订货须知
ORDERING INSTRUCTIONS

——应注明——

ITEMS ON THE RIGHT SHALL BE INDICATED

- 真空断路器：产品型号，名称，数量及额定电压、额定电流、额定短路开断电流
- 操作机构型式：弹簧机构：手动或电动；永磁机构
- 隔离开关：双侧隔离（需要时）
- 电流互感器 ：型号，名称，数量，变比，精度，容量
- 零序电流互感器：型号，变比，精度，容量（需要时）
- 电压互感器：型号，变比，精度，容量（需要时）
- 避雷器：型号，名称，数量
- 控制保护方式：涌流控制器
  - ☐ 罩式FTU：可选配件
  - ☐ 箱式FTU：可选配件
- 安装方式：采用柱上座式安装

- Vacuum circuit breaker: product type, name, quantity and rated voltage, rated current, rated short circuit breaking current
- Type of operation mechanism: spring mechanism: manual or electrical; permanent magnet structure
- Isolation switch: double side isolation (when required)
- Current transformer: type, name, quantity, ratio, accuracy, capacity
- Zero sequence current transformer: type, ratio, accuracy, capacity (when necessary)
- Voltage transformer: type, ratio, accuracy, capacity (when necessary)
- Lightning arrester: type, name, quantity
- Control protection mode: inrush current controller
  - ☐ Bell type FTU: optional accessories
  - ☐ Box type FTU: optional accessories
- Installation method: seated installation on the post

江苏大全高压开关有限公司
JIANGSU DAQO HIGH VOLTAGE SWITCHGEAR CO.,LTD.

地址：南京市江宁开发区隐龙路28号
电话：025-87187598
传真：025-87187599
网址：www.daqo.com

ADD: No.28 Yinlong Road, Jiangning Development Zone, , Nanjing City
TEL: 025-87187598
FAX: 025-87187599
IP: www.daqo.com

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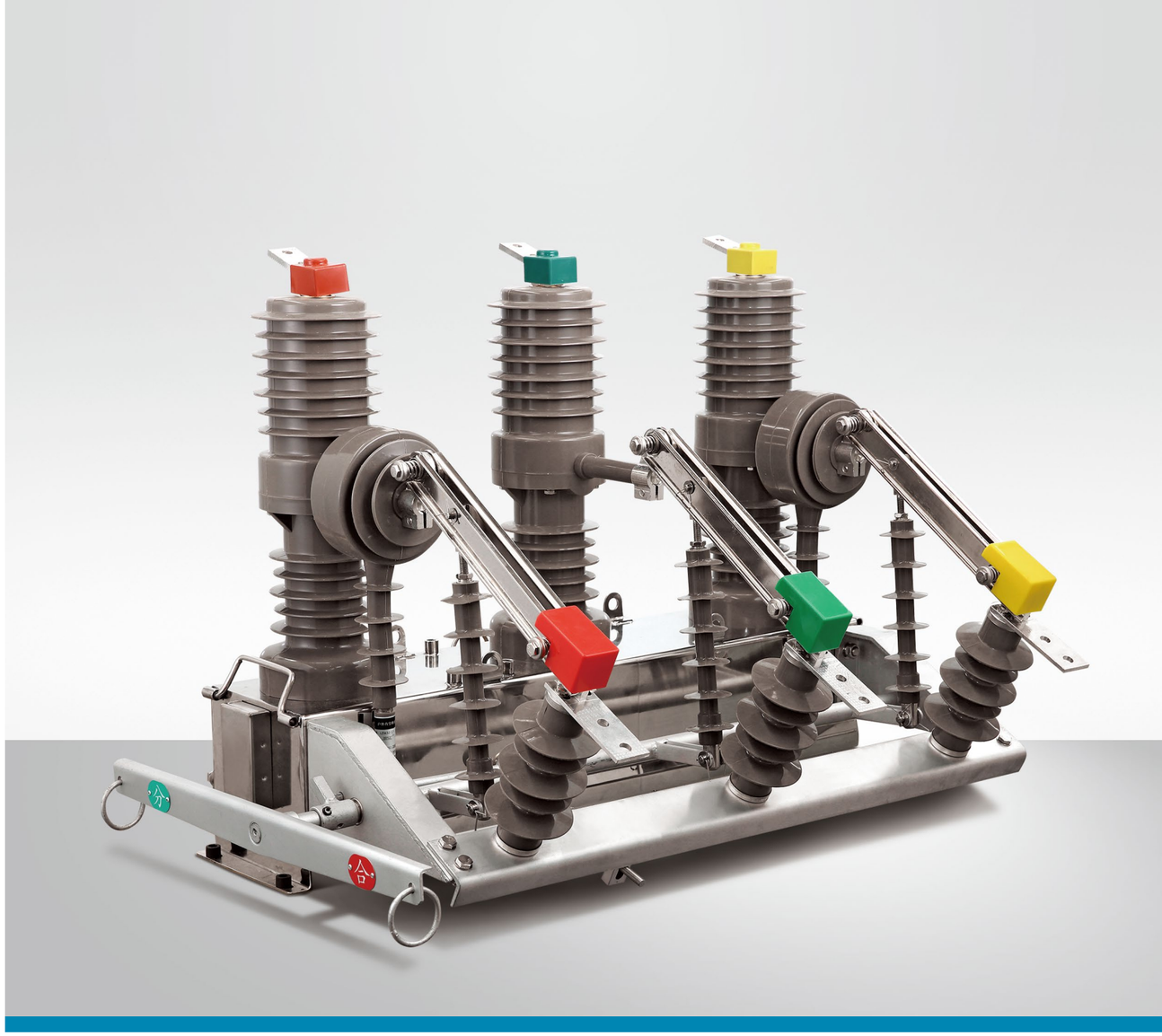

ZW32-12 POST TYPE
OUTDOOR HIGH VOLTAGE AC VACUUM CIRCUIT-BREAKER

ZW32-12 支柱式户外高压交流真空断路器

江苏大全高压开关有限公司
JIANGSU DAQO HIGH VOLTAGE SWITCHGEAR CO.,LTD.

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江苏大全高压开关有限公司

江苏大全高压开关有限公司是中国电气工业领军企业大全集团旗下的核心子公司，专业从事高、中压输配电设备的研发、生产、销售和服务。公司秉持“专业决定品质、专注铸就品牌”的经营理念，致力于开关设备和断路器技术及应用的研究与开发，精心打造国内知名电工品牌。

大全高压开关坐落于南京江宁高新技术开发区，总投资1.6亿元。公司厂房总面积逾万平方米，断路器年生产能力20000台，稳居国内高压电器设备设计与制造行业的一线阵营。

公司的主要产品有：7.2kV–40.5kV户内真空断路器，40.5kV高压真空负荷开关–熔断器组合电器，12kV户外柱上断路器等，服务于核电站、发电厂、变电站、城乡电网、石油、化工、冶金、电气化铁道、地铁、城市轻轨、港口、垃圾电站及环保等多个行业，并参与了多项国家重点项目建设。

得益于大全集团40多年的工程、服务经验以及吸收国外先进公司的电气技术和设计理念，大全高压开关向用户提供世界级高标准高性能的产品。自成立以来，公司持续为社会提供优质产品，成功运行于国内外不同行业的数万个变电站，产品以其优质的可靠性及安全性得到用户的一致认可与好评。

JIANGSU DAQO HIGH VOLTAGE SWITCHGEAR CO.,LTD.

