

AUTOMATIC CIRCUIT RECLOSER

CHZ13-15.5/D630-20





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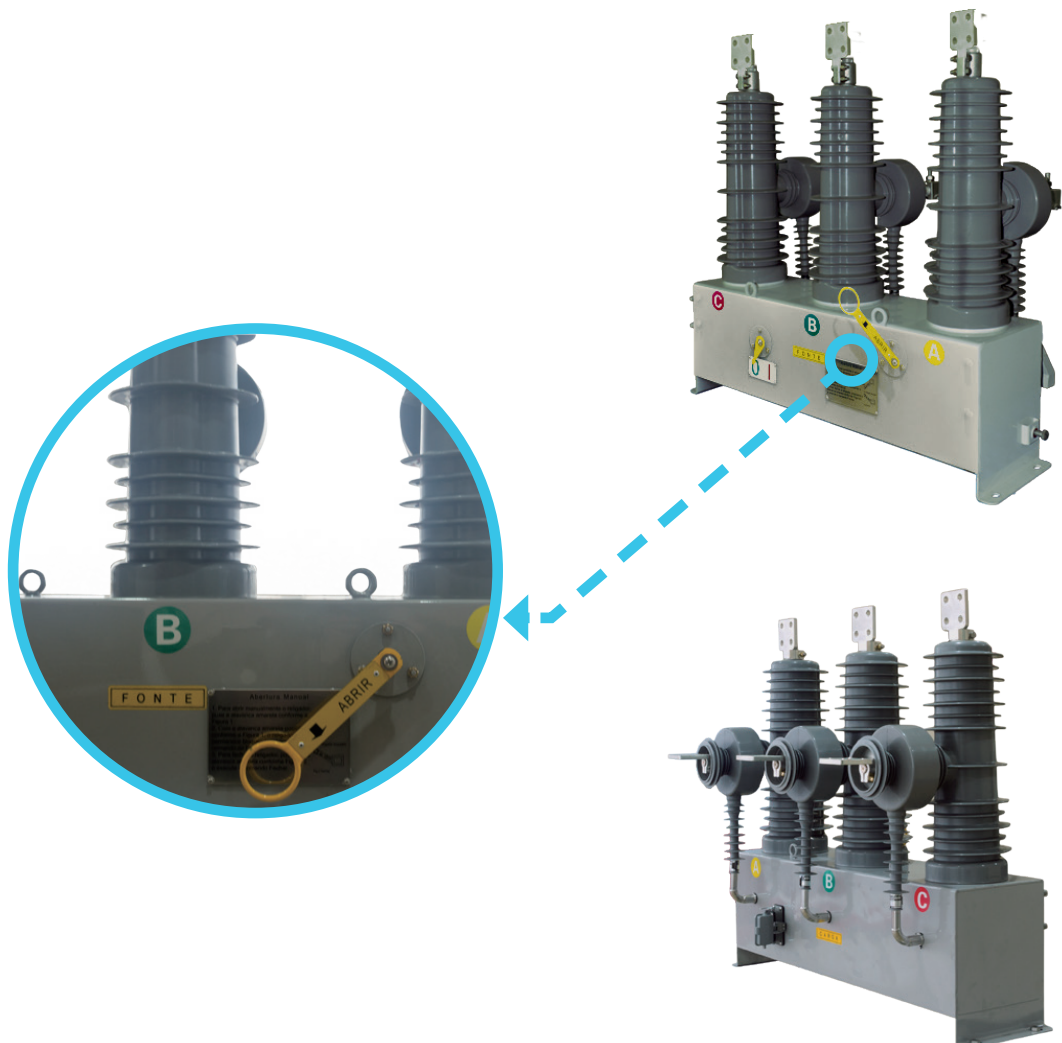
INTRODUCTION

Type CHZ13-15.5/D630-20 permanent magnetic vacuum automatic circuit recloser consists of three single-phase reclosers and three-phase mechanical connected in a single tank. Each recloser consists of an interrupting module, with an embedded current transformer, built-in voltage sensors, and mechanism mounted in an stainless steel tank. The interrupter modules utilize outdoor cycloaliphatic-epoxy-encapsulated vacuum interrupters. The recloser is three-phase trip and three-phase lockout and it also can be manual open and lockout.

