Westinghouse

Alpha Prime
Medium Voltage Metal-Clad Switchgear

Westinghouse

Leading The Future of Electrification

- A Global Heritage Brand with 130 Years of Product Innovation
- Perfect Products, Creative Services, and Competitive Price

Since 1886, Westinghouse Has Brought The Best To Life.

Westinghouse remains a trusted name globally in consumer and industrial products. Built on a heritage of innovation and entrepreneurial spirit, Westinghouse products were the first to supply the United States with AC electric power, transmit a commercial radio broadcast and capture man's first step on the moon. Today, Westinghouse continues to grow its diverse portfolio with a wide range of product categories that include home appliances, consumer electronics, lighting and power generation.

Contents

12 Alpha Prime metal-clad switchgear

• Alpha Prime is a state-of-the-art switchgear jointly developed by German and Chinese experts.
• Alpha Prime is designed for the full range of medium voltage switchgear;Voltages range from 3.6kV up to 40.5kV.
• Alpha Prime is a fully metal-clad, air insulated, arc-proof and compact design switchgear.
• Alpha Prime is equipped with the next generation cassette type of withdrawable embedded pole vacuum circuit breaker (Alpha VL).
• High speed earthing switch with short circuit making capability is employed in Alpha Prime switchgear.
• The mechanical strength and anti-corrosion properties of the structural frame of Alpha Prime are ensured by ALUZINC sheet metal with double bending and riveting fixing technology.
• Optimized electrical field and electrode screen technology are adopted to achieve high insulation reliability of Alpha Prime.
• Alpha Prime has a cable compartment with ample space and a cable connection height of up to 800mm.
• Alpha Prime is designed with a perfect interlocking system which provides the highest level of safety for operating personnel and equipment.
• Alpha Prime has inspection windows for both circuit breaker and cable compartments through which the position of the withdrawable device, status of breaker and the condition of the cable connection can be easily observed.
• Alpha Prime can be equipped with traditional or integrated protection devices, as well as traditional CTs and VTs.
• Alpha Prime is a safe and reliable switchgear which has been widely accepted by various industrial sectors around the world.

Overview

40.5kV Alpha Prime metal-clad switchgear

Alpha Prime full range metal-clad switchgear is developed by Westinghouse. To meet specific international and individual national standards, every endeavor has been made by experts from Westinghouse Alpha Prime is a state-of-the-art, three-phase AC, metal-clad, air insulated, indoor switchgear equipped with the most advanced cassette type of withdrawable Alpha VL embedded pole vacuum circuit breaker.

Besides the cassette type of withdrawable Alpha VL embedded pole vacuum circuit breaker, Alpha Prime can also be equipped with a SF6 gas insulated circuit breaker, a fused-contactor, a load-breaking switch, an isolation truck, and a VT truck, according to individual system designs. Alpha Prime metal-clad switchgear is constructed of ALUZINC sheet metal in a double bending process with rivet-fixing technology. The complete structural frame of Alpha Prime is fabricated using high precision assembly jigs, therefore high dimensional accuracy and high mechanical quality is guaranteed.

Alpha Prime series metal-clad switchgear is fully type tested in compliance with the following international and Chinese standards:

- IEC 62271:200
- IEC 60694
- DIN and VDE standards
- GB 3906
- GB/T11022
- DL/T404

Alpha Prime series metal-clad switchgear can be used in power distribution systems of power plants, power utilities and all industrial sections as control and protection equipment for transformers, motors and capacitor banks etc.

Overview of the Technical Data 12kV Alpha Prime Metal-Clad Switchgear

Description		Unit	Data
Rated voltage		kV	3.6/7.2/12/15/17.5
Rated frequency		Hz	50/60
Rated insulation level	Rated power frequency withstand voltage/1 min	kV	42
	Rated lighting impulse withstand voltage (peak value)		75/95
Rated current of busbar		A	630/1250/1600/2000/2500/3150/4000*
Rated current of T-0ff bar			
Rated short time withstand current (4s)		kA	20/25/31.5/40/50
Rated peak withstand current (peak value)			50/63/80/125/150
Resistance of main circuit		μQ	≤150+CT** (≤630A) ≤100+CT** (≤1250A) ≤70+CT** (≤2000A) ≤50+CT** (≤2500A)
Ingress protection degree		/	Enclosure IP4X, compartment IP2X
Overall dimensions (w*h*d)		mm	650 (800,1000) *2250*1400

Note:
*- Forced cooling ventilation is required
**- DC resistance of current transformer

Overview of the Technical Data of 12kV Alpha VL Embedded Pole Vacuum Circuit Breaker

Description		Unit	Data
Rated voltage		kV	3.6/7.2/12/15/17.5
Rated current		A	630/1250/1600/2000/2500/3150/4000*
Rated frequency		Hz	50/60
Rated insulation level	Rated power frequency withstand voltage/1 min	kV	42
	Rated lighting impulse withstand voltage (peak value)		75/95
Rated short circuit breaking current		kA	20/25/31.5/40/50
Rated short time withstand current（4s）			
Rated short circuit making current（peak value）			50/63/80/125/150
Rated short circuit breaking times		No.of times	50/50/50/50/30
Electrical endurance			274（Class E2 in accordance with IEC 62271-100 and GB 1984-2003）
Rated operating sequence		/	O-0.3s-CO-180s-CO（up to 40kA） O-180s-CO-180s-CO（50kA）
Rated auxiliary control voltage		V	AC110/220；DC 110/220
Rated closing time		ms	35-70
Rated opening time			25-40
Rated breaking time			40-55

Note：
*- Forced cooling ventilation is required

Technical Data

Overview of the Technical Data of 24kV Alpha Prime Metal-Clad Switchgear

Description		Unit	Data
Rated voltage		kV	24
Rated frequency		Hz	50/60
Rated insulation level	Rated power frequency withstand voltage/1 min	kV	50/65
	Rated lighting impulse withstand voltage (peak value)		125
Rated current of busbar		A	630/1250/1600/2000/2500/3150/4000*
Rated current of T-off bar			
Rated short time withstand current (4s)		kA	25/25/31.5/40
Rated peak withstand current (peak value)		kA	50/63/80/100
Resistance of main circuit		μQ	≤150+CT** (630A) ≤100+CT** (≤1250A) ≤70+CT** (≤2000A) ≤50+CT** (≥2500A)
Ingress protection degree		/	Enclosure IP4X, compartment IP2X
Overall dimensions (W*H*D)		mm	800 (1000) *2250*1680

Note:
*- Forced cooling ventilation is required
**- DC resistance of current transformer

Overview of the Technical Data of 24kV Alpha VL Embedded Pole Vacuum Circuit Breaker

Description		Unit	Data
Rated voltage		kV	24
Rated current		A	630/1250/1600/2000/2500/3150/4000*
Rated frequency		Hz	50/60
Rated insulation level	Rated power frequency withstand voltage/1 min	kV	50/65
	Rated lighting impulse withstand voltage (peak value)		125
Rated short circuit breaking current		kA	20/25/31.5/40
Rated short time withstand current（4s）			
Rated short circuit making current（peak value）			50/63/80/100
Rated peak value withstand current（peak value）			
Rated short circuit breaking times		No.of times	50/50/50/50/30
Electrical endurance			274（Class E2 in accordance with IEC 62271-100 and GB 1984-2003）
Rated operating sequence		/	O-0.3s-CO-180s-CO O-180s-CO-180s-CO
Rated auxiliary control voltage		V	AC110/220；DC 110/220
Rated closing time		ms	35-70
Rated opening time			25-40
Rated breaking time			40-55
Mechanical endurance		No.of times	20000

Note：
*- Forced cooling ventilation is required

Overview of the Technical Data of 40.5kV Alpha Prime Metal-Clad Switchgear

Description		Unit	Data
Rated voltage		kV	33/36/40.5
Rated frequency		Hz	50/60
Rated insulation level	Rated power frequency withstand voltage/1 min	kV	95
	Rated lighting impulse withstand voltage (peak value)		185
Rated current of busbar		A	1250/1600/2000/2500/3150*
Rated current of T-off bar			630/1250/1600/2000/2500/3150*
Rated short time withstand current(4s)		kA	25/31.5
Rated peak withstand current (peak value)			63/80
Resistance of main circuit		μQ	≤145+CT** (≤1250*) ≤100+CT** (≤1600~2000A) ≤70+CT** (≤1250*)
Ingress Protection Degree		/	Enclosure IP4X, compartment IP2X
Overall dimensions (w*h*d)		mm	1200*2400*2500

Note:

* Forced cooling ventilation is required

* DC resistance of current transformer

Overview of the Technical Data of 40.5kV Alpha VL Embedded Pole Vacuum Circuit Breaker

Description		Unit	Data
Rated voltage		kV	33/36/40.5
Rated current		A	1250/1600/2000/2500/3150*
Rated frequency		Hz	50/60
Rated insulation level	Rated power frequency withstand voltage/1 min	kA	95
	Rated lighting impulse withstand voltage (peak value)		185
Rated short circuit breaking current			25/31.5
Rated short time withstand current（4s）			
Rated short circuit making current（peak value）			63/80
Rated peak value withstand current（peak value）			
Rated short circuit breaking times		No.of times	50/50/50/50/30
Electrical endurance			274（class E2 in accordance with IEC 62271-100 and GB 1984-2003）
Mechanical endurance			20000
Rated operating sequence		/	O-0.3s-CO-180s-CO O-180s-CO-180s-CO
Rated auxiliary control voltage		V	AC110/220；DC110/220
Rated closing time		ms	55~80
Rated opening time			25~40
Rated breaking time			≤60

Note：
*- Forced cooling ventilation is required

Overview of the Technical Data of 40.5kV FEP SF_6 Gas Insulated Circuit Breaker

Description		Unit	Data
Rated voltage		kV	40.5
Rated current		A	1250/1600/2000/2500
Rated frequency		Hz	50/60
Rated insulation level	Rated power frequency withstand voltage/1 min	kV	95
	Rated lighting impulse withstand voltage (peak value)		185
Rated short circuit breaking current		kA	25/31.5
Rated short time withstand current（4s）			
Rated short circuit making current（peak value）			63/80
Rated peak value withstand current（peak value）			
Rated operating sequence		/	O-0.3s-CO-180s-CO O-180s-CO-180s-CO
Rated auxiliary control voltage		V	AC110/220；DC 110/220
Mechanical endurance		No.of times	10000
Annual leakage rate		%Y	< 0.1
SF6 Rated pressure		MPa	0.35±0.02
SF6 Alarm pressure			0.28±0.01

Alpha Prime：A Safe Switchgear

Busbar compartment of Alpha Prime-40.5kV

Cable compartment of Alpha Prime-40.5kV

Metal-Clad Arc-Proof Switchgear

The enclosure of the Alpha Prime series switchgear is designed with an ingress protection degree of IP4X as per IEC 62271-200. The metallic and earthed enclosure protects operation personnel against contact with live parts and against contact with moving parts inside the switchgear panel. It also protects Alpha Prime series switchgear against the penetration of foreign objects which could cause a severe short-circuit fault on the system. It is now expected that manufacturers and end users must endeavor to prevent, under all circumstances, faults in switchgear installations in which internal arcing may occur, however, it is also known that such faults cannot be completely prevented in all cases. For this reason, in most countries around the world, the internal arcing test is compulsory for medium voltage metal-clad switchgear. Thanks to its completely metal-clad design and its sturdy hinge and door-locking system, Alpha Prime series switchgear has successfully passed the internal arcing fault test in accordance with IEC 62271-200 in all three high voltage compartments.

