

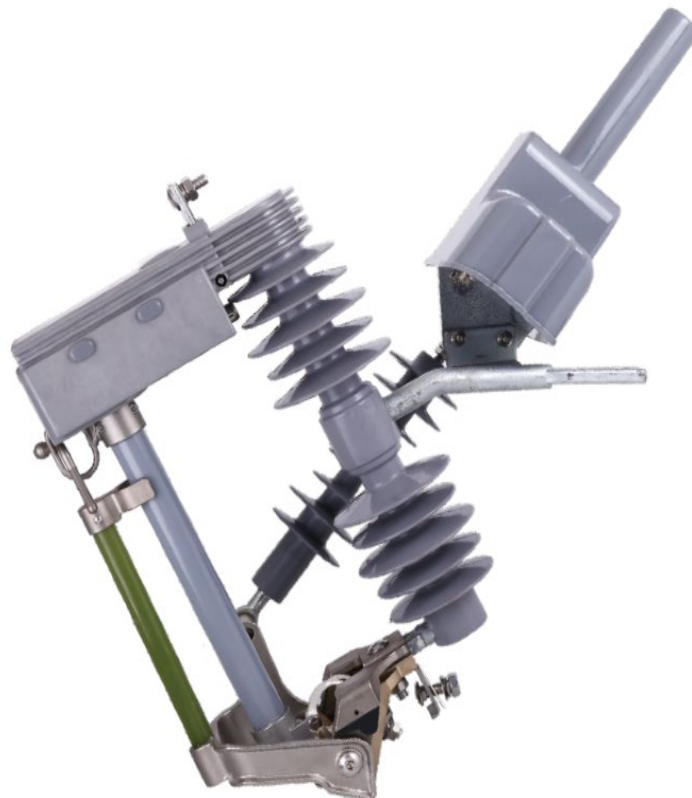
Intelligent distribution network equipment solution

Remote intelligent control, no need for pole climbing operation

Real time monitoring of all states, proactive fault warning

24/7 reliable operation, not constrained by the environment

One click sequential control linkage, intelligent platform management



Comply with IEC/ANSI standards

Provided customized manufacture

Whole solutions for design, assembly, test...

Accountable solution for safety and reliability

Wide range offering, easy business and convenient installation

About us / contact us	1
Summary	2
Electric drop-out fuse	3
Intelligent fuse tube and sensor	9
Motorized isolating switch	10
Intelligent detection control	12
Applicable scenarios	20
On-site installation display	21
After-sale service	22



ZHEJIANG ROCKWELL ENERGY TECHNOLOGY CO.,LTD. is a technology enterprise specializing in providing complete solutions for power automation system and related automation system supporting equipment.

The company has a long-term strategic cooperation with internationally renowned middle and high voltage electrical equipment R & D and manufacturing companies and research institutes, and has jointly developed a series of high-quality automation products,. The company has also married with the provincial intelligent high-voltage switch laboratory to jointly develop a new generation of intelligent synchronous switch measurement and control devices, electronic transformers, voltage sensor processing units, etc., and has achieved some fruitful technical achievements and accumulated a large number of industry professional and technical elites with excellent experience.Solid talent base, advanced production equipment, perfect quality system, strict testing means, is a strong guarantee for the company's product quality alone. In addition to providing a rich choice of products, we can provide you with technical solution support services, you only need to tell us your needs, our technical staff will be tailored for you to design a complete set of product solutions

The company is renowned at home and abroad for providing high-quality products and services. In addition to the domestic market, the products are currently exported to South America, Central Asia, the Middle East, Central Europe, Southeast Asia, Africa and other places.We always adhere to the belief of growing together with customers, and strive to provide safer, more reliable, more advanced and more humane automation system solutions and equipment.

RW-energy[®], China. Provide with best support. If you have any question please consult below:

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Web station: <https://www.energy-rw.com/>

RW-energy® strives to bring our customers the latest technology and competitive pricing and best service for distribution automatic.

The core product series includes: intelligent electric drop-out fuses (covering all voltage levels from 12kV to 40.5kV), electric disconnecting switches, smart fuse tubes, high-voltage current transformers and status detection sensors, along with supporting smart detection control systems and integrated smart distribution network solutions.

The product integrates mechanical, electrical, and digital control technologies, supporting intelligent functions such as remote operation, status monitoring, fault warning, and GPS positioning. It enables "one-click sequence control" for high and low voltage linkage operations, effectively replacing traditional manual pole climbing tasks and significantly improving the efficiency and safety of distribution network operations and maintenance.

