

ZW32-40.5

Outdoor High voltage
AC Vacuum circuit breaker



Description

ZW32-40.5 F type intelligent vacuum circuit breaker is composed of an electric spring mechanism and a high-reliability intelligent controller. The device is mainly used in medium-voltage overhead line power grids as a dividing and combining load current, overload current, and short-circuit current, and has 0~3 automatic maximum closing.

- Extremely high reliability
- Completely maintenance-free throughout its life
- Has high mechanical life and electrical life
- The whole body is small in size, light in weight, and easy to install
- With standard relay protection and fast automatic reclosing function

Use environmental conditions

1. Ambient air temperature: -30°C~+60°C;
2. Altitude: no more than 2000 meters;
3. The wind speed does not exceed 34m/s;
4. Vibration or ground movement from outside the switchgear and control equipment is negligible;
5. Pollution level: Level IV;
6. Storage temperature -40°C~+85°C.

Main technical parameter

Main technical parameter of circuit breaker

Table 1

No.	Name	Unit	Parameter
1	Rated voltage	kV	40.5
2	Rated current	A	1250/1600
3	Rated frequency	Hz	50 or 60
4	Power frequency withstand voltage (wet)(dry)	kV	80/95
5	Lightning impulse withstand current (peak)	kV	185
6	Rated short-circuit breaking current	kA	31.5
7	Rated short-circuit closing current (peak)	kA	80
8	Rated peak withstand current	kA	80
9	4s short-time withstand current	kA	31.5
10	Rated operation sequence		O-0.1S-CO-3s-CO-6s-CO -60s recovery
11	Rated short-circuit current breaking cycles	cycles	30
12	Mechanical life	cycles	20000
13	Intelligent mechanism control voltage	V	Dc220
14	Secondary circuit 1min power frequency withstand voltage	kV	2

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Main mechanical parameter of circuit breaker

Table 2

No.	Item	Unit	Parameter
1	Contact opening distance	mm	16±1
2	Contact over-range	mm	4±0.5
3	Opening speed	m/s	1.4~1.8
4	Closing speed	m/s	0.4~0.8
5	Contacts closing bounce time	m/s	≤5
6	Interphase center distance	mm	560±2
7	Three-phase opening and closing synchronicity	ms	≤2
8	Each phase conductive circuit resistance	μΩ	<120
9	Closing time	ms	25~45
10	Opening time	ms	20~45
11	Weight	kgs	315

Structure and working principal of circuit breaker

ZW32-40.5 F type intelligent circuit breaker is mainly composed of integrated solid sealing pole column, current transformer, motor operating mechanism and box. This type of circuit breaker is designed for miniaturization. At the same time, it is equipped with manual opening and closing devices. The current transformer can be selected according to user needs.

The control of ZW32-40.5 F type intelligent vacuum circuit breaker is completed by the supporting intelligent control unit. The opening and closing operation can be realized locally, or it can be operated remotely from a distance through the communication interface. Other information about the circuit breaker can also be transmitted to the control center, and the communication channels can be selected from cable, optical fiber, GPRS/CDMA, GSM, etc.

The intelligent control unit is installed close to the circuit breaker and is connected to the circuit breaker through a control cable. The power supply of the intelligent control unit is divided into the main power supply, the main power supply is AC or DC 220V, which is obtained by the high-voltage line through PT; the backup power supply is provided by the battery (installed in the intelligent control unit box).When working normally, the main power supply charges the backup power supply; when the main power supply is lost, the backup power supply can still complete the control of the circuit breaker and other operations in the control unit. The backup power supply (at full load) can maintain the whole machine for not less than 48 hours of work.

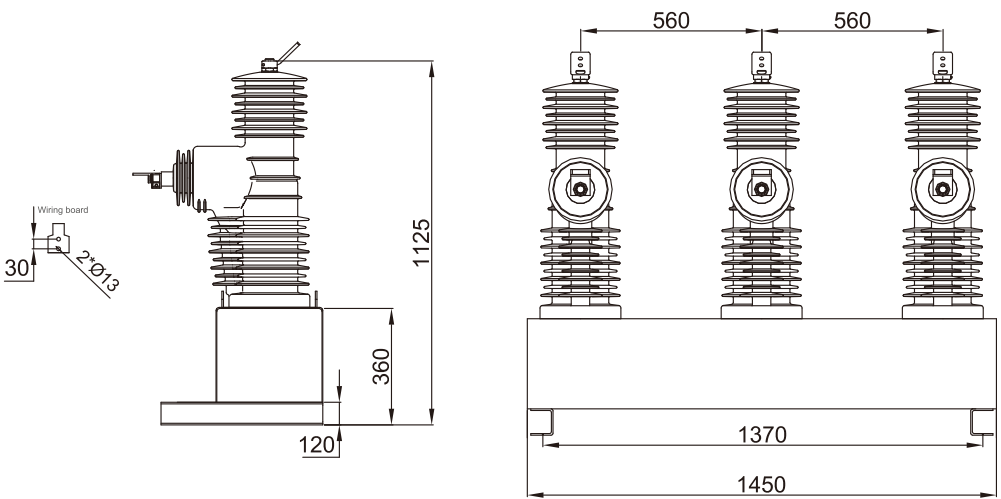
The circuit breaker operating mechanism is equipped with a manual emergency opening handle, which is used for emergency opening operation in the event of a control system or power failure.

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Working principle and process of circuit breaker

1. Arc extinguishing principle: ZW32-40.5 F type vacuum intelligent circuit breaker adopts a vacuum arc extinguishing chamber, which uses vacuum as the arc extinguishing and insulating medium, and has a very high degree of vacuum. When the moving and fixed contacts are electrically charged under the action of the operating mechanism, a vacuum arc will be generated between the contacts. At the same time, due to the special structure of the contacts, an appropriate longitudinal magnetic field will also be generated in the gap between the contacts, causing the vacuum arc to remain diffuse and the arc to be evenly distributed on the contact surface to burn and maintain a low isolation voltage. When the current naturally crosses zero, the remaining ions, electrons and metal vapor can be combined or condensed on the contact surface and the shield within the order of microseconds, and the dielectric insulation strength of the arc extinguishing chamber fracture is quickly restored, so that the arc is extinguished to achieve the purpose of breaking. Due to the use of longitudinal magnetic field to control the vacuum arc, the vacuum circuit breaker has a strong and stable ability to turn off the current.
2. Energy storage: ZW32-40.5 F type can store energy manually through the energy storage handle, or it can store energy motorized.
3. Closing operation: press the closing button on the intelligent controller locally, or remote control the closing operation from a distance, or use the opening and closing handle to close manually.
4. Opening operation: press the opening button on the intelligent controller locally, or remotely control the opening operation from a distance, or use the opening and closing handle to opening manually.

Installation dimension of circuit breaker (does not include the disconnecter)



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