Pressure Relief Flap

On the top of all three high voltage compartments, the Alpha Prime series switchgear is equipped with pressure relief flaps which will open automatically to the rear side of the switchgear in the event of over pressure loading due to an internal arcing fault in the corresponding compartment. The pressure relief flaps prevent the following dangerous situations which will endanger the operating personnel or extend the effect of the fault to the whole switchgear system;

- burn-through of barriers to adjacent compartments
- burn-through of partitions to adjacent panels
- over-pressure loading to adjacent compartments and panels
- properly closed doors, shutters, etc. being forced open
- parts of switchgear flying off

Alpha Prime：A Safe Switchgear

Circuit breaker in service position

Circuit breaker compartment of Alpha Prime-12kV

Comprehensive and Reliable Interlocking System

The Alpha Prime series switchgear is equipped with a comprehensive system of preventative mechanical interlocks to protect the equipment, operation and service personnel from the dangers of mal-operation. The interlocks are designed to prevent:

- A closed circuit breaker being inserted into or withdrawn from the service position.
- A circuit breaker being closed when not in the service, test position.
- A circuit breaker being racked into the service position if the secondary contacts plug has not been fitted.
- Insertion of the circuit breaker into the service position or withdrawal from the service position if the door of the circuit breaker compartment is opened.
- Closing of earthing switch when the circuit breaker is locked in the service position.
- Opening of the cable compartment door when the earthing switch is in the open position.
- Disengagement of the secondary plug from the socket when the circuit The Alpha Prime metal-clad switchgear is equipped with shutters in front of the spouts breaker is located in the service position.

Shutter Locking System

In the circuit breaker compartment which will automatically close and lock when the circuit breaker is in the test or racked-out position to provide the IP protection and prevent inadvertent opening which may cause danger, in some cases, to the operating personnel during maintenance.

Features

Alpha Prime：A Reliable Switchgear

Trubend5170 CNC bending machine

Compact Design for Cassette Withdrawable Type VCB

Alpha Prime series is designed for cassette type withdrawable VCBs. Each cassette is designed to save space inside the switchgear and eliminate any negative impact to the movable electric couplings between the circuit breaker and switchgear panel caused irregular installation of foundations. Therefore, reliability of the temperature rise on movable electric coupling points is maintained, which is a critical point for all withdrawable switchgear.

Separated and Metal-Screened Channel for Control and Metering Cables

The control and metering cables inside the Alpha Prime series switchgear are installed in a separate and metal-screened channel, so that electrical and magnetic interface between high voltage path and secondary cables is avoided completely. This construction also provides prevention of electrical and magnetic interfaces between high voltage conductors and digital protection equipment located in the metal-clad and earthed compartments.

TruPunch 5000 stamping machine

Precise and Rigid Panel Structure

The structural frame of the Alpha Prime series metal-clad switchgear is made of ALUZINC sheet metal processed by CNC punching and bending machines, so the very accurate overall dimensions of Alpha Prime is ensured, and interchangeability of withdrawable units between the panels of similar ratings is guaranteed. The main structural frame of the Alpha Prime series metal-clad switchgear is made of double bended 2mm ALUZINC sheet metal which is assembled on high precision jigs by very strong riveting and bolts with a strength grade above 8.8. As a result of this design, the strength of the Alpha Prime series switchgear can meet the operating requirements in the most critical conditions, such as offshore oil platforms and nuclear power plants. 12kV Alpha Prime metal-clad switchgear has successfully passed class 1 E qualification test for both thermal aging and seismic conditions.

Features

Alpha Prime：A Reliable Switchgear

Medium Voltage Embedded Pole Vacuum Circuit Breaker

Highly Reliable Components

The reliability of the Alpha Prime series switchgear is fundamentally due to the reliability of all the components used within. Apart from the most advanced and reliable Alpha VL embedded pole circuit breaker, all insulating components such as spouts, bushings, insulators, as well as instrument transformers, are strictly selected and have been qualified for a life span of 40 years by accelerated thermal aging tests.

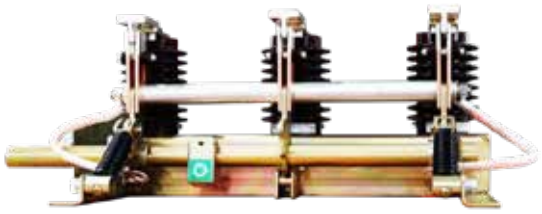
Robust Rail for Withdrawable Circuit Breaker

The strength of the rail is one of the most essential points in the prevention of overheating of the movable connection between the tulip contact and the contact pin inside the spout. In the Alpha Prime metal-clad switchgear, all rails are specially strengthened, and fixed on the double bended main structure frame with robust screws, hence the reliability of the movably connected current path can be assured.

Space Heaters

In order to avoid the risk of condensation inside the switchgear due to humidity, the Alpha Prime series metal-clad switchgear is equipped with space heaters in both cable and circuit breaker compartments. To guarantee efficiency, the space heaters should be permanently energized during the installation and commissioning periods, after which they can be either permanently energized or controlled by humidity sensors.

Alpha Prime：A Flexible Switchgear



Short-circuit making capable ESW-12kV earthing switch

Universal Application Purpose

Alpha Prime series metal-clad switchgear is designed for universal application in the field. 12kV Alpha Prime can be equipped with Alpha VL embedded pole VCB, load break switch, fused contactor, etc. for different applications. For example, distribution transformers, capacitor banks, station transformers, and motor starters. 36kV Alpha Prime can be equipped with Alpha VL embedded pole VCB, FEP SF6 Gas Circuit Breaker, load break switch or fuse link truck for station transformer applications.

Highest Resistance to Climate and Environment

Alpha Prime series metal-clad switchgear is equipped with the following components which provide the highest level of climatic and environmental independence:

- Epoxy resin embedded pole vacuum circuit breaker;
- Ribbed insulators and bushings;
- Totally enclosed under all operation conditions;

Thanks to these integrants, Alpha Prime series metal-clad switchgear has successfully passed the high altitude application tests up to 2000m above sea level, grade II pollution test, condensation test, and salty fog tests.

Remote Control Solution

Electrical remote control from a central control room, which is a normal requirement for intelligent switchgear systems, can be provided by Alpha Prime series metal-clad switchgear for the following functions:

- Moving a motorized withdrawable unit into the test or service position;
- Opening and closing of the switching device;
- Feeder earthing and short-circuiting with motor driven earthing switch;

High Availability of Components

Most of the components used in Alpha Prime series switchgear are standards products which can be easily procured in the market:

- Standard insulators
- Standard instrument transformers
- Standard bushings
- Standard dimensioned vacuum circuit breaker

Alpha Prime：A Flexible Switchgear

12kV VEC vacuum contaactor with HV fuses

Totally adjustable service trolley for 40.5kV Alpha Prime

Flexible Arrangement in Switching Rooms

Both cable and copper bar can be connected into the Alpha Prime series switchgear from the top and bottom side. 12kV Alpha Prime metal-clad switchgear can be installed against the wall of the switching room, as all components inside the switchgear can be accessed from the front or top side of the switchgear. This means that all the commissioning and maintenance requirements can be carried out from the front or top side of the switchboard.

Comprehensive Variations Scheme

Besides basic incomer and feeder panels, Alpha Prime series metal-clad switchgear has a comprehensive variation scheme to satisfy various system configurations of power distribution systems. The main functional schemes are as follows:

- Basic incomer and feeder panels equipped with Alpha VL cassette type withdrawable embedded pole vacuum circuit breaker. For 36kV Alpha Prime,SF6 gas circuit breaker are also available.;
- Bus coupling panel equipped with Alpha VL cassette type withdrawable breaker. For 36kV Alpha Prime, SF6 gas circuit breakers are also available;
- Bus riser panel with bus link truck for isolation of bus coupling panel;
- PT panel equipped with fixed or withdrawable installation potential transformers and fuses for bus bar voltage metering;
- Special metering panel equipped with withdrawable or fixed installation potential and current transformers with high accuracy, especially for kWh metering;
- Station transformer panel can be equipped with fused link truck or load break switch;
- 12kV Alpha Prime Fuse-contactor for panel equipped with a withdrawable fuse-contactor combination, used as control and protection equipment for transformers ,capacitor banks and for frequently switched motors . The 12kV Alpha Prime Fuse-contactor panel is completely compatible with the Alpha Prime vacuum circuit breaker panel.

Alpha Prime：A Flexible Switchgear

Easily Handled Service Trolley

The cassette type withdrawable Alpha VL vacuum circuit breaker can be moved outside the Alpha Prime series metal-clad switchgear using an easily handled service trolley. There are two versions of the service trolley designed for Alpha Prime series metal-clad switchgear; The partially adjustable version for 12kV and 24kV, and the totally adjustable version for 40.5kV. The cassette type Alpha VL vacuum circuit breaker on the totally adjustable version of the service trolley can be easily lowered to the floor by the gearing system set in the trolley, therefore only one of this version of the trolley is necessary for one 40.5kV substation. In order to ensure the safety of the Alpha VL vacuum circuit breaker, both versions of the service trolley were designed with locking devices. Before removing the Alpha VL, the service trolley shall be locked with the Alpha Prime switchgear panel, and after the Alpha VL is removed from the Alpha Prime switchgear, it shall be locked on the service trolley.

