

Enerswit⁺

SF6 Gas-insulated Switchgear

36 / 40.5kV, ...630A, ...31.5kA



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The core unit of Enerswit+ series 36 / 40.5 kV SF6 gas-insulated medium voltage switchgear uses patented self-energized load break switch, vacuum circuit breaker with ultra-low resistance and primary live parts, which are sealed in a stainless steel gas tank fully filled with SF6 gas Insulating Gas to isolate with the outside, ensuring that the switchgear and all live parts in the gas tank will not be affected by the outside environment. This exempts the unit from maintenance, improves the reliability of power supply, enhances personal safety and meets the needs of economic and reliable operation.

Field of Application

- Onshore/offshore wind farms
- Medium and large photovoltaic power stations
- Small medium voltage substation
- Industrial enterprises
- Large buildings and venues
- Airport, port and rail transit
- Municipal engineering, commercial complex, urban center, etc.



Environment and Operating Conditions

- Temperature: -25°C
- Average within 24 hours (max.): 40 °C
- Rated voltage: 36 / 40.5kV
- Operating temperature: -25°C ~ +40 °C
- Altitude: 2000m
- Degrees of protection: core unit (gas tank) IP68
Operation mechanism compartment IP4X
Cable compartment IP4X
- Insulating gas: SF6 Gas
Relative pressure at 20 °C 0.03Mpa

For special operating conditions different from the normal ones above in the use environment, the manufacturer and the end user must reach an agreement. If special severe operating environment is involved, please do consult with the manufacturer and supplier.



Technical Features

- Enerswit+ series is standardized based on the same platform, compact and reliable;
- Rated voltage: 36 / 40.5kV;
- All primary live parts are sealed in a stainless steel gas tank fully filled with SF6 gas;
- Resistance to internal arc fault;
- Earthing switch has earthing making capacity;
- With mechanical interlocking, ensuring correct and reliable sequential operation;
- All primary devices are sealed in a stainless steel gas tank, applicable to the distribution sites with salt mist, moisture or susceptible to contamination;
- 450/500mm* wide, compact, light-weight, saving occupation area;
- Designed based on a full-metal, full-seal, and modular concept, achieving a whole life cycle of primary live equipment maintenance free.

References and Standards

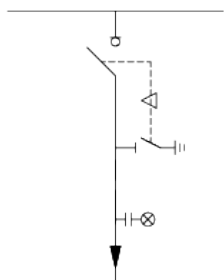
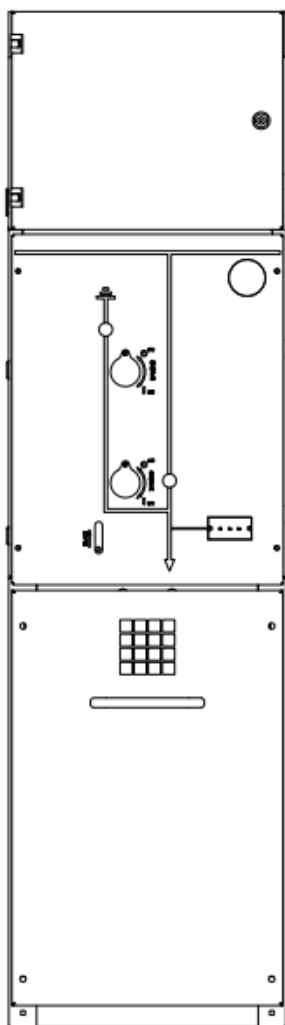
- IEC_62271-100 Alternating-current high-voltage circuit-breakers
- IEC_62271-102 High-voltage alternating-current disconnectors and earthing switches
- IEC_62271-200 A.C. metal-enclosed switchgear and controlgear
- IEC 62271-103 High voltage load break switch
- GB/T 3906 A.C. metal-enclosed switchgear and controlgear for rated voltages of 3.6kV - 40.5kV
- GB/T 3804 A.C. high voltage switches for rated voltages from 6kV to 40.5kV
- GB/T 1984 Alternating-current high-voltage circuit-breakers
- GB/T 1985 High-voltage alternating-current disconnectors and earthing switches
- GB/T 16926 High-voltage alternating current switch-fuse combinations
- GB/T 11022 Common specifications for high-voltage switchgear and controlgear standards
- GB/T 4208 Degrees of protection provided by enclosure (IP code)
- GB/T 15166.2 Alternating-current high-voltage fuses--Current-limiting fuses