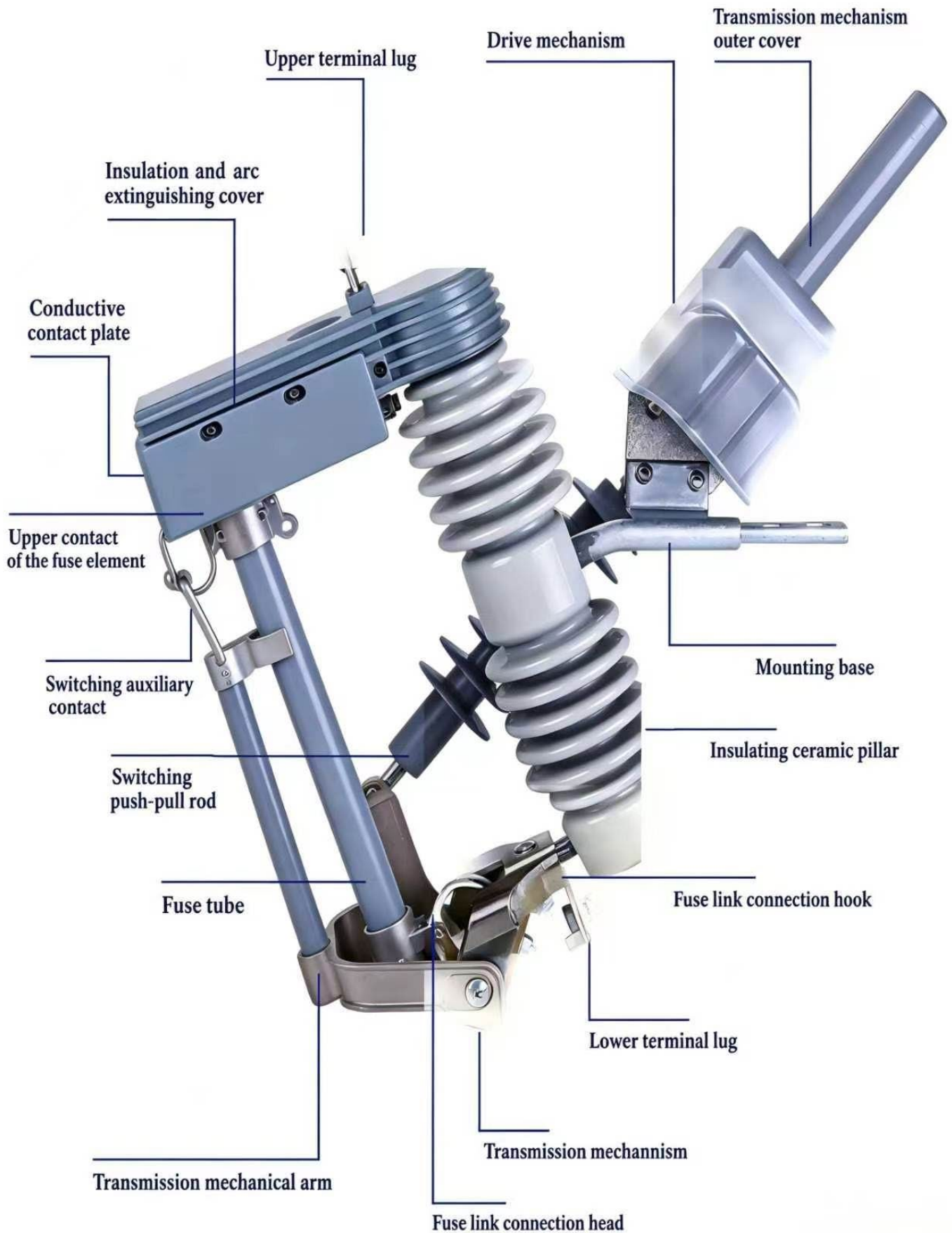
The product is widely used in various scenarios such as overhead line districts, rural power grids, power plants, industrial and mining oilfields, railways, communication base stations, and charging piles. With reliable quality and innovative technology, it contributes to the digital transformation and upgrading of the power system.

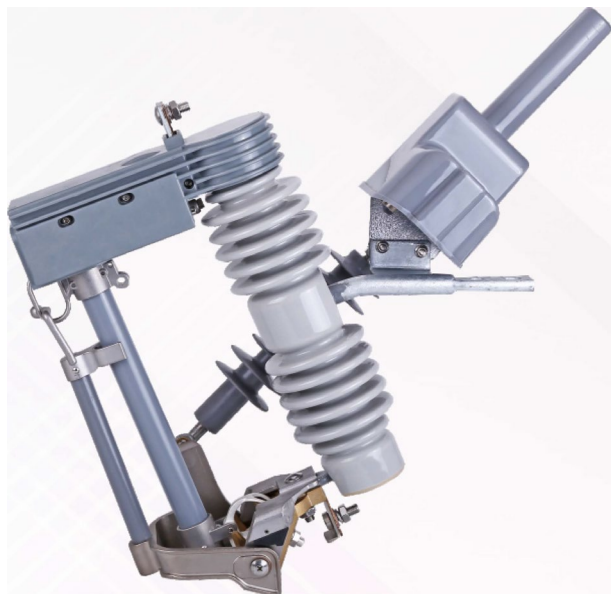
Service environment

Air temperature: Ambient temperature: -25°C ~ +70°C

Humidity: 5% ~ 100% (Non-congealing cream)

Above sea level: -100~3000m



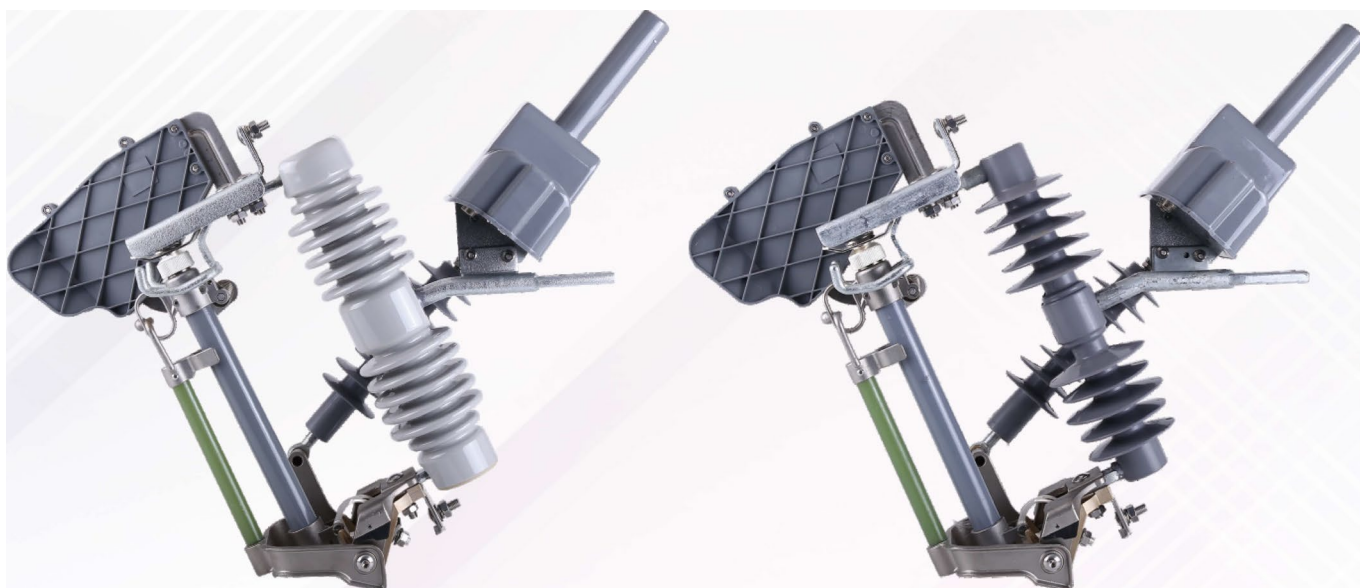


● Main technical parameters

Type	C(H)FRRW12-12/100(200)-12.5(16)	C(H)FRRW12-24/100(200)-12.5(16)
Rated voltage	12KV	24KV
Rated current	100A/200A	100A/200A
Drop-out current	12.5KA/16KA	12.5KA/16KA
The minimum distance	380mm	530mm
The motor voltage	12V/24VDC	12V/24VDC
Lightning impulse voltage	75KV/85KV	150KV
Power frequency withstand voltage	42KV/48KV	65KV

