

RDCD-II Cable Fault Testing System



RDCD-II Cable Fault Testing System is the achievement of our company's continuous improvement and innovation for many years. The product is the leading product of cable fault testing instruments at home and abroad at present, applying modern power electronic technology. It can also measure low resistance, short circuit, open circuit and broken line faults, high resistance leakage and high resistance flashover faults of various high frequency coaxial cables, local telephone cables, street lamp cables and buried wires with different cross sections by using the distance measurement, path finding and location of the main insulation fault points of power cables with voltages of 35kV and below. The system consists of four parts: RDCD-II/502 cable fault locator, RDCD-II/535T cable test high-voltage signal generator, RDCD-II/503D cable fault locator and RDCD-II/507 underground pipeline detector. The characteristics and parameters of each part are as follows:

1. RDCD-II/502 Cable Fault Pre-locator

RDCD-II/502 Cable Fault Pre-locator is used for power cable main insulation fault location (Advance positioning).

1) functional features:

- 12-inch industrial computer control and touch operation mode;
- Windows operating system, a super cable management system, automatically generates test reports;
- It has the functions of ranging and speed measurement;
- Automatic continuous sampling, never missing any discharge waveform;
- Methods: Low voltage pulse method, high voltage flashover method and multiple pulse

method were used.

- It has the function of mass test waveform storage: it can conveniently store the waveforms tested on the spot in the instrument according to the specified sequence, which can be called and observed at any time.
- The measured fault point waveform and the full-length open circuit waveform of good phase can be displayed on the screen at the same time for the same screen comparison and superposition comparison. So that the fault distance can be judged more accurately.
- Built-in li-polymer power supply: It can work continuously for more than 4 hours after being fully charged. Completely meet the field test requirements. It can also work with external AC power supply.
- Eight pulse transmission and fault reflection signals are automatically displayed, and the full-length waveform of cable open circuit is displayed at the same time. So that the representation of fault characteristic waveform is extremely simple. There is only one high-resistance fault waveform, that is, the short-circuit fault waveform similar to the low-voltage pulse method, which automatically displays the fault distance and has no test blind area.

2) Equipment parameters

- Sampling rate: 60MHz, 120MHz, 240MHz; ;
- Pulse amplitude: 400Vpp
- Pulse width: 0.1uS and 2uS
- Measuring distance: the testing distance is 60km.
- Reading resolution: 0.1m
- The test accuracy of the system is less than 0.5m
- The length of test cable is: < 1km (short distance); < 3km (medium distance); > 3 km (long distance) (test low voltage pulse amplitude: 400Vpp)
- Impulse coupler withstand voltage: 38kV DC
- The reflected signal sent by the pulse coupler is automatically displayed, and the full-length waveform of the cable open circuit is displayed at the same time. So that the representation of fault characteristic waveform is extremely simple. There is only one high-resistance fault

waveform, that is, the short-circuit fault waveform similar to the low-voltage pulse method, which automatically displays the fault distance and has no test blind area.

2. RDCD-II/535T Cable Test HV Signal Generator

RDCD-II/535T Cable Test HV Signal Generator, which provides a high-voltage signal source for fault location and accurate location of power cables. This equipment is a cart-type high-end experimental instrument, which integrates DC high-voltage source, energy storage capacitor, discharge ball device, automatic discharge device and voltage grade switching device. It is easy to use, portable, safe and reliable. This instrument adopts high-precision and high-stability special high-voltage electronic components and high-frequency and high-voltage technology, which makes its whole structure simple. In order to keep people's original habit of using transformer and operation box to generate DC high voltage, this pulse generator adopts humanized design and operation mode, and integrates miniature reliable circuit design. It is safe, reliable and visual. It can really achieve the effect of unbreakable impact, and also has the functions of automatic timing impact, manual impact and pressure resistance.

1) Functional characteristics

- High voltage pulse output is uniform and controllable;
- With double 1.5-level indicator display of current and voltage, it is intuitive and clear, and the impulse discharge process is clear at a glance;
- High voltage measurement, real-time and accurate;
- With zero starting protection function, it is safe and reliable;
- With three-gear voltage range and capacitor capacity switching function;
- Unique high-voltage measurement design, in the stop state, it will automatically discharge the internal capacitance of the equipment;
- Discharge time can be selected in two modes: timing mode and manual mode;
- With DC withstand voltage function;
- Install the internal high-precision test cable fault sampling waveform module;
- Humanized handcart design, easy to move;

2) Equipment parameters

- Impulse high voltage: 0 ~ 32kV, 0 ~ 16kV, 0 ~ 8kV.


- High voltage division: the voltage accuracy is 1.5.
- Built-in capacitor: 4 μ F/32kV, 16 μ F/16kV, 64 μ F/8kV three-stage adjustment
- Discharge power: 2048J.
- Impact time: impact automatically for about 5 seconds, and impact manually for any control time.
- Impact power: 2kVA
- Operating power supply: AC 220V \pm 10% 50Hz \pm 2Hz
- Environment: -20 ~+50°C

3. RDCDII/503D Cable Fault Locator

RDCD-II/503D Cable Fault Locator is to determine the location of cable fault point by acoustic-magnetic synchronization method. The electronic flashover generated by the high-voltage signal generator for cable test is picked up and amplified by the corresponding probe, and the accurate position of the fault point is determined by the auditory and visual judgment. The equipment that completes the accurate positioning of the cable fault point within the rough measurement range integrates acoustic magnetic time difference positioning technology, noise reduction technology, path auxiliary testing and other technologies, and provides various test modes and rich and varied prompt information to efficiently and accurately locate the cable fault.