Jiangsu Daqo High Voltage Switchgear Co., Ltd. is a core subsidiary under Daqo Group which takes a leading position in China’s electrical industry. It is specialized in research and development, production, sales and services of medium and high-voltage transmission and distribution equipment. Abiding by the business philosophy of “quality depending on specialty and concentration creating brand”, it is engaged in research and development of switchgear and circuit breaker technology and application to create a famous electrical brand in China.

Daqo High Voltage Switchgear is located at Jiangning High - tech Development Zone in Nanjing. With total investment of RMB 160 million and total plant area of more than 10,000 m2, it can reach annual breaker production capacity of 20000 sets to take a leading position in China’s High Voltage electrical equipment design and manufacture.

7.2KV-40.5KV indoor vacuum circuit breaker, 40.5KV high voltage vacuum load switch-fuse combination electrical appliances, 12KV outdoor column circuit breaker and so on, serving nuclear power station, power plant, substation, urban and rural power grid, petroleum, chemical, metallurgy, electrified railway, subway, urban light rail, port, garbage power station and environmental protection industries, and participated in a number of national key projects.

Thanks to Daqo Group’s engineering and service experiences of more than 40 years as well as electrical technology and design concept absorbed from foreign advanced companies, Daqo HV Switchgear can provide users with world-class products with high standard and high performance. Since inception, it has kept on offering quality products successfully applied to thousands of hundreds of power substations in different industries at home and abroad. Its products have been recognized and appraised by all users with high reliability and safety.

荣誉与资质
Honor and Qualification

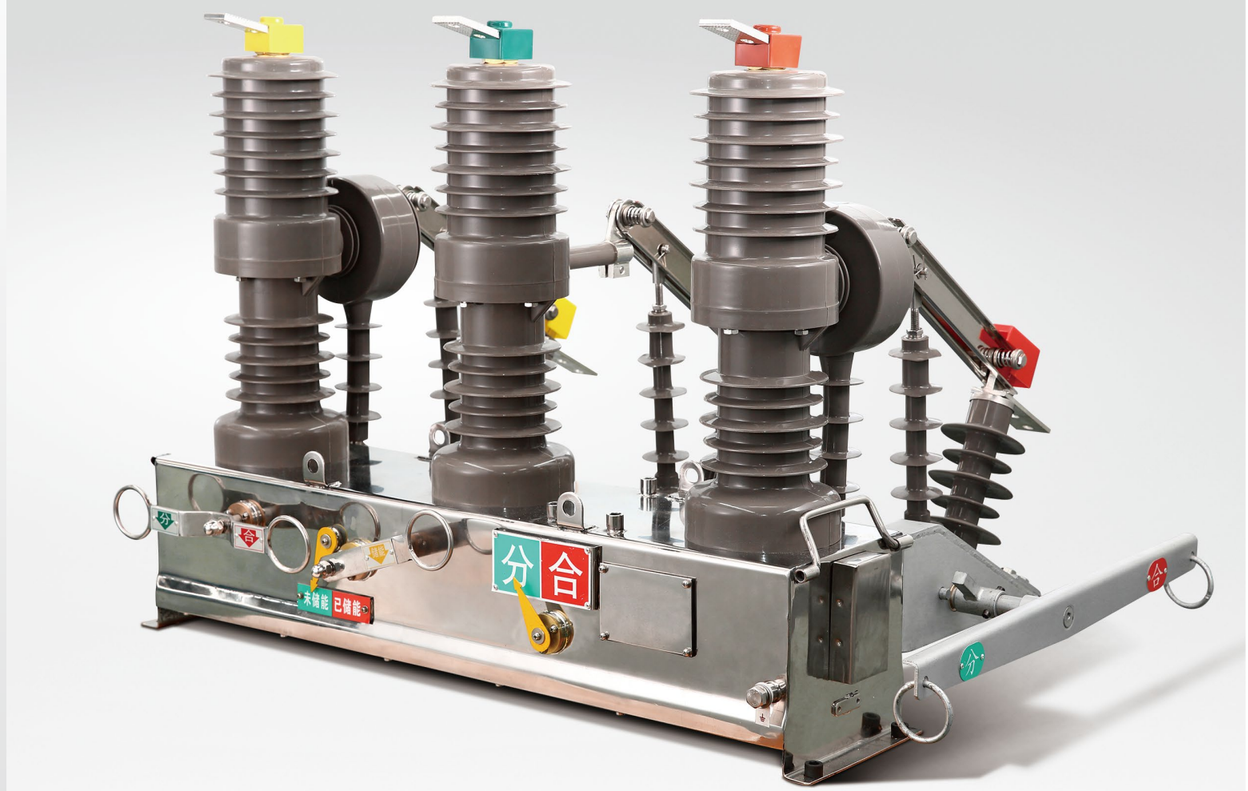
❶ 企业法人营业执照
❷ 环境管理体系认证证书
❸ 管理体系认证证书
❹ 职业健康安全管理体系证书
❺ 高新技术企业认证证书
❻ ZW32-12产品质量检验报告

❶ Business License
❷ Environmental Management System Certificate
❸ Management System Certificate
❹ Occupational Health and Safety Management System Certificate
❺ High-Tech Enterprise Certificate
❻ ZW32-12 product quality inspection report

1	2	3	4	
	5	6		

ZW32-12 支柱式户外高压交流真空断路器

ZW32-12 POST TYPE OUTDOOR HIGH VOLTAGE AC VACUUM CIRCUIT-BREAKER



产品概述 Product Description

总则 / GENERAL

ZW32–12户外交流高压真空断路器采用三相分离的柱式结构，真空灭弧室先采用硅橡胶软包封，再与一次导电件安装在各相的绝缘套筒内，绝缘筒安装在全密封壳体上，壳体内装设机构、传动件及二次元件等附件。整机密封性好，具有小型化、耐寒、耐高温、耐风沙、防潮、防凝露以及智能化等特点，可靠性高，免维护，能够在环境恶劣的条件下正常工作。

The ZW32-12 outdoor AC high-voltage vacuum circuit-breaker adopts the three-phase separated post structure. The vacuum arc extinguish chamber is firstly flexibly packed and sealed using silicone rubber and then installed in the insulation sleeve of each phase together with the primary conducting elements. The insulation sleeve is installed on the fully sealed enclosure. The mechanism, drive parts, secondary elements etc. are installed inside the enclosure. The whole machine is of good sealing performance and the characteristics of miniature, low-temperature resistance, high-temperature resistance, dust and sand resistance, moisture protection, condensation protection and intelligence. It's of high reliability and maintenance-free operation. It's able to operate normally in the severe environment condition.