Technical Parameters

Model	C load break switch	D Vacuum Circuit Breaker
Rated voltage (kV)	36 / 40.5	36 / 40.5
Rated current (A)	630	630
Rated withstand current (kA/s)	20 / 4	25 / 4, 31.5 / 4
Rated short circuit making current (peak) (KA)	50	63, 80
Electrical endurance (times)	E2	E2
Rated short circuit breaking current (kA)		25, 31.5
Internal arc rating (AFLR)	25kA/1s	25kA/1s
Mechanical life of circuit breaker (times)		10000
Mechanical life of disconnecter (times)		5000
Mechanical life of load break switch (times)	5000	
Mechanical life of earthing switch (times)	3000	5000
Power frequency withstand voltage (across the Isolating distance) kV	118	118
Power frequency withstand voltage (common value) kV	95	95
Lightning impulse voltage (across the Isolating distance) kV	215	215
Lightning impulse voltage (common value) kV	185	185
Annual leakage rate (%/year)	≤0.01	≤0.01
Degrees of protection (Switchgear)	IP4X	IP4X
Degrees of protection (Gas tank)	IP68	IP68
Width (mm)	450	450

C Load Break Switch



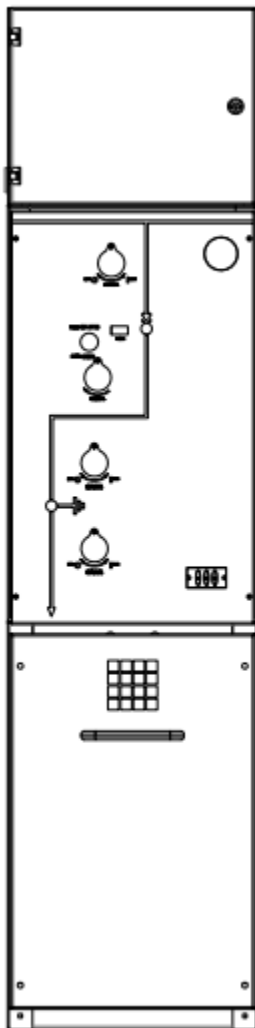
Standard Configuration

- Self-energized load break switch
- Manual operation mechanism for self-energized load break switch
- Earthing switch
- Manual operation mechanism for earthing switch
- SF6 gas gauge
- Potential indicator (indicating that the cable outlet bushing is charged)
- 630A internal busbar
- Cable compartment with interlocking with earthing switch
- Earthing busbar
- Low voltage compartment (400mm / 600mm height)

Optional Accessories for Additional Charges

- Electrical operation mechanism for load break switch
- Surge arrester
- Single cable outlet bushing (630A)
- Short circuit and earthing fault indicator
- Reserved external bus extension, bus coupler
- Bushing CT or Ring CT
- Touchable cable termination kits