● Product comparison

Type	Traditional fuse	Intelligent drop-out fuse
Information return		√
Remote control switching		√
Not affected by weather factors		√
Intelligent monitoring		√
Manual operation	√	√



● Main technical parameters

Type	C(H)FRRW12-12/100(200)-12.5(16)	C(H)FRRW12-24/100(200)-12.5(16)
Rated voltage	12KV	24KV
Rated current	100A/200A	100A/200A
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Intelligent monitoring		√
Manual operation	√	√

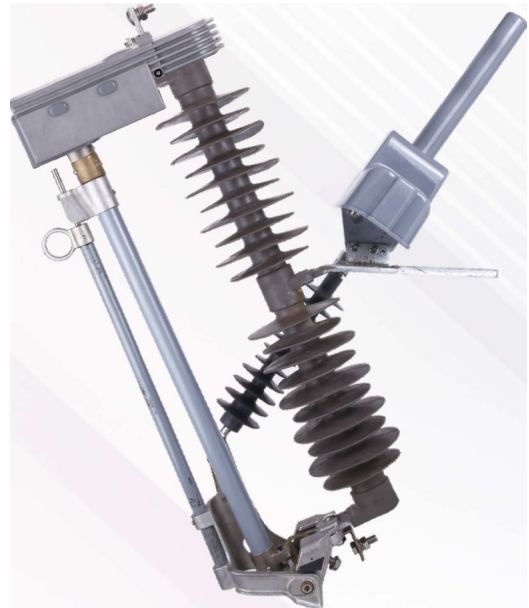
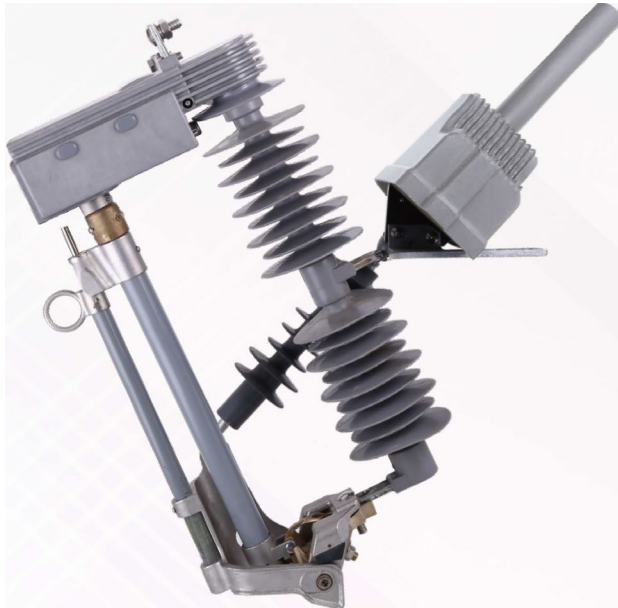


● Main technical parameters

Type	C(H) FRRW12-12/100(200)-12.5(16)	C{H} FRRW12-24/100(200)-12.5{16}
Rated voltage	12KV	24KV
Rated current	100A/200A	100A/200A
Drop-out current	12.SKA/16KA	12.SKA/16KA
The minimum distance	380mm	530mm
The motor voltage	12V/24VDC	12V/24VDC
Lightning impulse voltage	75KV/ 85KV	ISOKV
Power frequency withstand voltage	42KV/48KV	65KV

● Product comparison

Type	Traditional fuse	Intelligent drop-out fuse
Information return		√
Remote control switching		√
Not affected by weather factors		√
Intelligent monitoring		√
Manual operation	√	√



● Main technical parameters

Type	C(H) FRRW12-35/100(200)-12.5(16)	C(H)RRW12-40.5/100(200)-12.5(16)
Rated voltage	35KV	40.5KV
Rated current	100A/200A	100A/200A
Drop-out current	12.5KA/16KA	12.5KA/16KA
The minimum distance	1085mm	1250mm
The motor voltage	12V/24VDC	12V/24VDC
Lightning impulse voltage	185KV	215KV
Power frequency withstand voltage	80KV	95KV

● Product comparison

Type	Traditional fuse	Intelligent drop-out fuse
Information return		
Remote control switching		√
Not affected by weather factors		√
Intelligent monitoring		√
Manual operation	√	√



● Main technical parameters

Type	C(H) FRRW12-12/100(200)-12.5(16}	C(H) FRRW12-24/100(200)-12.5(16)
Rated voltage	12KV	24KV
Rated current	100A/200A	100A/200A
Drop-out current	12.5KA/16KA	12.SKA/16KA
The minimum distance	380mm	530mm
The motor voltage	12V/24VDC	12V/24VDC
Lightning impulse voltage	75KV/ 85KV	ISOKV
Power frequency withstand voltage	42KV/ 48KV	65KV

● Product comparison

Type	Traditional fuse	Intelligent drop-out fuse
Information return		
Remote control switching		√
Not affected by weather factors		√
Intelligent monitoring		√
Manual operation	√	√

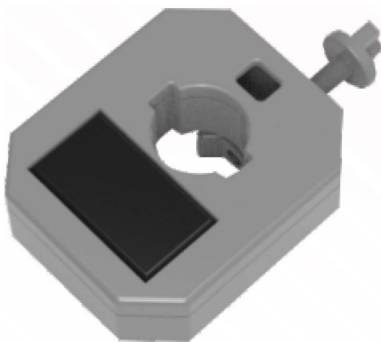


Intelligent fuse tube functions: GPS positioning, status monitoring of the fuse

CT Intelligent fuse tube functions: Current, temperature status and GPS detection