The CHZ13-15.5/D630-20 recloser is suitable for pole and substation mounting, equipped with recloser control to cut the fault and auto-reclosing, matched up with sectionalizer to eliminate the momentary fault, isolate permanent fault, to avoid the expansion of the failure, in order to achieve automatic identification of line failure, isolation, non-fault zone power supply recovery, and to improve continuity of power supply.

Type CHZ13-15.5/D630-20 Automatic Circuit Recloser is designed and tested in accordance with IEC62271-111/IEEE C37.60, with KEMA certification obtained in 2011.

And the company quality management system is ISO 9001 certified.



MAIN FEATURE

▲ High fault current breaking capability

The interrupter chamber of the vacuum circuit breaker is well designed with superb performance; it has passed the 20kA short circuit breaking current and associated items.

▲ High insulation level

Computerized electric field design optimizes the structure dimension and electric field distribution of all elements. Use of advanced manufacturing technique enhances the insulation level of the product.

▲ Provide 6 voltage sensors

Capacitive sensors are built inside the pole for voltage measurement, three are at source side and the other three are at load side, which can monitor the state both of source and load side from the control.

▲ Long service life

It is designed with the characteristics of anti-aging, anti-ultraviolet radiation, and ozone resistance. With 10000 times of mechanical endurance, a long service life is thus ensured.

▲ Maintenance free

The recloser is assembled by standard modules with flexible and interchangeable arrangement, less parts and components will make site maintenance work very easy.

▲ Easy installation and operation

The recloser and controller are assembled and tested in the factory before being packaged into suitable wooden box for shipment, which makes site installation easy and shortens the installation time. Simple and humanization interface makes the operation easy to be understood.

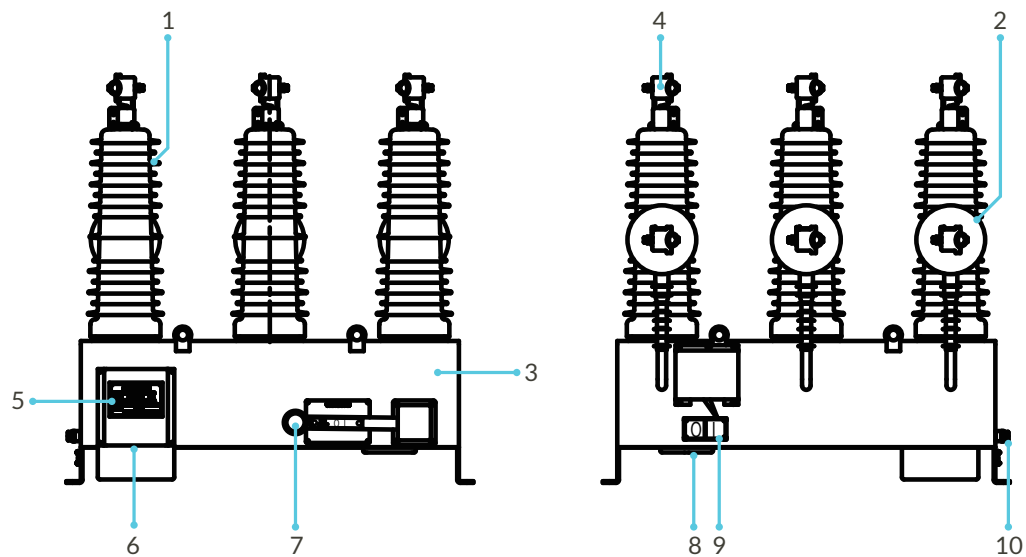
▲ Control compatibilities

Various style of controls are available upon application different requirements, such as RDCU-1R, SEL-651R and etc.



ASSEMBLY STRUCTURE

Type CHZ13-15.5/D630-20 automatic circuit recloser is comprised of two main parts, epoxy encapsulation pole and stainless steel tank. Current transformer, vacuum interrupters and voltage sensors are built into the pole, permanent magnetic actuator, driving mechanism, manual trip blocking, position indication, and mechanical counter are assembled inside the tank, see below.