D Vacuum Circuit Breaker



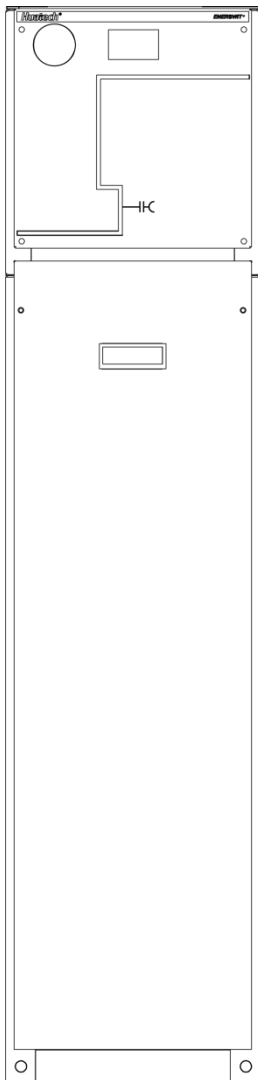
Standard Configuration

- 630A/1250A vacuum circuit breaker
- Manual operation mechanism for vacuum circuit breaker
- Three-position isolated earthing switch
- Manual operation mechanism for three-position isolated earthing switch
- Potential indicator (indicating that the cable outlet bushing is charged)
- SF6 gas gauge
- 630A/1250A internal busbar
- Cable room with interlocking with earthing switch
- Earthing busbar
- Low voltage compartment (400mm / 600mm height)

Optional Accessories for Additional Charges

- Electric operation mechanism for vacuum circuit breaker
- Inlet line arrester
- Single cable outlet bushing (630A/1250A)
- Short circuit and earthing fault indicator
- AP330-R series microcomputer integrated protection device
- Reserved external bus extension, bus coupler
- Bushing CT or feed-through CT