1) Functional characteristics

- Acoustic-magnetic synchronous positioning technology is adopted to automatically calculate the acoustic-magnetic time difference and reduce the dependence on sound monitoring.
- Background of noise reduction technology, effectively filter out the environmental interference noise and highlight the discharge sound at the fault location.
- Combining the traditional acoustic measurement method with the advanced acoustic magnetic method, the operator can choose freely according to the usage habits.
- The gain value and trigger value of acoustic and magnetic signals can be adjusted manually, which is more convenient for fixed point.
- It has the function of route auxiliary indication, so as to avoid the offset of the route during fixed point.

- Adjustable parameters, select appropriate filter parameters to suppress environmental noise.
 - 7-inch touch highlight LCD to ensure visibility in the sun.
 - Built-in large-capacity lithium-ion battery power supply, with fast charger.
 - Compact, portable and light in weight.
- 2) Equipment parameters
- Acoustic synchronous fixed-point function:
 - (1) Sound channel
 - Bandwidth: Full 100 Hz ~ 1500 Hz; Low pass: 100 Hz ~ 400 Hz;
 - High pass: 150 Hz ~ 1500 Hz; Band pass 200 Hz ~ 600 Hz.
 - Signal gain: 0 -7 adjustable.
 - Fixed point accuracy: 0.1m.
 - (2) Magnetic field channel: 0 -7 adjustable.
 - Acoustic synchronous background noise reduction mode (BNR).
 - The bar chart of sound intensity indicates that the threshold of sound trigger (0 ~ 100) can be adjusted.
 - The bar chart of electromagnetic intensity indicates that the magnetic field trigger threshold (0 ~ 100) can be adjusted, and it has the function of magnetic field trigger prompt.
 - Acoustic magnetic time difference method positioning mode: waveform display, acoustic magnetic time difference display.
 - Path auxiliary test: the path direction can be indicated  by icons on the left and right sides of the cable.
 - Power supply:
 - Battery: Built-in lithium-ion battery pack, voltage 8.4V, capacity 4.4Ah
 - Use time: continuous use time > 8 hours;
 - Charger: input AC 220v 10%, 50Hz; ; Nominal output 8.4V, 1A
 - Charging time: < 6 hours.
 - Display mode: 7-inch color LCD with 1024*600 resolution and touch function.

- Volume: host 250mm×160mm×160mm.
- Mass: 0.6kg; of main engine; 1.4kg sensor.
- Operating environment temperature: -25°C-40°C, humidity 5-90% RH, altitude < 4500m.

4. RDCD-II/507 Pipeline Detector

RDCD-II/507 Pipeline Detector r uses the principle of electromagnetic induction to detect the precise direction and depth of underground cables, as well as to locate the open circuit, short circuit and skin fault points of cables. It can be used to find the path of cable (live or dead) and the fault of directly buried cable.

1) Functional characteristics

- Compass and direction display: visually display pipeline position and left-right direction.
- Tracking error prompt: Measure the current direction, and eliminate the interference of adjacent lines.
- Real-time depth and current measurement.
- All digital processing, stable and reliable.
- Compact, portable and light in weight.

2) Equipment parameters

- Transmitter:

Operating frequency: low frequency, intermediate frequency, high frequency, radio frequency 50Hz

Antenna mode: wave trough method (vertical coil) and wave crest method (horizontal coil)

Sound indication: FM tone that varies with signal strength.

Current indication: shows the effective current value of the cable under test (unit: mA)

Operating temperature: -10°C ~+55°C

Battery: rechargeable battery

Electric quantity indication: graphic display

Signal strength: ladder diagram, digital range 0 ~ 999.

Gain control: manual adjustment with a dynamic range of 100db.

Detection depth: the maximum detection is not less than 10m.

Maximum detection distance: the cable with good insulation can reach 15km in the direct connection method.

Depth measurement: Press the depth key to display three digits, and the maximum measurable depth can reach 2.5 meters.

Accuracy *: low frequency: $(1 \sim 5) \% \leq 2.5\text{m}$. Radio frequency: $(5 \sim 12) \% \leq 2.5\text{m}$.

* depends on the site environment, the shape of the non-concentric line, the number of adjacent pipelines and the return current of the soil.

● Receiver:

Operating frequency: low frequency, intermediate frequency, high frequency and radio frequency.

Working modes: direct connection method, coupling method and induction method.

Load: $5 \Omega \sim 3,000 \Omega$

Impedance display: five digits

Over current: automatic protection

Output: low gear, middle gear and high gear

Battery: rechargeable battery

Operating temperature: $-10^{\circ}\text{C} \sim 55^{\circ}\text{C}$