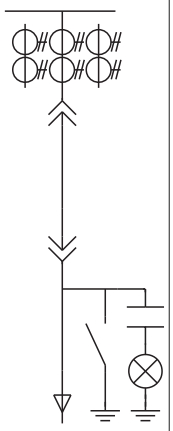
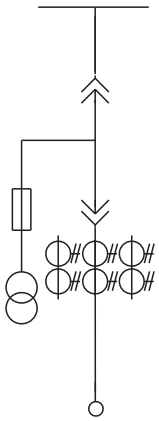
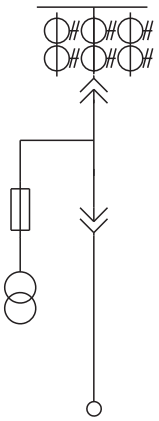
Program No.		005	006	007	008
	Single line diagram				
Main electrical components	VCB ZN85(NV3)-40.5	1	1	1	1
	CT LDJ□-35/LZZB8-35		1-3	1-3	4-6
	PT				
	HV Capacitor				
	Earthing switch	0-1	0-1	0-1	0-1
	Live Monitor	0-1	0-1	0-1	0-1
	Surge arrester	0/3	0/3	0/3	0/3
	Application	Cable incoming and outgoing feeder	Cable incoming and outgoing feeder	Cable incoming and outgoing feeder	Cable incoming and outgoing feeder

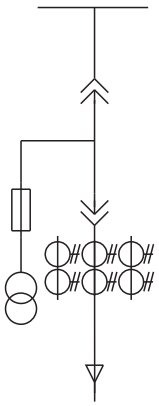
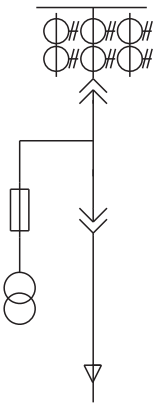
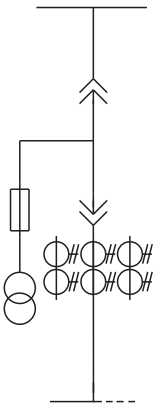
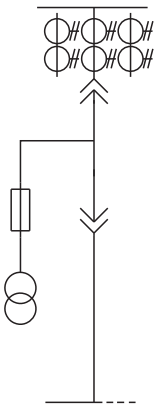
Program No.		009	010	011	012
	Single line diagram				
Main electrical components	VCB ZN85(NV3)-40.5	1	1	1	1
	CT LDJ□-35/LZZB8-35		1-3		1-3
	PT				
	HV Capacitor				
	Earthing switch				
	Live Monitor	0-1	0-1	0-1	0-1
	Surge arrester	0/3	0/3	0/3	0/3
	Application	Overhead Incoming(outgoing) feeder communicating	Overhead Incoming(outgoing) feeder communicating	Overhead Incoming(outgoing) feeder communicating	Overhead Incoming(outgoing) feeder communicating

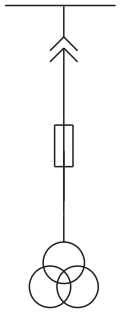
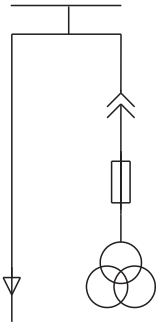
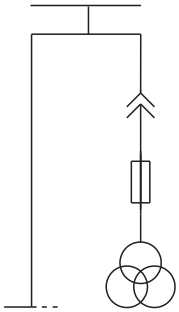
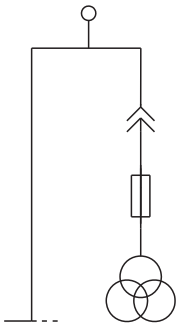
Program No.		013	014	015	016
	Single line diagram				
Main electrical components	VCB ZN85(NV3)-40.5	1	1	1	1
	CT LDJ□-35/LZZB8-35		1-3	1-3	4-6
	PT				
	HV Capacitor				
	Earthing switch				
	Live Monitor	0-1	0-1	0-1	0-1
	Surge arrester	0/3	0/3	0/3	0/3
	Application	Left (right) communicating	Left (right) communicating	Left (right) communicating	Left (right) communicating

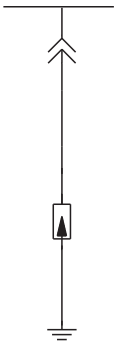
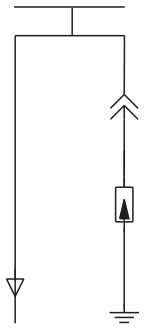
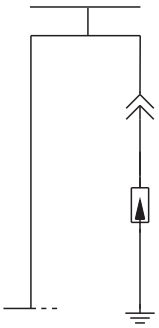
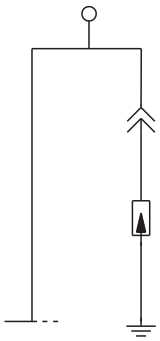
Program No.		017	018	019	020
	Single line diagram				
Main electrical components	VCB ZN85(NV3)-40.5				
	CT LDJ□-35/LZZB8-35		1-3	1-3	4-6
	PT				
	HV Capacitor				
	Earthing switch				
	Live Monitor	0-1	0-1	0-1	0-1
	Surge arrester	0/3	0/3	0/3	0/3
	Application	Left (right) communicating	Left (right) communicating	Left (right) communicating	Left (right) communicating

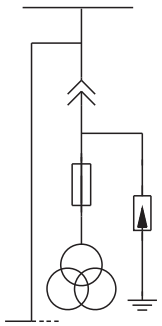
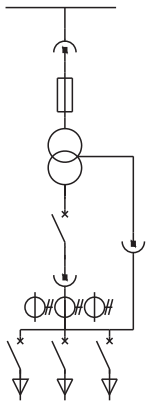
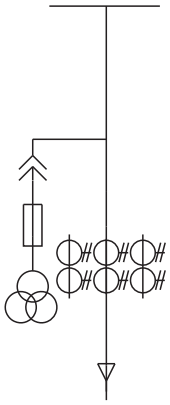
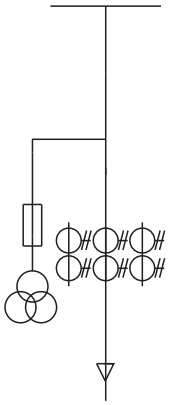
Program No.		021	022	023	024
	Single line diagram				
Main electrical components	VCB ZN85(NV3)-40.5	1	1	1	1
	CT LDJ□-35/LZZB8-35		1-3	1-3	4-6
	PT				
	HV Capacitor				
	Earthing switch	0-1	0-1	0-1	0-1
	Live Monitor	0-1	0-1	0-1	0-1
	Surge arrester	0/3	0/3	0/3	0/3
	Application	Overhead incoming and outgoing feeder	Overhead incoming and outgoing feeder	Overhead incoming and outgoing feeder	Overhead incoming and outgoing feeder

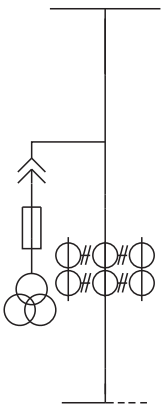
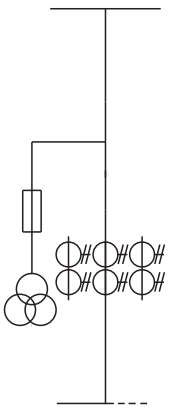
Program No.		025	026	027	028
	Single line diagram				
Main electrical components	VCB ZN85(NV3)-40.5	1	1	1	1
	CT LDJ□-35/LZZB8-35	1-3	1-3	1-3	1-3
	PT			2	2
	HV Capacitor				
	Earthing switch	0-1	0-1	0-1	0-1
	Live Monitor	0-1	0-1	0-1	0-1
	Surge arrester				
	Application	Cable incoming and outgoing feeder	Cable incoming and outgoing feeder	Measuring+ Overhead incoming and outgoing feeder	Measuring+Overhead incoming and outgoing feeder

Program No.		029	030	031	032
	Single line diagram				
Main electrical components	VCB ZN85(NV3)-40.5	1	1	1	1
	CT LDJ□-35/LZZB8-35	1-3	1-3	1-3	1-3
	PT	2	2	2	2
	HV Capacitor				
	Earthing switch	0-1	0-1	0-1	0-1
	Live Monitor	0-1	0-1	0-1	0-1
	Surge arrester				
	Application	Measuring & cable incoming feeder	Measuring & cable incoming feeder	Measuring & left/right communicating	Measuring & left/right communicating

Program No.		033	034	035	036
	Single line diagram				
Main electrical components	VCB ZN85(NV3)-40.5				
	CT LDJ□-35/LZZB8-35				
	PT	1-3	1-3	1-3	1-3
	HV Capacitor	3	3	3	3
	Earthing switch				
	Live Monitor	0-1	0-1	0-1	0-1
	Surge arrester	0/3	0/3	0/3	0/3
	Application	PT	PT & cable incoming and outgoing feeder	PT & left(right) communicating	PT overhead & left(right) communicating

Program No.		037	038	039	040
	Single line diagram				
Main electrical components	VCB ZN85(NV3)-40.5				
	CT LDJ□-35/LZZB8-35				
	PT				
	HV Capacitor				
	Earthing switch				
	Live Monitor	0-1	0-1	0-1	0-1
	Surge arrester	3	3	3	3
	Application	Surge arrester	Surge arrester & cable incoming and outgoing feeder	Surge arrester & left/right communicating	Surge arrester overhead & left/right communicating

Program No.		041	042	043	044
	Single line diagram				
Main electrical components	VCB ZN85(NV3)-40.5			1	1
	CT LDJ□-35/LZZB8-35			3	3
	PT	1-3		3	3
	HV Capacitor	3	3(XRNT)		
	Earthing switch			0-1	0-1
	Live Monitor			0-1	0-1
	Surge arrester				
	Application	PT + surge arrester and communicating feeder	Transformer	Measuring & cable incoming feeder	Measuring & cable incoming feeder
	Note		Transformer SC9-35		

Program No.		045	046		
	Single line diagram				
Main electrical components	VCB ZN85(NV3)-40.5	1	1		
	CT LDJ□-35/LZZB8-35	3	3		
	PT	3	3		
	HV Capacitor				
	Earthing switch	0-1	0-1		
	Live Monitor	0-1	0-1		
	Surge arrester				
	Application	Measuring & left/right communicating	Measuring & left/right communicating		

MV (7.2 kV～17.5kV) Metal Enclosed Switchgear Panel, Fixed Type

XGN36-12 (DXG-12) Cubicle AC Metal Enclosed Switchgear Panel, Fixed Type

1 General

1.1 Ratings: rated voltage 3.6～12kV, with VCB 50/60 Hz, rated current up to 3150A, AC 50/60Hz.
1.2 Application: applicable in the system of three-phase single busbarfor power receive and distribution.
1.3 Standards: IEC 62271-200

2 Type and Designation

X G N 36-12/□–□

- Rated short-circuit making & breaking current
- Rated current
- Rated voltage
- Design No.
- Indoor
- Fixed type
- Cubicle type

3 Working Condition

3.1 Ambient air temperature: -25℃～+40℃ (-25℃～+45℃ available as customized products)
3.2 Altitude:≤1000m
3.3 Relative humidity: Daily average ≤95%
Monthly average ≤90%
3.4 Earthquake intensity: ≤magnitude 8
3.5 Applicable in the places without corrosive or flammable gas and steam pollution.
※ Note: Customized products are available.

4 Main Technical Parameter

Item		Unit	Data
Rated voltage		kV	3.6, 7.2, 12
Rated current		A	630, 1250
Rated withstand current (peak)		kA	40, 50, 63, 80
rated short-time withstand current		kA	16, 20, 25, 31.5
Making & breaking times at rated short-circuit current		Times	50
Mechanical life		Times	10000
Rated short-circuit continuous time		S	4
Rated breaking current		kA	16, 20, 25, 31.5
Rated insulation level	1min power frequency withstand voltage	kV	(Inter-phase, phase to earth) 42 (Open contact) 48
	Linghtning withstand voltage	kV	(Inter-phase, phase to earth) 75 (Open contact) 85
Protection level			IP3X
Overall dimension (W×D×H)		mm	800×1000×2270 (ZN63A matched, recommended)
			800×1200×2270 (ZN28A matched)
			800×1300×2270 (Overheaded incoming and outoping feeder, ZN63A matched)
			800×1400×2200 (ZN63/ZN28 matched, not recommended)
			1600A (the dimensions pending for switchgears above 1600A)

5 Construction

5.1 Adopting ZN63A-12 VCB and mini DGN-12 diconnector.

5.2 Compact design and space-saving.

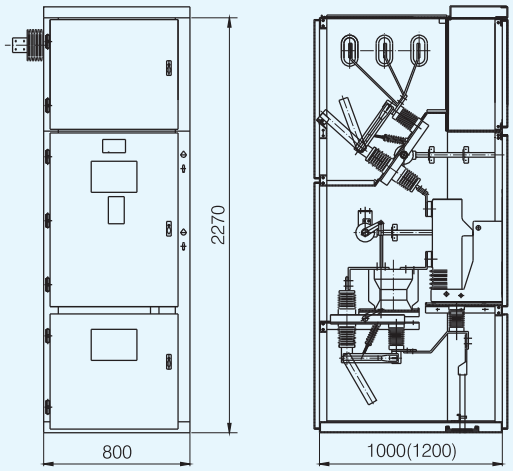
5.3 Reliable "anti-5" mechanical latch, convenient and safe maintenance, flexible operation.

5.4 Bus compartment is connected to the upside diconnector through branch bus and is fixed through a passing bushing when passing the switchgear, which can stop the nearby switchgear being influenced.

5.5 Cable compartment is of enough space for the manufacturing, installation and monitoring of cable heads. Rubber sealing plate is adopted between the compartment gutters, which can prevent moisture and little animals from entering the switchgear.