R Cable/Bus riser without earthing switch

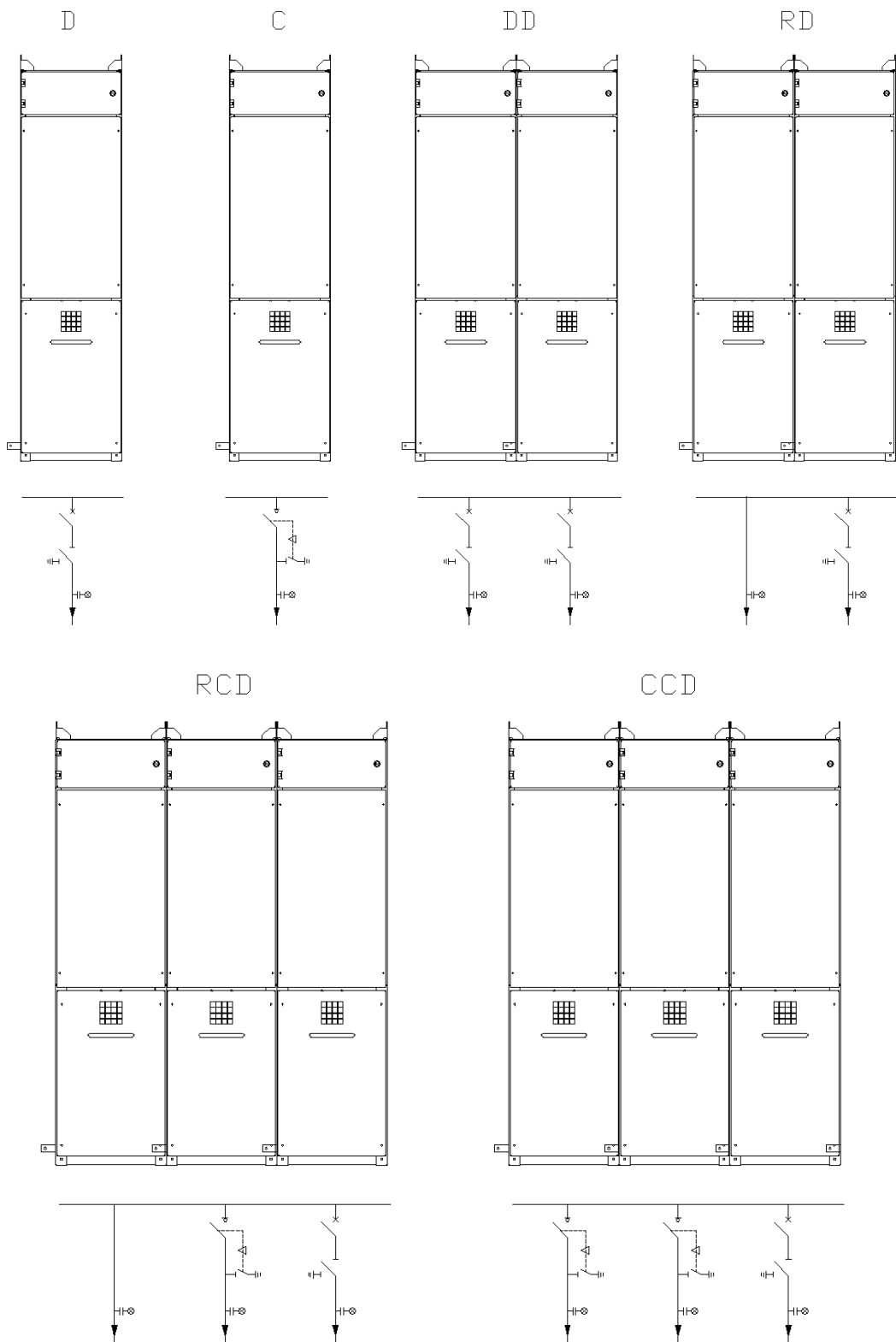


Standard Configuration

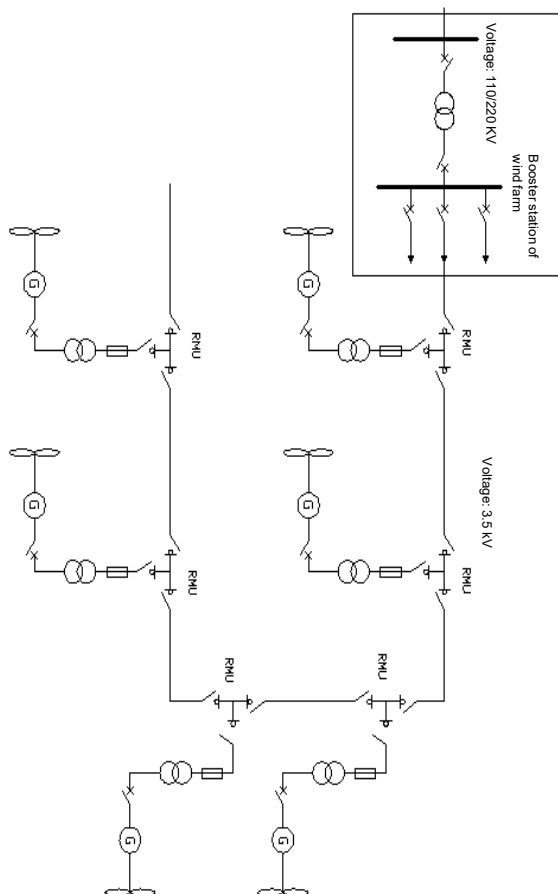
- 630A/1250A internal bus
- Outlet bushing in front of the unit 630A/1250A
- Potential indicator (indicating that the cable outlet bushing is charged)
- SF6 gas gauge
- Earthing busbar
- Low voltage compartment (400mm / 600mm height)

Optional Accessories for Additional Charges

- Inlet line arrester
- Short circuit and earthing fault indicator
