

HZDS-5B

Live cable identification instrument



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Contents

I、 OVERVIEW:	1
II.TECHNICAL SPECIFICATIONS	3

I、 Overview:

Live cable identification instrument, also known as cable identification instrument, multi-function cable identification instrument, and intelligent cable identification instrument, is designed for power cable engineers and cable workers to solve the technical problems of cable identification. The user can accurately identify one of the target cables from the multiple cables through the instrument, so as to avoid accidentally sawing the live cables and causing serious accidents. The cable identification starts from the operation at both ends of the cable, and the double numbers at both ends of the cable must be ensured to be accurate. This instrument is designed with PSK technology combined with precise algorithms. No matter how reliable the memory of on-site staff is, it cannot replace the recognition of professional instruments. This product also has the functions of live cable identification, power failure cable identification, AC current test, and AC voltage test. It is composed of a **transmitter**, a **transmitting current clamp**, a **receiver**, and a receiving flexible current clamp.

Transmitter: It transmits signals to the target cable during the identification of live cables and power-off cables. Built-in high-performance rechargeable lithium battery, automatic impedance matching, and automatic protection. The transmitter adopts an integrated special toolbox design, uses polypropylene plastic as raw material, and adds new composite fillers for one injection molding. It has low density, strength, rigidity, hardness, wear resistance, heat resistance, and insulation performance. The cabinet can withstand a pressure of about 200kg, the host's large LCD displays the remaining battery power in real time, white backlight, and dynamic indication of the emission signal, which is clear at a glance.

Transmitting clamp: When the live cable is identified, the transmitting clamp couples the signal from the transmitter to the target cable. The clamp size is $\Phi 120\text{mm}$. The transmitting clamp has directivity. The transmitting signal flows in from the direction indicated by the arrow on the transmitting clamp.

During live identification: use calipers to couple the output pulse current, emit four frequencies: 625Hz, 1562Hz, 2500Hz, 10kHz, couple to the target cable through the

transmitter (the target cable is a three-core armored cable), and inject composite pulses into the cable core. Current signal, the pulse current generates an electromagnetic field around the target cable for the receiver and flexible current clamp to detect and identify; because the pulse current has directionality, the detection also has directionality.

Power failure recognition: Directly connected output pulse current is used to inject pulse encoding current signal into the cable core. This current generates an electromagnetic field around the target cable for the receiver and flexible current clamp to detect, decode and identify; because the current has directivity, so Detection is also directional.

Receiver: It is a handheld device, 3.5-inch color LCD screen, built-in high-speed microprocessor, combined with precise algorithms, to identify and decode the pulse code current signal of the transmitter, and has a signal strength calibration function to display signal strength and detection results. Exquisite and intuitive; the color scale bar is dynamically displayed, which is clear at a glance. The cable identification is successfully marked $\surd$, and the non-target cable is marked $\times$, which can quickly and automatically identify the target cable. At the same time, the testable voltage range is AC 0.00V~600V (50Hz/60Hz), the measurable AC current range is AC 0.00A~5000A (50Hz/60Hz), and the measurable current frequency is 45Hz~70Hz.

Flexible current clamp: It is a Rockwell coil with excellent transient tracking ability, can quickly identify the pulse code current generated by the transmitter, and is suitable for thick cables or irregularly shaped conductors. The inner diameter of the jaws is about 200mm, which can clamp cables below $\Phi 200\text{mm}$, without disconnecting the tested circuit, non-contact measurement, safe and fast.

Special note: This cable identification instrument has both live cable identification and power-off cable identification functions. When power-off cable identification: it is strictly forbidden to connect to the live cable. Live cable identification is only applicable to three-core armored cables. When identifying, the transmitting clamp and receiving clamp cannot be mixed, and the direction of the input signal must be consistent.