标准 / STANDARDS

GB 311.1	高压输变电设备的绝缘配合；
GB 1207	电磁式电压互感器
GB 1208	电流互感器
GB 1984	高压交流断路器；
GB 1985	高压交流隔离开关和接地开关
GB 3309	高压开关设备常温下的机械试验
GB 4208	外壳防护等级
GB 50150	电气装置安装国内工程电气设备交接试验标准
GB/T11022	高压开关设备及控制设备标准的共用技术要求；
GB/T 22071.1	互感器试验导则 第1部分:电流互感器
GB/T 22071.2	互感器试验导则 第2部分:电磁式电压互感器
DL/T 403	12kV～40.5kV高压真空断路器订货技术条件
DL/T 486	交流高压隔离开关和接地开关
DL/T 593	高压开关设备的共用技术要求
DL/T 615	交流高压断路器参数选用导则
DL/T 844	12kV少维护户外配电开关设备通用技术条件

GB 311.1	Insulation co-ordination for high voltage transmission and distribution equipment
GB 1207	Electromagnetic voltage transformers
GB 1208	Current transformer
GB 1984	High-voltage AC circuit-breakers
GB 1985	High-voltage AC disconnector and earthing switch
GB 3309	Mechanical test at ambient temperature for high-voltage switchgear
GB 4208	Protection rating of enclosure
GB 50150	Electric Equipment Installation Engineering, Standard for Hand-over Test of Electric Equipment
GB/T 11022	Common specifications for high-voltage switchgear and controlgear standards
GB/T 22071.1	Test guide for instrument transformers, Part 1: current transformers
GB/T 22071.2	Test guide for instrument transformers, Part 2: electromagnetic voltage transformers
DL/T 403	Technical specification for procurement of HV vacuum circuit-breaker for rated voltage of 12kV to 40.5kV
DL/T 486	Alternating current high-voltage disconnectors and earthing switches
DL/T 593	Common specifications for high-voltage switchgear
DL/T 615	Guide to the selection of characteristic quantities of HVAC circuit-breaker
DL/T 844	General specification for 12kV low maintenance outdoor distribution switchgear

应用范围 / RANGE OF APPLICATION

ZW32–12型户外高压交流真空断路器用于额定电压12kV，三相交流50Hz的三相电力系统，作为分断、关合负荷电流之用，它具有过载及短路保护功能，满足控制、测量要求，还可实现远方控制、监视等。适用于变电站及工矿企业配电系统中作保护和控制之用及农村电网中频繁操作场所。
断路器通过加装零序电流互感器、电压互感器，配网自动化馈线终端—FTU,使普通断路器具备速断、过流以及零序等各种保护功能，还可实现“四遥”，并针对界内、界外的单相接地故障或相间短路故障，进行正确判断和处理，实现配网自动化。

The ZW32-12 type outdoor high-voltage AC vacuum circuit-breaker is used for the three-phase AC 50Hz power system with the rated voltage of 12kV. It's used to break and make the load current. It has the overload and short-circuit protection functions and meets the control and measurement requirements. It can also perform the remote control and monitoring etc. It's applicable to the provision of protection and control in the power distribution system in the substation and industrial and mining establishments and frequent operation area in rural power grid.
The ordinary circuit-breaker is capable of performing the quick break, overcurrent and zero sequence protection functions etc. and “remote control, telemetry, remote surveillance and remote regulating” by adding the zero sequence current transformer, voltage transformer and distribution automation feeder terminal – FTU. It also correctly judges and processes the single-phase earth fault or phase-to-phase shorted fault inside and outside the boundary to achieve distribution automation.

产品概述 Product Description

试验 / TEST

型式试验：

a）绝缘试验：包括雷电冲击试验、工频耐压试验。
b）温升试验。
c）主回路电阻测量。
d）短时耐受电流和峰值耐受电流试验。
e）关合和开断能力试验。
f）机械操作、机械联锁和机械稳定性试验（连续机械操作试验）。
g）隔离闸刀及套管绝缘电阻测量
h）防护等级验证。
i）凝露及污秽试验。
j）接线端子静态机械负荷试验。
k）淋雨试验。
l）电磁兼容性试验（EMC）。
m）严重冰冻条件下的操作。
n）辅助和控制回路的附加试验；

出厂例行测试：

主回路绝缘试验，辅助和控制回路的绝缘试验，机械操作和机械特性试验，主回路工频耐压试验，主回路电阻测量，外观及结构检查， 产品功能与性能测试， 绝缘性能测试，零序保护额定启动电流试验，相间保护额定启动电流试验,零序和相间保护延时定值试验。

Type tests:

a） Insulation tests: those include the lightning impulse test and power-frequency withstand voltage test.
b） Temperature rise test.
c） Measurement of main circuit resistance.
d） Short-time withstand current and peak withstand current test.
e） Test of make and break abilities.
f） Mechanical operation, mechanical interlock and mechanical stability tests (continuous mechanical operation tests).
g） Insulation resistance measurement of disconnecting link and sleeve
h） Verification of protection degree.
i） Condensation and pollution test.
j） Static mechanical load test of connecting terminal.
k） Rain test.
l） Electromagnetic compatibility test (EMC).
m） Operation in severe freezing condition.
n） Additional tests of auxiliary and control circuits;

Routine delivery test:

Insulation test of main loop, insulation test of auxiliary and control loops, mechanical operation and mechanical characteristic tests, power-frequency withstand voltage test of main loop, resistance measurement of main loop, leakage test, appearance and structure check, product function and performance test, insulation performance test, test of rated startup current for zero-sequence protection, test of rated startup current for phase-to-phase protection, delay time setting test of zero-frequency and phase-to-phase protection.

使用环境 / OPERATING ENVIRONMENT

海拔高度：2000m以下
环境温度：上限+40℃；下限−40℃
储运温度：−40℃
相对湿度：日平均值≤95%
　　月平均值≤90%
地震烈度：不超过8度
无火灾、爆炸、严重粉尘、化学腐蚀及剧烈振动场所

Altitude: below 2,000 m
Ambient temperature: the upper limit of + 40 ℃; the lower limit of -40℃
Storage and transportation temperature: -40℃
Relative humidity: daily average value ≤95%
　　Monthly average value ≤90%
Seismic intensity: M8 or below
No fire, explosion, serious dust hazard, chemical corrosion or excessive vibration.