- Reserved external bus extension, bus coupler (bus)

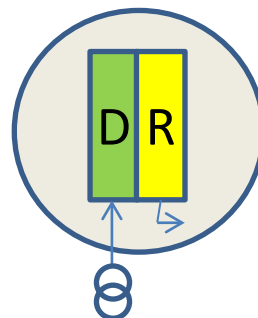


Combined application scheme suitable for wind turbine tower cabin



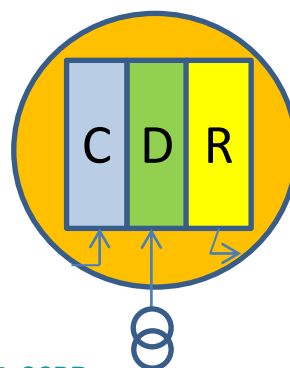
Enerswit⁺ 36 / 40.5 DR

Fan transformer to protect the circuit breaker cabinet + outgoing cabinet



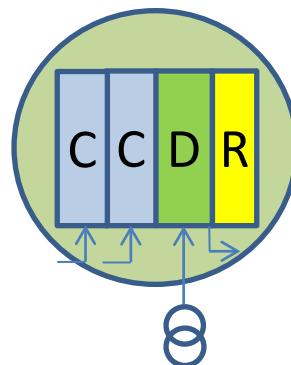
Enerswit⁺ 36 / 40.5 CDR

Fan transformer to protect the circuit breaker cabinet + outgoing cabinet + load break switch incoming cabinet

