



ZW32-24/630-20 Catalogue

Outdoor high vacuum circuit breaker



For Reliable, Secure and Economical Energy System Operation

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1. General Overview

This manual is not a substitute for the operating procedures of electrical equipment and cannot contain all safety rules for electrical installation and operation. The users must follow the safety rules for high-voltage operation of electrical systems and strictly comply with their provisions. Otherwise, the company will not be responsible for any accidents caused by them.

This manual is a general version, the actual parameters of the product may be different from this manual. In this case, the product order shall prevail.

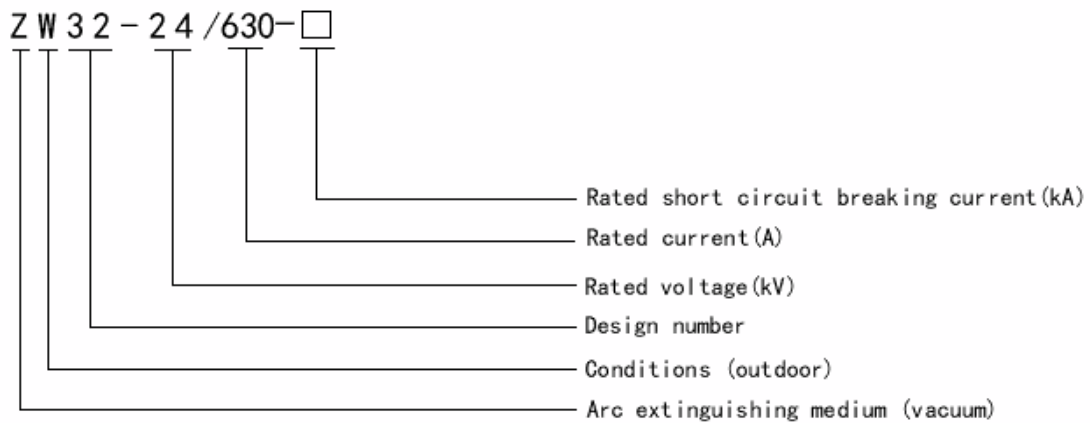
1.1 Application

ZW32-24 series outdoor high vacuum circuit breaker is outdoor power distribution equipment with rated voltage 24kV and three-phase AC 50Hz. It is mainly used to open and close the load current, overload current and short-circuit current in the power system. It is suitable for protection and control in substations and distribution systems of industrial and mining enterprises, and

more suitable for rural power grids and places of frequent operation.

This instruction manual specifies the referenced standards for circuit breakers, environmental conditions for use, model and rated parameters, structural features, operating principles, ordering instructions, and the principles and methods of operation, installation, use and maintenance.

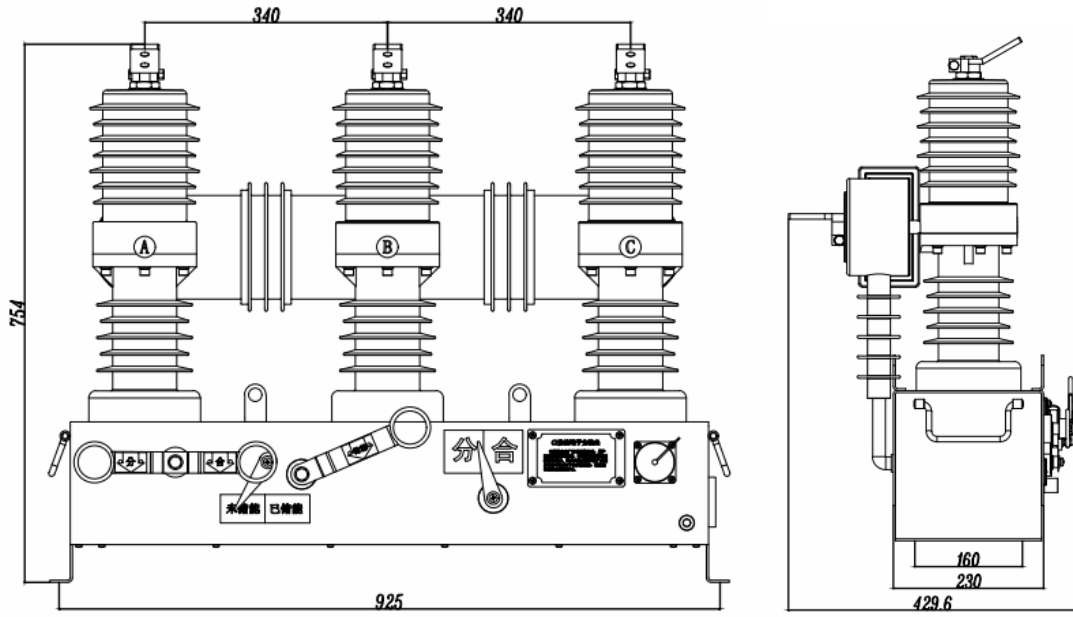
1.2 Composition and meaning of the product model