型号及含义 / MODEL AND MEANING

Z W 32−12 / □ 630−20

- 额定短路开断电流（20kA、25kA）
- 额定电流（630A、1250A）
- T：弹簧操动机构，Y：永磁操动机构
- 额定电压
- 设计序号
- 户外
- 真空

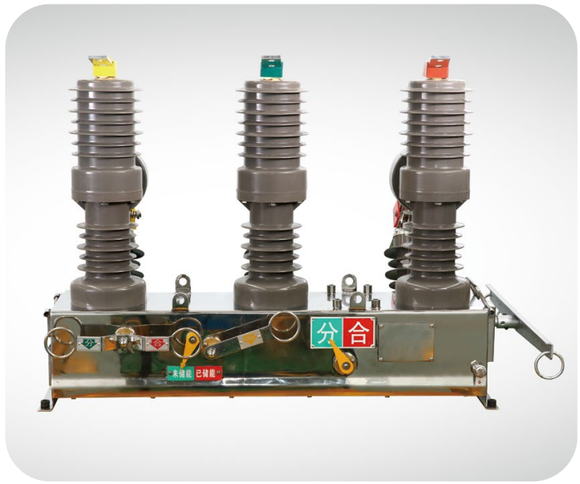
Z W 32−12 / T 630−20

- Rated short circuit breaking current
- Rated current
- T: Spring operating mechanism, Y: permanent magnetic actuator
- Rated voltage
- Design Serial Number
- Outdoors
- Vacuum

产品优点 Product Advantage

采用三相分离的柱式结构，将三相一次回路安装在各相的绝缘套筒内，单相发生故障时，不会引起三相短路。
采用新式小型化真空灭弧室，陶瓷外壳，铜铬触头，纵磁场灭弧方式，开断性能稳定可靠，触头磨损小，无燃烧和爆炸危险。
真空灭弧室安装在绝缘套筒内，用硅橡胶套将真空灭弧室整体密封在绝缘筒内，杜绝了由于凝露引起的短路故障，20年免维护。
绝缘筒采用进口户外环氧树脂材料或硅橡胶材料，有良好的憎水性和抗污秽能力，可用于恶劣的户外环境。

The three-phase separation post structure is adopted. The primary circuit of the three phases is installed in the insulation sleeve of each phase. The failure of single phase won't lead to the short-circuiting of the three phases.
By adopting the new type miniature vacuum arc extinguish chamber, porcelain enclosure, copper and chrome contact and the arc extinguish method of axial magnetic field, it provides steady and stable break performance and low loss of contact and eliminates the risk of combustion and explosion.
The vacuum arc extinguish chamber is installed in the insulation sleeve. It's sealed in the insulation sleeve as an integral part using the silicone rubber jacket, eliminating the short-circuit fault caused by condensation and providing the maintenance-free operation of 20 years.
The insulation sleeve is made of imported outdoor epoxy resin material or silicone rubber. Therefore, it's of good hydrophobicity and foul resistance and applicable to severe outdoor environment.



采用新型的弹簧操动机构，结构新颖、简洁、体积小、动作可靠、机械寿命可达1万次。
采用全密封结构，操动机构安装在箱体内，密封性能好，提高了防潮、防锈性能。箱体内无变压器油、无六氟化硫气体，满足无油化改造和环保的要求。
箱体表面采用先进的镀达克罗工艺或使用不锈钢材料，具有优良的抗腐蚀性能。

The new type spring operation mechanism is adopted, which features innovative, simple and small structure, reliable operation and the mechanical life up to 10,000 times.
The fully sealed structure is adopted, where the operation mechanism is installed in the enclosure to provide good sealing performance and moisture and rust resistance. The enclosure doesn't contain transformer oil and SF6 gas. Hence, the oil-free reconstruction and environment protection requirements are met.
The advanced Dacrotized process or stainless steel material is used on the surface of the enclosure, providing good corrosion resistance.

产品优点 Product Advantage

断路器可配置手动操动机构或电动操动机构。手动机构只具有手动分、合闸和过流保护功能。电动机构需要独立电源供电，除具有电动储能、电动分、合闸和过流保护功能外，同时还具有手动储能、手动分合闸功能。
在断路器A相、C相分别安装一只外置的保护用电流互感器和具有防涌流功能的复合控制器。当线路上出现涌流时，延时一段时间，躲避涌流，防止断路器误动；当线路上发生故障时，断路器可以速断。互感器变比按用户要求配置。
断路器可加装杆下遥控装置，在杆下用遥控器操作开关分闸、合闸。
断路器可加装外置PT或电子PT，提供断路器操作电源。
断路器可加装重合闸控制器、分段器控制器构成自动重合器、自动分段器；是实现配网自动化的理想设备。

The circuit-breaker can be equipped with the manual or electrical operation mechanism. The manual mechanism provides only the manual opening and closing and overcurrent protection function. The electrical mechanism requires independent power supply. Besides the electrical energization, electrical opening and closing and overcurrent protection functions, it also provides the manual energization and manual opening and closing functions.
An external protective current transformer and a composite controller of surge protection function are installed respectively on phases A and C of the circuit-breaker. When surge current occurs on the line, a period of delay will be applied to avoid the surge current and prevent the misoperation of circuit-breaker. When the line is faulty, the circuit-breaker can break quickly. The transformer ratio is configured as per the user requirements.
The circuit-breaker can be equipped with the remote control device below the rod, operating the switch for opening and closing from the remote controller below the rod.
The circuit-breaker can be equipped with additional external PT or electronic PT to provide the operational power supply of circuit-breaker.
The circuit-breaker can be equipped with the additional reclosing controller and sectionalizer controller to constitute the automatic recloser and sectionalizer. It's the ideal equipment to achieve distribution automation.

DA-F200故障检测器外形
Appearance of DA-F200 fault detector

PT外形
PT appearance

采用零序方向判断有效判断界内界外故障
The zero-sequence direction judgement is adopted to effectively judge the faults inside and outside.

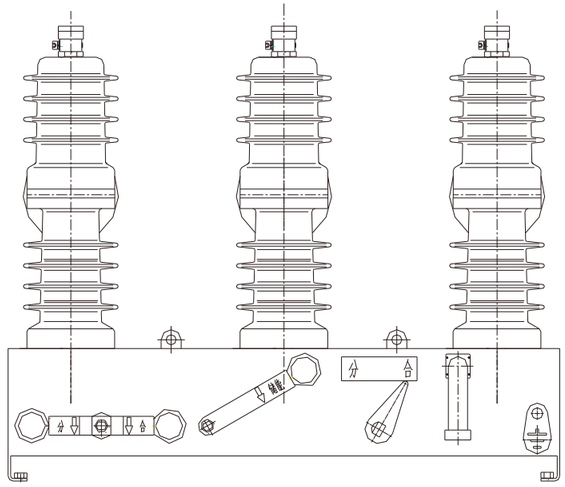
故障性质及故障点 Fault nature and point		保护处理 Protective treatment
单相接地故障 SINGLE-PHASE EARTH FAULT	中性点不接地系统，用户界内 The system with unearthed neutral point, in the boundary of the user	经延时判定为永久性接地后跳闸 Tripping after permanent earthing is determined after delay
	中性点经消弧线圈接地，用户界内 Neutral point earthed via the extinguishing coil, in the boundary of the user	
	中性点不接地系统，用户界外 The system with unearthed neutral point, outside the boundary of the user	不动作 No action
	中性点经消弧线圈接地，用户界外 Neutral point earthed via the extinguishing coil, outside the boundary of the user	
	中性点经小电阻接地，用户界内 Neutral point earthed via small resistor, in the boundary of the user	不动作 No action
	中性点经小电阻接地，用户界外 Neutral point earthed via small resistor,outside the boundary of the user	不动作 No action
相间短路故障 Phase-to-phase short-circuit fault		一般先于变电站开关跳闸 Generally prior to the tripping of substation switch