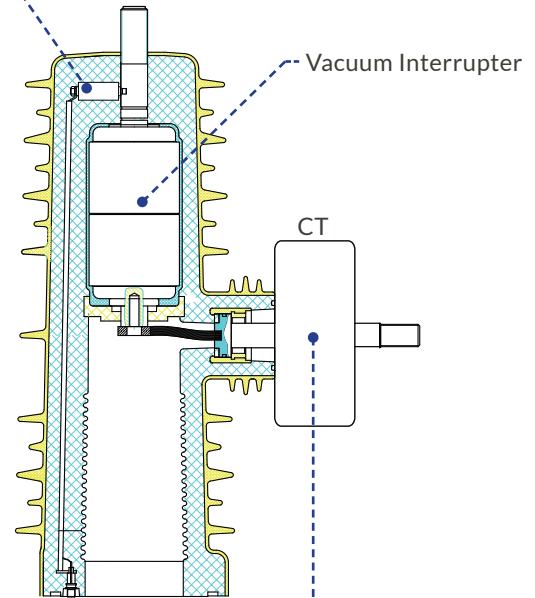
1. Epoxy Encapsulation Pole & Vacuum Intertupter
2. Current Transformer
3. Stainless Steel Tank
4. Terminal Connector
5. Data Plate
6. Control Cable Connector
7. Manual Trip Handle
8. Operation Counter
9. Position Indicator
10. Grounding Connector

Epoxy Encapsulation Pole & Vacuum Interrupter



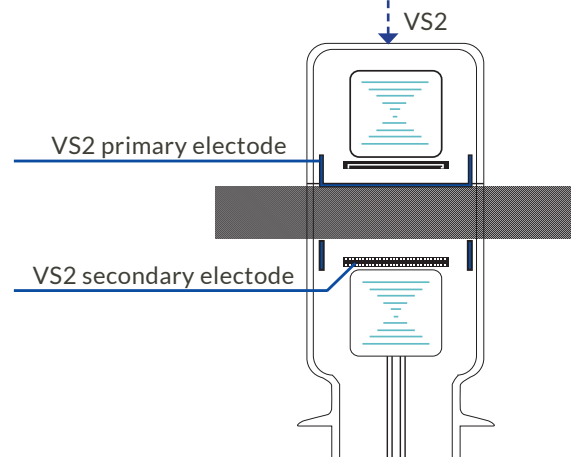
The encapsulated pole is manufactured from epoxy-silicone, applying advanced APG manufacturing technology. A layer of liquid silicone covers outside the epoxy, self-recovery and tear resistance is especially good after molding, the shape of bushing boots could be preserved and extrusion resistant. It has the advantages of high insulation performance, no dangerous of burning and explosion, anti-aging, anti-ultraviolet and ozone resistance.

The vacuum interrupter is designed with the advantages of energy & material saving, burning & explosion resistance, small and compact, long service life, minimum maintenance, reliable operation and zero pollution.



Voltage Sensor

The CHZ13-15.5/D630-20 recloser provides 6 built-in capacitive voltage sensors for voltage measurement. Three is at source side and the other three is at load side; the sensing voltage signals will be transmitted to control which can monitor the state both of source and load side from the control. The capacitance of the voltage sensor is approx. 25pF to 30pF. (VS2 built inside the CT.)



Current Transformer

The CHZ13-15.5/D630-20 recloser is equipped with built-in current transformers in each phase; same epoxy-silicone for main insulation,

We can provide options of 600/1, 400/1, 300/1 or 200/1 as parameters of protective current transformers for different user needs.

Stainless Steel Tank

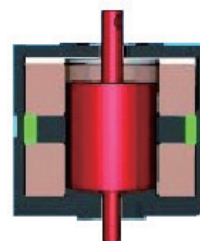
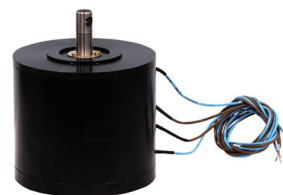
The CHZ13-15.5/D630-20 recloser tank is made of high performance 304 stainless steel, with oxidation surface treatment after welding. The tank is powder coated in light grey by polyurethane paint. The tank including the fitted control cable cover provides IP65 degree of protection.