● Main technical parameters

Type	Intelligent fuse tube	CT Intelligent fuse tube
Rated voltage	12KV	12KV
Rated current	100A/200A	100A/200A



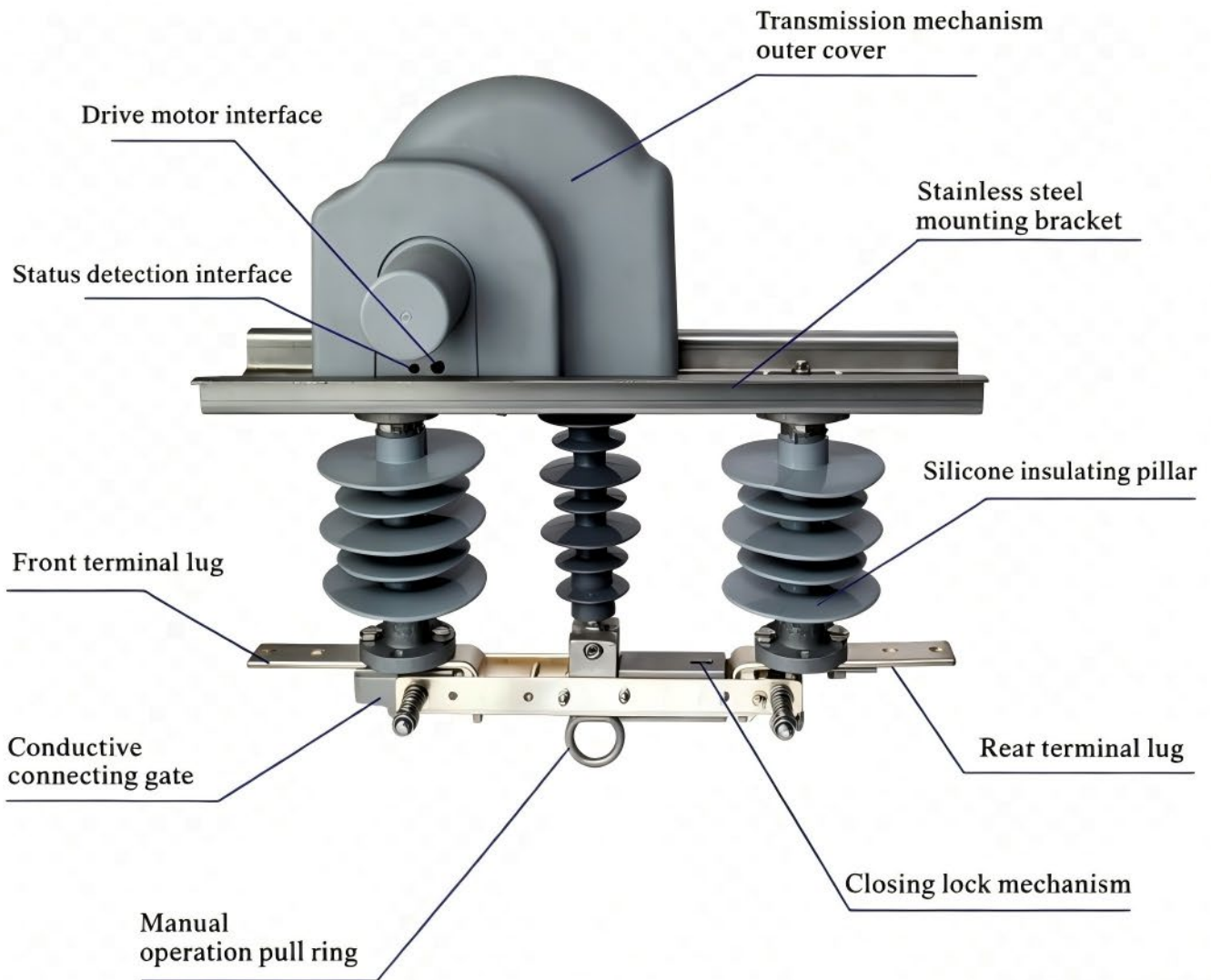
High-voltage current sensor

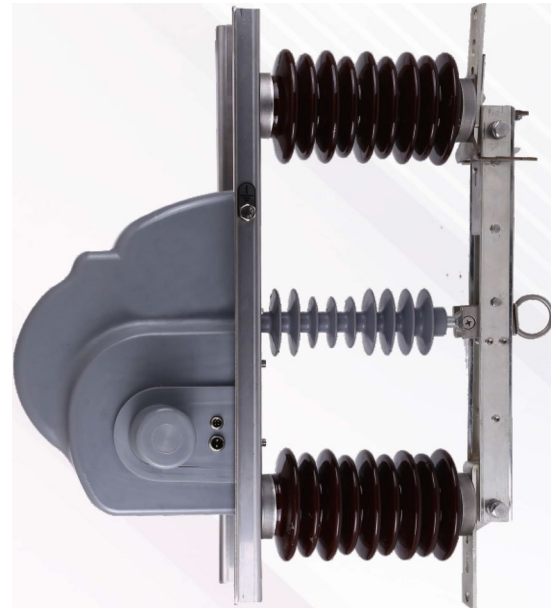
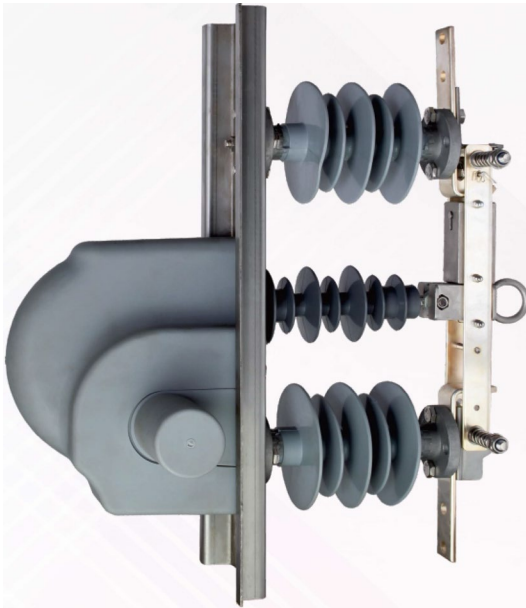