1.3 Environmental conditions of use

No.	Name		Unit	Standard parameter values
1	Ambient air temperature	Maximum temperature	K	+40
		Lowest Temperature		40
		Maximum daily temperature difference		25
2	Elevation		m	1000
3	Solar radiation intensity (outdoor)		W/cm ²	0.1
4	Filth level			
5	Thickness of ice cover		mm	20
6	Wind speed / wind pressure (outdoor)		(m/s)/Pa	34/700
7	Humidity	Average daily relative humidity	%	95
		Average monthly relative humidity		90
8	Earthquake-resistant capacity	Horizontal acceleration/vertical acceleration	m/s ²	0.3g/0.15g
		Sine resonant triple wave with safety factor over 1.67		

1.4 Equipment size



1.5 Main technical parameters

Main technical parameters of circuit breaker

No.	Item		Unit	Value
1	Rated voltage		kV	24
2	Rated frequency		Hz	50
3	Rated current		A	630
4	Rated short-circuit breaking current		kA	20 (25)
5	Rated peak withstand current		kA	50 (63)
6	Rated short-time withstand current/duration		kA/S	20/4 (25/4)
7	Rated short-circuit closing current (peak)		kA	50 (63)
8	Rated operating sequence		times	0-0.3s-co-180s-co
9	Mechanical life		times	10000
10	Rated short-circuit current opening and closing times		times	30
11	1min frequency withstand voltage	(Dry) Interphase, ground/break	kV	50/70
12	Lightning surge withstand voltage (peak) phase to phase, ground to ground/break		kV	125/170
13	Secondary circuit 1min frequency withstand voltage		V	2000

Main mechanical characteristics of circuit breakers

No.	Item	Unit	Value
1	Contact opening distance	mm	12±1
2	Contact overtravel	mm	3±1
3	Breaking speed	m/s	1.4±0.2
4	Closing speed	m/s	0.8±0.2
5	Contact closing bounce time	ms	2
6	Interphase center distance	mm	380±1.5
7	Three-phase division (closing) is not simultaneous	ms	2
8	Loop resistance		80
9	Closing time	Ms	60
10	Breaking time	Ms	50
11	Rated power of energy storage motor	W	40

2. Basic components

2.1 Vacuum interrupter

ZW32-24 type circuit breaker adopts domestic high-quality brand vacuum interrupter chamber, through the tube vacuum excellent insulation to make the medium and high

voltage circuit cut off the power supply can quickly extinguish the arc and suppress the current to avoid accidents and accidents.

2.2 Operating mechanism

ZW32-24 type circuit breaker adopts simple and reliable spring-operated mechanism, sealed inside the switch box, which can effectively avoid the rusting of the mechanism caused by the switch in long-term outdoor

environment. It can realize electric energy-storage opening and closing and manual energy-storage opening and closing, which is convenient for operation.

2.3 Current Transformer

ZW32-24 type circuit breaker can be installed with phase sequence and zero sequence current transformer, and used in conjunction with the controller, which can be used for line

current measurement and protection. If needed, zero sequence voltage sensor can also be installed.

3. Features

- 1 Flexible operation: This product can realize electric energy storage, electric splitting and closing, and also has manual energy storage, manual splitting and closing function.
Facilitating field operations;
- 2 With maintenance-free characteristics; the main circuit of the circuit breaker and the secondary components and operating mechanism are sealed in the box, not affected by the external environment;
- 3 Excellent external insulation performance: the three-phase insulating sleeve is made of silicone rubber/epoxy resin for outdoor use, which has many advantages of stopping surface discharge, good water repellent performance, UV resistance and high mechanical strength;

4. Installation and commissioning

"WARNING": When lifting and installing equipment, follow local recommendations for safe operation. Please use the lifting ring on the circuit breaker. Please lift the equipment

smoothly to ensure that the center of gravity of the breaker does not shift and that the breaker is not allowed to swing significantly. Improper lifting may result in equipment damage.