Permanent Magnetic Actuator

The recloser mechanism is designed 3-phase trip / close driven by permanent magnetic actuator. The recloser remains at the closed position through the magnetic energy provided by high-performance permanent magnet. The open and close operation is through excite the coil to generate electromagnetic force. It can be emergency opening by manual opening handle when the electronic operation fails.

Compared to traditional mechanical actuator, the permanent magnetic actuator is without the devices of energy storage, shackle and etc. The mechanisms are simplified and the components are lessened up to 50%, thus greatly improving the reliability and lengthening service life.

Compared to rely on special power supply and influenced by power fluctuations, energy-storage capacitors are used to perform better characteristics, and can frequently operate without any maintenance.



RDCU Driver

The permanent magnetic actuator shall be driven by RDCU driver, RDCU-CM1/12 is used for monostable actuator, RDCU-DM2/12R is used for bistable actuator, and they will be installed in the control cubicle.



RDCU-DM2/12R



RDCU-CM1/12

Manual Trip Handle

The CHZ13-15.5/D630-20 recloser is equipped with a manual trip handle, it could open the recloser by manual trip handle with hot stick when control power is off or electrical operating fails.

Pulling down the handle will lock out the electrical close, meanwhile the limit switch inside the recloser will close to send lockout signal to control.

Contact Position Indicator

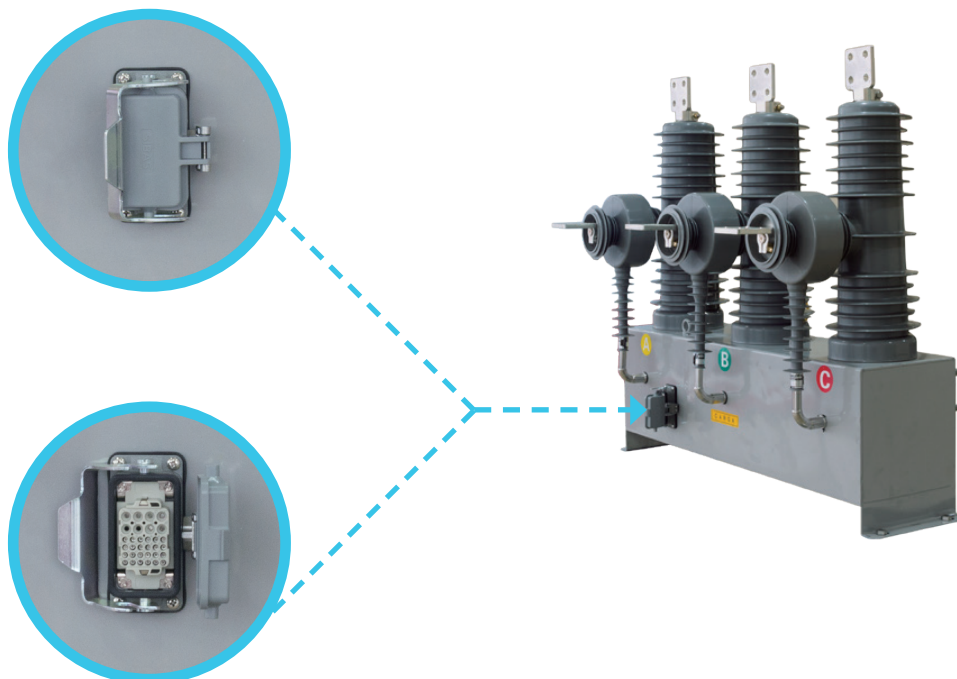
Located at the side of the recloser, with a yellow pointer to indicate contact position, it points to "1" (Red) when the contacts are closed, and points to "0" (Green) when the recloser contacts are open.