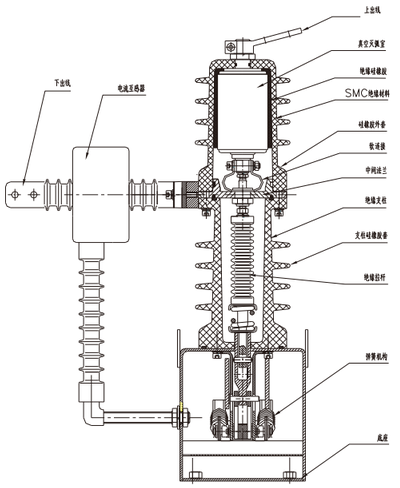
产品结构 Product Structure

总体结构 / GENERAL STRUCTURE

断路器总体采用小型化设计，采用全封闭结构。主要由密封式一次极柱、电流互感器、弹簧或永磁机构及箱体组成。弹簧操作机构密封布置在箱体的里面。
真空断路器的导电回路由支柱上部接线端、真空灭弧室断口、法兰盘、引出下部接线端构成。真空灭弧室是断路器的主要部件，采用陶瓷外壳，杯状纵磁场触头结构，铜铬触头材料，具有良好的开断和关合短路电流能力，电寿命长。避免由于充油，充气带来的一系列问题。
断路器可装设二相或三相CT，零序互感器。

As a whole, the circuit-breaker adopts the miniature design and fully enclosed structure. It' s mainly made up of the sealed primary terminal, current transformer, spring or permanent magnet mechanism and enclosure. The spring operation mechanism is sealed inside the enclosure.
The conducting circuit of the vacuum circuit-breaker is made up of the upper connecting terminal of post, break of vacuum arc extinguish chamber, flange plate, leading-out terminal of lower wiring. The vacuum arc extinguish chamber is the main part of the circuit-breaker. It adopts the ceramic package, cup shaped contact structure of axial magnetic field and copper & chrome contact material. It has good short-circuit current break and make ability and long electrical life, avoiding a series of problems caused by oil and gas filling.
The circuit-breaker can be equipped with the two-phase or three-phase CT and zero-sequence instrument transformer.





产品结构 Product Structure

小型弹簧操动机构 / MINIATURE SPRING OPERATION MECHANISM

该断路器采用新型小型化弹簧操动机构，分合闸能耗低；机构传动输出采用主轴滑动方式，无扭力损耗，分合传动件少，可靠性高，要求外供电源功率不大于50w，易于配备后备电源。

工作原理：

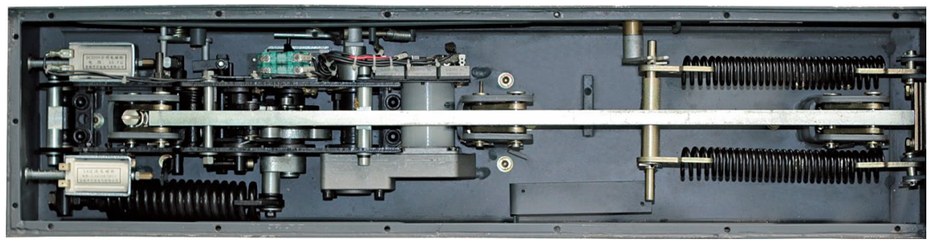
储能过程：拉动机构手动储能拉环，或给机构电动储能信号，电机带动储能拐臂给合闸弹簧储能，通过储能保持环节保持此能量。

合闸过程：合闸时，拉动机构手动合闸拉环或给机构电动合闸信号，合闸弹簧能量释放，机构输出轴转动，通过拐臂、连杆带动灭弧室触头向上运动，与静触头接触，并提供接触压力，同时为分闸弹簧储能，通过机构的合闸保持环节正常扣接使断路器保持合闸状态。

分闸过程：分闸时，拉动机构手动分闸拉环或机构电动分闸信号，机构的合闸保持合闸环节解扣，在触头压力弹簧和分闸弹簧的作用下，机构输出轴反向转动，通过连杆、拐臂带动灭弧室触头向下运动，动静触头分开，断路器分闸。分闸状态电开关分闸弹簧保持。

The circuit-breaker adopts the new type miniature spring operation mechanism of low energy consumption in opening and closing. The main shaft sliding method is used for the drive output of mechanism, which is of no torque loss, less drive components for opening and closing and high reliability. The required power of external power supply isn't higher than 50w, easy for the equipment of back-up power.

Operating principle:
Energization process: by pulling the manual energization ring pull of the mechanism or sending electrical energization signal to the mechanism, the motor drives the energization crank to energize the closing spring. The energy is maintained by the energization holding link.
Closing process: by pulling the manual closing ring pull of the mechanism or sending electrical closing signal to the mechanism during closing, the energy of the closing spring is released. The output shaft of the mechanism rotates and drives the contact of the arc extinguish chamber upward via the crank and connecting rod to come into contact with the fixed contact. It also provides the contact pressure and energizes the opening spring. The circuit-breaker is maintained closed by normally engaging the closing maintaining link of the mechanism.
Opening process: by pulling the manual opening ring pull of the mechanism or sending electrical opening signal to the mechanism, the closing maintain link of the mechanism is disengaged. Under the effect of the pressure spring and opening spring of the contact, the output shaft of the mechanism rotates counterclockwise and drives the contact of the arc extinguish chamber downward via the connecting rod and crank. Then, the moving and fixed contacts separate to open the circuit-breaker. In the open condition, the opening spring of the electrical switch is maintained.