Climate and Ambient Conditions

■ **Normal operation conditions**

- Ambient temperature: -15°C — +40°C
- Daily average temperature: ≤ +35°C
- Environmental humidity:
- Daily average relative humidity: ≤95 %
- Monthly average relative humidity: ≤90 %
- Maximum operation altitude: 1000m above sea level

■ **Special operation conditions**

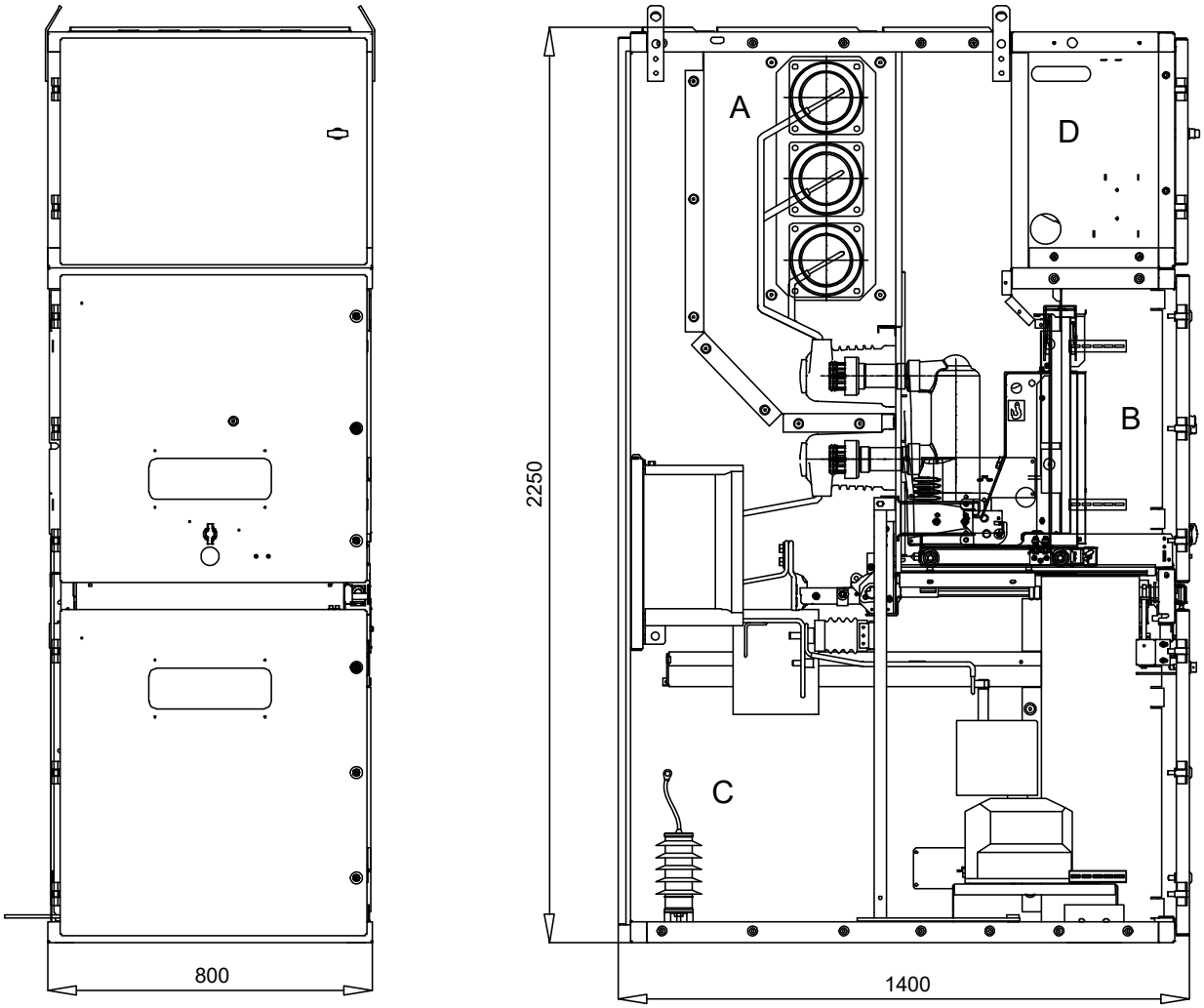
If Alpha Prime metal -clad switchgear is operated at a site with an altitude higher than 1000m above sea level, the decrease in insulating capacity of air will be considered, and, if it is necessary, methods will be taken to enhance the insulation capacity of Alpha Prime switchgear.

If operational ambient temperature is higher than +40°C, the following actions will be considered：

- Using a circuit breaker with higher rated current；
- Natural ventilation, i.e. prod-proof ventilation, slits on the middle plate and on the top of Alpha Prime switchgear；
- Forced ventilation, i.e. prod-proofed ventilation slits on the top of high voltage compartments in conjunction with a fan in the middle plate.

Product Structure Drawing

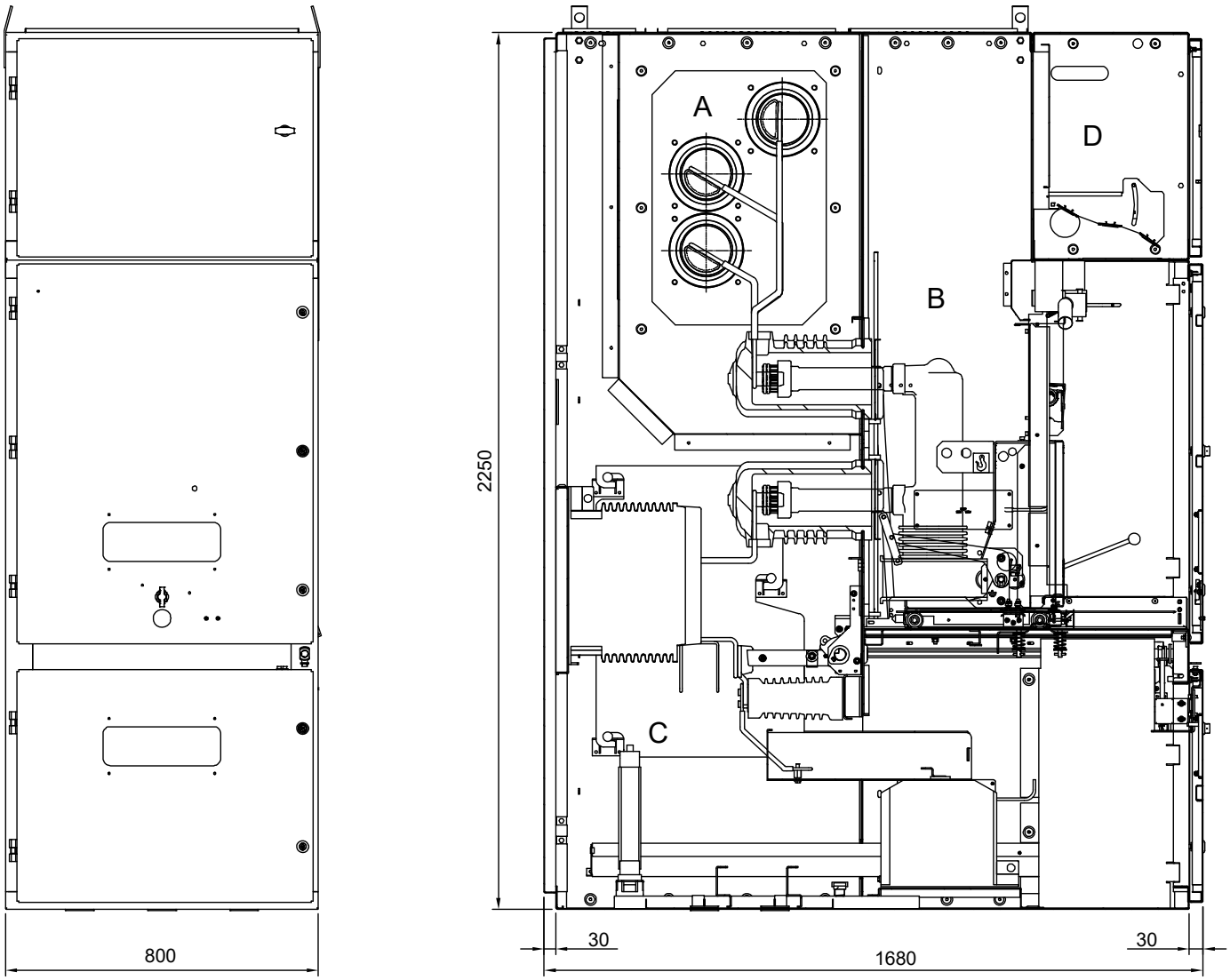
Alpha Prime：12kV



A. Busbar Compartment
B. Circuit Breaker Compartment
C. Cable Compartment
D. Low Voltage Compartment

Product Structure Drawing

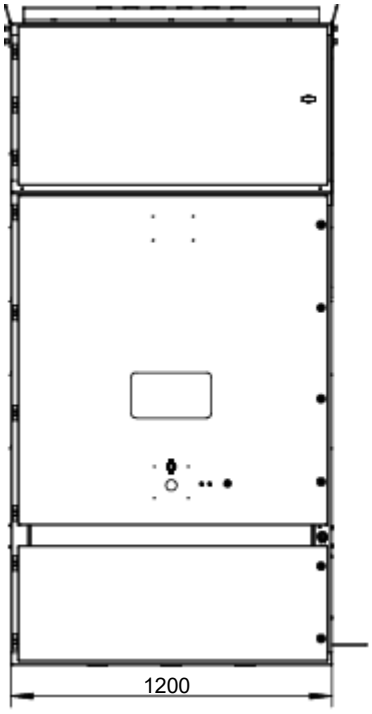
Alpha Prime：24kV

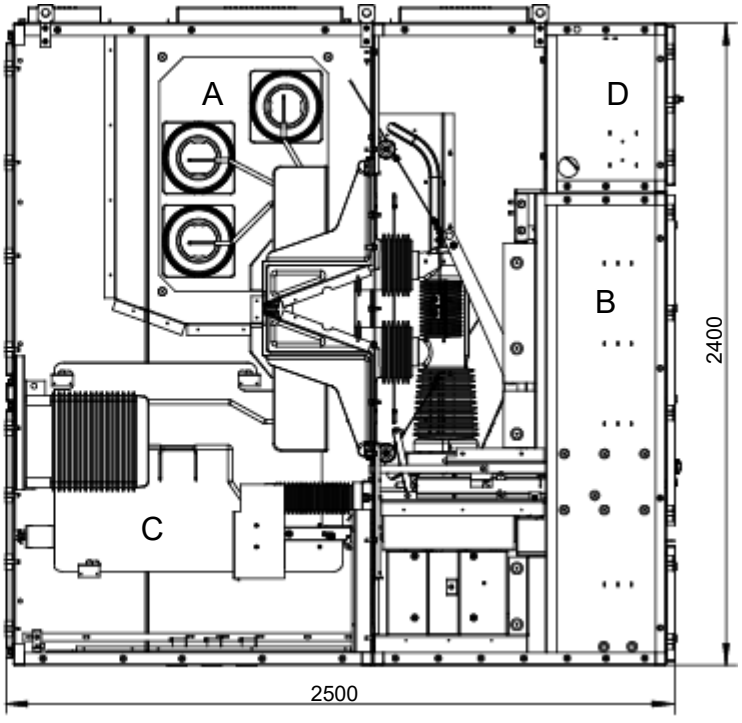


A. Busbar Compartment
B. Circuit Breaker Compartment
C. Cable Compartment
D. Low Voltage Compartment

Product Structure Drawing

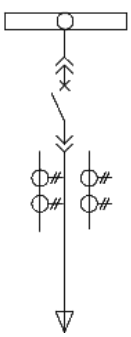
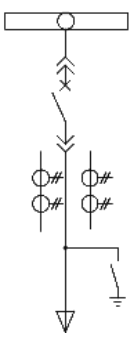
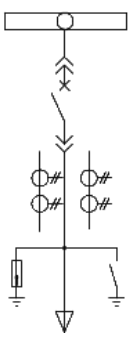
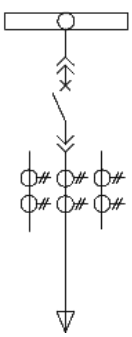
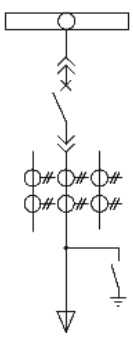
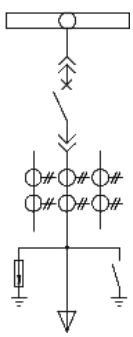
Alpha Prime：40.5kV