Operation Counter

This is a 5-digit mechanical counter installed in the tank, which can be seen from a transparent window at the bottom of recloser. The mechanical counter is connected to the drive mechanism and cumulatively records each time when the recloser operates.

Secondary Connection

The secondary connections of the CHZ13-15.5/D630-20 recloser is realized with the help of 32-pin type connector(Han-K 8/24) which is placed on the protective lid with locker, and it can be well protected while no connection.



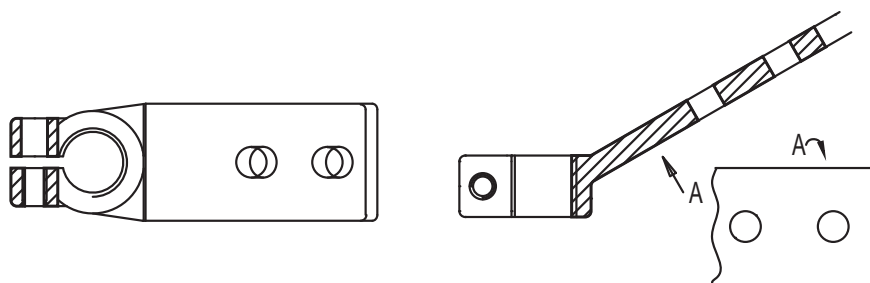
Terminal Connector

The terminals of CHZ13-15.5/D630-20 recloser can be flat-pad or eyebolt. Rated current of both terminals is 630A and they are made of copper. Copper wires are connected.

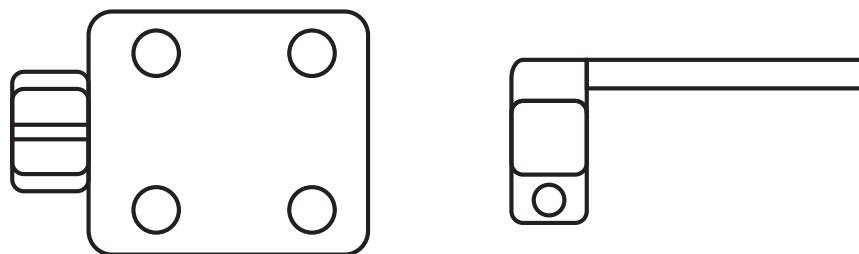
There are two types of flat-pad terminals, type A is for recloser horizontal mounted, and type B is for recloser vertical mounted.

Eyebolt terminal is applicable for cable diameter from 12mm to 24mm,

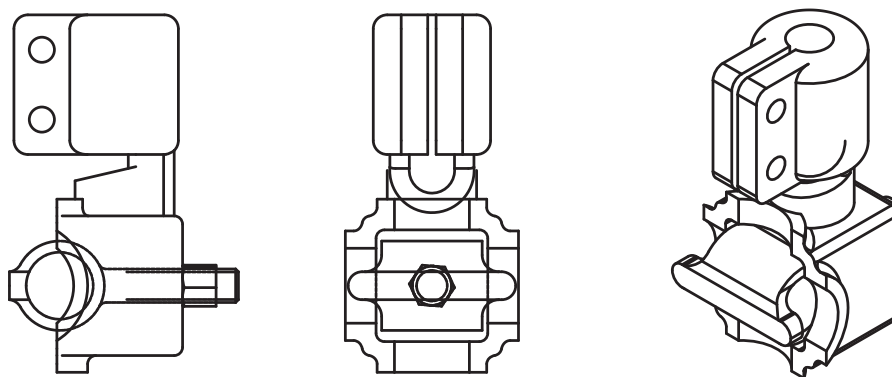
1) Flat pad terminal, type A



2) Flat pad terminal, type B (NEMA-4 holes)