4.1 Lifting of equipment

ZW32-24 circuit breaker in the process of transport should be maintained in the closed position, shall not be turned upside down, lifting hooks must be hooked in the ZW32-24

circuit breaker lifting ring, and maintain the level of lifting, with special attention to the lifting rope can not act directly on the sleeve.

4.2 Fixing of equipment

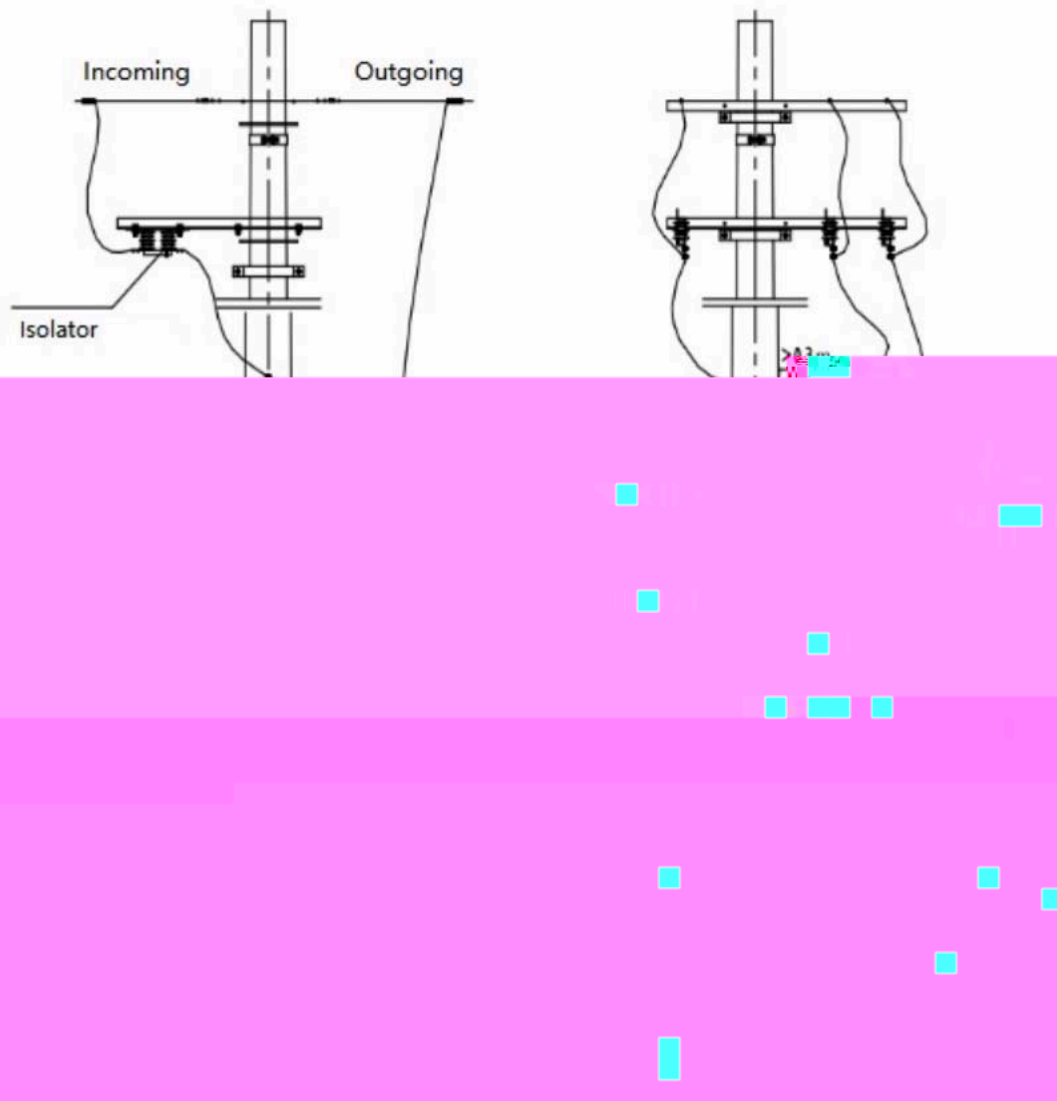
ZW32-24 circuit breaker is suitable for most of the standard mounting brackets, the user can provide their own mounting brackets, or

the manufacturer can provide mounting bracket accessories to fix the ZW32-24 circuit breaker mounting bracket on the pole.