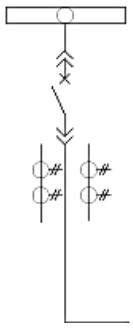
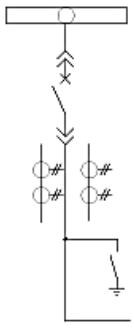
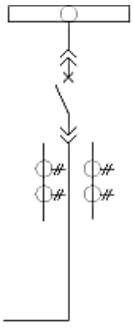
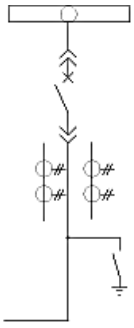
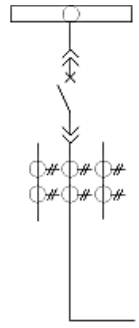
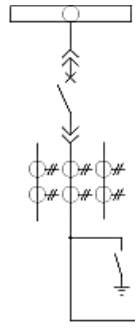
A. Busbar Compartment
B. Circuit Breaker Compartment
C. Cable Compartment
D. Low Voltage Compartment

Primary Scheme of Alpha Prime（12kV）

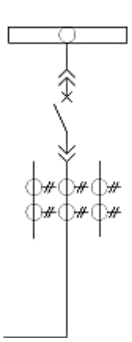
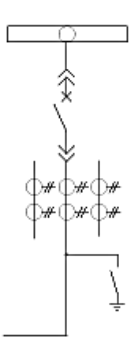
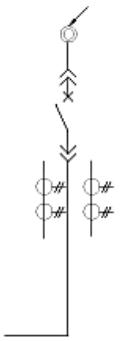
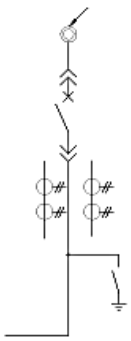
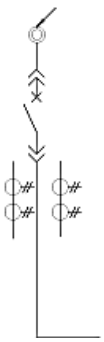
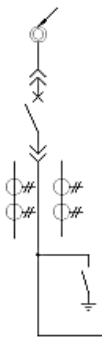
No.		001	002	003	004	005	006
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）	1	1	1	1	1	1
	CT	2	2	2	3	3	3
	PT						
	Fuse						
	Earthing Switch		1	1		1	1
	Arrester			3			3
Application		I.F	I.F	I.F	I.F	I.F	I.F

Meaning of code name in primary schemes
I-incoming F-outgoing D-disconnecting B-coupling R-busbar rising M-metering P-PT T-CPT S-Arrester

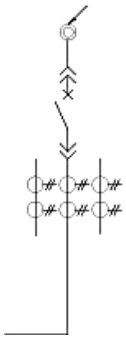
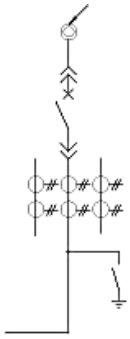
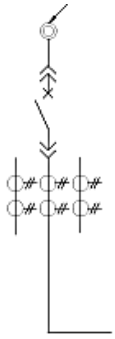
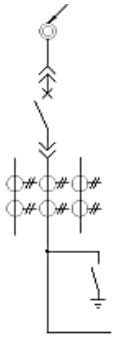
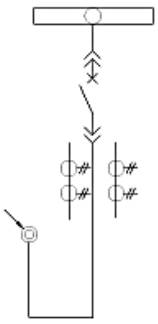
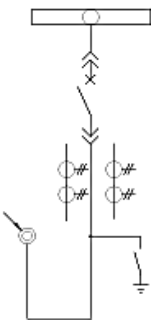
Primary Scheme of Alpha Prime（12kV）

No.		007	008	009	010	011	012
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB (Alpha VL)	1	1	1	1	1	1
	CT	2	2	2	2	3	3
	PT						
	Fuse						
	Earthing Switch		1		1		1
	Arrester						
Application		B	B	B	B	B	B

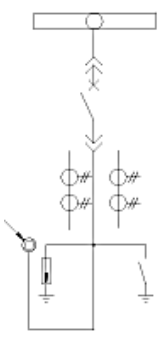
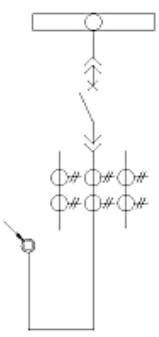
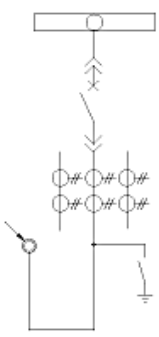
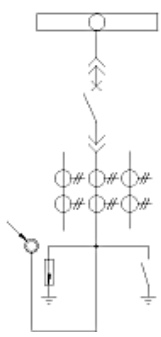
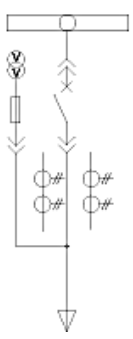
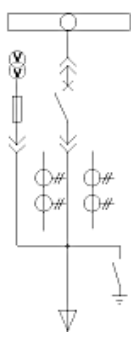
Primary Scheme of Alpha Prime（12kV）

No.		013	014	015	016	017	018
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）	1	1	1	1	1	1
	CT	3	3	2	2	2	2
	PT						
	Fuse						
	Earthing Switch		1		1		1
	Arrester						
Application		B	B	B	B	B	B

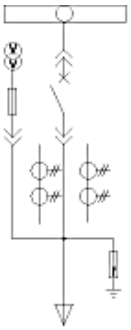
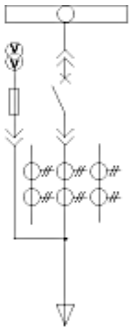
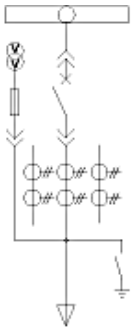
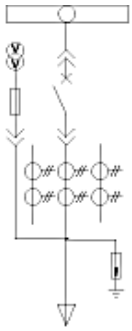
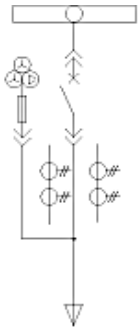
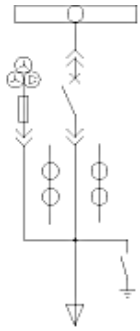
Primary Scheme of Alpha Prime（12kV）

No.		019	020	021	022	023	024
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）	1	1	1	1	1	1
	CT	3	3	3	3	2	2
	PT						
	Fuse						
	Earthing Switch		1		1		1
	Arrester						
Application		B	B	B	B	I.F	I.F

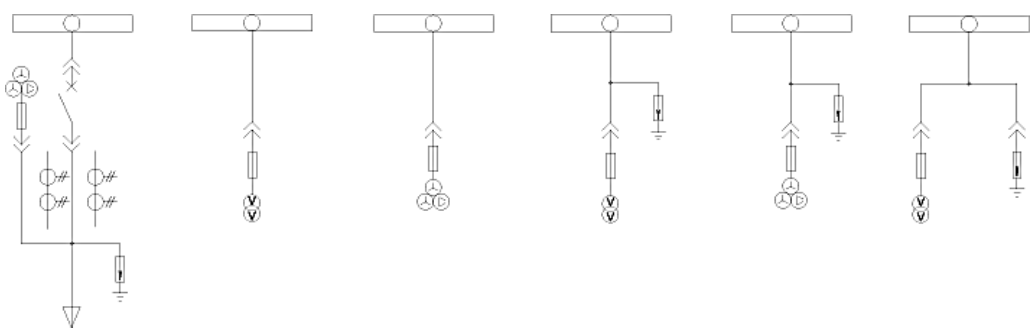
Primary Scheme of Alpha Prime（12kV）

No.		025	026	027	028	029	030
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）	1	1	1	1	1	1
	CT	2	3	3	3	2	2
	PT					2	2
	Fuse					3	3
	Earthing Switch	1		1	1		1
	Arrester	3			3		
Application		I.F	I.F	I.F	I.F	I+P	I+P

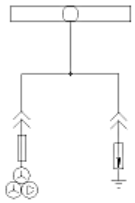
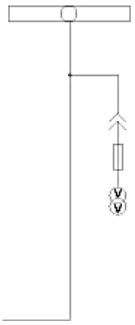
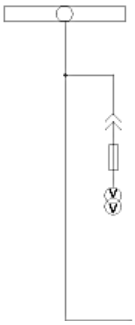
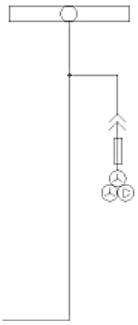
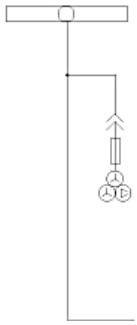
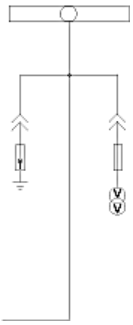
Primary Scheme of Alpha Prime（12kV）

No.		031	032	033	034	035	036
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）	1	1	1	1	1	1
	CT	2	3	3	3	2	2
	PT	2	2	2	2	3	3
	Fuse	3	3	3	3	3	3
	Earthing Switch			1			1
	Arrester	3			3		
Application		I+P	I+P	I+P	I+P	I+P	I+P