3) Eyebolt terminal



TECHNICAL DATA

SN	Item Description	Data
Service Conditions		
1	Ambient air temperature	-40℃~+55℃
2	Elevation	Less than 2000m
3	Air pollution grade	IV
Ratings		
1	Rated voltage	15.5 kV
2	Rated current	630 A
3	Rated frequency	50/60 Hz
4	Rated power frequency withstand voltage. 1 min dry	50 kV
5	Rated power frequency withstand voltage. 10s wet	45 kV
6	Rated lightning impulse withstand voltage(peak)	110 kV
7	Rated short-circuit breaking current	20 kA
8	Rated short-circuit making current, peak	50 kA
9	Rated short-time withstand current,4s	20 kA
10	Rated peak withstand current	50 kA
11	Rated duration of short-circuit	4s
12	Rated short-circuit breaking current under the condition of earth fault at different phases	17.3 kA
13	Rated cable charging current	10 A
14	Rated operating sequence	O-0.2s-CO-2s-CO-2s-CO
15	Rated operation voltage	220VDC
16	Rated short-circuit current breaking	
	90%~100%	16 times
	45%~55%	56 times
	15%~20%	44 times
17	Mechanical life	10000 times
18	Weight	140kg(308lbs)

SN	Item Description	Data
Current Transformer		
1	Current Sensing	3 Current transformers
2	Rated primary current	600A
3	Rated secondary current	1A
4	Accuracy class and accuracy limit factor for protective transformers	5P15
5	Rated capability	2.5VA
Voltage Transformer		
1	Voltage Sensing	6 voltage sensors
2	Capacitance	25...30pF

SN	Item Description	Unit	Data
Mechanical Data			
1	Contact opening range	mm	9±1
2	Contact stroke	mm	4±1
3	Contact closing spring pressure	N	1800±200
4	Average closing speed(full-contact opening range)	m/s	0.6±0.2
5	Average opening speed(contact opening range 0~6 mm)	m/s	1.1±0.2
6	Moving contact bounce time of closing	ms	≤2
7	Three-phase non-synchronous closing/opening	ms	≤2
8	Closing time	ms	55±5 (Bistable) ≤77 (Monostable)
9	Opening time	ms	42±4 (Bistable) ≤32 (Monostable)
10	DC resistance of main circuit in each pole	μΩ	≤60
11	Distance between poles' center	mm	340±1.5
12	Reset time	Numerical	s 5~180
		Permissible error	% ±10

RECLOSER CONTROL

The recloser control RDCU-1E/A, RDCU-1R are microprocessor based and provide a combination of functions including protection, control, monitoring, measurement, communication, reporting and self-checking. It is with TCC philosophy and designed as user programmable logic, which will reduce distribution automation costs. The technical specifications are as follows.