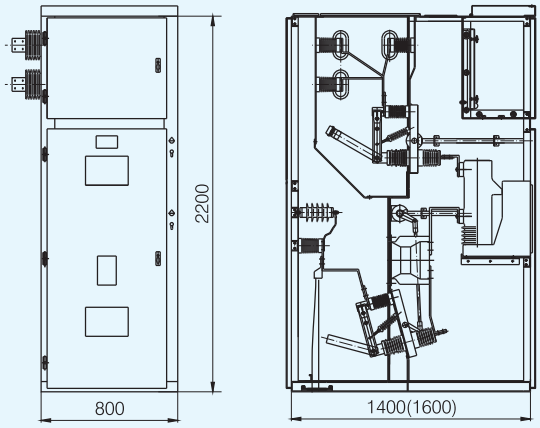
6 Overall and Installation Dimension (Unit:mm)

Switchgear type 1



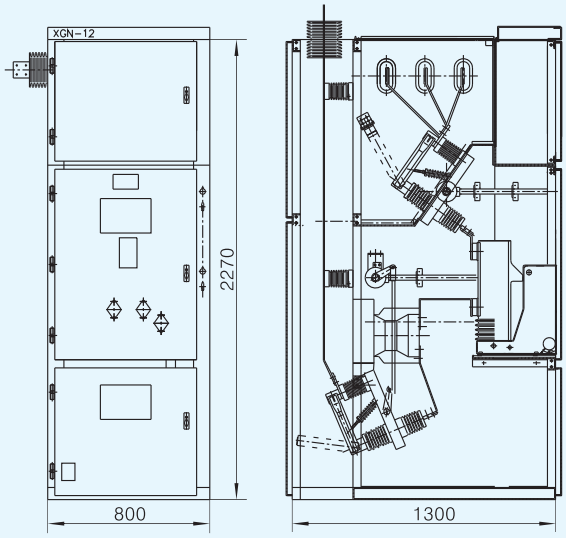
type 1

Switchgear type 2

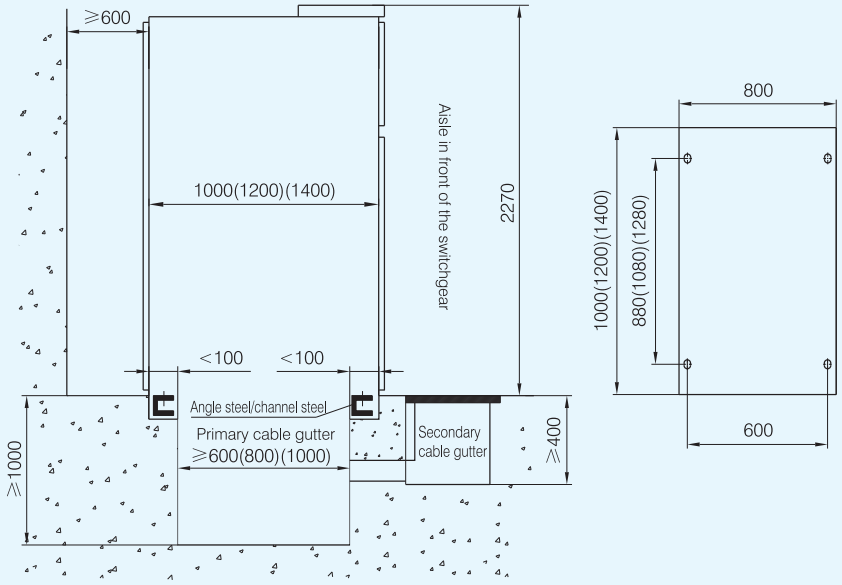


type 2

Overhead incoming switchgear overall and construction diagram



Switchgear installation foundation and dimension



7 Ordering Information

Please specify the following information when ordering:

7.1 Main circuit Plan number, main circuit wiring diagram, allocation diagram and layout diagram.

7.2 Secondary circuit diagram and terminals allocation diagram.

7.3 Model, specifications and quantity of the components.

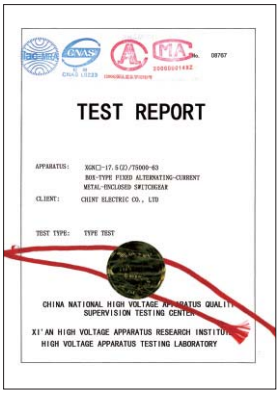
7.4 Material, type and quantity of main bus bar.

7.5 Electric equipments list.

7.6 Span and height of bus bridge, if needed.

7.7 Type and quantity of extra accessories and spare parts, if needed.

7.8 Customized products are available.



XGN□-17.5(Z)/T5000-63
Fixed AC Metal Enclosed Switchgear Panel

1 General

1.1 Ratings: rated voltage 7.2-17.5kV, rated current up to 5000A, AC50/60Hz.

1.2 Application: applicable for connecting the generator into the grid during normal operation and breaking and protecting the generator when short circuit and fault occur in the grid.

1.3 Standards: IEC 62271-200; IEC 60694

2 Type Designation

X G N □ — 17.5 (Z) / T 5000 — 63

- 63 — Rated short circuit breaking current (kA)
- 5000 — Rated current (A)
- T — Spring operating mechanism
- Z — Vacuum circuit breaker
- 17.5 — Rated voltage (kV)
- □ — Design No.
- N — Indoor
- G — Fixed
- X — Cubicle type

3 Working Condition

3.1 Ambient air temperature : -25℃～+40℃

3.2 Altitude: ≤1000m in 17.5kV system
≤2500m in 12kV system

3.3 Relative humidity: Daily average ≤95%
Monthly average ≤90%

3.4 Saturated vapor pressure: Daily average ≤2.2 kPa
Monthly average ≤1.8 kPa

3.5 Earthquake intensity: ≤magnitude 8; no frequent serious earthquake.

3.6 Applicable in places without dust, smoke, corrosive, flammable gas, vapor and salty smoke pollution.

※ Note: Customized products are available.

4 Main Technical Parameter

4.1 Main Technical Parameters of The Switchgear

Item			Unit	Data
Rated voltage			kV	7.2, 12, 17.5
Rated current of switchgear			A	5000
Rated frequency			Hz	50
Rated short circuit breaking current			kA	63
Rated short-time withstand current (3s)			kA	63
Rated withstand current (peak)			kA	173
Rated short circuit making current			kA	173
Rated insulation level	1 min power frequency withstand voltage (phase to phase, phase to earth/disconnecting open contacts)		kV	50/59
	Lightning impulse withstand voltage (phase to phase, phase to earth/disconnecting open contacts)		kV	95/110
	Power frequency withstand voltage of auxiliary & control circuit (1 min)		V	2000
Standard value of prospective transient recovery voltage of system source		Peak voltage	kV	33
		Reference time	μs	7.4
		Increasing rate	kV/μs	4.5
Percentage of DC component of rated short circuit breaking current			%	66
Rated operating sequence				CO−15min−CO
Rated out-of-step dissymmetrical breaking circuit			kA	31.5
Main circuit resistance			μΩ	≤50
Protection degree				IP3X
Weight of switchgear			kg	3300
Dimension (W×D×H)			mm	1800×2160×2763

4.2 Rated Parameters of VCB

Item			Unit	Data
Rated voltage			kV	17.5
Rated current			A	5000
Rated frequency			Hz	50
Rated short circuit breaking current			kA	63
Rated short-time withstand current（3s）			kA	63
Rated withstand current (peak)			kA	173
Rated short-circuit making current			kA	173
Rated insulation level	1 min power frequency withstand voltage (phase to phase,phase to earth/disconnecting open contacts)		kV	50
	Lightning impulse withstand voltage (phase to phase,phase to earth/disconnecting open contacts)		kV	110
	Power frequency withstand voltage of auxiliary & control circuit (1 min)		V	2000
Standard value of prospective transient recovery voltage of system source		Peak voltage	kV	33
		Reference time	μs	7.4
		Increasing rate	kV/μs	4.5
Percentage of DC component in rated short circuit breaking current			%	66
Rated operating sequence				CO−15min−CO
Rated out-of-phase dissymmetrical breaking circuit			kA	31.5
Closing time			ms	<80
Opening time			ms	<65
Breaking times of rated short circuit current breaking			times	30
Mechanical life			times	10000
Energy storage motor		Rated voltage	V	DC:220/AC:230
		Rated frequency	Hz	50/60
Closing electromagnet		Rated voltage	V	DC:220
		Rated frequency	Hz	50
Opening electromagnet		Rated voltage	V	DC:220
		Rated frequency	Hz	50

4.3 Main Parameters of GN22-15 Disconnecting Switch Sheet 3

Rated Parameter	Unit	GN22-15
Rated voltage	kV	17.5
Rated current	A	5000
Dynamic stable current	kA	173
3s hot stable current	kA	63
Main circuit resistance	μΩ	≤5

5 Construction

5.1 The main body is welded with angle steel. The front and rear frames are assembled with bent plates and are connected through bolts with the main body, which improves the strength of panel and the appearance. The switchgear is air insulated.

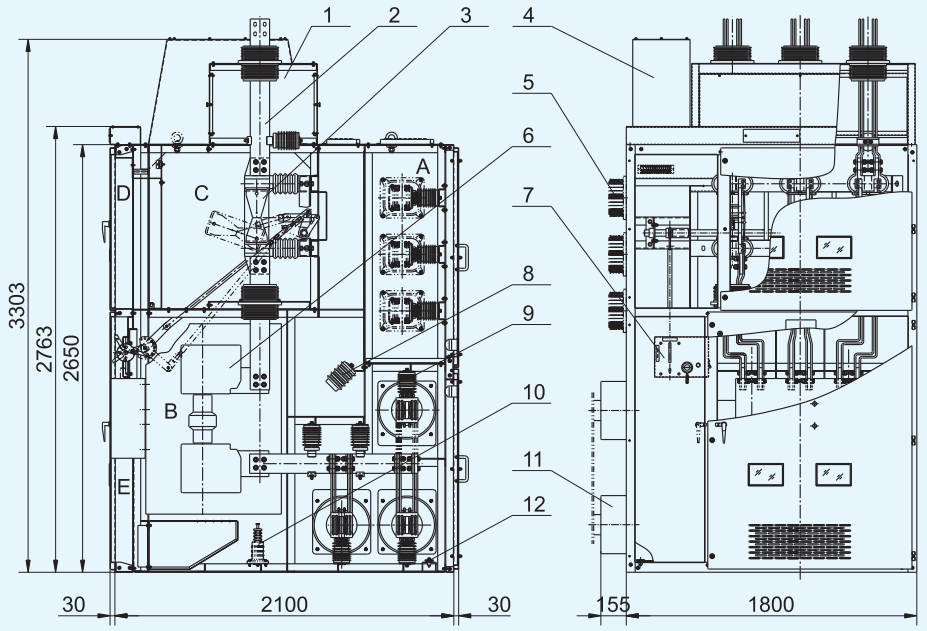
5.2 The chambers of the panel are separated with steel sheets and the metal shell is well earthed. The main component chambers are equipped with separate ventilation or pressure relieving ways.

5.3 Primary schemes including cable incoming feeder, overhead incoming feeder, bus bar linking, disconnecting, voltage transformer and arrester are also provided.

5.4 The main circuit is four-way 120mmX10mm copper bus bar. The main bus is a segment bus. The adjacent panels are separated with bus bushings, which can effectively prevent accidents from developing and support the bus bars.

5.5 There are mechanical and electric interlocking systems between the disconnector, the VCB and the panel door, which realizes the five protection interlocking functions.

Fig. 1 Construction diagram of the switchgear panel (Unit:mm)



A. Main bus bar chamber
B. VCB chamber
C. Disconnector chamber
D. Instrument chamber
E. Operating chamber
1. Bus bar incoming feeder cover
2. Bus bar
3. Disconnector
4. Air scoop
5. Bushing
6. VCB
7. Operating interlocking system
8. Sensor
9. Insulator
10. Over voltage protection device
11. Current transformer
12. Earthing bus bar

※ Note: This type of switchgear panel adopts natural air cooling.