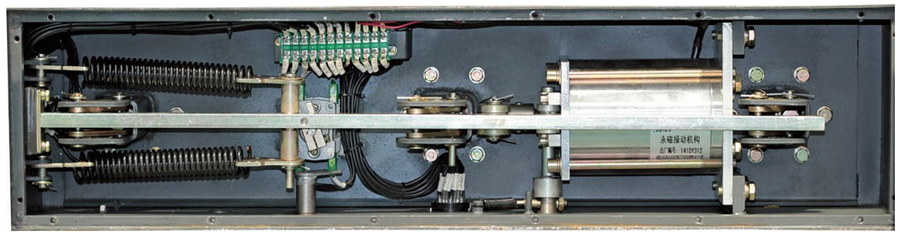
弹簧机构
Spring mechanism

性能优异的永磁操动机构

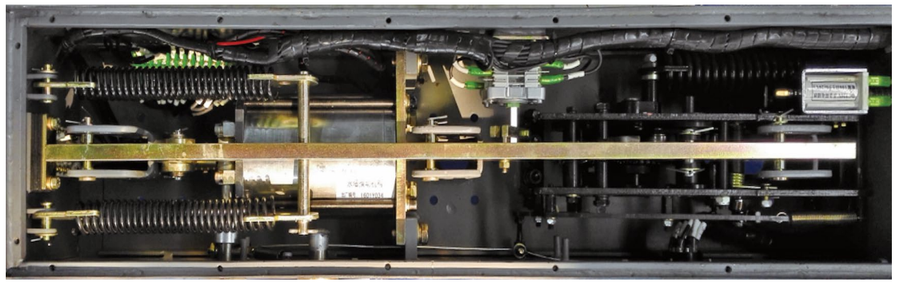
PERMANENT MAGNET OPERATION MECHANISM OF EXCELLENT PERFORMANCE

为电磁操动、永磁保持的操动机构，合闸位置由永磁铁保持，为单稳态机构，依靠触头弹簧和分闸弹簧使断路器分闸；
工作时运动部件少，具有很高的机械寿命，无机械锁扣，可靠性高；
采用超级电容、IGBT电子器件或微机系统对分合闸线圈进行控制，可实现断路器智能操作；
具备手动紧急分闸装置，通过加装储能弹簧系统可实现手动合闸功能；

It' s the operation mechanism manipulated by the electromagnet and maintained by the permanent magnet. The closing position is maintained by the permanent magnet. It's the monostable mechanism. The circuit-breaker opens via the contact spring and opening spring.
Because there are a few moving parts in operation, the mechanical life is very long. There is no mechanical lock, and the reliability is high.
The supercapacitor, IGBT electronic device or microcomputer system are used to control the opening and closing coils and perform the intelligent operation of circuit-breaker;
The manual emergency opening device is provided. The manual closing function can be performed by installing the energization spring system;



标准永磁机构
Standard permanent magnet mechanism



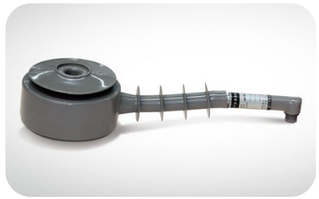
带手动合闸的永磁机构
It's equipped with the permanent magnet mechanism for manual closing.

可选配件 Optional Accessories

保护电流互感器 / PROTECTIVE CURRENT TRANSFORMER

在电网故障状态下，向继电保护等装置提供电网故障电流信息，采用内置式，二次侧5A，额定容量不小于1VA,一般配置A、C两相。

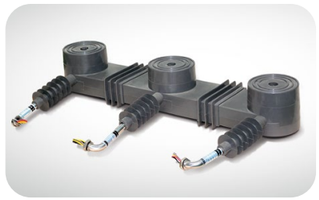
The disconnector is installed on the side of the circuit-breaker to form the combination electrical device of outdoor high-voltage vacuum circuit-breaker and disconnector. The visible isolation break is added. The reliable mechanical interlock function to prevent misoperation is also provided.



零序电流互感器 / ZERO-SEQUENCE CURRENT TRANSFORMER

电力系统产生零序接地电流时，与保护装置或信号配合使用，使装置元件动作，实现保护或监控。变比20/1,额定容量不小于1VA,一般与保护做成保护零序一体。

When the zero-sequence earth current is produced by the electrical system, it' s used in combination with the protective device or signal, which puts the device elements into action to perform protection or monitoring. The transformer ratio is 20/1. The rated capacity isn' t lower than 1VA. Generally, the protective and zero-sequence current transformers are integrated.



电压互感器 / VOLTAGE TRANSFORMERS

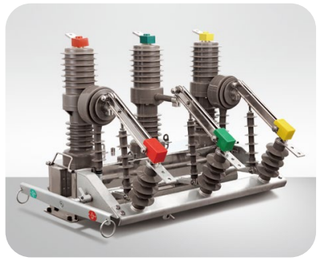
将电力系统的一次电压按一定变比缩小为要求的二次电压，每台断路器根据配网自动化建设需求，配置1或2只电压互感器。电压比10kV/0.22kV,额定容量不小于150VA,短时容量不小于300VA/10s。

It reduces the primary voltage of the power system to the required secondary voltage at certain transformer ratio. Each circuit-breaker is equipped with one or two voltage transformers according to the distribution automation construction requirement. The voltage ratio is 10kV/0.22kV. The rated capacity isn't smaller than 150VA. The short-time capacity isn't lower than 300VA/10s.

隔离刀 / THE DISCONNECTOR

在断路器侧面可以加装隔离开关，形成户外高压真空断路器–隔离开关组合电器，增加了可见的隔离断口，并具有可靠的防误操作机械联锁功能。
隔离开关采用手动操作方式，具有以下防误操作功能：
a) 断路器处于合闸位置时，隔离开关不能分闸；
b) 断路器处于分闸位置时，隔离开关方能分合闸。

When the electrical equipment is in overhaul, it provides an electrical gap, which is also an obvious break point, to ensure the personal safety of the maintenance personnel. The disconnector and circuit-breaker have perfect interlock.
The disconnector adopts the manual operation method and has the following misoperation prevention functions:
a) When the circuit-breaker is closed, the disconnector can't open;
b) The disconnector can open and close only when the circuit-breaker is open.



避雷器 / LIGHTNING ARRESTER

保护电器设备免受雷电过电压、操作过电压、工频暂态过电压冲击而损坏。

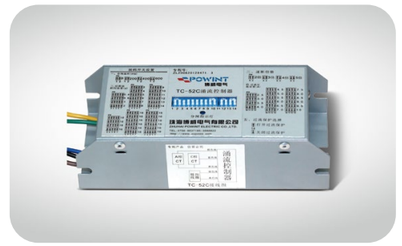
Protect electrical equipment from lightning over voltage, operating over-voltage, power frequency transient overvoltage impact and damage.