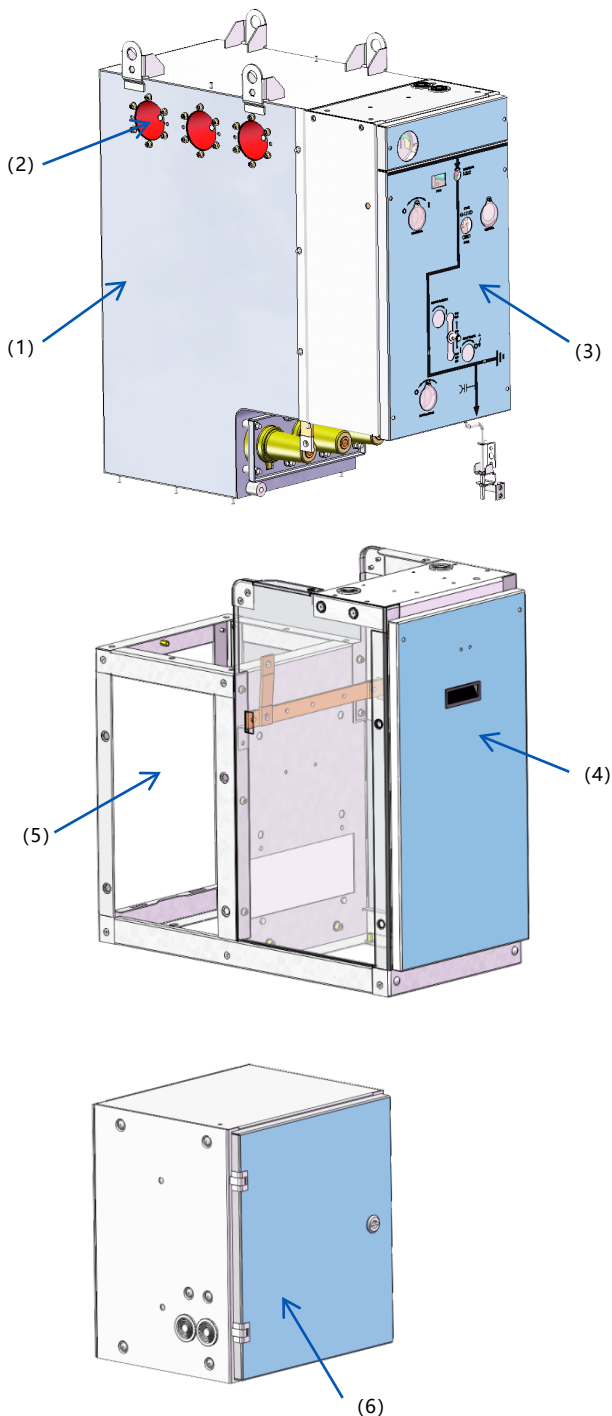


Enerswit⁺ 36 / 40.5 CCDR

Fan transformer to protect the circuit breaker cabinet + outgoing cabinet+2-way load break switch incoming cabinet