RDCU-1E/A



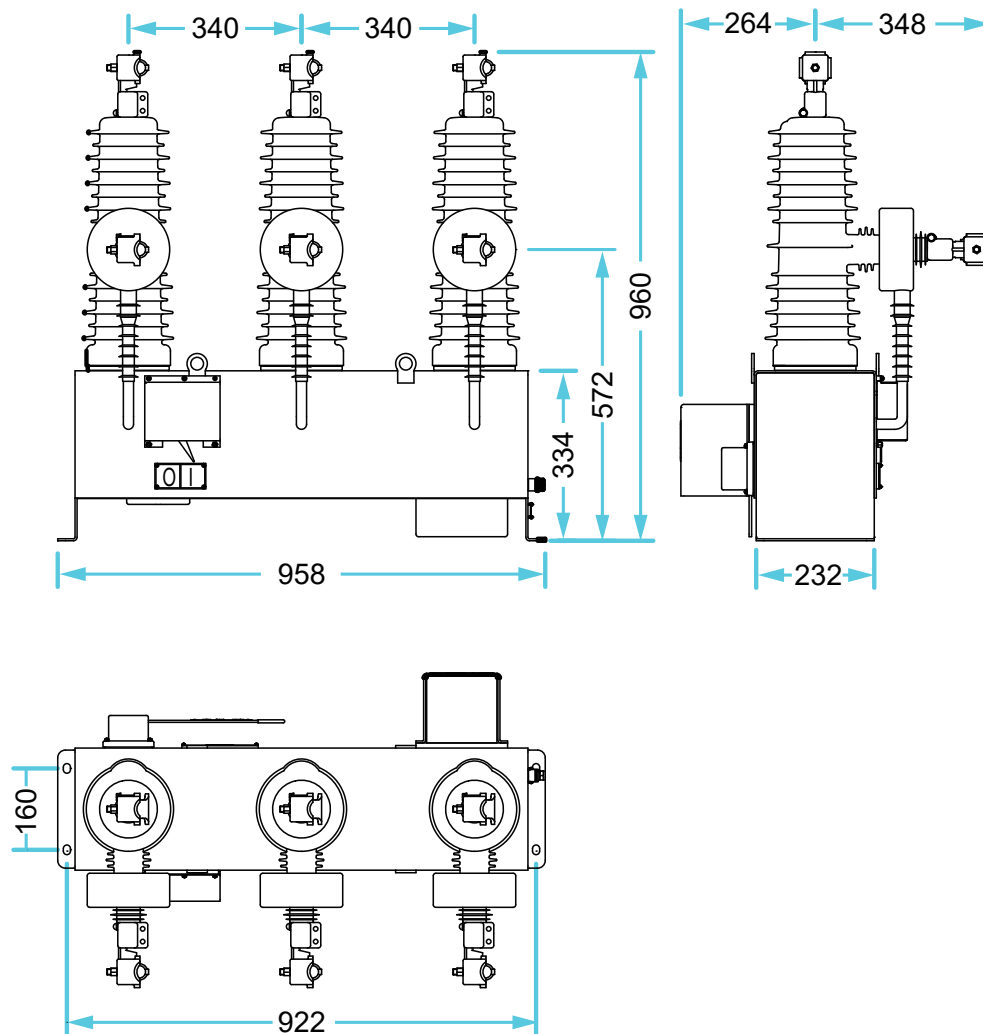
RDCU-1R

	RDCU-1E/A	RDCU-1R
Environmental		
Ambient temperature range	-40°C ~ +70°C	-40°C ~ +85°C
Outdoor(Humidity)	95%	95%
Degree of protection	IP65	IP65
Ratings		
Rated frequency	50Hz	50/60Hz
Control voltage	165Vac~265Vac/24Vdc	165Vac~265Vac/24Vdc
Metering(At rated voltage and current)		
Current	±0.5%	±0.2%
voltage	±0.5%	±0.2%
Watt Hours	±1%	±0.5%
Vars Hours	±1%	±0.5%
Power factor	±1%	±0.5%
Frequency	0.02Hz	0.01Hz

	RDCU-1E/A	RDCU-1R
Protection and control (Protective elements- ANSI Designations)		
Synchronism check (25)	×	√
Undervoltage (27)	×	√
Overvoltage (59)	×	√
Overcurrent(Phase, Ground, Neg. Seq.) 50(P, G, Q)	50P, 50G	√
Time-Overcurrent(Phase, Ground, Neg. Seq.) 51(P, G, Q)	51P, 51G	√
Sensitive Earth Fault protection (51SEF)	√	√
Directional Overcurrent(Phase, Ground, Neg. Seq.) 67(P, G, Q)	×	√
Sensitive Earth Fault protection (67SEF)	×	√
Autoreclosing(79)	√	√
Over- /Under frequency , 81(O,U)	×	√
Cold load pickup	√	√
Sequence coordination	√	√
Communications		
EIA-232 ports	1	3
EIA-485 port	×	1
USB Type B	×	1
Ethernet port	×	4
IEC 60870-5-101/104	IEC 60870-5-101	√
DNP3.0,	×	√
MODBUS	√	√
IEC 61850	×	Optional
Monitoring and Recording		
Waveform capture	√	√
System event	√	√
Diagnostic event	√	√
Load profile	√	√
Counter	√	√