6 Installation & Commissioning (Unit:mm)

Fig. 2 Foundation plan

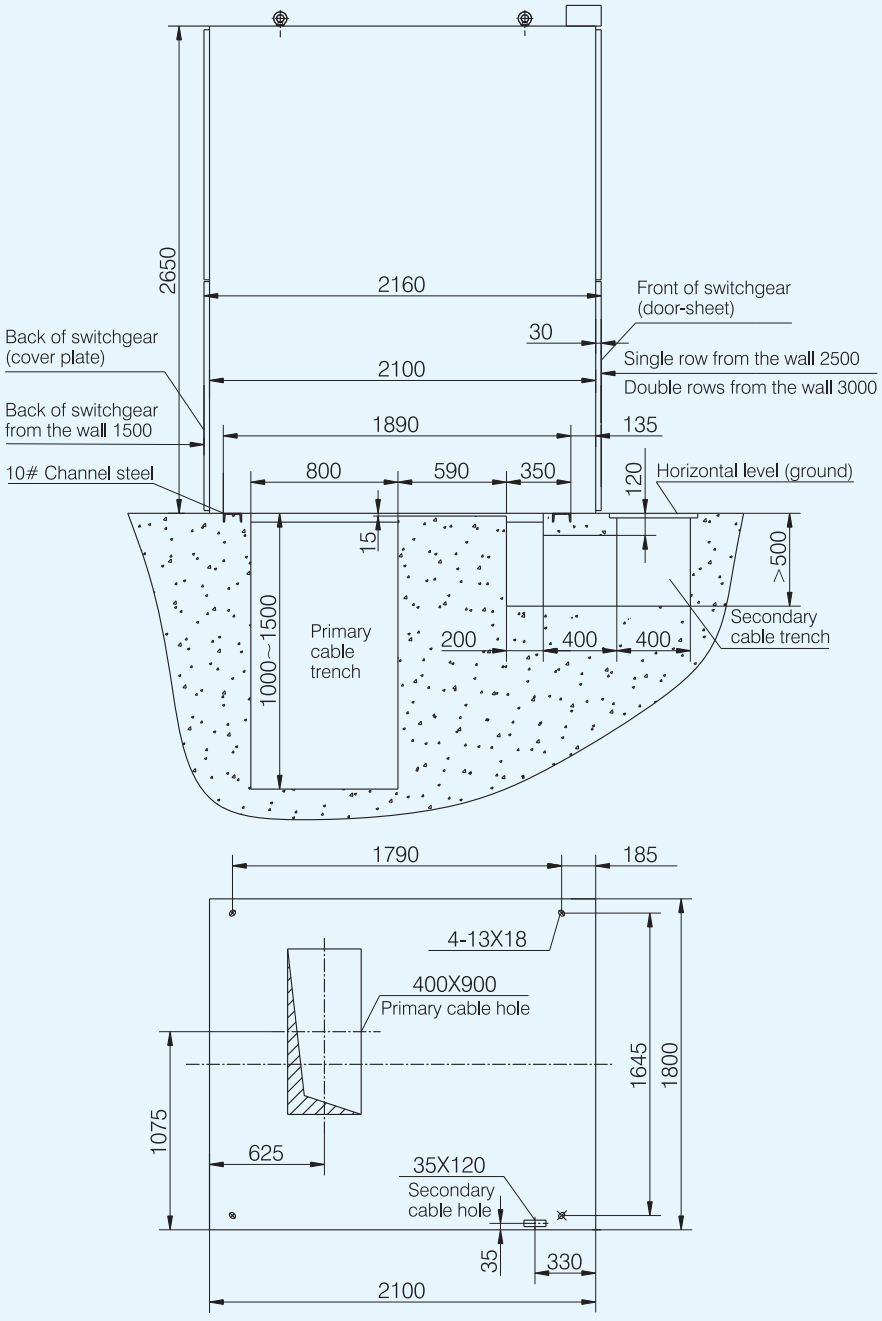
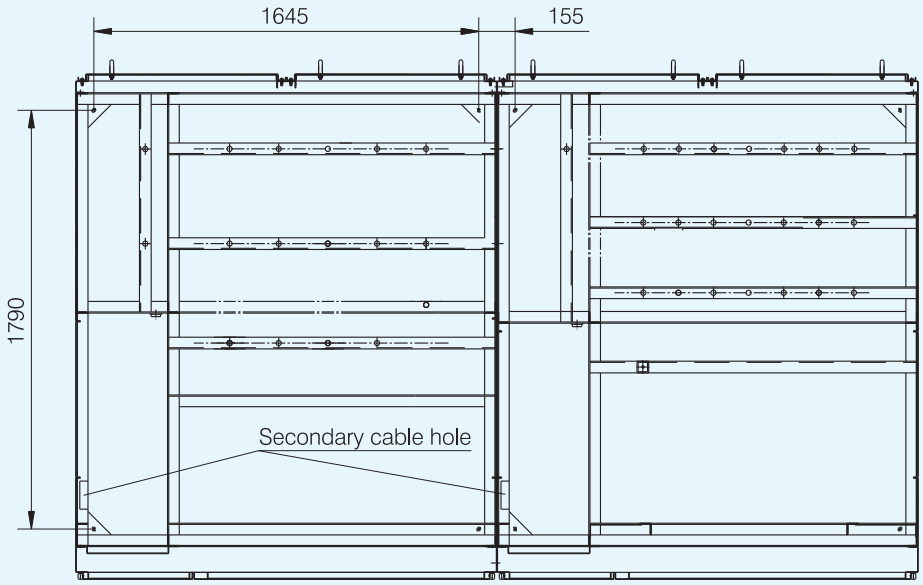
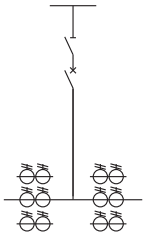
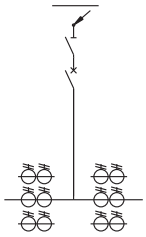
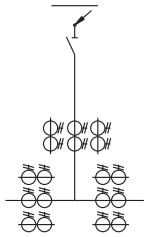
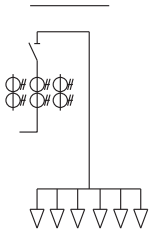
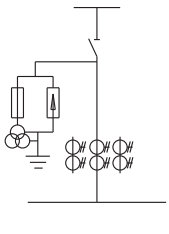
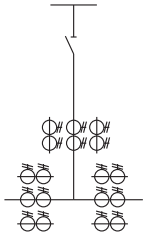
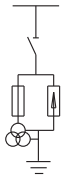
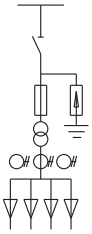


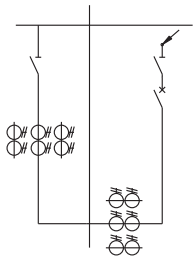
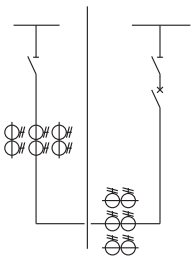
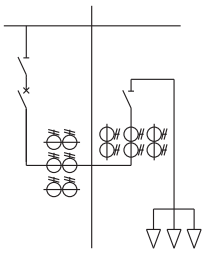
Fig. 3 Switchgear installation drawing



7 Single Line Diagram

Program No.		01	02	03	04
Single line diagram					
Rated current (A)		5000			
Main electrical components	VCB	1	1		
	GN22-15/5000	1	1	1	1
	LMZBJ-10GY	3	3	3	3
	TBP	1	1		
	RN2-15				
	JDZJ-15				
W×D×H (mm)		1800X2160X2763			
Application		Side communicating	Overhead incoming & outgoing feeder	Side communicating	Cable incoming & outgoing feeder

Program No.	05	06	07	08
Single line diagram				
Rated current (A)	5000			
Main electrical components: VCB				
Main electrical components: GN22-15/5000	1	1		
Main electrical components: LMZBJ-10GY	3	3		
Main electrical components: HY5W	3		3	3
Main electrical components: RN2-15	3		3	
Main electrical components: JDZJ-15	3		3	
W×D×H (mm)	1800X2160X2763			
Application	Measuring bus tie	Side communicating	Voltage measuring	Transformer

Program No.	06 & 02		06 & 03		03 & 08	
Single line diagram						
Rated current (A)	5000					
Main electrical components: VCB		1		1	1	
Main electrical components: GN22-15/5000	1	1	1	1	1	1
Main electrical components: LMZBJ-10GY	3	3	3	3	3	3
Main electrical components: TBP		1		1	1	
Main electrical components: RN2-15						
Main electrical components: JDZJ-15						
Width (mm)	1800	1800	1800	1800	1800	1800
Application	Overhead incoming & outgoing feeder		Bus communicating		Cable incoming & outgoing feeder	

8 Ordering Information

Please specify the following information when ordering:

8.1 For single line diagram:

8.1.1 Rated voltage, rated current and short circuit capacity of incoming power supply.

8.1.2 Rated current of each outgoing loop.

8.1.3 Type and specification of the main electrical components.

8.2 For secondary circuit diagram: rated current of operating, signal and protection circuit and specification of each electrical component.

8.3 The arrangement diagram and the layout of switchgear.

8.4 The arrangement diagram of small bus.

8.5 Type, specification and quantity of electrical components within switchgears.

8.6 Electrical equipment list.

8.7 Type and quantity of extra accessories and spare parts, if needed.

8.8 Customized products are available.

MV (12kV) Air-insulated Rain Main Unit (RMU), Fixed Type

XGN15-12(F)
XGN15-12(F•R)
Air-insulated Rain Main Unit (RMU), Fixed Type

1 General

1.1 Ratings: rated voltage 12kV with SF_6 load break swith, rated current up to 630A, AC 50/60Hz.
1.2 Application: applicable in the power distribution systems,especially suitable for application in prefabricated substation to control and protect the electric system.
1.3 Standards: IEC62271-200

2 Type Designation

X G N 15-12(F • R)

- Combination electric equipments of load switch and fuse
- Rated voltage
- Design No.
- Indoor
- Fixed type
- Cubicle type

3 Working Condition

3.1 Ambient air temperature: -15℃～+40℃ (-25℃～+45℃ available as customized products)
3.2 Altitude:≤1000m
3.3 Relative humidity:
Daily average ≤95%, daily average of vapour pressure ≤2.2kPa
Monthly average ≤90%, monthly average of vapour pressure ≤1.8kPa
3.4 Earthquake intensity: ≤magnitude 8
3.5 Applicable in the places without corrosive and flammable gas.
※ Note: Customized products are available.

4 Main Technical Parameter

Item	Unit	Data	
		XGN15-12(F)	XGN15-12(F.R)
Rated voltage	kV	12	
Rated current of main bus	A	630	
Max rated current of circuit breaker	A		125
Rated insulation level			
1min power frequency withstand voltage between phases, to earth/open contacts	kV	42/48	
Lightning impulse withstand voltage between phases, to earth/open contacts	kV	75/85	
Auxiliary and control circuit 1min power frequency withstand voltage	V	2000	
Rated frequency	Hz	50	
Rated short circuit closing current (peak)	kA	50	125
Rated withstand current (peak)	KA	50	
Rated shifting breaking current	kA		1700
Main circuit rated short time withstand current/time	kA/s	20/3	
Earthing circuit rated short time withstand current/time	kA/s	20/2	
Control circuit rated voltage	V	DC：220，AC：220	
Mechanical life	Times	2000	
Protection level		IP2X	

5 Construction

5.1 SF_6 load switch with insulated enclosure FLN36-12D and FLRN36-12D could be matched in the switchgear panel.

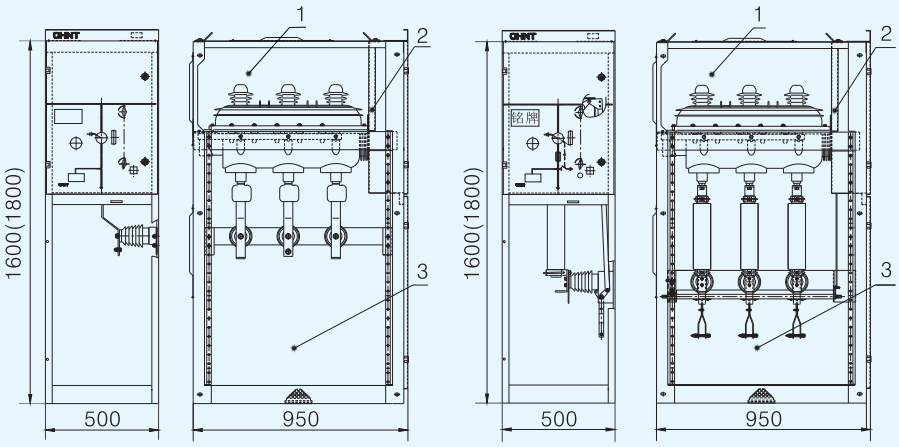
5.2 Compact design and easy operation.

5.3 There is a pressure reliefing duct at the rear of the switchgear to protect the operator when a failure occurs in the switchgear panel.

5.4 Allocation of the switchgear panel is changeable.

5.5 Reliable interlocking at the different making status of the loading switch, earthing switch to ensure the reliable operation.

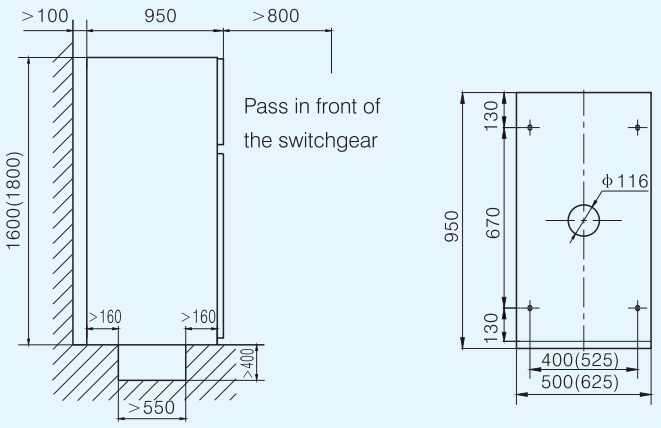
Switchgear overall dimension (Unit:mm)



Ring Main Unit (Load switchgear) Ring Main Unit (Combination switchgear)

1. Bus compartment 2. Meters compartment 3. Cable compartment

Switchgear installation dimension (Unit:mm)



Installation foundation diagram Base fixing hole

6 Ordering Information

Please specify the following information when ordering:

6.1 Main circuit diagram, busbardiagram for main circuit, allocation diagram.

6.2 Auxiliary circuit diagram and terminals allocation diagram.

6.3 Model, specifications and quantity of the components.

6.4 Spare parts and their quantity.

6.5 Customized products are available.

HXGN15A-12(F·R) Air-insulated Rain Main Unit (RMU), Fixed Type

1 General

1.1 Ratings: rated voltage 3～10kV, rated current up to 630A for load break switchgear and 125A for combined switchgear, AC 50/60Hz.

1.2 Application: applicable for power distribution, control, and protection on electric equipments as the loop power supply unit or terminal equipment.

1.3 Standards: IEC60420

2 Type Designation

H X G N 15A- 12 (F・R)

- Combined load break switch and fuse
- Rated voltage
- Design No.
- Indoor
- Fixed type
- Cubicle type
- Loop

3 Working Condition

3.1 Ambient air temperature: -15℃～+40℃ (-25℃～+45℃ available as customized products)

3.2 Altitude:≤1000m

3.3 Relative humidity:

Daily average ≤95%, daily average of vapour pressure≤22kpa

Monthly average ≤90%, monthly average of vapour pressure≤1.8kpa

3.4 Earthquake intensity: ≤magnitude 8

3.5 Applicable in the places without corrosive and flammable gas.

※ Note: Customized products are available.