Status detection sensor

● Main technical parameters

Name	High-voltage current transformer	Status detection sensor
Communication	2.4G wireless communication	2.4G wireless communication
Sampling level	/	0.5
Sampling ratio	/	600:1
Charge ratio	/	400:1

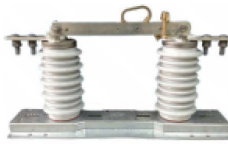




● Main technical parameters

Type	DGDWI-12/630-25	GWT24-24
Rated voltage	12KV	24KV
Rated current	630A	630A
Drop-out current	25KA	25KA
The minimum distance	380mm	380mm
Lightning impulse voltage	75KV/85KV	95KV/115KV
Power frequency withstand voltage	42KV/48KV	50KV/ 64KV
Type	DGDWI-12/630-25	GWT24-24

● Product comparison

Type	Traditional fuse 	Intelligent drop-out fuse 
Information return		√
Remote control switching		√
Not affected by weather factors		√
Intelligent monitoring		√
Manual operation	√	√

● Overview

The intelligent detection control is primarily designed for the intelligent monitoring of our company's independently developed electric drop-out fuses and motorized isolating switches. It is an intelligent switchgear device designed using a variety of modern microelectronics and communication technologies. It integrates measurement, protection, control and communication functions, featuring high integration and flexible configuration. It employs a 32-bit high-performance processor for faster real-time protection, and high-precision current transformer sampling combined with dedicated protection algorithms for enhanced protection accuracy. An external distribution encryption box or distributed communication management unit can be connected to realize encrypted data communication with the master station.



Bucket-type detection control - ICC-A



Box-type detection control - ICC-B



Collection detection control - ICC-C

● Comparison of main functions

Item	A	B	C
Remote control equipment operation and closing	✓	✓	×
Provides remote data transmission	✓	✓	✓
Drop alarm	✓	✓	✓
Current and voltage detection	✓	✓	✓
(RS485)Static Interface Extension (RS485)	✓	✓	✓
Input voltage	220	220	12
Hand remote control operation	✓	✓	×

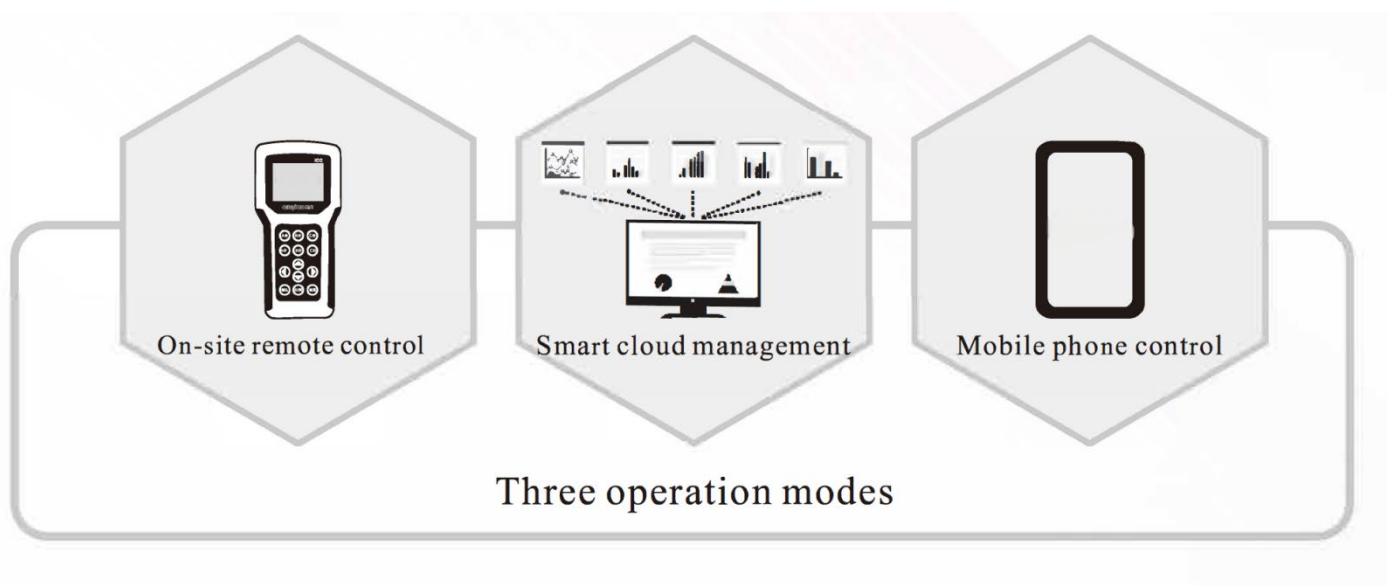
● Product features

Our company's intelligent drop-out fuses and isolating switches series products are intelligent high-voltage power distribution products that integrate mechanical, electrical and digital control. The products are divided into mechanical-electrical parts and electronic control parts. The mechanical part shares similar installation methods with traditional products, and it can be connected to the electronic part to achieve automatic intelligence.

Operation methods of the product: manual operation, computer terminal management, handheld remote control, and multibackground operation.

The product can be customized according to user needs and has the following six advantages compared to traditional products:

- ◆ High-voltage switching can be performed remotely without the need to climb or work at heights, ensuring personal safety.
- ◆ Unaffected by adverse weather conditions such as wind, rain, fog and night, allowing for all-weather operation.
- ◆ Independent of the operator's skill level or experience, preventing equipment damage and ensuring efficient power supply.
- ◆ Equipped with a pre-fault prediction system, it can safely cut off power in case of transformer or line aging failures.
- ◆ The intelligent detection and early warning system can monitor the real-time operation of the transformer circuit, and the equipment will transmit fault information when a fault occurs. The electronic positioning system can accurately record the product installation location, saving time and improving efficiency for maintenance and repairs.
- ◆ The new generation of products can be customized to include video surveillance, remote operation under load, and other functions according to user requirements.