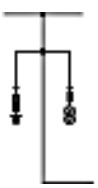
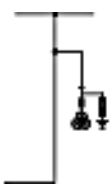
Primary Scheme of Alpha Prime（12kV）

No.		037	038	039	040	041	042
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）	1					
	CT	2					
	PT	3	2	3	2	3	2
	Fuse	3	3	3	3	3	3
	Earthing Switch						
	Arrester	3			3	3	3
Application		I+P	P	P	P+Arrester	P+Arrester	P+Arrester

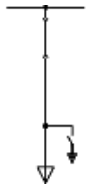
Primary Scheme of Alpha Prime（12kV）

No.		043	044	045	046	047	048
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）						
	CT						
	PT	3	2	2	3	3	2
	Fuse	3	3	3	3	3	3
	Earthing Switch						
	Arrester	3					3
Application		P+Arrester	P+R	P+R	P+R	P+R	R+P+Arrester

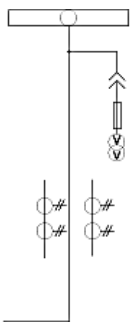
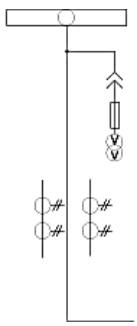
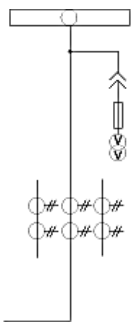
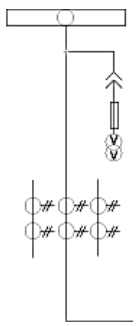
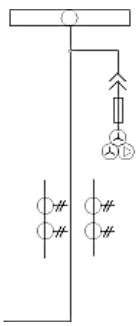
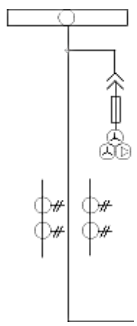
Primary Scheme of Alpha Prime（12kV）

No.		049	050	051	052	053	054
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）						
	CT						
	PT	2	3	3			
	Fuse	3	3	3			
	Earthing Switch						
	Arrester	3	3	3			
Application		R+P+Arrester	R+P+Arrester	R+P+Arrester	R	R	D

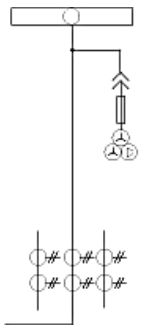
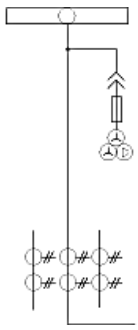
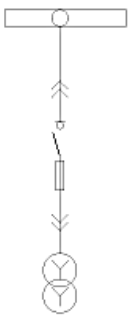
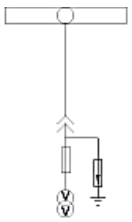
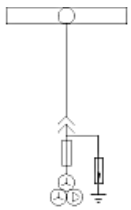
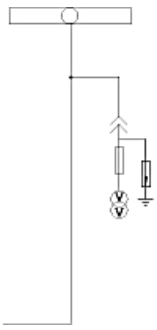
Primary Scheme of Alpha Prime（12kV）

No.		055	056	057	058	059	060
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）						
	CT						
	PT			2	2		
	Fuse			3	3		
	Earthing Switch						1
	Arrester						
Application		D+B	D+B	D+B+P	D+B+P	Outgoing phase changing	Outgoing phase changing

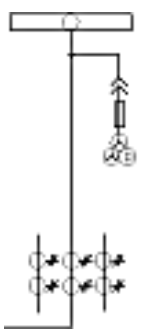
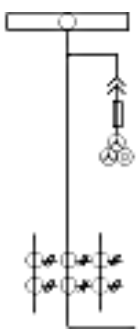
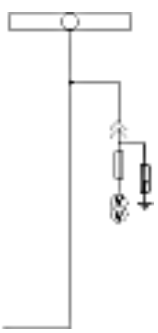
Primary Scheme of Alpha Prime（12kV）

No.		061	062	063	064	065	066
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）						
	CT	2	2	3	3	2	2
	PT	2	2	2	2	3	3
	Fuse	3	3	3	3	3	3
	Earthing Switch						
	Arrester						
Application		M	M	M	M	M	M

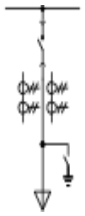
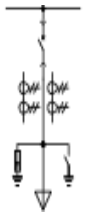
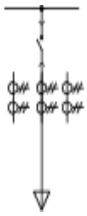
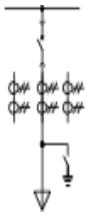
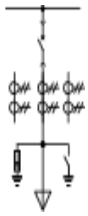
Primary Scheme of Alpha Prime（12kV）

No.		067	068	069	070	071	072
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）			Transformer 50/80kVA			
	CT	3	3				
	PT	3	3		2	3	2
	Fuse	3	3	3	3	3	3
	Earthing Switch						
	Arrester			3			
Application		M	M	T	T	P+Arrester	P+Arrester

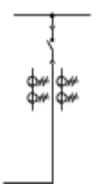
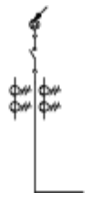
Primary Scheme of Alpha Prime（12kV）

No.		073	074	075	076	077	078
Primary Schemes							
Rated current（A）		630`4000			630`1250		
Main Apparatus	VCB（Alpha VL）						
	CT						
	PT	2	3	3			
	Fuse	3	3	3			
	Earthing Switch						
	Arrester						
Application		P+B+Arrester	P+B+Arrester	P+B+Arrester	P+B+Arrester	M	M

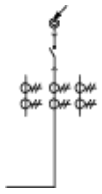
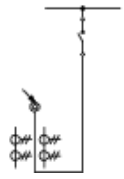
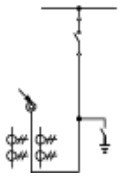
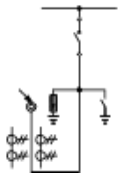
Primary Scheme of Alpha Prime（24kV）

No.		001	002	003	004	005	006
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）	1	1	1	1	1	1
	CT	2	2	2	3	3	3
	PT						
	Fuse						
	Earthing Switch		1	1		1	1
	Arrester						3
	Potential indicator	As per requirement					
Application		I.F	I.F	I.F	I.F	I.F	I.F

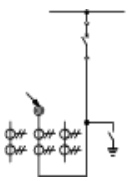
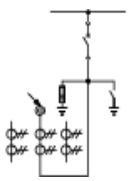
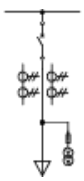
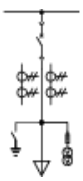
Primary Scheme of Alpha Prime（24kV）

No.		007	008	009	010	011	012
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）	1	1	1	1	1	1
	CT	2	2	3	3	2	2
	PT						
	Fuse						
	Earthing Switch						
	Arrester						3
	Potential indicator	As per requirement					
Application		B	B	B	B	B	B

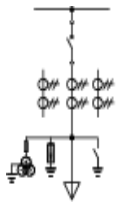
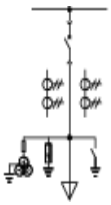
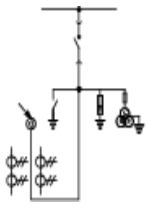
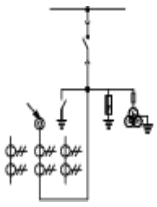
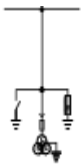
Primary Scheme of Alpha Prime（24kV）

No.		013	014	015	016	017	018
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）	1	1	1	1	1	1
	CT	3	3	2	2	2	3
	PT						
	Fuse						
	Earthing Switch				1		
	Arrester					3	
	Potential indicator	As per requirement					
Application		B	B	I.F	I.F	I.F	I.F

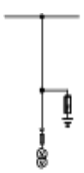
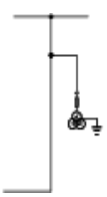
Primary Scheme of Alpha Prime（24kV）

No.		019	020	021	022	023	024
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB (Alpha VL)	1	1	1	1		
	CT	3	3	2	2		
	PT			2	2	2	3
	Fuse			3	3	3	3
	Earthing Switch	1	1		1		
	Arrester		3				
	Potential indicator	As per requirement					
Application		I.F	I.F	I+P	I+P	P	P

Primary Scheme of Alpha Prime（24kV）

No.		025	026	027	028	029	030
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）	1	1	1	1		
	CT	3	2	2	3		
	PT	3	3	3	3	3	3
	Fuse	3	3	3	3	3	3
	Earthing Switch	1	1	1	1	1	1
	Arrester	3	3	3	3	3	3
	Potential indicator	As per requirement					
Application		B	B	I.F	I.F	I.F	I.F

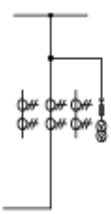
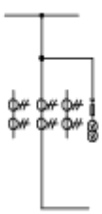
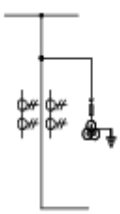
Primary Scheme of Alpha Prime（24kV）

No.		031	032	033	034	035	036
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）						
	CT						
	PT	2	3	2	2	3	3
	Fuse	3	3	3	3	3	3
	Earthing Switch						
	Arrester	3	3				
	Potential indicator	As per requirement					
Application		P+Arrester	P+Arrester	P+R	P+R	P+R	P+R

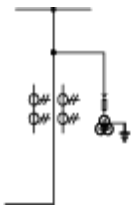
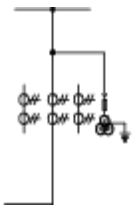
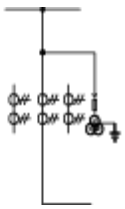
Primary Scheme of Alpha Prime（24kV）

No.		037	038	039	040	041	042
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）						
	CT						
	PT						
	Fuse						
	Earthing Switch						
	Arrester						
	Potential indicator	As per requirement					
Application		R	R	D	D+B	D+B	Outgoing phase changing

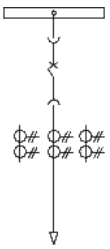
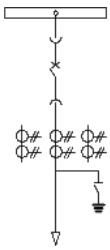
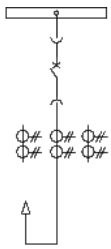
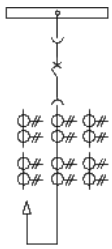
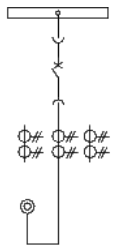
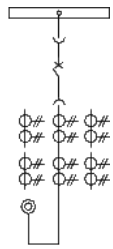
Primary Scheme of Alpha Prime（24kV）