4 Main Technical Parameter

Item		Unit	Data
Rated voltage		kV	12
Rated current	Load break switchgear	A	630
	Combined switchgear		125
Rated short-circuit breaking current		kA	31.5
Rated active on-load breaking current		A	630
Rated short-time withstands current		kA	20
Rated withstands current (peak)		kA	50
Rated power frequency voltage withstands	Inter-phase, to earth and to the open contact	kV	42/48
Thundering withstands voltage	Inter-phase, to earth and to the open contact	kV	75/85
Mechanical life		Times	10000
Rated take-over current		A	3150
Operating mode			Manual or automatic
Protection level			IP2X

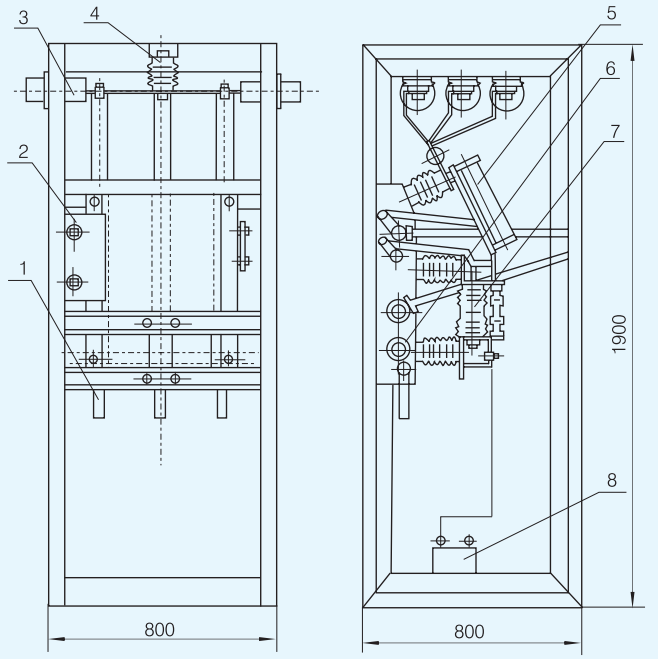
5 Construction

5.1 8MF material adopted for the switchgear, modular holes available with E=20mm.

5.2 Switch disconnector, vacuum load break switch, earthing switch and the switchgear door reliably interlocked, which could avoid miss operation.

5.3 Both manual and automatic operation are available.
5.4 There is lead sealed pin at the door of measurement chamber and meter chamber.
5.5 Prompt tripping could be realized to protect the equipments.
5.6 The design facilitate the operation at the front panel and the switchgear could be installed alongside the wall.
5.7 The switchgear is featured for its complete interlocking functions: the load break switch could be operated to the making status when the switchgear door is closed and locked and the earthing switch to the making position. The earthing switch could make or break when the load break switch is at disconnect position. When the earthing switch is at making status, input the insulation Clapboard to its position, the switchgear door then, could be opedned. The vacuum arc-extinguishing chamber and fuse are reliably connected. So as the fuse & switchgear door and insulation clapboard & the switchgear door.

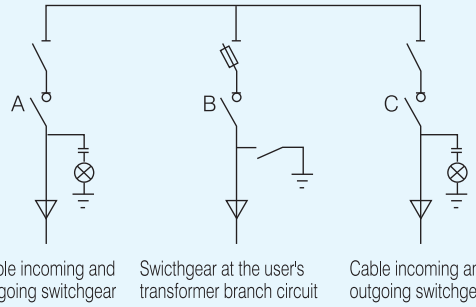
Switchgear Construction diagram (Unit:mm)



1. Earthing switch
2. Operating mechanism
3. Bushing
4. Insulator
5. Cut-out fuse
6. Spring operating mechanism
7. Load break switch
8. CT

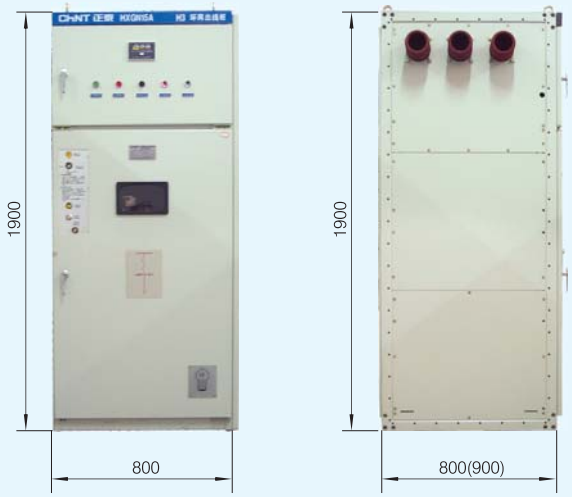
6 Circuit Power Supply Principle

The circuit power supply is composed of three basic units to separate any one of the failure line and ensure the continuous power supply through the other unit. The branch line for the user could separated and protect the transformer which could facilitate the maintenance.
The circuit power supply could be expanded as per the user's requirements to form various protection plans.

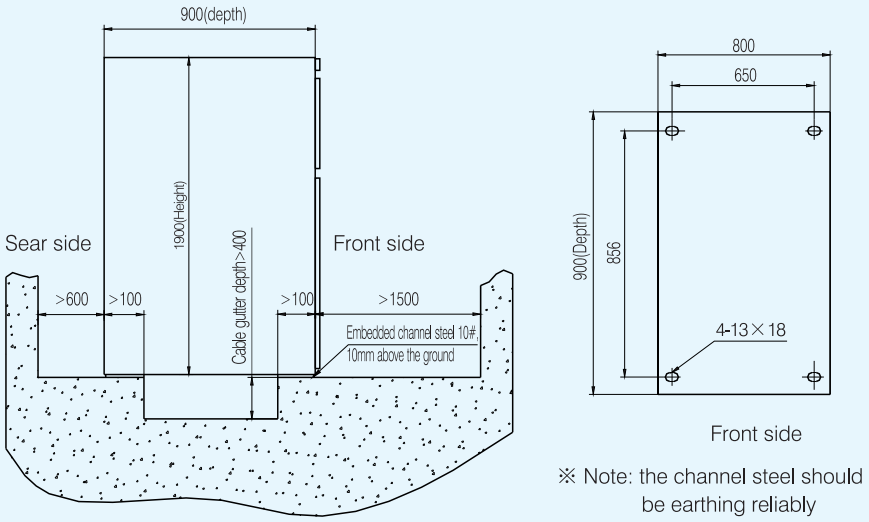


7 Overall and Installation Dimension (Unit:mm)

Switchgear overall dimension diagram



Installation foundation diagram



※ Note: the channel steel should be earthing reliably

8 Ordering Information

Please specify the following information when ordering:

8.1 Main circuit diagram and plan number or main circuit allocation diagram.

8.2 Auxiliary circuit diagram and control circuit voltage

8.3 Allocation diagram.

8.4 Customized products are available.

LV Switchgear Panel (415/690V)

NGC8 Low-voltage Switchgear Panel, Withdrawable Type

1 General

1.1 Ratings: rated voltage of main circuit up to 690V, rated insulation voltage up to 1000V, rated current up to 6300A, AC 50/60Hz.

1.2 Application: applicable in the low-voltage system of all power generation, power distribution occasions, like main and sub-power panels, distribution panels, motor power and motor control center, power system, ships, oil drilling platform, industrial end users, utility users and civil & commercial construction.

1.3 Standards: IEC 60439-1

2 Working Condition

2.1 Ambient air temperature : -5℃～+40℃

2.2 Altitude: ≤2000m; the equipment should decrease the capacity to run when the altitude is >2000m.

2.3 Relative humidity: ≤50% when at +40℃
≤90% when at +20℃

※ Note: 1. Higher relative humidity is allowed when under lower temperature.
2. Certain amount of congeal dew is allowed due to temperature changes.

2.4 Pollution grade: IP54

※ Note: Customized products are available for special application environments like tropics, earthquake region, ship and offshore, etc.

3 Main Technical Parameter

- Anti-arc design and consistent with type testing TTA.
- Protection level: IP40, IP41, IP43, IP54
- Internal partition mode from the mode 1 to mode 4, comply with IEC60439-1
- Allow front and back operation; back to back installation, double-sided operation
- Rated voltage Ue: the main circuit :up to 690V AC, auxiliary circuit: 220,380 V
- Rated insulation voltage Ui: 1000V, rated impulse withstand voltage Uimp: 12KV
- Bus rated current (In)
  - Horizontal main bus bar:
    - Rated current up to 6300A
    - Rated peak withstand current (Ipk) up to 176KA, I
    - Rated short-time withstand current (Ipk) up to 105KA, 3s
  - Vertical bus bar for fixed installation technology:
    - Rated current up to 2000 A
    - Rated peak withstand current (Ipk) up to 143KA, Is
    - Rated peak withstand current (Ipk) up to 80KA, 3s
  - Vertical bus bar for plug-in and withdraw technology:
    - Rated current up to 1500A
    - Rated peak withstand current (Ipk) up to 143 KA, Is
    - Rated peak withstand current (Ipk) up to 80 KA, 3s

- Surface treatment:
  - Supporting part: galvanized,
  - Enclosure: galvanized / powder-coated
  - Door: powder coating

- Contour dimension:
  - Height: 2200, 2400;
  - Width: 400, 600, 800, 1000, 1200;
  - Depth: 600, 800, 1000, 1200.

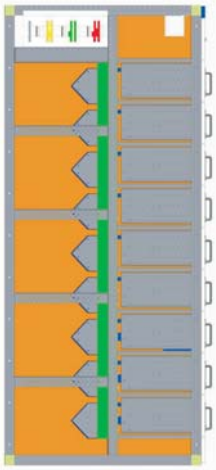
- Free maintenance and long service life
  - Frame and metal components adopt imported aluminum panels and high-quality zinc-galvanized steel, with excellent surface protection to anti-scratch.
  - Skeleton using flexible processing technology to ensure machinability of components, and can ensure the accuracy and strength.
  - Connection parts of frame adopt new tapping screw technology to ensure assembly accuracy, all framework components are maintenance free.
  - Metal frame ensures a good grounding continuity.
  - All the insulation parts use of anti-aging retardant materials.

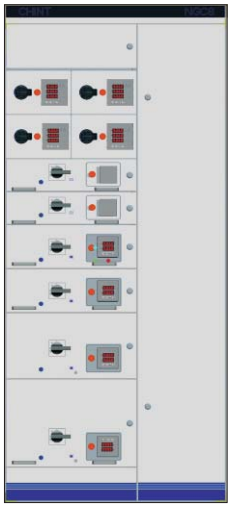
4 Construction

- Different standard components can be installed to achieve high flexibility.
- Modular design adopted to meet different working environment and achieve high protection degree and internal partition mode.
- Advanced materials adopted to maximize the prevention of arc fault, and can ensure to crush out the arc in the shortest time.
- The insulation materials do not contain CFC and halogen which realizes high flame retardant performance.

5 Advantage

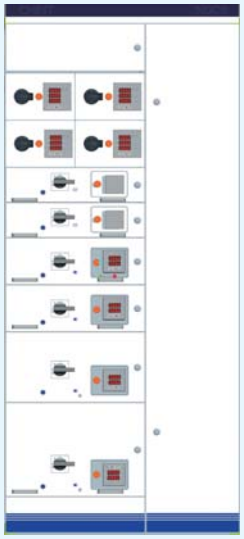
- Full series type
- Compact structure
- The cabinet can be installed back to back
- Economic distribution circuit layout
- Arc prevention design
- Meet shake and impact resistance requirements
- Convenient to update
- Maintenance free
- High operation continuity and reliability
- High security
- Best temperature control function
- Intelligent system



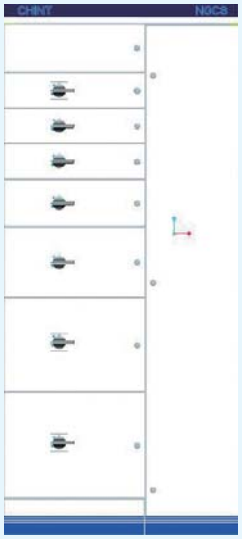


6 NGC8 Cabinet Type

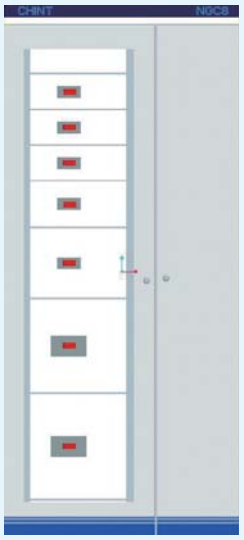
Fig 1



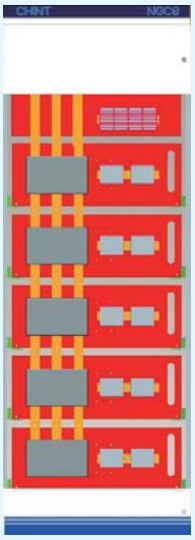
Withdrawable type



Plug-in type



Fixed separated type



Capacitor type

7 Framework

7.1 Main Feature

- Switchgear panel skeleton adopt aluminum connection and tapping screw technology, which is suitable to combine into different type base on relevant module specifications according to actual needs.
- Materials of switchgear panel adopt aluminum and zinc-galvanized steel; Skeleton using flexible processing technology to ensure accuracy and strength; Good grounding continuity.

7.2 Enclosure

- Door plate: the front of switchgear panel uses one or more doors to seal. All the doors can choose to open from left or right. Spring door lock guarantees the safety in lock and can balance the pressure when gas produced.
- Top plate and bottom plate are designed based on the layout of outgoing feeder according to actual protection degree.
- Top plate has explosion-proof function.

7.3 Back and Side Plate

- Seal plate used when the switchgear is installed against the wall; plate that can be opened is adopted when the outgoing feeder is at the back; side plates are made of steel.

7.4 Drawer Unit

- Drawer cabinet consists of drawer unit compartment, outgoing feeder terminal compartment, horizontal cable compartment and horizontal bus compartment, all components are housed in the drawer unit.
- Drawer specifications: 6E/4, 6E/2, 4E, 6E, 8E, 12E, 16E, 20E, 24E (E=25). Maximum current is up to 630A.

6E/4 Drawer

6E/2 Drawer

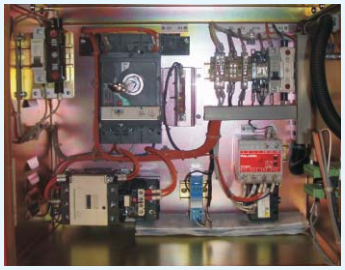
6E Drawer

8E Drawer

16 Drawer

8E Plug-in unit

16E Plug-in unit



Plug-in 200A

Plug-in 400A

Miniature circuit breaker (MCB)

Fixed separation program

8 Intelligent Control System

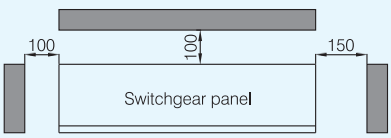
8.1 Advanced computer technology, network communication technology and embedded software and hardware technology adopted.

8.2 Connect with different intelligent devices IED (secondary electrical equipments) through monitoring center and monitoring stations.