Enerswit+ 36 / 40.5kV Series Medium Voltage Switchgear



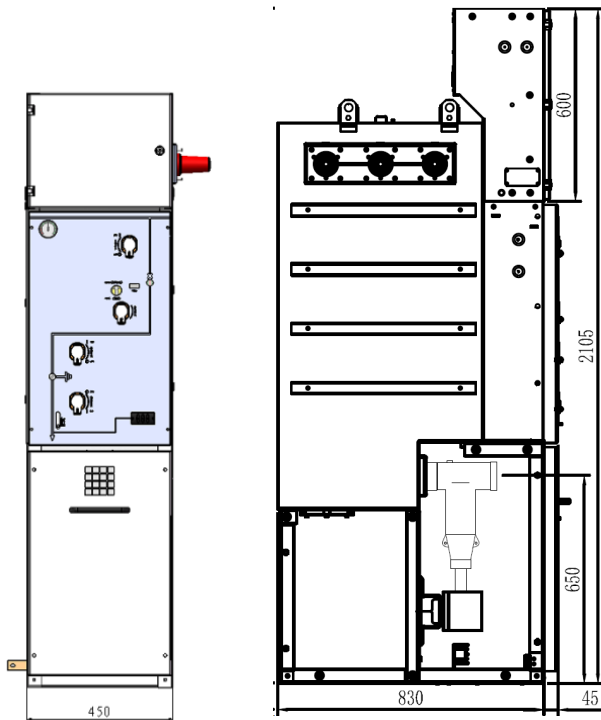
Enerswit+ 36 / 40.5kV series SF₆ insulated medium voltage switchgear has the self-energized load break switch, vacuum circuit breaker with ultra-low resistance, and primary live part sealed in a stainless steel gas tank fully filled with SF₆ Insulating Gas to isolate with the outside, ensuring that the switchgear and all live parts in the gas tank will not be affected by the outside environment; the gas tank is installed on the base of cable room made of Alu-zinc plate; the operation mechanism and the door plate of the cable room are interlocked to realize reliable and safe sequential operation; with over 90% of metal materials, it exempts the unit from maintenance, improves the reliability of power supply, enhances personal safety and meets the needs of economic and reliable operation.

Note:

- (1) Stainless steel gas tank filled with SF₆ Insulating Gas
- (2) Bus connection expansion bushing
- (3) Operation mechanism and door
- (4) Cable compartment door
- (5) Base of cable compartment
- (6) Low voltage compartment

Overall Dimensions

Enerswit+ 36 / 40.5kV Series Medium Voltage Switchgear



Features

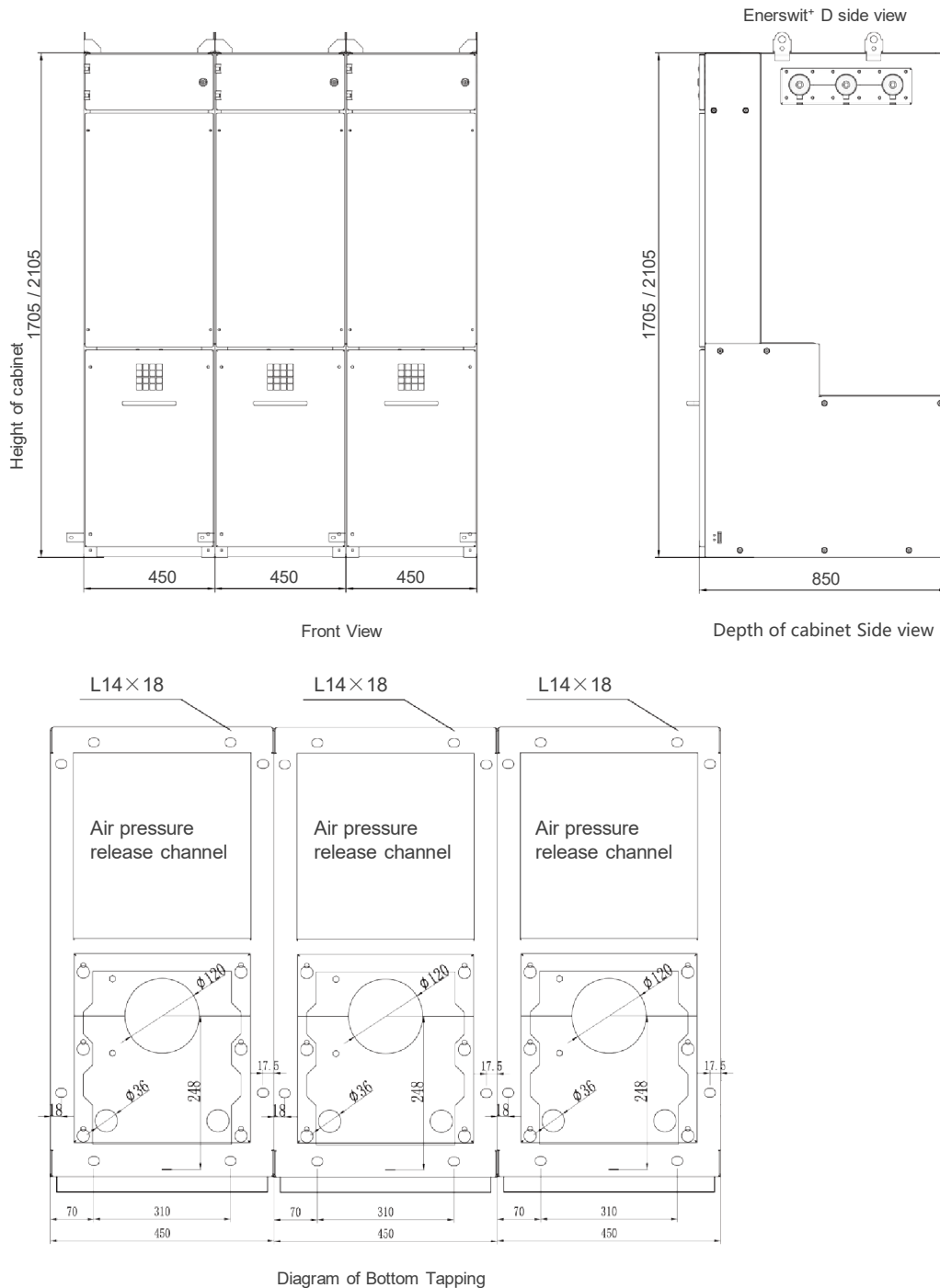
With compact and small size, it greatly reduces occupation area and is easy to be installed in wind turbine tower cabin and outdoor switchroom, which facilitates site installation, shortens construction period and improves economic benefits.