Multi-terminal backstage management system



Intelligent cloud dedicated network system



On-site remote controller

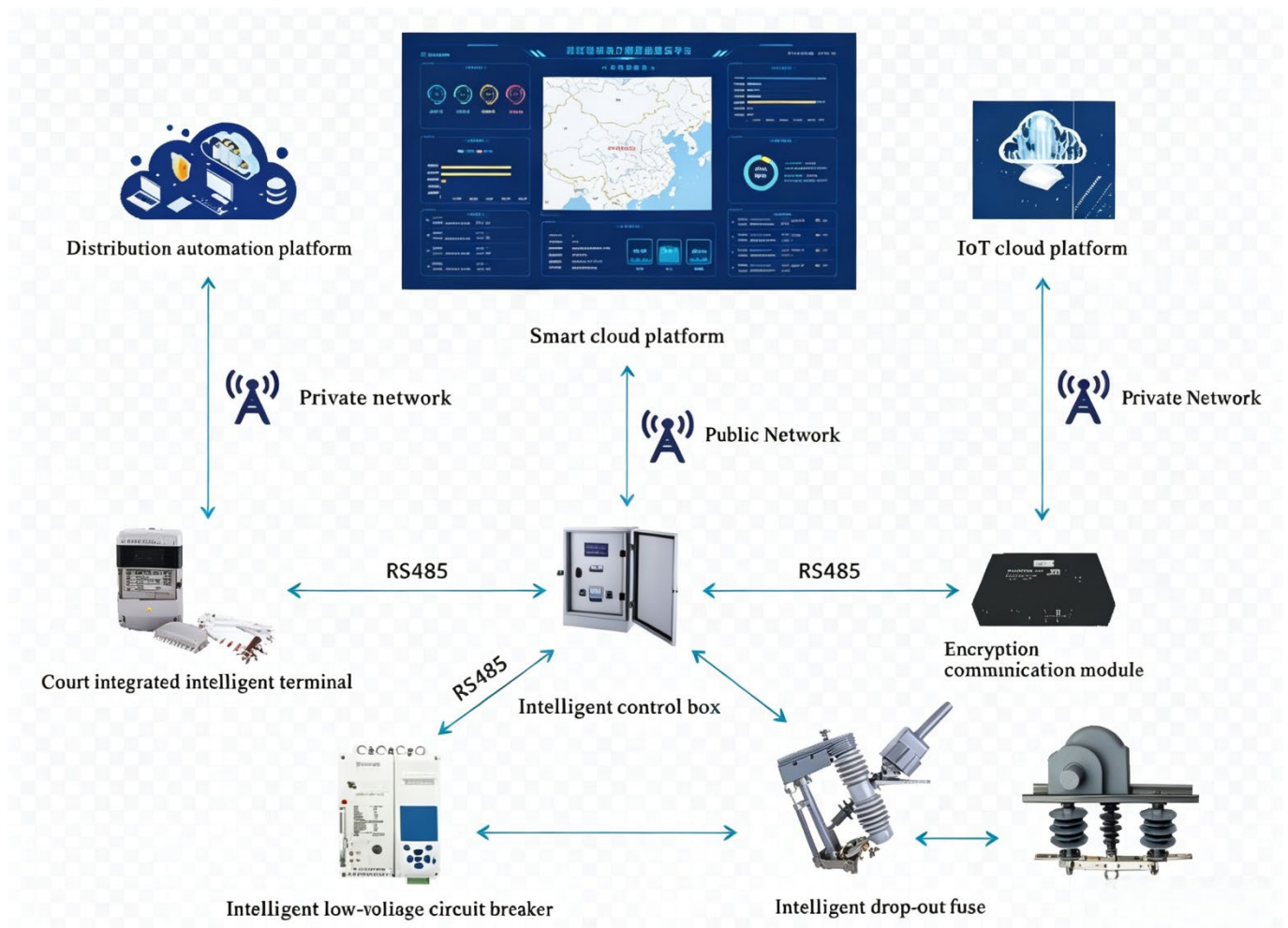


Remote intelligent controller (choose one)



- ◆ Users can access the service platform through multiple terminal devices to view the operating status of the equipment online and remotely operate the switching of the equipment, realizing remote real-time monitoring and precise control of the power equipment status.
- ◆ The data collected from the intelligent drop-out fuses (including abnormal situation alarms, primary current access monitoring, and current monitoring alarms) is accessed by a unified data analysis service platform. When the system detects an abnormality in a certain part of the fuse, it will promptly notify the on-site construction unit for inspection and maintenance through data analysis and on-site conditions, so as to protect the safe and reliable operation of the distribution transformer and the entire 10kV line, and gain valuable time for subsequent maintenance work.

● Intelligent court application



1. Multi-scheme adaptation to main station background positioning management system The system can connect to devices through multiple expansion interFACES according to the configuration scheme of the main station. In combination with devices such as the court integrated intelligent terminal, it can remotely locate the court, grasp the real-time online status of the equipment, and realize point-to-point fine-grained management of the equipment.
2. Multi-dimensional monitoring and intelligent analysis of equipment operation information Using artificial intelligence technology, combined with the operation information of court equipment, equipment inventory, and operation records, big data analysis is used to intelligently analyze and process the monitoring data to ensure the stable and reliable operation of the equipment.
3. Equipment safety protection measures Using our company's self-developed intelligent control terminal, combined with the "one-click sequential control" start-up technology, the intelligent management of the high and low-voltage switching sequence is implemented, and the one-click safe switching function of load protection and power unloading of the distribution network area is realized in cooperation with the arc extinguishing protection and automatic switching function of the intelligent fuse.

● Overhead line visualized intelligent circuit "one-click sequential control" solution

In response to industry demands for enhanced efficiency and safety, we have developed an innovative intelligent circuit system equipped with "one-click sequential control" functionality. This system leverages high-voltage and low-voltage linkage technology to significantly reduce the operational burden on personnel and achieve remarkable improvements in task execution efficiency. Additionally, the introduction of a dual confirmation mechanism involving camera monitoring and real-time device location feedback ensures the high reliability and security of remote operation.