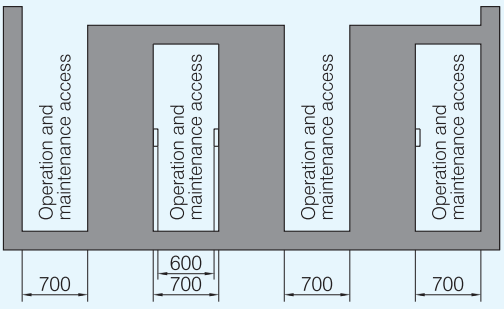
8.3 Remote monitor & control of primary electrical equipments.

9 Installation and Transportation

- The following distance between switchgear panel and obstacle must be guaranteed:



- Operation and maintenance access

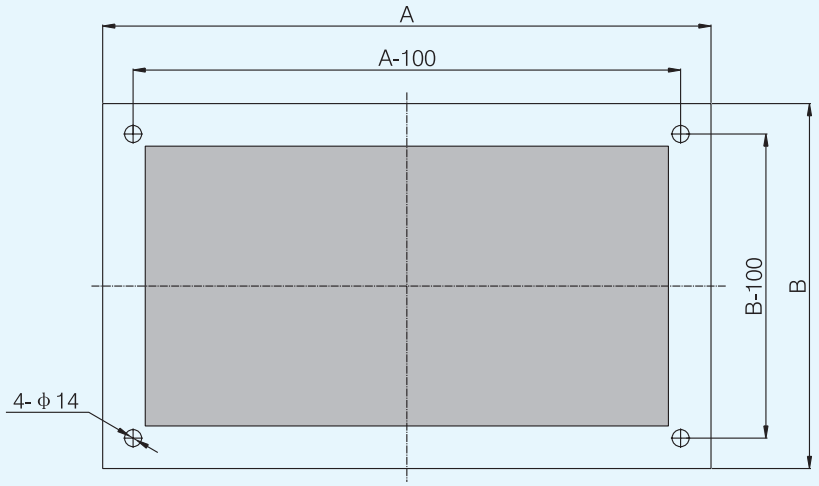


- The corresponding derating factors when installation higher than 2000m

Installation location height (m)	Derating factor
2200	0.88
2400	0.87
2500	0.86
2700	0.85
2900	0.84
3000	0.83
3300	0.82
3500	0.81
4000	0.78
4500	0.76
5000	0.74

- The distance between the roof surface of the switchgear panel and obstacles should be at least 400mm.
- The door should be able to open at least angle 90° .
- Transportation units could be one or more switchgears but all the units must be fixed on one unified foundation.

Floor installation size



A- Cabinet width, B- Cabinet depth, outgoing feeder can be arranged in the shaded part.

MNS Low-voltage Switchgear Panel, Withdrawable Type

1 General

1.1 Ratings: rated voltage 690/1000V, rated current up to 5000A, AC 50/60Hz.
1.2 Application: applicable in the low-voltage system of factories, etc. power distribution and motor control systems.
1.3 Protection level: Ip40, Ip43, Ip51, Ip54
1.4 Standards: IEC 60439-1

2 Working Condition

2.1 Ambient air temperature: -5℃～+40℃ (-25℃～+45℃ available as customized products)
2.2 Altitude:≤2000m
2.3 Relative humidity: ≤50% when at +40℃.
≤90% when at +20℃.
2.4 Applicable in the places without danger of fire and explosion, chemical pollution, corrosive and flammable gas.
2.5 Pollution grade: 3
2.6 Indoor installation
※ Note: Customized products are available.

3 Main Technical Parameter

3.1 Electric Data
- Rated insulation voltage: 690/1000V
- Rated operational voltage: 400V / 690V
- Rated frequency: 50/60Hz
- Rated impulse withstands voltage: 8kV
- Rated voltage of auxiliary circuit: AC380/220V, DC110/220V
- Over-voltage grade: III
- Rated current: ≤5000A
- Rated current of horizontal bus bar: ≤5000A
- Rated current of vertical bus bar: 1000A

3.2 Mechanical Item
- Incoming and outgoing item: Cable, Bus duct, Cable bridge.
- Cable incoming and outgoing: From top and bottom of the switchgear panel.
- Connection mode: From front and back side of the switchgear panel.
- The functional units completely separated or partially separated.

3.3 Switchgear Dimension
- Height (mm): 2200
- Width (mm): 600, 800, 1000
- Depth (mm): 600, 800, 1000
- Surface processing:
- Surface color: 5Y8/1

3.4 Horizontal Bus Bar
- Rated short-time withstand current: 50/80/100kA
- Rated peak withstand current: 105/176/220kA

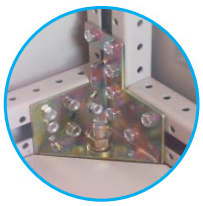
3.5 Vertical Bus Bar
- Rated short-time withstand current : 50kA
- Rated peak withstand current: 105kA

3.6 Earthing System: TT, IT, TN-S, TN-C-S

※ Note: 1. For switchgear of IP54, the min. depth is 728mm.
2. For easier busbar installation, depths of the switchgears should be unified. If the depths are not unified, a busbar exchange switchgear with depth of 400mm should be added.
3. The depth of the switchgear should be ≥ 800mm, if there is incoming and outgoing of busbarbridge and channel.
4. Customized products are available per your requirements.

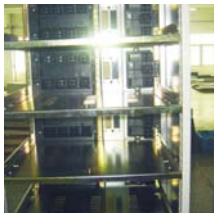
4 Main Feature

4.1 For easier installation at site, there is special cable channel and fixing parts, as well.



4.2 The strength of the switchgear is ensured as special structure and connection mode are adopted.

4.3 The operation status of each drawer is accurately fixed and clearly indicated. Max 3 locks could be used at each status.



4.4 The drawer is directly connected to the L type vertical bus bar, which is simple and reliable.

5 The Internal Allocation

There are four independent compartments inside the switchgear:

5.1 Horizontal Bus Compartment

The horizontal bus is at the rear side of the switchgear for front side outgoing. It can also be installed at the top of the switchgear.

5.2 Vertical Bus Compartment

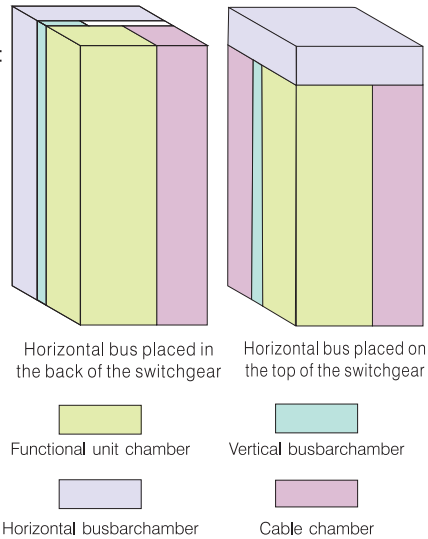
Installed in the special hermetic functional plate to ensure high reliability. When the drawer units is drawn out, the protection degree of the electrified part is IP20.

5.3 Functional Unit Compartment

Drawer is unit or fixed separating unit.

5.4 Cable Compartment

The compartment is at the right and the front side for front outgoing, at the right and the rear side for rear outgoing.



6 Construction

6.1 Frame

- C type material adopted for the main frame. There are mounting holes with E=25mm on the main frame.
- The switchgear is made of 2mm cold-rolled steel plate or zinc-coated plate.

6.2 Shell

The following functional plates could be installed for protection, as per your requirements.

- Front side: transparent glass door, normal plate, drawer plate and ventilation door
- Rear side: the rear door, the screw fixed sealing plate
- Lateral side: screw fixed lateral plate
- Top: top plate with ventilation holes, outgoing rings or flange plate for top outgoing.
- Bottom: bottom plate
- Inter-switchgears: complete clapboard adopted for the separation

7 Functional Unit

7.1 Drawer

- The drawer is composed of several functional parts with mechanical operating mechanism, which ensure positions of making, testing, breaking and withdrawing and the drawer could be locked at the different positions. The indication, control and human-computer interface are integrated at the front panel.
- The drawer could be moved to the positions of making, testing, breaking and withdrawing accurately through operating handle and the interlock. The different positions could be indicated on the front panel, as well.
- The reliability could be ensured as the drawer is locked when the circuit breaker makes.
- The drawer panel could be opened with special tool.
- The drawers are independent as they are separated.
- The drawers are exchangable.
- The outgoing side is connected with the fixed commutator. Special secondary connection parts adopted for the secondary connection,
- There are rails and wheels for different drawers for the smooth moving of the drawer and saving of the operating force.
- Driving mechanism could be added for the drawers as per the height of the drawer and the circuit current.
- The drawer unit is particularlly good for the control of motor. For distribution circuit, please select on your requirements.

7.2 Separated Functional Units, Fixed Type (based on fixed type or plug-in type components)

- Applicable for distribution and motor control circuit, which is featured simple operation and reliable separation.
- The plug-in type components could be drawed out for maintenance without cutting off the power supply.
- Through the interloack between the operating mechanism and the operating handle, the door could not be opened when the circuit breaker makes.
- When the components within the functional units have to be set and examined, unlock the door with the unlocking tools.

7.3 Functional Units, Withdrawable Type

- The components are installed on the drawer base, with four positions, working, testing, breaking and withdrawable. The four positions could be indicated and locked.
- The protection degree up to IP20 at different positions.
- The maintenance is simplified. It is applicable for the incoming, busbartie and distribution circuit.

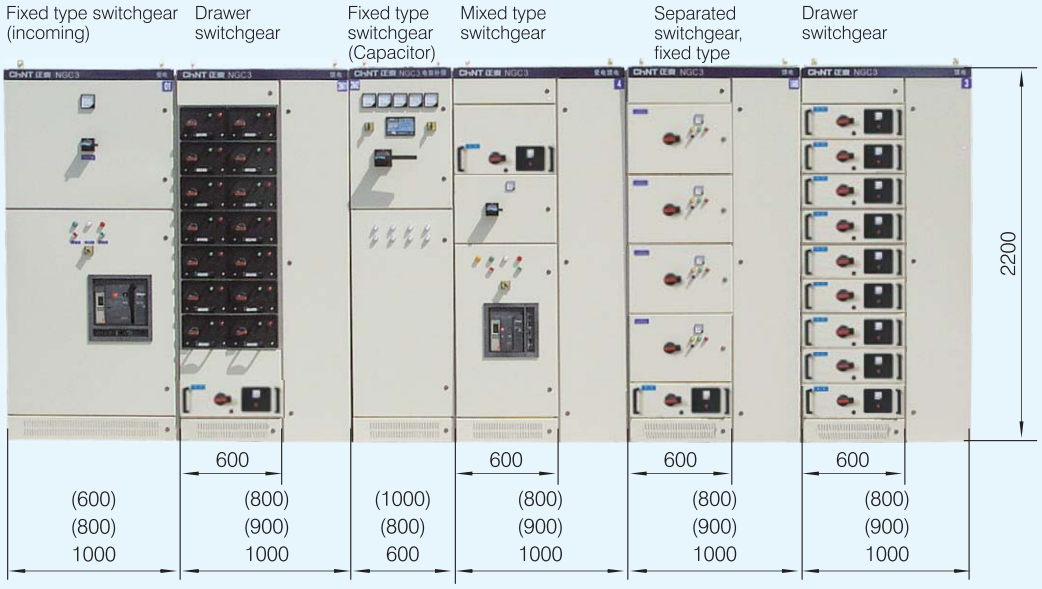
Contact wire

Adapter pieces

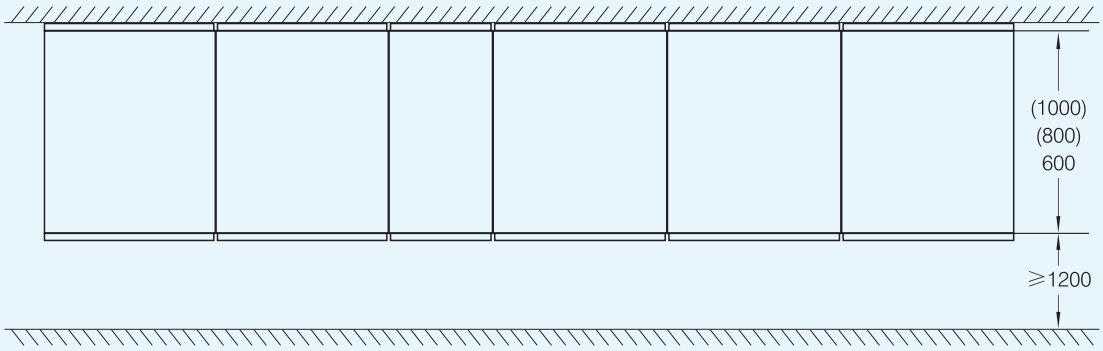
Modular plug

Adapter pieces

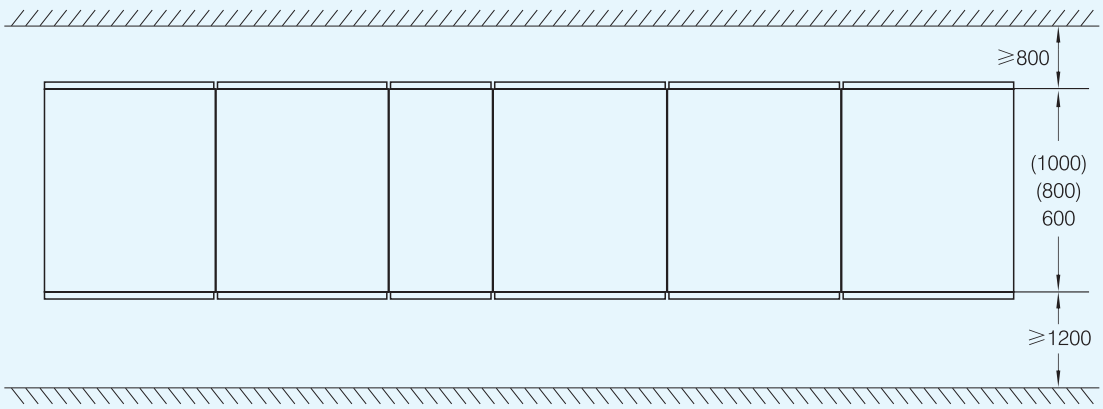
8 Overall and Installation Dimension (Unit:mm)