No.		043	044	045	046	047	048
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）						
	CT		2	2	3	3	2
	PT		2	2	2	2	3
	Fuse		3	3	3	3	3
	Earthing Switch	1					
	Arrester						
	Potential indicator	As per requirement					
Application		Outgoing phase changing	M	M	M	M	M

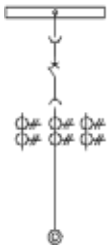
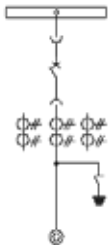
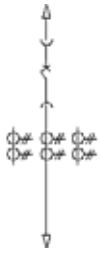
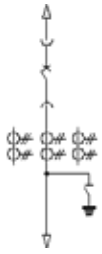
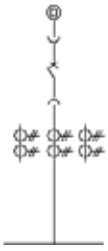
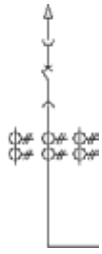
Primary Scheme of Alpha Prime（24kV）

No.		049	050	051	052	053	054
Primary Schemes							
Rated current（A）		630`4000					
Main Apparatus	VCB（Alpha VL）	2	3	3		3	
	CT	3	3	3			
	PT	3	3	3	3	3	
	Fuse						
	Earthing Switch						
	Arrester					3	
	Potential indicator	As per requirement					
Application		M	M	M	T	M	

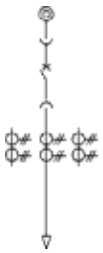
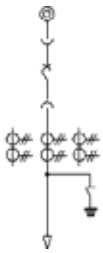
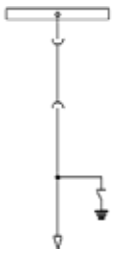
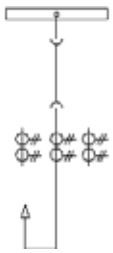
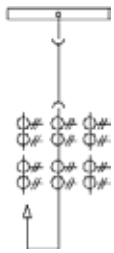
Primary Scheme of Alpha Prime（40.5kV）

No.		01	02	03	04	05	06
Primary Schemes							
Rated current（A）		630~3150					
Main Apparatus	(VCB)Alpha VL/ SF_6CB(FEP)	1	1	1	1	1	1
	CT	3	3	3	6	3	6
	PT						
	Fuse						
	Earthing Switch		1				
	Arrester	As per requirement					
	Potential indicator	As per requirement					
Application		I.F	I.F	I.F	I.F	I.F	I.F

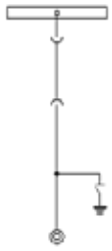
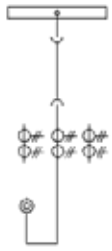
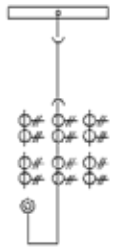
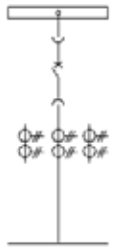
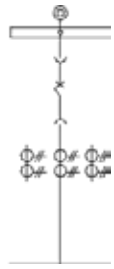
Primary Scheme of Alpha Prime (40.5kV)

No.		07	08	09	10	11	12
Primary Schemes							
Rated current (A)		630~3150	630~3150	630~3150	630~3150	630~3150	630~3150
Main Apparatus	(VCB)Alpha VL/ SF_6CB(FEP)	1	1	1	1	1	1
	CT	3	3	3	3	3	3
	PT						
	Fuse						
	Earthing Switch		1		1		
	Arrester	As per requirement				/	/
	Potential indicator	As per requirement					
Application		I.F	I.F	I.F	I.F	I.F	I.F

Primary Scheme of Alpha Prime (40.5kV)

No.		13	14	15	16	17	18
Primary Schemes							
Rated current (A)		630~3150					
Main Apparatus	(VCB)Alpha VL/ SF_6CB(FEP)	1	1				
	CT	3	3			3	6
	PT						
	Fuse						
	Earthing Switch		1		1		
	Arrester	As per requirement					
	Potential indicator	As per requirement					
Application		I.F	I.F	D	D	D	D

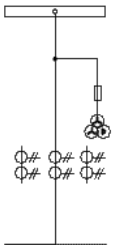
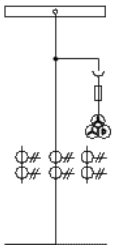
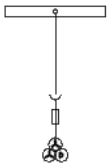
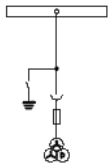
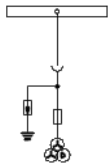
Primary Scheme of Alpha Prime（40.5kV）

No.		19	20	21	22	23	24
Primary Schemes							
Rated current（A）		630~3150					
Main Apparatus	(VCB)Alpha VL/ SF_6CB(FEP)					1	1
	CT			3	6	3	3
	PT						
	Fuse						
	Earthing Switch		1				
	Arrester	As per requirement				、/	/
	Potential indicator	As per requirement					
Application		D	D	D	D	B	B+（I）

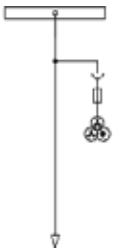
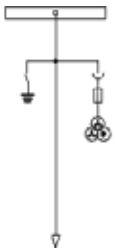
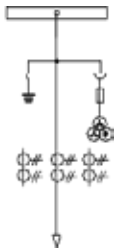
Primary Scheme of Alpha Prime（40.5kV）

No.		25	26	27	28	29	30
Primary Schemes							
Rated current（A）		/	630~3150				
Main Apparatus	(VCB)Alpha VL/ SF_6CB(FEP)						
	CT				3		
	PT						
	Fuse						
	Earthing Switch						
	Arrester	3	3	/	/	/	As per requirement
	Potential indicator	/	/	As per requirement			
Application		S	S+（F）	R	R	R	R

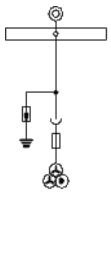
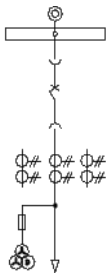
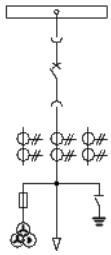
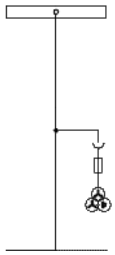
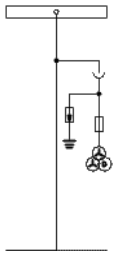
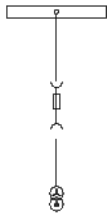
Primary Scheme of Alpha Prime（40.5kV）

No.		31	32	33	34	35	36
Primar Schemes							
Rated current（A）			630~3150		/	/	/
Main Apparatus	(VCB)Alpha VL/ SF_6CB(FEP)						
	CT		3	3			
	PT		3	3	3	3	3
	Fuse		3	3	3	3	3
	Earthing Switch					1	
	Arrester	/	/	/			3
	Potential indicator	As per requirement					
Application		R+（I）	M	M	P	P	P

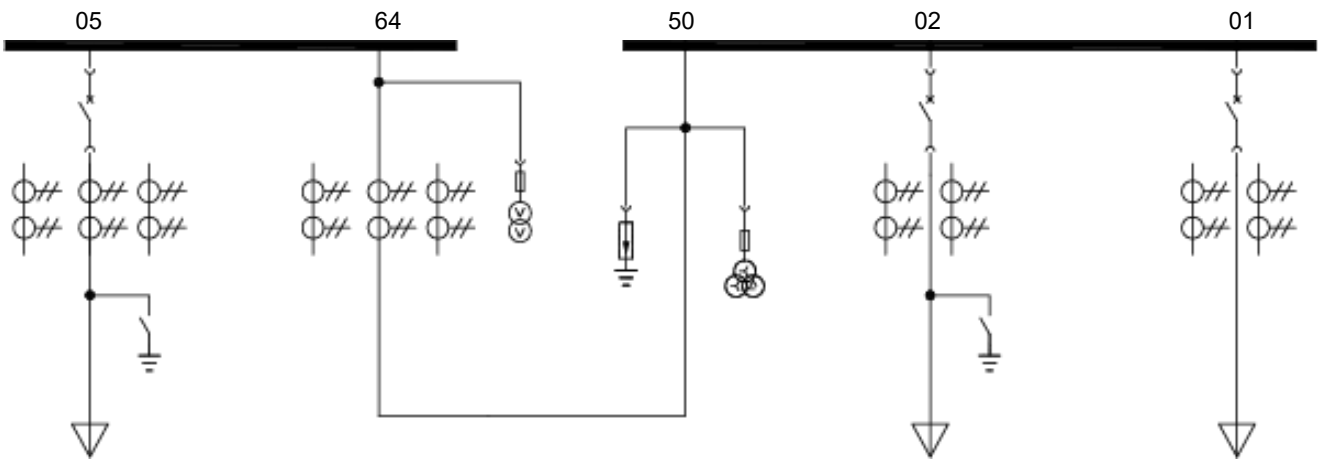
Primary Scheme of Alpha Prime（40.5kV）

No.		37	38	39	40	41	42
Primary Schemes							
Rated current（A）				630~3150	630~3150	630~3150	630~3150
Main Apparatus	(VCB)Alpha VL/ SF_6CB(FEP)						
	CT					3	3
	PT	3	3	3	3	3	3
	Fuse	3	3	3	3	3	3
	Earthing Switch		1		1		1
	Arrester	As per requirement					
	Potential indicator	As per requirement					
Application		P	P	P+（I）	P+（I）	P+（I）	P+（I）