The one-click sequential control intelligent circuit system realizes the one-click switching of intelligent circuit linkage equipment, including intelligent fuses, isolating switches and low-voltage circuit breakers. Compared with traditional operation and maintenance modes, one-click sequential control technology has demonstrated great advantages in fault handling. It can significantly shorten the time required for fault identification and repair, and effectively reduce economic losses caused by power outages. This innovation not only improves the stability of the power system but also greatly improves the efficiency and intelligence of operation and maintenance work.

Intelligent fuses

Overcurrent and short-circuit protection switches used in 10KV distribution lines and overhead transformer circuits.



Isolating switches

Outdoor high-voltage distribution system lines used to disconnect or switch lines when they are energized but not loaded.



IoT cloud platform

Receives control terminal information, remotely sends control commands, and connects to cameras to display real-time footage.



Low-voltage circuit breakers

Overcurrent protection, short-circuit protection, remote control, electrical parameter measurement, over/under voltage self-recovery, fault analysis, fault warning, and RS485 communication.



High-definition cameras

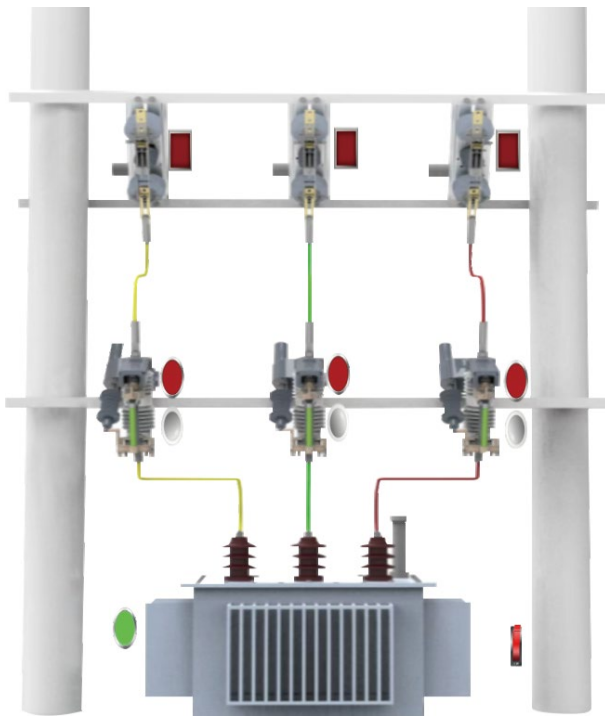
Provide clear and detailed video footage for monitoring circuit status.



Intelligent integration central box

Controls intelligent fuses, isolating switch, and low-voltage circuit breakers, communicates with the cloud platform and receives cloud platform instructions.



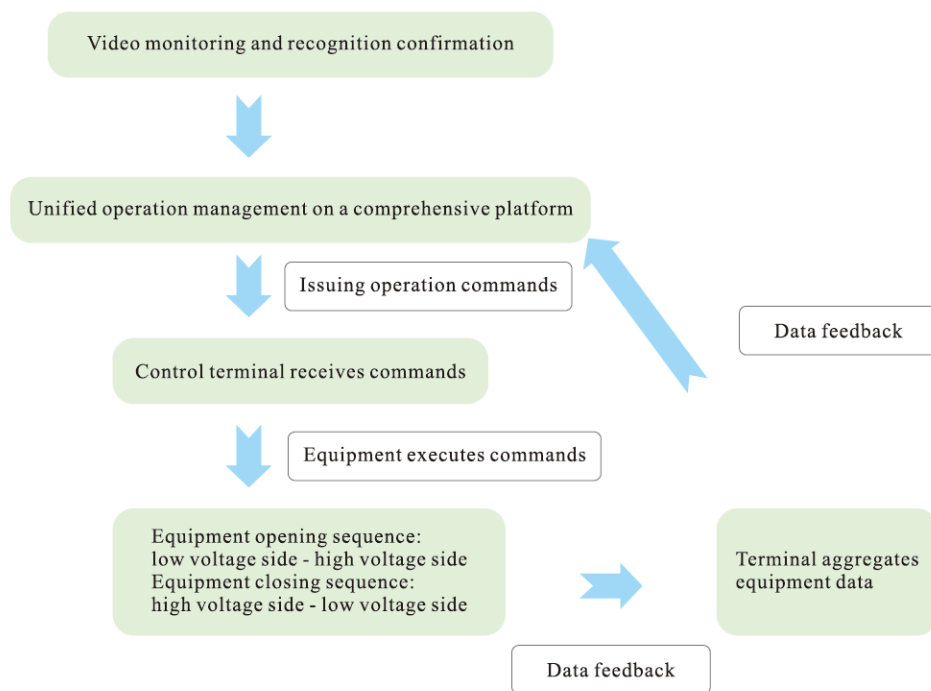


Real-time control with dynamic management in the background

Core system principles

The intelligent switching strategy employs a multi-level linkage algorithm to ensure fast and accurate switching actions while adhering to strict safety standards during the closing process. Dual confirmation mechanism

Leveraging the video monitoring system and the control system's feedback on switching information, a dual safeguard is implemented to verify operations.



"One-click sequential control" opening strategy application



- ◆ The intelligent control terminal receives instructions from the remote platform, verifies and parses the interlocking opening command, and executes the intelligent opening after validation.



- ◆ First, execute the operation to open the low-voltage circuit breaker to ensure complete isolation between the load and the power source, ensuring operational safety and reducing the risk of electric shock. Additionally, this effectively prevents arc flash phenomena that may occur with fuses and isolating switches during load operation, thereby protecting equipment from damage and ensuring stable operation of the power system.



- ◆ Next, execute the automatic opening of intelligent fuses. The operation strictly follows the (B-A-C) sequence of middle-first, then sides, sequentially operating the circuit breakers of the three-phase lines for opening and closing. Throughout the operation, video footage is synchronized and uploaded in real-time to ensure stable equipment operation.