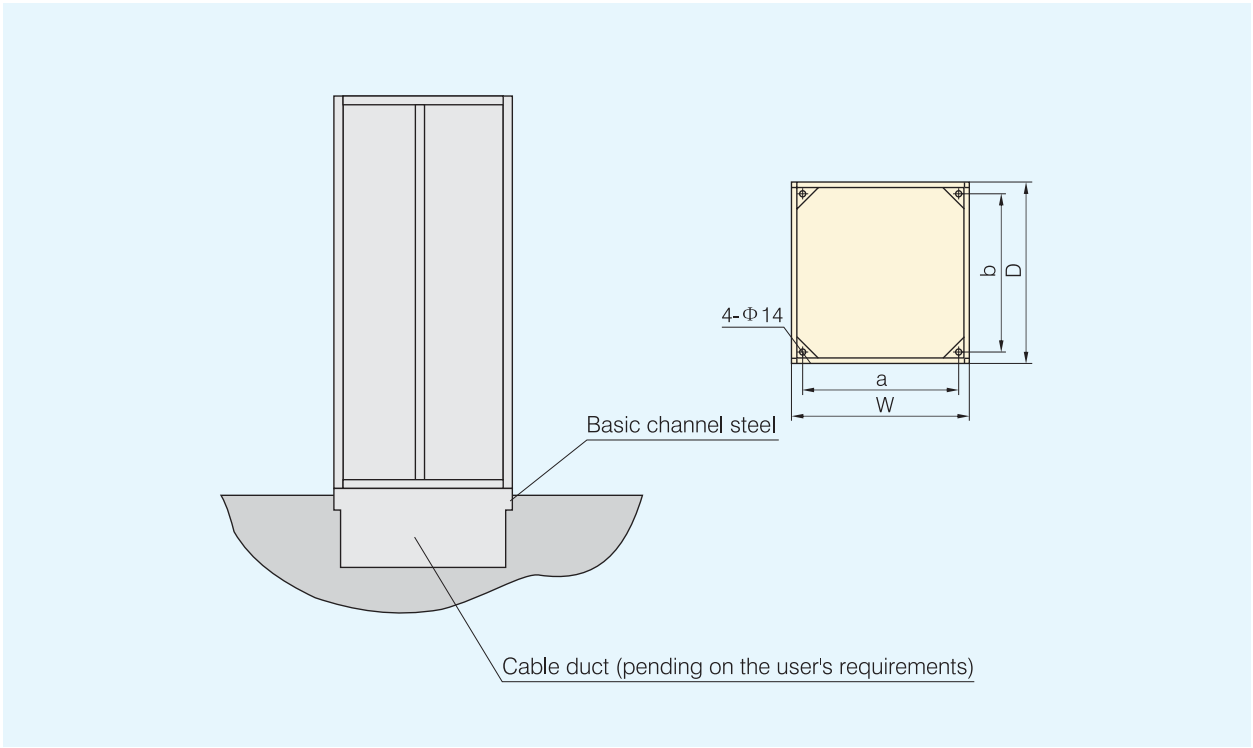


Front connection (installed alongside the wall)



Rear connection (not installed alongside the wall)





Fixed Type Switchgear

Width	Depth	a	b	Note
1000, 800, 600	600, 800, 1000	W-100	D-100	
400*	800, 1000	W-100	D-100	

* Mainly for connection of bus bars within switchgears of varied depths

Drawer Switchgear

Width	Depth	a	b	Note
1000, 900	600, 800, 1000	W-100	D-100	Front outgoing
600, 800	800, 1000	W-100	D-100	Rear outgoing

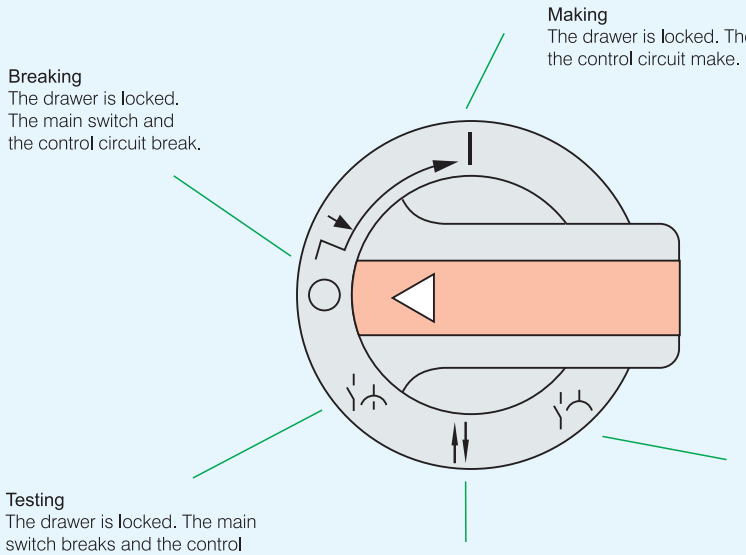
※ Note:Drawer swithgear with glassdoor:min width 650 mm,min depth 700 mm.

Fixed Separating Switchgear

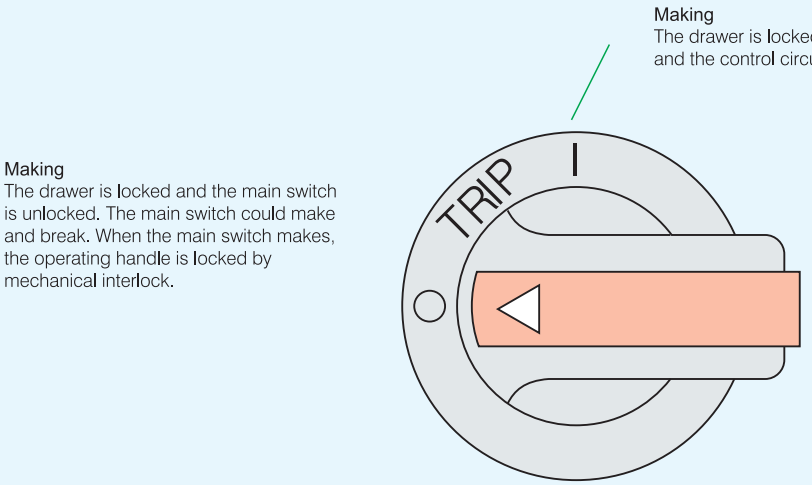
Width	Depth	a	b	Note
1000, 900	600, 800, 1000	W-100	D-100	Front outgoing
600	800, 1000	W-100	D-100	Rear outgoing

9 Function of Handle

8E/4, 8E/2Handle functional diagram



6E and above unit handle functional diagram



10 Switchgear Panel with Glass Door

Fixed separating switchgear panel

Drawer switchgear panel

GGD Low-voltage Switchgear Panel, Fixed Type

1 General

1.1 Ratings: rated voltage 400V, rated current up to 3150A, AC 50/60Hz.

1.2 Application: applicable for the power receive, distribution and control of lighting and distribution equipments, etc.

1.3 Standards: IEC60439-1

2 Working Condition

2.1 Ambient air temperature: -5℃～+40℃; daily average ≤ +35℃.
(-25℃～+45℃ available as customized products)

2.2 Altitude:≤2000m

2.3 Relative humidity: ≤50% when at +40℃
≤90% when at +20℃

2.4 Applicable in the places without danger of fire and explosion, chemical pollution, corrosive and flammable gas.

2.5 Inclination ≤ 5°

※ Note: Customized products are available.

3 Technical Parameter

3.1 Main Technical Data

Type	Rated voltage(V)	Rated current(A)		Rated short-circuit breaking current(kA)	Rated short-circuit withstand current(1s)(kA)	Rated peak withstand voltage(kA)
GGD-1000-15	400	A	1000	15	15	30
		B	600(630)			
		C	400			
GGD-1600-30	400	A	1500(1600)	30	30	63
		B	1000			
		C	600			
GGD-3150-50	400	A	3150	50	50	105
		B	2500			
		C	2000			

3.2 Main Bus

Single copper busbaradopted when the rated current ≤1600A. Double copper busbaradopted when the rated current >1600A. Brushing & anodizing process adopted which is better than traditional zinc-coated process.

3.2.1 Selection of Horizontal Bus

Rated current(A)	Specification of copper bus bar(mm)
400	40×4
630	50×5
1250	60×10
1600	80×10
2000	2×(60×10)
2500	2×(80×10)
3150	2×(100×10)

3.2.2 Selection of Neutral Earthing Bus

Cross section of phase conductor(mm^2)	Cross section of PE(N) conductor(mm^2)
500～720	40×4
1200	50×5
＞1200	60×10

3.3 Selection of Electrical Components

3.3.1 With flexible installation of GGD, variety of electric components can be easily installed in it. Such as CHINT NA1 intelligent circuit breaker, NM1 plastic shell circuit breaker, soft-start circuit, and inverter.

3.3.2 HD13BX and HS13BX disconnectors are easy to operate and safe for maintenance with visible open contacts. It is easy for installation of QA, QP and GL diconnectors.

3.3.3 PMJ and AMJI series bus clips of high intensity can be installed to ensure dynamic Stability.

4 Construction

4.1 The accuracy and quality of the switchgear could be ensured as the framework parts and special parts supplied by CHINT. Modular design of the dimensions concerning (E=20mm), which has cut production time and enhanced efficiency.

4.2 The heat dispensation channel at the top and bottom of the switchgear formulate a ventilation loop to dispens the heat.

4.3 Easy for installation and dismantling.

4.4 The switchgear is with perfect earthing protection system.

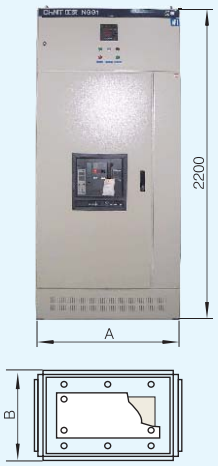
4.5 The cover of the switchgear could be removed for installation and adjustment of the main bus bar. There are also rings for lifting and delivery of the switchgear.

4.6 The protection degree is IP30. As per your requirements, switchgears with protection degree of IP20～IP40 are available.

4.7 Flexible circuit plans are available.

5 Overall and Installation Dimension (Unit: mm)

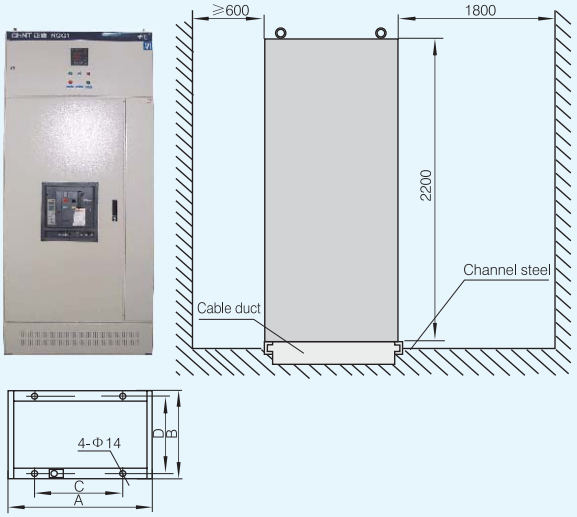
Overall dimension



(mm)

Product code	A	B
06	600	600
06A	600	800
08	800	600
08A	800	800
10	1000	600
10A	1000	800
12	1200	800

Dimension



(mm)

Product code	A	B	C	D
06	600	600	500	500
06A	600	800	500	700
08	800	600	700	500
08A	800	800	700	700
10	1000	600	900	500
10A	1000	800	900	700
12	1200	800	1100	700

6 Ordering Information

Please specify the following information when ordering:

6.1 The full model, including main circuit plan and auxiliary circuit plan.

6.2 The diagram of main circuit system allocation

6.3 Inner allocation diagram of the switchgear

6.4 Electric diagram of auxiliary contact

6.5 Name, model, specification and list of adopted components

6.6 Customized products are available.

LV Control Signal Panel

NGZ2(GZD(W))DC Power Supply Panel

1 Application

1.1 The DC power supply panel serves in power generation plants and substations to function as power supply needed for making & breaking closing of high-voltage.

1.2 It also serves as power supply in such occasions as metallurgical industry, railway, mine, petrochemicalindustry, post, telecom, hospital, bank, hotel, computer network and so on.

1.3 Standards: IEC 61204

2 Type Designation

N G Z 2-□-□/□

- Rated Voltage
- Capability of battery
- Program No.
- Design No.
- Direct Current
- Full-sealed Switchgear
- Company Code

Type	Discription	Specification	Application
NGZ2-30-□/□	One battery, Single bus with sections, Two float-charging devices with double out-put wires charging, No pressure-reducing circuit	10	Power plant or large substation
NGZ2-31-□/□	One battery, Single bus, Two float-charging devices with double out-put wires charging, No pressure-reducing circuit	10	Power plant or large substation
NGZ2-32-□/□	One battery, Double bus with sections, Two float-charging devices with double out-put wires charging	20	12kV-220kVsubstation and small or medium power plant
NGZ2-33-□/□	One battery, Double bus, Two float-charging devices with double out-put wires charging	20	12kV-220kVsubstation and small or medium power plant
NGZ2-34-□/□	One battery, Double bus with sections, Two float-charging devices with triple out-put wires charging	20	12kV-220kVsubstation and small or medium power plant
NGZ2-35-□/□	One battery, Double bus, Two float-charging devices with triple out-put wires charging	20	12kV-220kVsubstation and small or medium power plant
NGZ2-40-□/□	Two batteries, Single bus with sections, Two float-charging devices with double out-put wires charging, No pressure-reducing circuit	10	Important power plant or large substation
NGZ2-41-□/□	Two batteries, Double bus, Two float-charging devices with double out-put wires charging	12	12kV-220kVsubstation and small or medium power plant
NGZ2-42-□/□	One battery, Double bus with sections, Three float-charging devices with double out-put wires charging	10	Important power plant or large substation
NGZ2-43-□/□	Two batteries, Double bus, Two float-charging devices with triple out-put wires charging	12	12kV-220kVsubstation and small or medium power plant

3 Working Condition

3.1 Ambient air temperature: -5℃～ +40℃

3.2 Altitude: ≤2000m (you can consult with us if it is over 2000m)

3.3 Relative humidity: ≤ 90% when at 20±5℃

※ Note: Customized products are available.