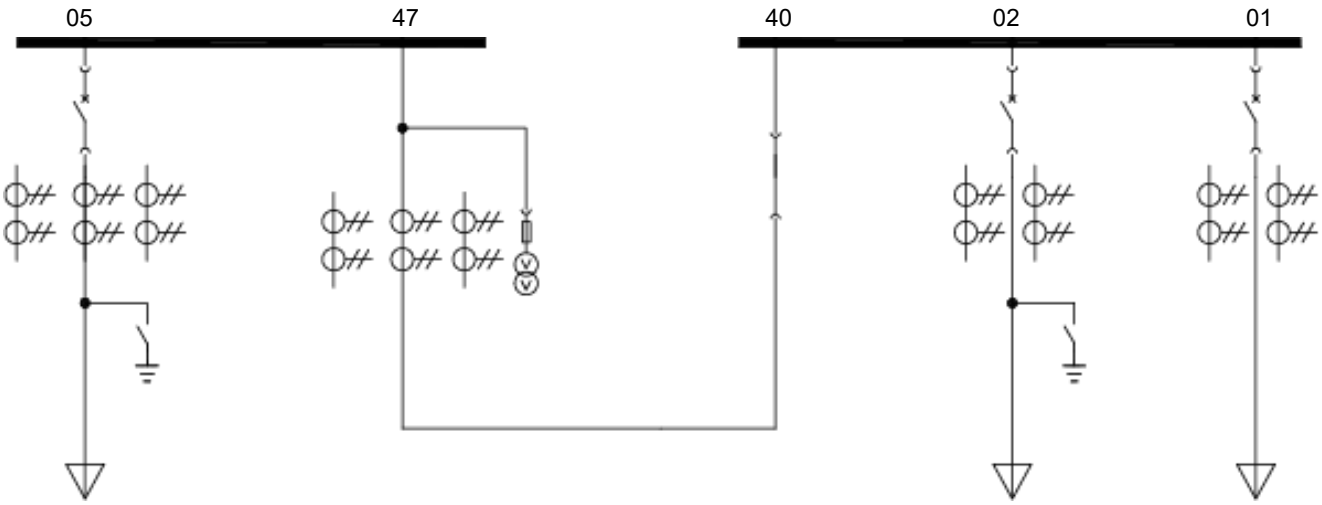
Primary Scheme of Alpha Prime（40.5kV）

No.		43	44	45	46	47	48
Primary Schemes							
Rated current（A）		/	630~3150				/
Main Apparatus	(VCB)Alpha VL/ SF_6CB(FEP)		1	1			Transformer 50/80/100kVA
	CT		3	3			
	PT	3	3	3	3	3	
	Fuse	3	3	3	3	3	3
	Earthing Switch			1			
	Arrester	3	As per requirement		/	/	/
	Potential indicator		/	As per requirement			
Application		P+（I）	P+（I）	P+（F）	P+R	P+R	T

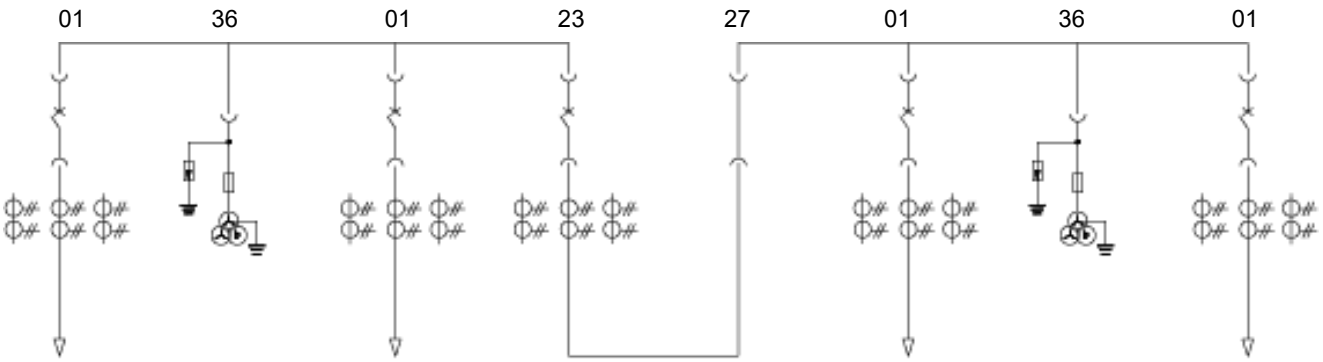
Application Example of Alpha Prime （12kV）