The height of product is increased by 200mm or 400mm according to the configuration of the low voltage compartment.

Functional Units	Functional Scheme	Width (mm)	Depth (mm)	Height (mm)
C	Load break switch cabinet	450	875	1705 / 2105
D	Vacuum circuit breaker cabinet	450	875	1705 / 2105
R	Cable/Bus riser without earthing switch	450	875	1705 / 2105
PT	PT cabinet with load break switch	450	875	1705 / 2105

Diagram of Installation Foundation

C+C+D

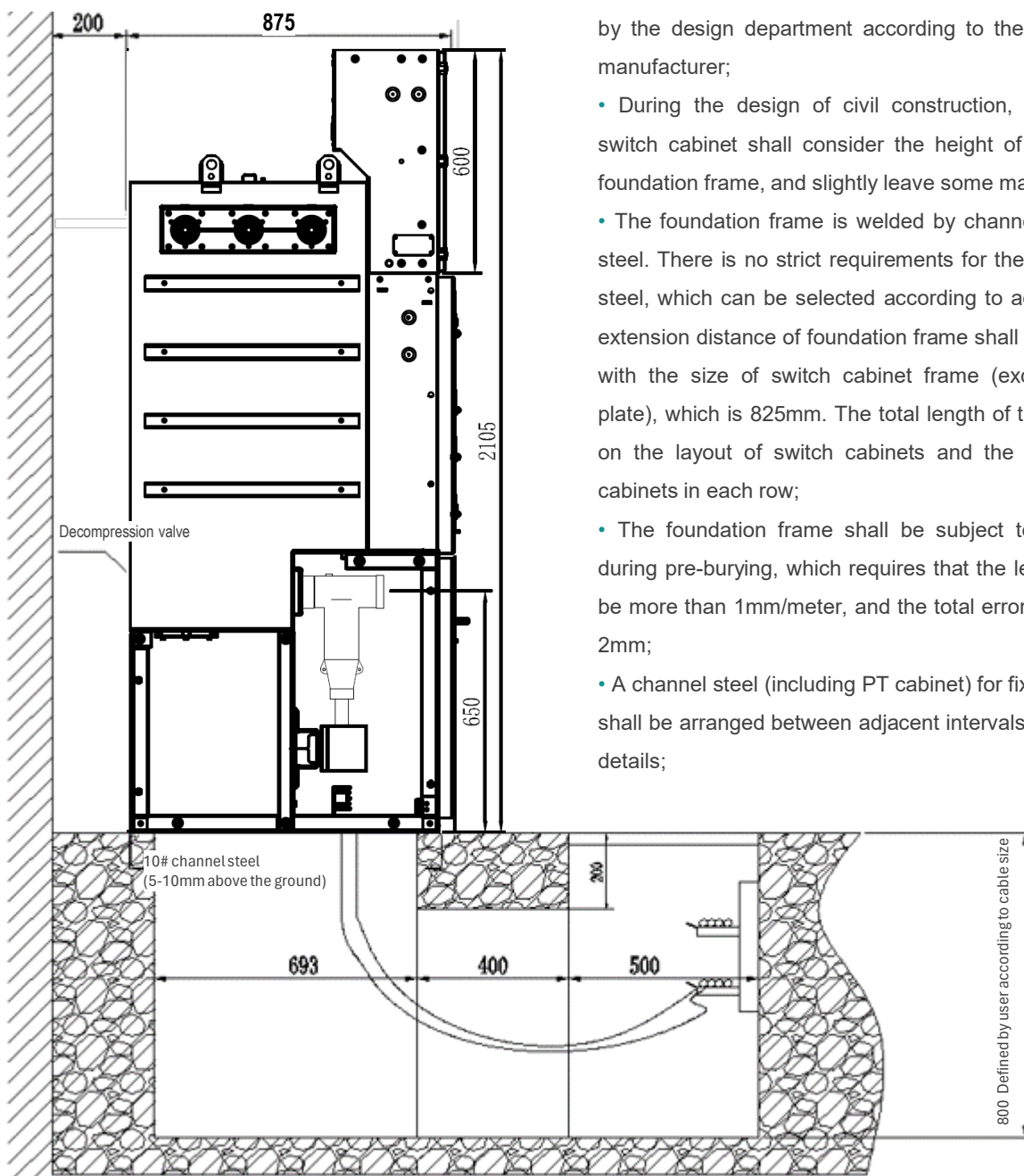


Note:

1. Mark the side of left and right end blanking plates, 20mm in thickness, respectively.

A-A

Size unit: mm



- Generally, the foundation framework shall be buried using secondary pouring method by electrical installation unit after the completion of civil construction, and the foundation framework shall be fabricated based on the drawings prepared by the design department according to the requirements the manufacturer;
- During the design of civil construction, the foundation of switch cabinet shall consider the height of channel steel for foundation frame, and slightly leave some margin;
- The foundation frame is welded by channel steel and angle steel. There is no strict requirements for the height of channel steel, which can be selected according to actual bearing. The extension distance of foundation frame shall be kept consistent with the size of switch cabinet frame (excluding front door plate), which is 825mm. The total length of the frame depends on the layout of switch cabinets and the number of switch cabinets in each row;
- The foundation frame shall be subject to level calibration during pre-burying, which requires that the level error shall not be more than 1mm/meter, and the total error not be more than 2mm;
- A channel steel (including PT cabinet) for fixing switch cabinet shall be arranged between adjacent intervals, see floor plan for details;

Order Information



Order Information

- Model, name and scheme of switchgear
- Rated voltage, rated current and required quantity
- Manual operation mechanism or electric operation mechanism, and indicate the voltage for electric operation
- Name and quantity of spare parts
- Other special requirements shall be put forward before ordering

Accompanying Documents and Attachments

- Certificate of Conformity (factory test report)
- Operation Manual
- Packing List
- Operation Handle

Notes



United Kingdom | Australia | China | Chile | Germany |
Hongkong | Indonesia | Malaysia | Russia | Singapore |
South Africa | Thailand | Vietnam |

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