4 Main Technical Parameter

4.1 Input power voltage: Three-phase AC 380V±10%, 50Hz±5%.

4.2 Rated voltage of output DC: 48V; 10V, 220V.

4.3 Rated current of output DC: 5A, 8A, 10A, 15A, 20A, 30A, 40A, 50A.

4.4 Rated capacity of battery: 10Ah, 20Ah, 38 Ah, 40 Ah, 50 Ah, 60 Ah, 65 Ah, 100 Ah, 150 Ah, 200 Ah, 250 Ah, 300 Ah.

4.5 Voltage Regulation Range

Rated voltage of output DC	48V	110V	220V
Regulation range of float-charging voltage	43~57	99~130	198~260
Regulation range of average-charging voltage	54~62	125~140	198~286
Regulation range of main-charging voltage	43~70	99~162	187~310

4.6 Output DC Current Regulation Range：0~100% of rated value.

4.7 Steady voltage accuracy: <1%.

4.8 Steady current accuracy: <1%.

4.9 Operating Way: Continuous work.

4.10 Efficiency: >90%.

4.11 Level of security: IP20~IP30

5 Main Function

5.1 Complete Specifications

This series contains hundreds specifications classified to ten types, it can completely meet the DC power needs of large, medium or small power plants, substations and other sectors.

5.2 Reliable Operation

Automatically switch between two DC input circuit. This kind of product has two float-charging devices, reserving for each other. They can switch conveniently.

5.3 Steady Operation

Good anti-jamming performance, high steady voltage and steady current accuracy, small ripple coefficient.

5.4 Long Life For Battery

It can charge and float-charge the battery according strictly to the charging curve. This can help to avoid over-charge or less-charge.

The micro-computer controlling type is with the battery inspecting function.

5.5 Multi-protection

It can do tracking detection to all working points, combining software protection with hardware protection. The insulation inspecting device can inspect the insulation conditions of buses anytime.

5.6 Moving Communicating

The micro-computer controlled DC power supply switchgear can communicate with the upper micro-computer, implementing the centralized monitoring and unattended.

6 Product Specification (The Lead-acid Maintenances-free Battery)

Model	Rated battery capacity (Ah)	Rated output voltage of battery (V)	Rated current of controlling bus (A)	Impacting current of closing bus (A)	Number of panels
NGZ2-20/220	20	220	5	60	2
NGZ2-38/220	38	220	5	100	2
NGZ2-50/220	50	220	8	120	2
NGZ2-65/220	65	220	10	120	2
NGZ2-100/220	100	220	10	240	2~3
NGZ2-150/220	150	220	15	480	3~4
NGZ2-200/220	200	220	20	480	3~4
NGZ2-300/220	300	220	30	600	4~5
NGZ2-20/110	20	220	5	60	2
NGZ2-38/110	38	220	5	100	2
NGZ2-50/110	50	220	8	120	2
NGZ2-65/110	65	220	10	120	2
NGZ2-100/110	100	220	10	240	2
NGZ2-150/110	150	220	15	480	3~4
NGZ2-200/110	200	220	20	480	3~4
NGZ2-300/110	300	220	30	600	3~4

7 Internal DC Electrical Schematic Diagram (Diagram1~ 10)

Diagram 1 About DC system sketch of NGZ-230 series

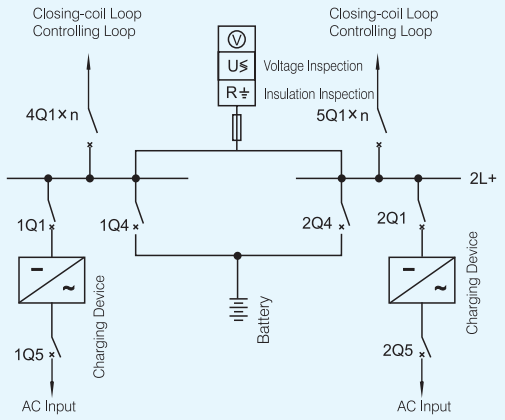


Diagram 2 About DC system sketch of NGZ-231 series

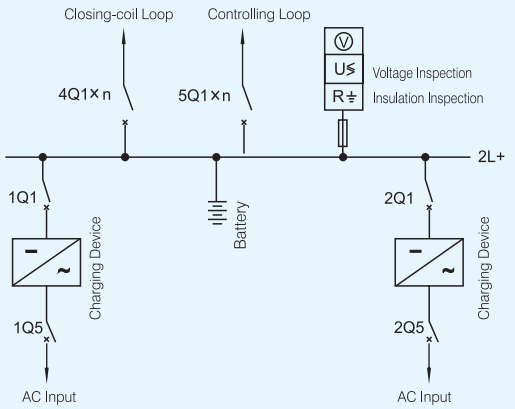


Diagram 3 About DC system sketch of NGZ-232 series

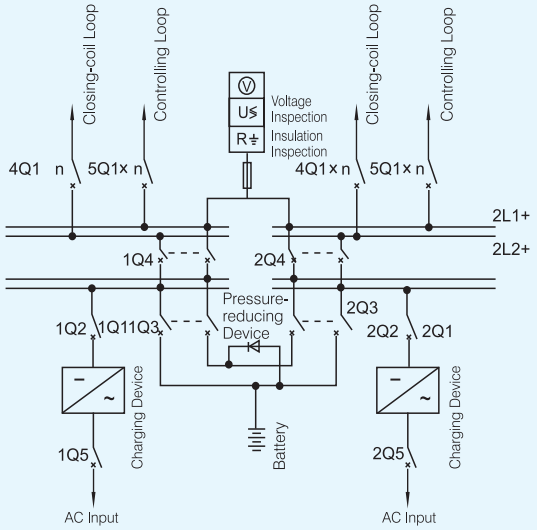


Diagram 4 About DC system sketch of NGZ-234 series

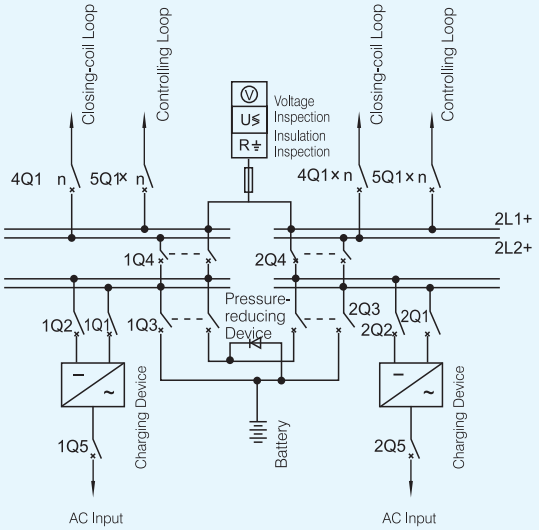


Diagram 5 About DC system sketch of NGZ-233 series

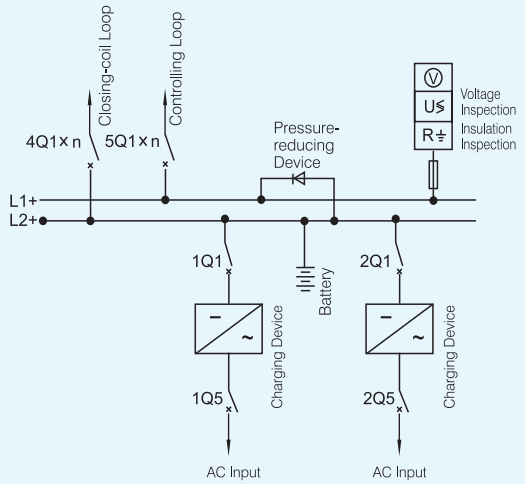


Diagram 6 About DC system sketch of NGZ-235 series

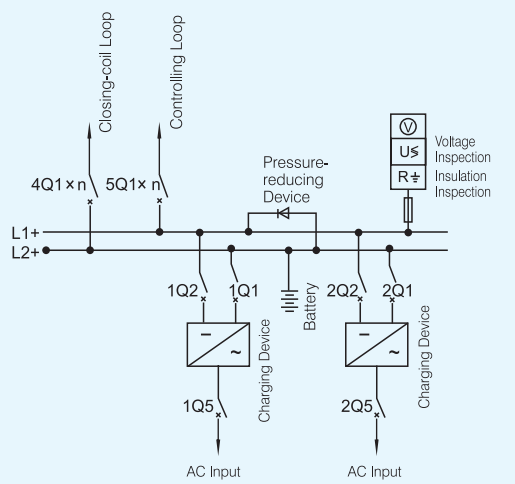


Diagram 7 About DC system sketch of NGZ-240 series

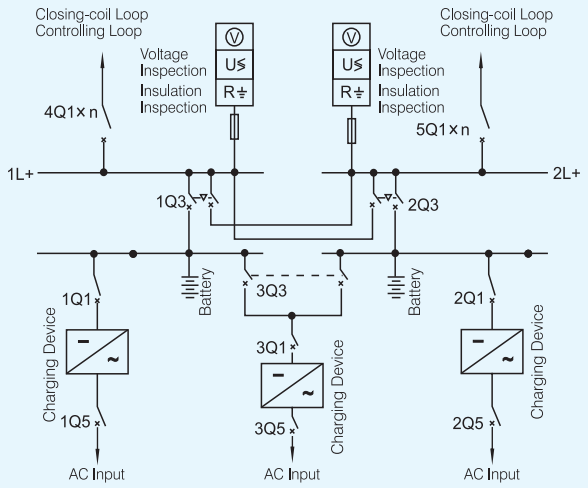


Diagram 8 About DC system sketch of NGZ-241 series

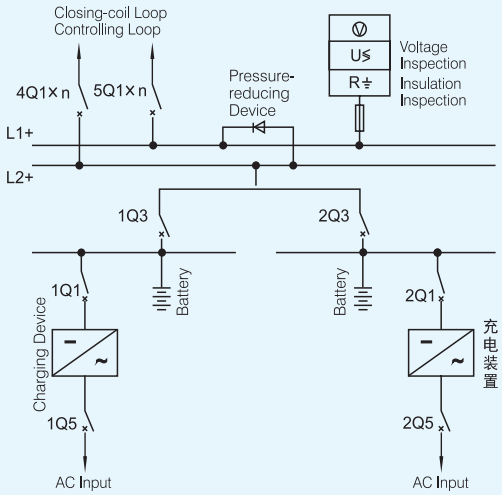


Diagram 9 About DC system sketch of NGZ-242 series

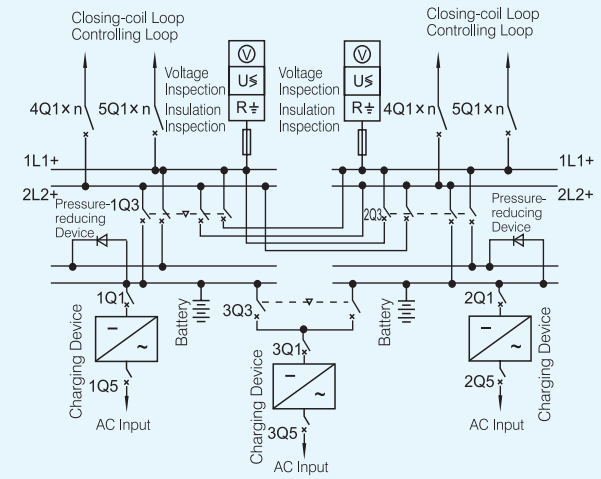
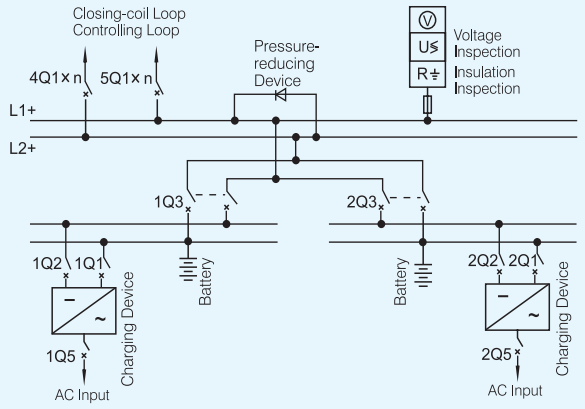
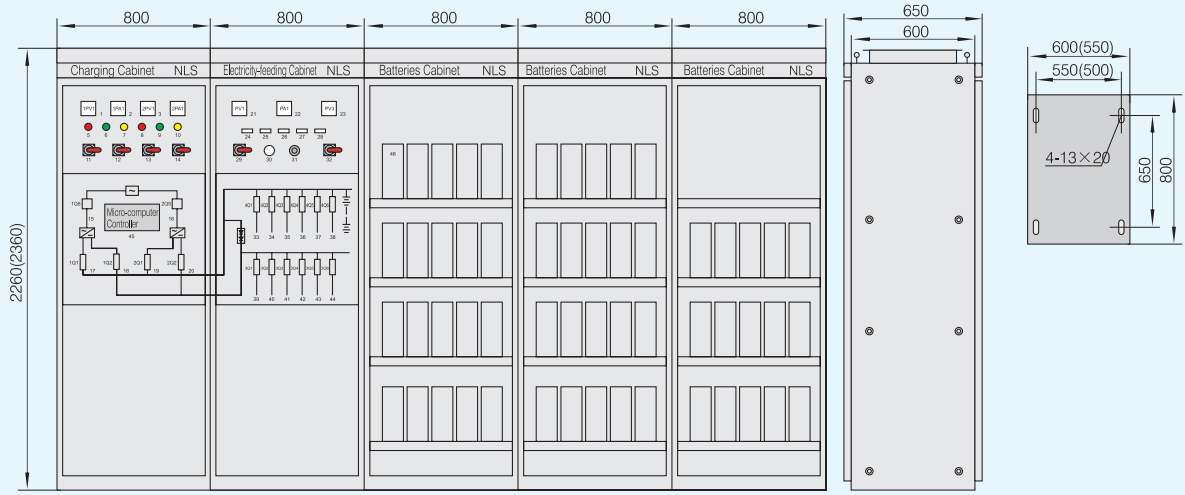