Application Example of Alpha Prime （24kV）



Application Example of Alpha Prime （40.5kV）



Installation of Alpha Prime 12kV switchgear

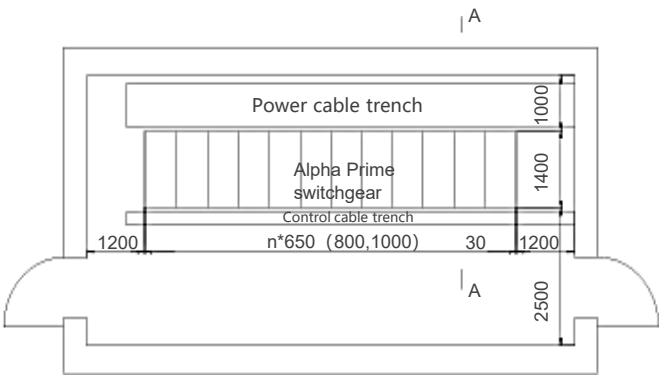


Figure1:plane diagram for switchgear arrangement scheme

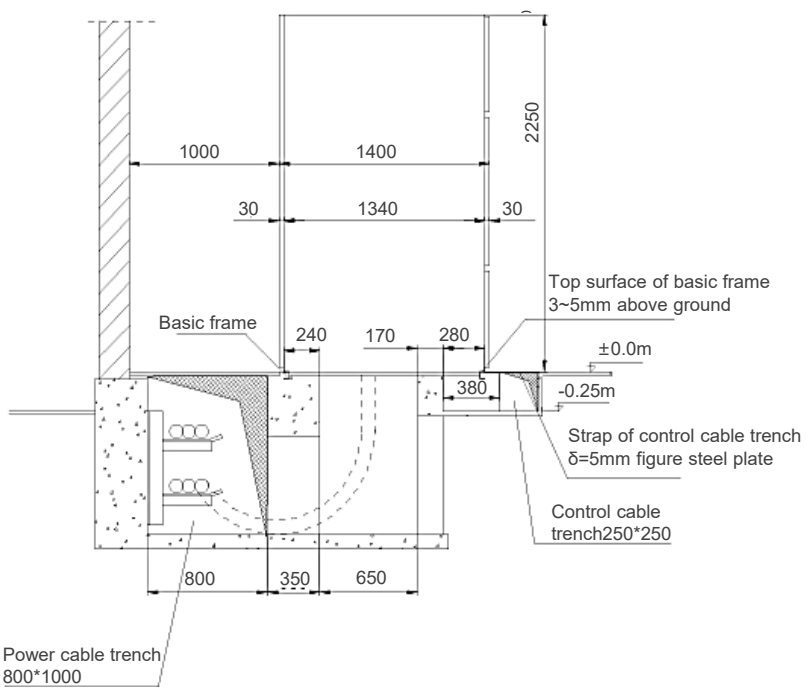


Figure2:plane diagram for switchgear arrangement scheme（section A-A）

Installation of Alpha Prime 12kV switchgear

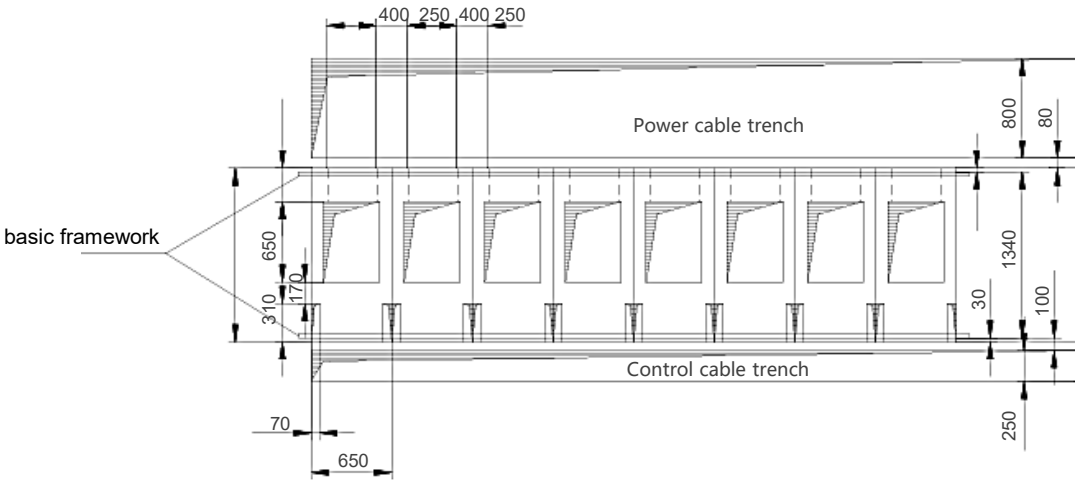


Figure3:Switch-room cable trench arrangement scheme

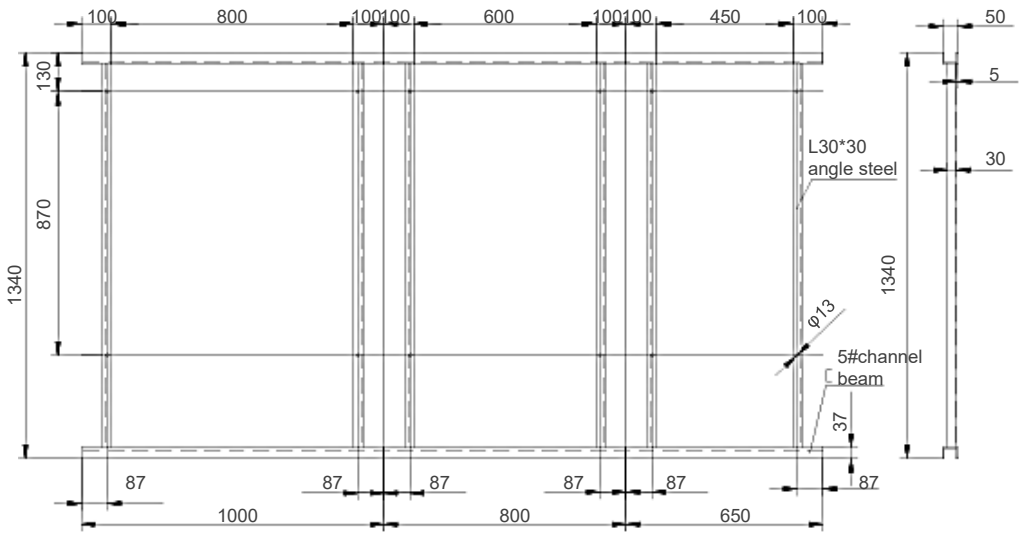


Figure4:Typical basic frame foundation

（for 1000mm/800mm/650mm width dimension model）

Installation of Alpha Prime 24kV switchgear

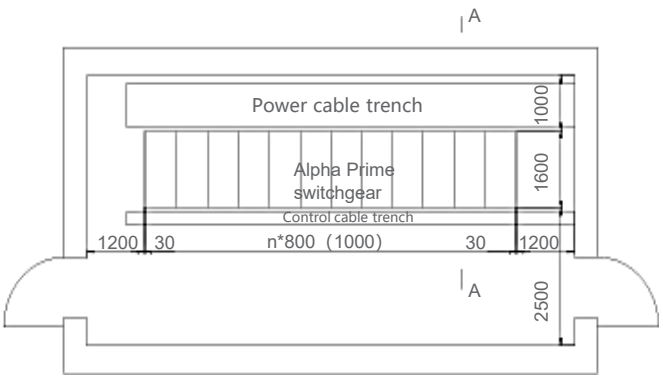


Figure1:plane diagram for switchgear arrangement scheme

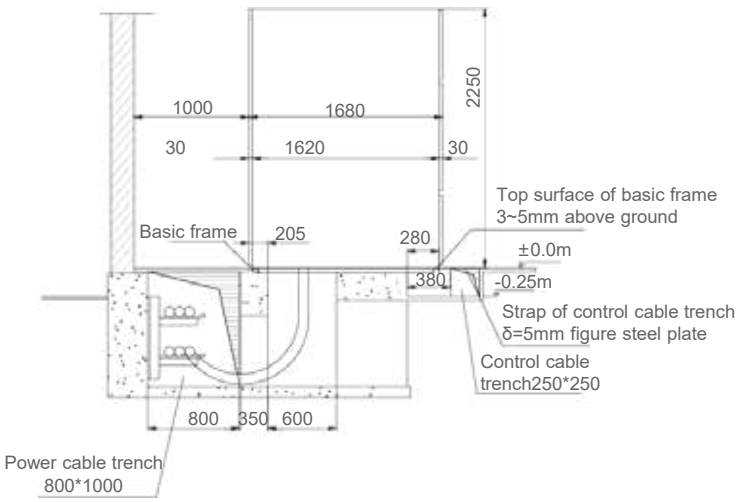


Figure2:plane diagram for switchgear arrangement scheme（section A-A）

Installation of Alpha Prime 24kV switchgear

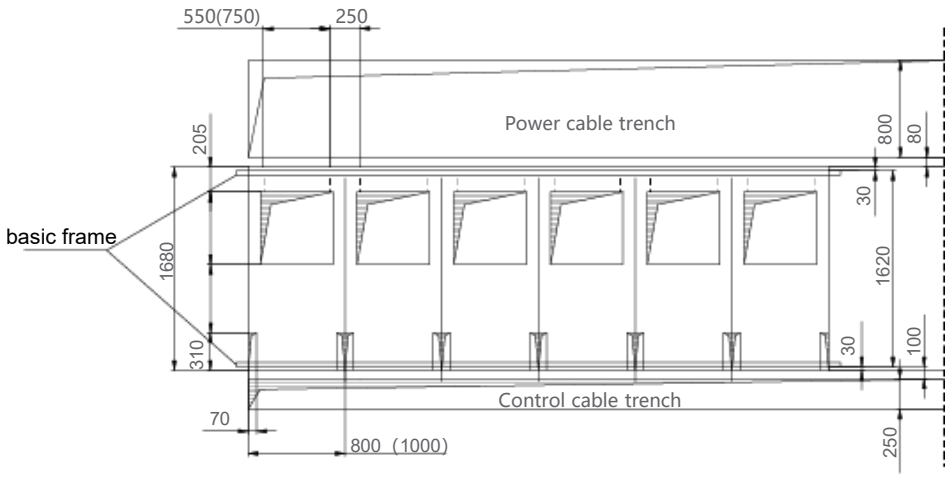


Figure3:Switch-room cable trench arrangement scheme

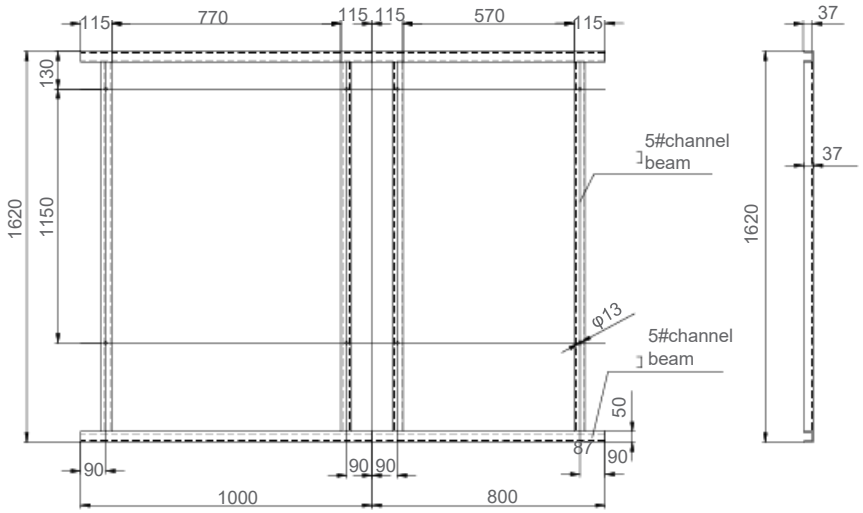


Figure4:Typical basic frame foundation
（for 1000mm/800mm width dimension model）

Installation of Alpha Prime 40.5kV switchgear

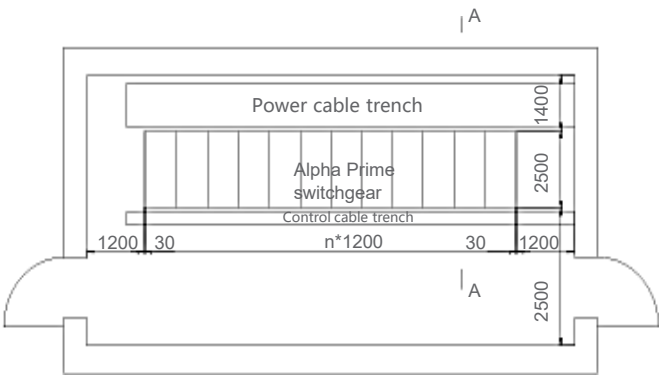


Figure1:plane diagram for switchgear arrangement scheme

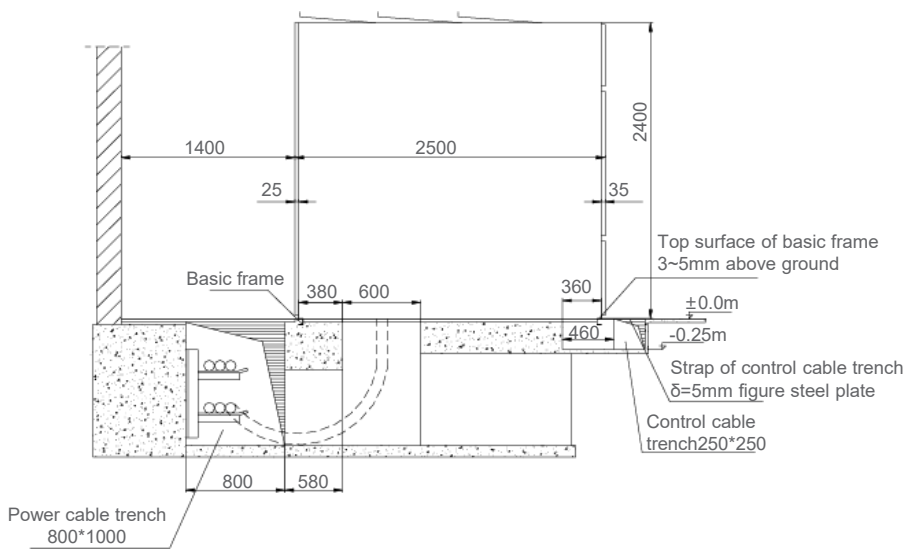


Figure2:plane diagram for switchgear arrangement scheme（section A-A）

Installation of Alpha Prime 40.5kV switchgear

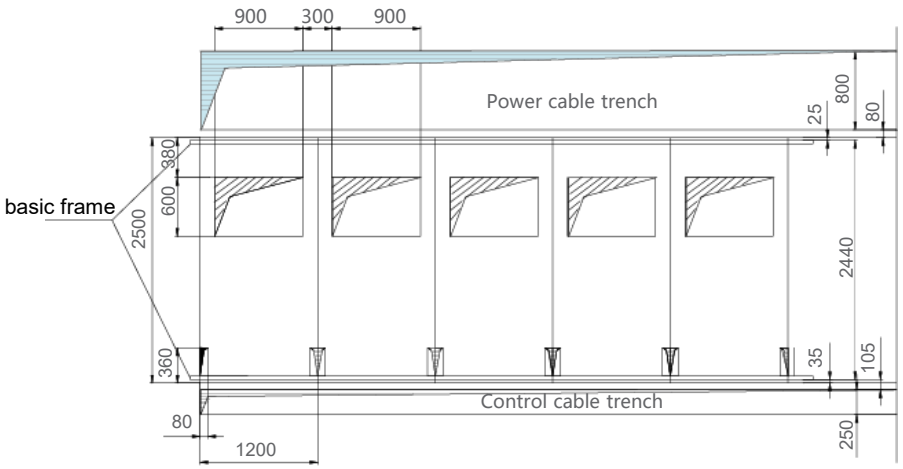


Figure3:Switch-room cable trench arrangement scheme

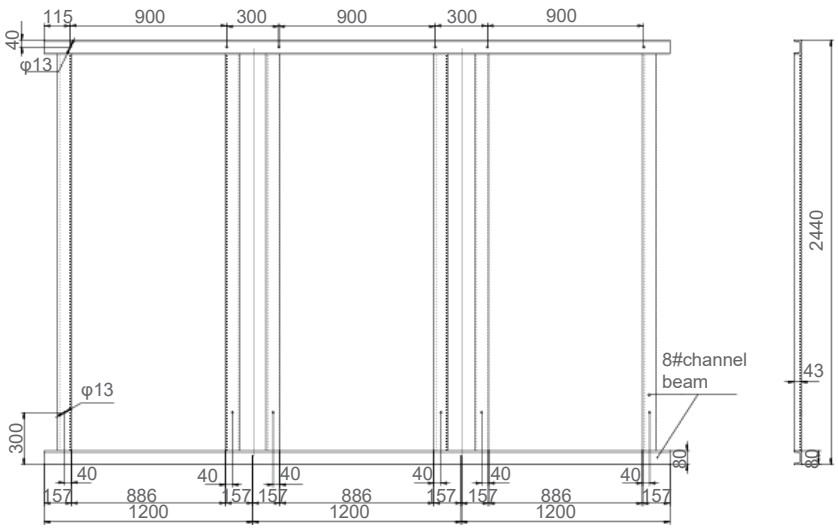


Figure4:Typical basic frame foundation

OUR PROMISE

Westinghouse is built upon a tradition of dependability and innovation.

Today, we strive to make everyday life a little better by offering a wide range of quality products and services you can trust.

WHY WESTINGHOUSE ?

Since 1886, Westinghouse has brought the best to life. Today, Westinghouse Electric Corporation remains a trusted name globally in consumer and industrial products. Built on a heritage of innovation and entrepreneurial spirit. Today, Westinghouse continues to grow its diverse portfolio, which includes a wide range of product categories, including home appliances, consumer electronics. Lighting and power generation.

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