4.3 On-site installation guidance

- A. Delivery to the site for vertical mounting tests of the circuit breakers as required;
- B. Ensuring that the poles are strong enough to support the circuit breakers;
- C. Mount the mounting bracket of the ZW32-24 circuit breaker firmly on the pole;
- D. Lifting the ZW32-24 circuit breaker to a suitable position and fixing it to the mounting bracket;
- E. Reasonable high-voltage electrical connections according to the site conditions, and the lead wires on both sides of the ZW32-24 circuit breaker switch should have a certain degree of slack to prevent the lead wires from generating excessive stress on the product;
- F. Turn on the controller power, if the DC power supply should be used to ensure the correct wiring of the positive and negative power supply.

Installation schematic



4.4 Field trials

Insulation withstand voltage test

The high voltage withstand test of the body of the ZW32-24 type circuit breaker switch should be conducted at 50Hz, phase to phase, 31.5kV to ground, and 36.8kV at the break (75% of the rated frequency withstand voltage).

"Note": When testing, the controller must be connected to the body of the circuit breaker or CT short, and the controller and circuit breaker box should be reliably grounded.

A.) Test 1 to ground operating procedures:

- Close the main contact of the circuit breaker switch
- Ground the circuit breaker body reliably
- Connecting the three power side terminals together
- Apply the test voltage to the power side terminal
- The circuit breaker should be able to withstand the test voltage for 60 seconds

B.) Test 2 interphase operating procedure:

- Close the main contact of the circuit breaker switch
- Ground the circuit breaker switch body reliably
- Ground the A-phase and C-phase load side terminals
- Apply test voltage to B-phase power side terminal
- Breaker switch should be able to withstand the test voltage for 60 seconds

C.) Test 3 fracture operation procedure:

- Open the main contact of the circuit breaker switch
- Ground the circuit breaker switch body reliably
- Connect the load side terminals together and ground them reliably
- Connecting the power side terminals together
- Apply test voltage to the power side terminals
- Breaker switch should be able to withstand the test voltage for 60 seconds
- Change the wiring, connect the power side terminals together and ground, connect the load side terminals together, then apply the test voltage to the load side terminals, the circuit breaker can withstand the test voltage for 60 seconds.

5. Application and Maintenance

"WARNING": The user must select the circuit breaker correctly for the purpose for which it is to be used. The circuit breaker must be properly installed and operated by personnel who are trained and familiar with the installation procedures. These safety

warnings are not a substitute for proper safety training and a certain level of safety experience. Incorrect selection, installation or maintenance of the switch may result in death or serious personal injury.

Application

Before the circuit breaker is put into operation, the rated voltage and rated current of each operating element should be carefully checked to see if they match the actual situation, and operated with the closing and dividing mode

that the mechanism has to check if the indicators are correct. If the supporting controller is used, it is necessary to confirm the AC or DC operation voltage level, otherwise the circuit breaker will be damaged.

Maintenance

The circuit breaker is made of silicone rubber/epoxy resin sleeve, which is oil-free and free from environmental hazards. In order to ensure that the circuit breaker can operate safely and reliably for a long time, regular maintenance checks on the equipment are required. When conducting the inspection, the

circuit breaker must be disconnected and withdrawn from operation, and the high-voltage busbar and circuit breaker case are required to be reliably grounded. Then, carry out inspection and maintenance according to the following items.

External inspection

Check the silicone rubber/epoxy sleeve surface of the circuit breaker for damage, if the damage is more serious, then contact the replacement sleeve immediately; check the case surface of the circuit breaker for bruising or wear. If pits or deformation are found, they should be repaired, and if the paint or protective layer is scratched, it should be repaired immediately.

of its special design structure, can ensure that users are maintenance-free for a long time in use, and only need to conduct a frequency withstand voltage test every three years or so.

When inspecting and repairing as well as storing circuit breakers, do not store tools, materials, and various parts and other miscellaneous items on top of or next to the circuit breakers.

This column vacuum circuit breaker, because

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