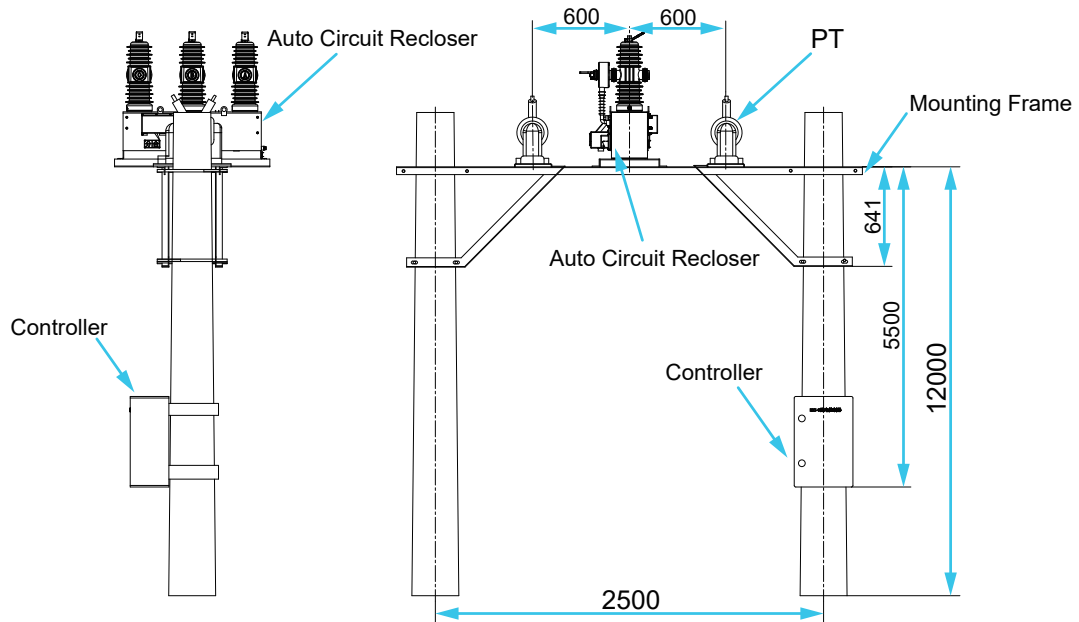
INSTALLATION

Product Dimension

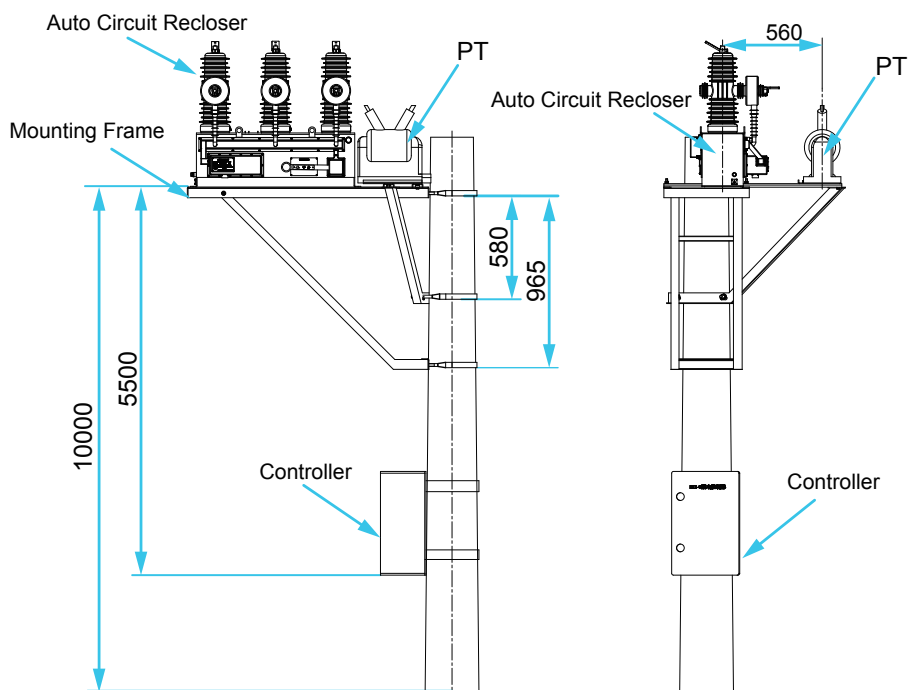


※ Dimensions are approximate, Do not use for construction.

Mounting Example



Double Pole Mounting



Single Pole Mounting

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