断路器无源保护装置——涌流控制器

PASSIVE PROTECTION DEVICE OF CIRCUIT-BREAKER — SURGE CONTROLLER

- 不需PT，主要用于手动弹簧机构；
- 两相或三相保护，不带零序保护；
- 超出2～8倍整定电流时速断保护，速断保护有四档延时选择；
- 合闸或线路由小电流骤增至大电流时，快速涌流吸收并延时；
- 过流延时时间有15档任选：40ms～3s；

- No PT required, generally used for manual spring mechanism;
- Two-phase or three-phase protection, no zero-sequence protection;
- Provide quick break protection when the current is 2~8 times higher than the current setting, which has four step delay;
- When closing occurs or the line suddenly increases from small current to large current, it quickly absorbs the surge current and delay;
- The overcurrent delay is optional from 15 steps in the range of 40ms~3S;



罩式智能控制器——分界断路器控制器

HOOD-TYPE INTELLIGENT CONTROLLER — DIVIDING CIRCUIT-BREAKER CONTROLLER

- 速断保护、过流保护
- 三次重合闸、重合闸后加速
- 零序保护、本地／远程定值设置
- “四遥”、事件记录
- 实时查询、四个输入模拟量通道
- 可选配件：
  A 备用电源
  B 掌上电脑——PDA
  C 通讯：GPRS或GSM
  D 串口
  E 小液晶

- Quick break protection, overcurrent protection
- Tertiary reclosing, acceleration after reclosing
- Setting of zero-sequence protection, local/remote setting value
- “Remote control, telemetry, remote surveillance and remote regulating”, event recording
- Real-time inquiry, four channels of input analog quantity
- Optional accessories:
  A Standby power supply
  B Personal digital assistant-PDA
  C Communication: GPRS or GSM
  D Serial port
  E Small LCD

具有网络重构功能的箱式控制终端

BOX TYPE CONTROL TERMINAL WITH NETWORK RECONFIGURATION FUNCTION

- 304优质不锈钢体，耐腐蚀性强，防护等高
- 液晶功能
- 速断保护、过流保护
- 定时限/反时限保护
- 三段式保护、零序保护
- 三次重合闸、重合闸后加速
- 本地/远程定值设置
- 事件记录、实时查询、“四遥|”
- 带后背电源
- 可选配件：
  A 通讯：GPRS或GSM
  B 串口

- 304 high-quality stainless steel body, strong corrosion resistance, High protection level
- LCD function
- Quick break protection, overcurrent protection
- Fixed/inverse time-lag protection
- Three-stage protection and zero-sequence protection
- Tertiary reclosing, acceleration after reclosing
- Setting of local/remote setting value
- Event recording, real-time inquiry, “remote control, telemetry, remote surveillance and remote regulating”
- With back-up power
- Optional accessories:
  A Communication: GPRS or GSM
  B Serial port

技术参数 Technical Parameters

主要技术参数 / MAIN TECHNICAL PARAMETERS

项目 / ITEM		单位 / UNIT	技术数据 / TECHNICAL DATA
额定电压 Rated voltage		kV	12
额定频率 Rated frequency		Hz	50
额定电流 Rated current		A	630、1250
额定短路开断电流 Short circuit breaking current rating		kA	20、25
额定短路关合电流（峰值） Short circuit making current rating (peak)		kA	50、63
额定短时耐受电流4s Rated short time withstand current (4s)		kA	20、25
额定峰值耐受电流（峰值） Rated peak withstand current (peak)		kA	50、63
机械寿命 Mechanical life		次/ Times	10000
额定电流开断次数 Number of breaks under rated current		次/ Times	10000
额定短路开断电流开断次数 Number of breaks at rated short-circuit break current		次/ Times	30
工频耐压(1min) Power frequency withstand voltage (1min)	相间、对地 / 断口（干试） Between phases, to earth/at break (Dry test)	kV	42/48
	相间、对地（湿试） Between phases, to earth (Wet test)	kV	34
雷电冲击耐受电压（峰值）相间、对地/断口 Lightning impulse withstand voltage (peak) between phases, to earth/at break		kV	75/85
二次回路1min工频耐压 1min power-frequency withstand voltage of secondary circuit		kV	2
净重 Net weight		kg	140

断路器机械特性参数 / MECHANICAL CHARACTERISTIC PARAMETERS OF CIRCUIT-BREAKER

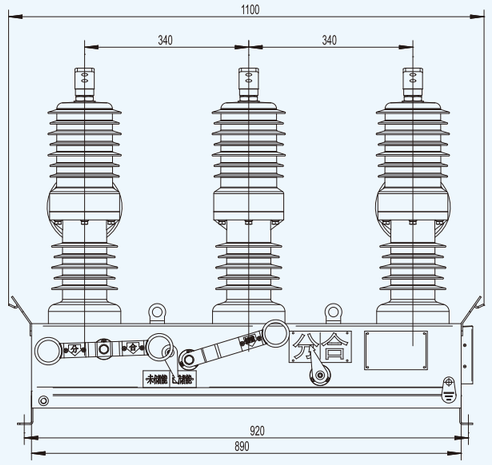
项目 / ITEM	单位 / UNIT	技术数据 / TECHNICAL DATA
触头开距 Contact distance	mm	9±1
触头超行程 Overtravel of contact	mm	3±0.5
分闸速度 opening speed	m/s	1.2±0.2
合闸速度 Closing speed	m/s	0.8±0.2
触头合闸弹跳时间 Closing bouncing time of contact	ms	≤2
相间中心距离 Interphase center distance	mm	340±1.5
外部带电空气绝缘距离 Insulation distance of external live air	mm	240±2
外部爬电比距 External creepage distance	cm/kV	3.8
三相分闸不同期性 Time error of three-phase non-synchronous opening	ms	≤2
各相导电回路电阻 Resistance of conducting circuit of each phase	μΩ	≤80； ≤140（含隔离 / Containing isolation）
合闸时间 Closing time	ms	≤60
分闸时间 Opening time	ms	≤40
隔离断口开距 Gap of disconnecting break	mm	≥210
触刀关合位置偏斜 Skewness of opening and closing positions of contact knife switch	mm	≤2
手动分合闸操作力矩 Operation torque of manual opening and closing	N.m	≤150

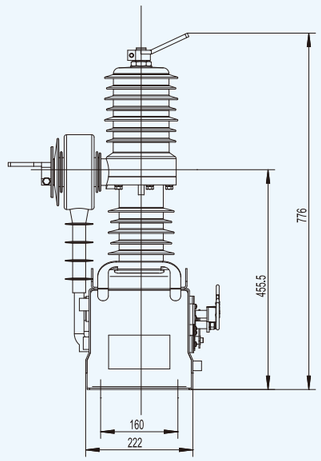
弹簧操动机构主要技术参数 / MAIN TECHNICAL PARAMETERS OF SPRING OPERATION MECHANISM

项目 / ITEM	单位 / UNIT	技术数据 / TECHNICAL DATA			
储能电机额定工作电压 Rated operating voltage of energization motor	V	DC220、 110、48、24			
储能电机功率 Power of energization motor	W	40			
储能电机额定工作电压储能时间 Energization time of energization motor at rated operating voltage	s	≤8			
手动储能操作力：采用机构所配储能手柄时最大操作力 Operation force of manual energization: the maximum operation force of the energization handle equipped for the mechanism	kg	<25			
分合闸电磁铁额定电压 Rated voltage of opening and closing electromagnet	V	DC220	DC110	DC48	DC24
分合闸电磁铁额定功率 Rated power of opening and closing electromagnet	W	<440	<583	<480	<480
过流脱扣器额定电流 Rated current of overcurrent release	A	5			
脱扣电流准确度 Accuracy of tripping current	%	±10			