Diagram 10 About DC system sketch of NGZ-243 series



8 Overall and Installation Dimension (Unit:mm)



Screen side Lay-outing and mounting Diagram of NGZ2-35 300/200 DC Power Supply Switchgear (lay-out according to the client's actual requirement)

Interpretation on Labels of Screen side Lay-outing Diagram

No.	Content of Label
1	No.1 Frequent Loading Voltage Meter
2	No.1 Frequent Loading Current Meter
3	No.2 Frequent Loading Voltage Meter
4	No.2 Frequent Loading Current Meter
5	No.1 Main-charging Indicating Light
6	No.1 Average-charging Indicating Light
7	No.1 Float-charging Indicating Light
8	No.2 Main-charging Indicating Light
9	No.2 Average-charging Indicating Light
10	No.2 Float-charging Indicating Light
11	No.1 Steady Voltage and Steady Current Change Switch
12	No.1 Average-charging and Float-charging Change Switch
13	No.2 Steady Voltage and Steady Current Change Switch
14	No.2 Average-charging and Float-charging Change Switch
15	No.1 AC Power Input Switch
16	No.2 AC Power Input Switch
17	No.1 Closing-coil Power Output Switch
18	No.1 Controlling Power output Switch
19	No.2 Closing-coil Power Output Switch
20	No.2 Controlling Power output Switch
21	Battery Voltage Meter
22	Charging Current Meter
23	Insulation Inspection and Controlling Bus Voltage Meter
24	Over Voltage Signs
25	Less Voltage Signs
26	Insulation Fault Signs
27	Electricity-feeding Fault Signs
28	Fuse Fault Signs
29	Earthing Inspection Change Switch
30	Flashing Signs Indicating Light
31	Flashing Trial Button
32	Controlling Voltage Regulation Change Switch
33	First Closing-coil Electricity-feeding Switch
34	Second Closing-coil Electricity-feeding Switch
35	Third Closing-coil Electricity-feeding Switch
36	Fourth Closing-coil Electricity-feeding Switch
37	Fifth Closing-coil Electricity-feeding Switch
38	Fault Lighting Power Switch
39	First Controlling Electricity-feeding Switch
40	Second Controlling Electricity-feeding Switch
41	Third Controlling Electricity-feeding Switch
42	Fourth Controlling Electricity-feeding Switch
43	Fifth Controlling Electricity-feeding Switch
44	Central Information Screen Power Switch
45	Micro-computer Controller
46	Battery

※ Note: 1. This Plane Layout Diagram is for NGZ131-500/220 G-type Program.
2. For the others, it should do some corresponding changes according to the designed structure features and capacity sizes.

9 Interpretation

Company Types	NGZ2	NGZ1	NGZ3
Used Types	GZD(W)	PCD(W)	GZG
Industry Releasing Types	GZW31	PZW15	GZG51

10 Ordering Instruction

Client Name				Contacts	
Tel				Fax	
System voltage	☐220V	☐110V	☐48V	Battery Capacity	
Frequent loading current, without charging current		A		Battery	☐China-made (company name) ☐Import (company name)
Battery Type	☐the lead-acid maintenances-free ☐Ni-Cd			Battery Type	☐Single ☐Double
Micro-computer Controlled	☐Yes ☐No			Four-remote Function	☐Yes ☐No
Shell Dimensions (W×D×H)	☐800×600×2260			Outside Color	☐CHINT B (Light Camel) ☐Others
	☐800×550×2260				
	☐800×600×2360			Earthing Wires	☐Yes ☐No
	☐800×550×2360			Battery Inspection	☐Yes ☐No
	☐Others			Feeding Wires Switch	☐Siemens
Electricity-Feeding Loop	☐Closing-coil Loop			Feeding Wires Switch	☐People (Beijing)
	☐Controlling Loop				☐Others
Others					

PK Computer Control Panel

1 General

1.1 Application: apply for measurement, protection and control on the HV equipments within substations of 35kV and below.

1.2 Standards: IEC 255-5

2 Working Condition

2.1 Ambient air temperature: -40℃～+75℃ for storage and transportation. -15℃～+40℃ for operation.

2.2 Altitude: ≤1000m

2.3 Relative humidity: ≤95%

3 Main Technical Parameter

3.1 Sampling Ratings: voltage: 100V/50Hz, current: 5A/50Hz

3.2 Rated Power Supply Voltage: 110V/220V DC

3.3 Power Consumption: DC normal power consumption: 10W. AC, under working status, 15W, when the power of current circuit is <0.75VA/phase, the power of voltage circuit is 0.50VA/phase

3.4 Overload Feature

- Long time making current for current circuit: 20A
- Short time making current: 100A/1s
- Instantaneous making current 500A/20ms
- 1.5 times for ratings of voltage circuit long time operation

3.5 Contact Capacity: long time making: 5A/220V (DC)

3.6 Input Making & Breaking Value: +24V/5mA, disconnecting withstand voltage 2000V

3.7 Measurement Accuracy

- Current measurement accuracy: 0.5% for 0.1A～6A, 2% for 6A～100A
- Voltage measurement accuracy: 0.5% for 60V～120V, 1% for 0V～60V and 120～150V
- Power measurement accuracy: 1.0%
- Watt-hour measurement accuracy: 1.0%
- Protection time-delay accuracy: 0.1s～20.00s, ±2.5% or 25ms

3.8 Telecommunication Interface: RS-485, speed 9600Mbps

3.9 Insulation Resistance: 100kΩ/500V

3.10 Voltage Withstand: 2.0 kV/50Hz 1min

3.11 Anti-interference: common mode: 2.5kV/1MHz/2S, differential mode1.0 kV/1MHz/2S

4 Construction

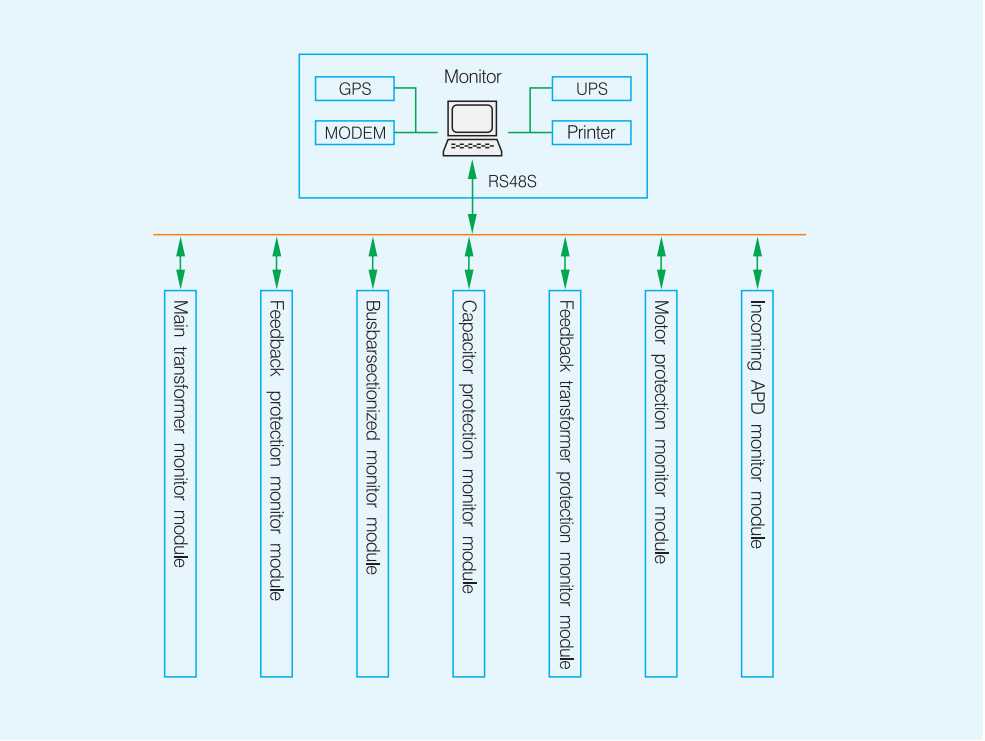
4.1 Equipped with double CPUs and chips from Intel to realize reliable processing capability, on which one of the CPUs could switch to the other one if it fails to work. Ungrading and extension of the system is allowable as there is enough redundancy.

4.2 COMS chips adopted to lower the power loss and anti-interference capability.

4.3 High reliability to meet the requirements needed for various working conditions.

4.4 Efficient and reliable telecommunication. Specified RS-485 adopted, as well as photoelectricity separation measures to protect all the connected equipments.

5 Reference on System Allocation



6 Overall Dimension

800mm(W)×600mm(D)×2260(2360)mm(H)

7 Ordering Information

Please specify the following information when ordering:

7.1 Connection diagram for amin circuit of substation.

7.2 Requirements on automation distribution monitoring, protection system diagram and technical parameters.

7.3 If master computer and telecommunication system are needed, please clarify, as well as the telecommunication protocol and media.

7.4 Overall dimensions, meters allocation at the control panel and color.

7.5 Customized products are available.

Available Product Range from CHINT Electric:

≥500kV


500kV Power Transformer


500kV Rod Composite Insulator


468kV Porcelain Metal Oxide Surge Arrester used for Substation


750kV Power Transformer

252kV


GW7-252 HV Switch Disconnector


GW22-252kV Switch Disconnector


GW23-252kV Switch Disconnector


252kV GIS


LW43-252 Circuit Breaker


220kV Power Transformer


220kV SF_6 tank metal oxide surge arrester (without gap)(GIS)


220kV Rod Composite Insulator


220kV Outdoor SF_6 HV Current Transformer


220kV Outdoor Oil-Immersed HV Current Transformer

110kV


LW36-126 Outdoor SF_6 Circuit Breaker


GW4-126 AC HV Switch Disconnector


126kV Mini GIS


126kV Mini GIS


ZF21-126kV GIS


110kV SF_6 tank metal oxide surge arrester (without gap) (GIS)


110kV Power Transformer

40.5kV


KYN61-40.5(Z) Metalclad Enclosed Withdrawable Switchgear


ZN85 Indoor Solid Sealed Polar Pole Vacuum Circuit Breaker


XGN77-40.5(Z) Cubicle Fixed AC Metal-enclosed switchgear


NYBM(P)77-40. 5-0. 69 HV/LV Prefabricated Substation


NFZR77-40. 5D HV AC Vacuum Load Switch-Fuse Combined Equipment Specialised for Wind Power


ZGS11 American Type Transformer Specialised for Wind Power


Outdoor SF_6 Circuit Breaker


ZW7-40.5 Outdoor HV AC Vacuum Circuit Breaker


GW4-40.5 Outdoor AC Switch Disconnector


YB29-40.5/12 Prefabricated Substation


Skid-type Box Transformer


TBBS (6-35kV) Substation Type Auto-switched HV Shunt Capacitor Equipment


MSVC Magnetic Control Reactor Type HV Static Reactive Compensator


35kV Oil-immersed Transformer with OLTC in SZ9 series


27. 5kV Surge Arrester & Insulator Used for Electric Railway 35kV Porcelain Metal Oxide Surge Arrester Used for Substation

12kV


KYN28A-12(Z) Metalclad Enclosed Withdrawable Switchgear


KYN28A-24(Z) Metalclad Enclosed Withdrawable Switchgear


XGN15-12 (SF_6) Fixed Type Metalclad Enclosed Loop Switchgear


HXGN15A-12 Fixed Type Metalclad Enclosed Loop Switchgear


XGN2-12 Box-type Fixed AC Metal-enclosed switchgear


XGN36-12 Box-type Fixed AC Metal-enclosed switchgear


NG7 Cubicle Gas Insulated Switchgear (C-GIS)


TBBF(6-10kV) HV Shunt Capacitor Complete Equipment


12kV Indoor Embedded Pole Vacuum Circuit Breaker


12kV Indoor HV AC Vacuum Circuit Breaker


12kV Indoor HV AC SF_6 Switch-fuse Combined Equipment


12kV Indoor HV AC Vacuum Load Switch-fuse Combined Equipment


12kV Outdoor HV AC Vacuum Circuit Breaker


12kV Outdoor Shunt Type HV AC Vacuum Load Breaker Switch (Electric Dog)


12kV Outdoor Shunt Type HV AC Vacuum Circuit Breaker (Electric Dog)


Outdoor HV Permanent Magnet Vacuum Circuit Breaker


12kV Outdoor HV AC Droping Fuse


HV Shunt Capacitor Compensation Equipment


TBBF(X) HV Shunt Capacitor Complete Equipment


S9-S11 Series Three-phase Oil-immersed Regulating Distribution Transformer without Excitation


S9-S11 Series Three-phase Oil-immersed Full-sealed Distribution Transformer without Excitation


SC(B) series Epoxy Resin Dry-type Transformer


SCBH15 Amorphous Transformer


SBH15 Amorphous Oil-immersed Transformer


YB6 series Prefabricated Substation


YBM(P)29 HV/LV Prefabricated Substation


10kV Indoor Casting Current Transformer
10kV Indoor Casting Voltage Transformer


Outdoor Oil-immersed Energy Metering Box


12kV AC Three-phase Combined Over-voltage Protector With Composite Jacket and Gap

0.38-0.6kV


NGC8 LV Withdrawable Switchgear


NGC1~3 LV Withdrawable Switchgear


NGG1 LV Fixed Switchgear


NGZ2 series Power Supply Switchgear


NGZ3 DC Power Supply Switchgear


PZ series Lighting and Control Box


NTSC(0.4-1kV) Dynamic Filtering Compensator


BAM/BFM Full-film HV Shunt Capacitor


BAMH Assembled HV Shunt Capacitor

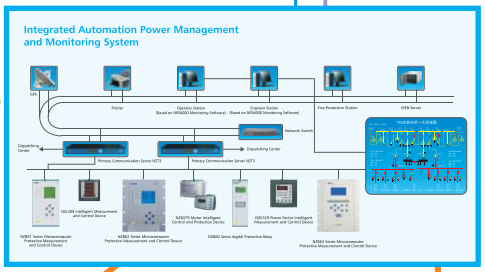

XKGKL Dry Type Air-core Current-limiting Reactor CKGKL Dry Type Air-core Reactor


BKS, BKD HV Oil-immersed Shunt Reactor


NCM1 Coarctation Insulated Control Bus-bar


XQJ series Cable Bracket


Cable



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