- ◆ Finally, execute the operation to open the intelligent isolating switch. The isolating switch has distinct disconnect points, isolating high-voltage lines from the circuit, ensuring safety for personnel and equipment.



The system is equipped with high-definition video monitoring devices, integrated into the cloud management platform, enabling visualization and real-time monitoring of each operation. Furthermore, after executing the opening and closing commands, the control box not only promptly reports the operation results to the cloud platform but also provides a secondary confirmation through video monitoring images, forming a double insurance mechanism to effectively prevent human error.

"One-click sequential control" closing strategy application



During the closing process, strictly adhere to the safety standard of "prioritize high voltage and proceed step by step", ensuring that after restoring high voltage power, each level of switch is closed according to the preset safety strategy to steadily restore power supply lines."



First, operate the intelligent isolating switch for automatic closing. Create a clear connection point, indicating normal connection between circuit and line.



◆ Next, execute the automatic closing operation of intelligent fuses. Installing fuses before closing prevents surge currents generated when low voltage switches are closed from directly impacting electrical equipment. As protective components, fuses (or circuit breakers) can quickly cut off the current in case of circuit abnormalities, protecting downstream electrical equipment from damage.

If switches are closed first before installing fuses, circuit issues such as short circuits may immediately damage equipment. The protection of the fuse.



◆ Finally, execute the closing operation of low voltage circuit breakers. Following this sequence during maintenance or troubleshooting makes it easier to pinpoint the problem. For instance, if a trip occurs after switches are closed following fuse installation, it typically indicates a circuit fault that needs further investigation, rather than blaming the fuse itself.

Following the correct sequence for opening and closing switches is one of the basic principles of electrical safety. It helps protect personnel, prevents equipment damage and facilitates system maintenance and fault diagnosis.



Overhead line courts



Rural power grids



Power generation plants



Mining and oil fields



Railways



Group enterprises



Communications base stations

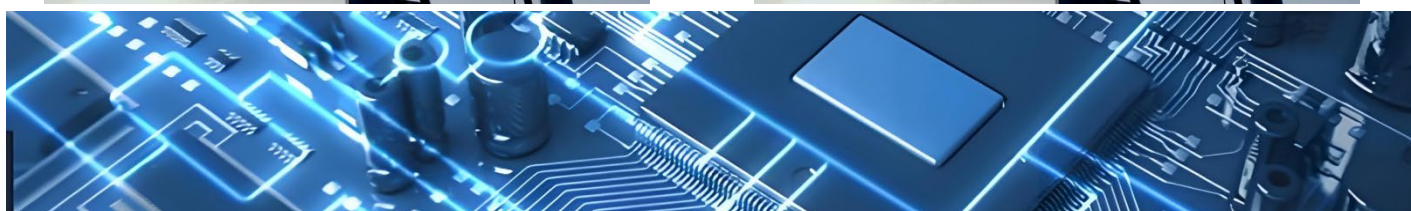
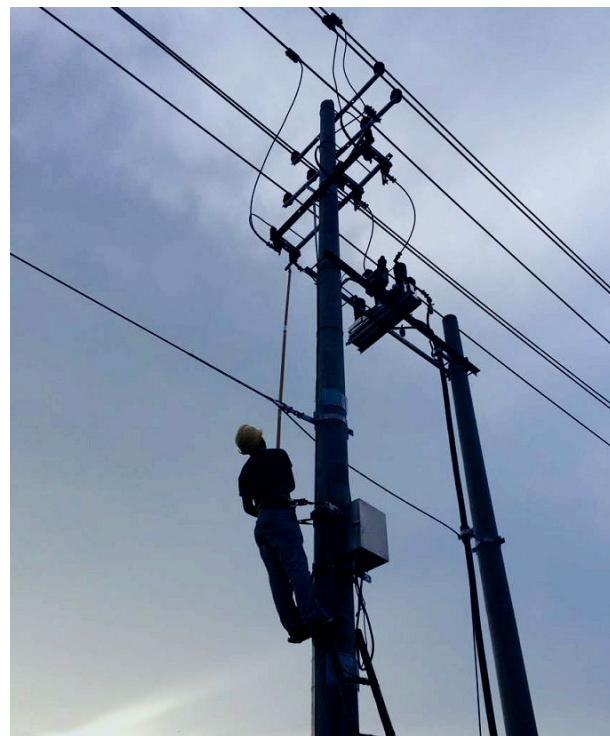
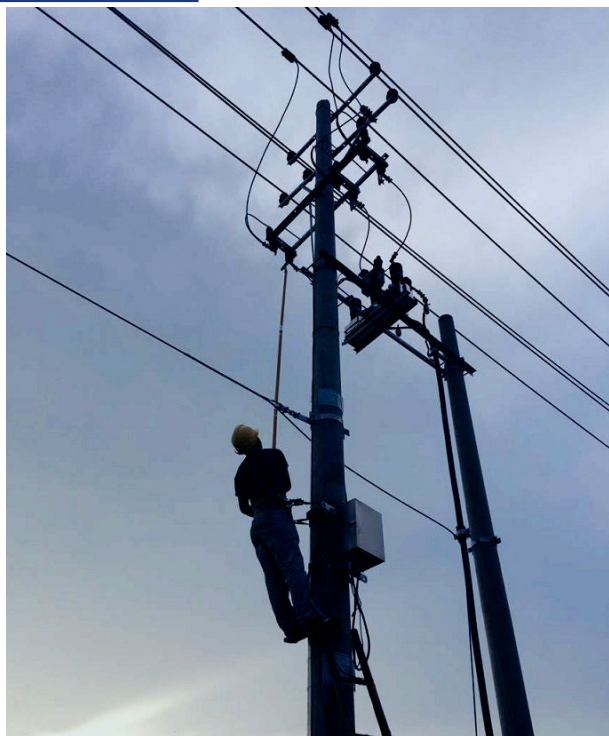


Charging piles



After-sale service

<https://www.energy-rw.com/>



Field service operation and warranty issues:

RW-energy® can provide competent, well trained field service representatives to provide technical guidance and advisory assistance for the installation, overhaul, repair and maintenance of RW-energy® equipment, processes and systems.

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