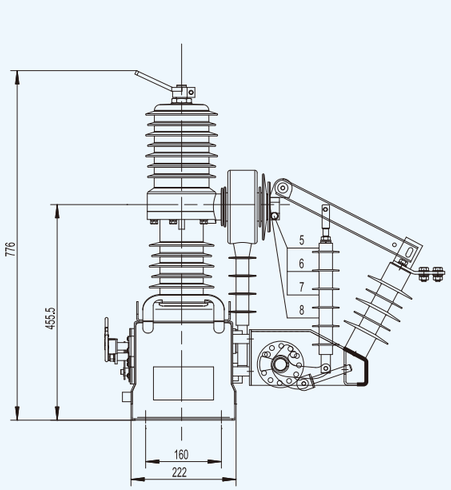
外形尺寸 Overall Dimensions

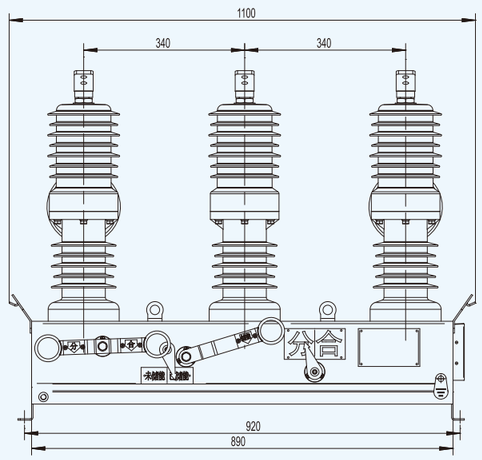
ZW32–12 外形尺寸 Overall Dimensions





ZW32–12标准外形 / Standard shape of ZW32–12

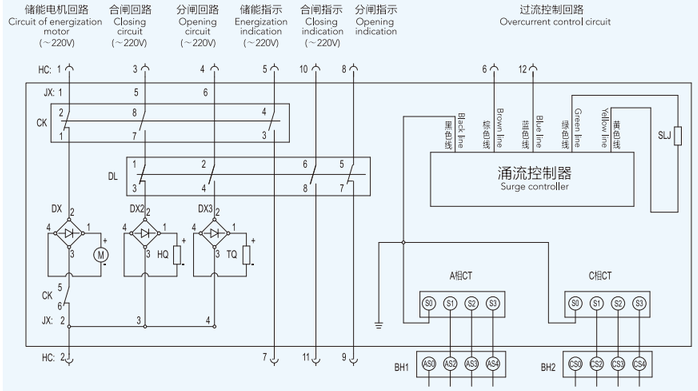




ZW32–12带隔离刀外形 / Shape of ZW32–12 with disconnector switch

电气接线图 Electrical Wiring Diagram

ZW32-12 Wiring Diagram (Electrical + Surge Current) ZW32–12 接线图（电动＋涌流）



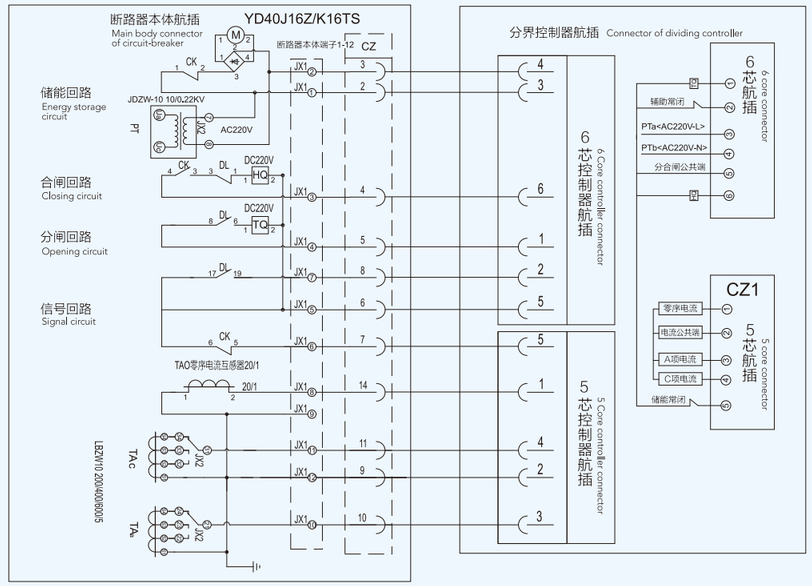
注：
HQ：合闸线圈
TQ ：分闸线圈
CK：行程开关
M： 储能电机
DL：辅助开关
DX～DX2：桥式整流器
SLJ：过流线圈
JX :开关内部接线板
HC:开关外部接线板
BH1～BH2:
开关外部接线板
S0:CT保护线
S1:CT 200/5接线
S2:CT 400/5接线
S3:CT 600/5接线

Note:
HQ: Closing solenoid
TQ: Opening solenoid
CK: Travel switch
M: Energy storage motor
DL: Auxiliary switch
DX ~ DX2: Bridge rectifier
SLJ: Overcurrent coil
JX: Internal terminal block of switch
HC: External terminal block of switch
BH1 ~ BH2:
External terminal block of switch
S0:CT Protective wire
200/5 S1:CT 200/5Wiring
400/5 S2:CT 400/5Wiring
600/5 S3:CT 600/5Wiring

注：
1、图示二次回路未加电；
2、断路器处于分闸状态、机构未储能；
3、图中CK2到CK5储能电机回路部分、分合闸线圈已在机构接好线；
4、A、C相CT保护线与涌流控制器黑色线内部短接,变比线接到外部接线板；
5、涌流控制器棕色线连到6号端子后与A相所需要的变比对应的端子相连；
6、涌流控制器蓝色线连到12号端子后与C相所需要的变比对应的端子相连。

Notes:
1. The secondary circuit shown in the figure isn't energized;
2. The circuit-breaker is open. The mechanism isn't energized;
3. The circuit part of CK2 to CK5 of the energization motor and the opening and closing coils have been wired in the mechanism;
4. The CT protective wire of phases A and C and the black wire of surge controller are shorted internally. The transformation ratio wire is connected to the external terminal block;
5. After connecting with the terminal 6#, the brown wire of the surge controller is connected to the terminal corresponding to the transformation ratio required by phase A;
6. After connecting with the terminal 12#, the blue wire of the surge controller is connected to the terminal corresponding to the transformation ratio required by phase C.

ZW32-12 Diring Diagram (Electrical + Dividing) ZW32–12 接线图（电动＋分界）



分界控制器定义图 Defining figure of boundary controller

注：
1、图示二次回路未加电；
2、断路器处于分闸状态、机构未储能；
3、图中CK2到CK5储能电机回路部分、分合闸线圈已在机构接好线。

Notes:
1, The secondary circuit shown in the figure isn't energized;
2, The circuit-breaker is open. The mechanism isn't energized;
3, The circuit part of CK2 to CK5 of the energization motor and the opening and closing coils have been wired in the mechanism;