II. Technical specifications

1. Baseline conditions and working conditions

Influence	Base condition	Working conditions	Remarks
Ambient temperature	23℃±1℃	-10℃～40℃	/
environment humidity	40%～60%	<80%	/
Measured voltage and current frequency	50Hz±1Hz	45Hz～70Hz	When testing voltage and current
Receiver working voltage	7.4V±0.5V	7.4V±1V	/
Transmitter operating voltage	11.1V±0.5V	11.1V±1.5V	/
External electric field, magnetic field	Should be avoided		
Location of the cable under test	The cable under test is at the approximate geometric center of the flexible current clamp		

2. Transmitter specifications

Features	Transmit a composite pulse frequency current signal, display the remaining battery voltage, and dynamically indicate the transmission status
power supply	11.1V large-capacity rechargeable lithium battery, fully charged and continuously working for about 8 hours
output method	Caliper coupling during power-on recognition; direct output during power-off recognition
Transmit frequency	625Hz, 1562Hz, 2500Hz, 10KHz (when electrified identification), press the up and down arrow keys to adjust the transmission frequency
Pulse voltage	500V (when power failure is recognized)
Pulse current	Maximum 5A (depending on the size of the loop resistance)
Pulse frequency	1 time/sec
Pulse Width	2ms
Launch clamp inner	φ120mm

diameter	
Test line length	3 meters, with alligator clip, 1 red and black each
Launch clamp size	Length, width, height 300mm×175mm×50mm
Launching clamp wire length	2m
Ground pin size	Length, width, height 225mm×100mm×10mm
Transmitter size	320mm×275mm×145mm
Display mode	Large LCD displays the remaining battery voltage in real time, with backlight
LCD size	Length and width 128mm×75mm; display area 124mm×67mm
Package size	Length, width and height 400mm×245mm×335mm
Operating temperature	-10℃～40℃
Storage conditions	-20℃～50℃, ≤95%RH, No condensation
Backlight control	Yes, white backlight
Operating temperature	-10℃～40℃
Storage conditions	-20℃～50℃, ≤95%RH, No condensation
Instrument quality	Transmitter 2.5kg; transmitting clamp 1.08kg; total weight 4.4kg (including receiver)
battery power	When the battery voltage is lower than 9.65V, the battery voltage low icon is displayed to remind you to charge the battery; when the battery voltage is lower than 9.5V, the device automatically shuts down
Charger	12.6V DC charger
Charging port	Round charging port, DC logo
Compressive	The transmitter adopts an integrated special toolbox design, and the box can withstand a pressure of about 200kg
Withstand voltage	AC 3700V/rms(Before the top and bottom of the instrument case)
Electromagnetic	IEC61326(EMC)

properties	IEC61010-1(CAT III 300V、CAT IV 150V、Pollution degree 2)
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3. Receiver specifications

Features	Live cable identification, power failure cable identification; AC voltage, current, frequency measurement
power supply	7.4V large-capacity rechargeable lithium battery, USB charging port, fully charged and continuous work for about 6 hours
Rated current	About 300mA max
Display mode	3.5 inch true color LCD screen display, color icon indication
Signal calibration	Yes, calibrate the transmitted signal. The current percentage between the received signal and the transmitted signal is between 75% and 135% of the calibration value, which is one of the conditions for successful identification
	After calibration, the test frequency and magnification cannot be changed, otherwise it will need to be re-calibrated; different cables need to be re-calibrated when testing different cables
Direction recognition	Yes, the transmitting clamp, receiving clamp and loading signal must be in the same direction, which is one of the conditions for successful identification
Cable identification is successful	Green tick icon indicates (✓)
Non-target cable	Red-orange crossed icon indicates (×)
Receiver size	Length, width and height 207mm×101mm×45mm
Flexible current clamp	The length is about 630mm, the wire diameter is 6 mm or 12.5mm
Coil inner diameter	φ200mm (larger diameter can be customized according to needs)
Lead length	Flexible current clamp lead length: 2m
Voltage test line	1m long (1 each for red and black)
Scope of test	Power failure identification: the coil can detect pulse signals with

	a loop resistance of $0\Omega \sim 10k\Omega$; when the detection loop resistance is $10k\Omega$, the transmitter battery must be guaranteed to be above 11V (generally, the cable length can reach 0-10 kilometers, mainly due to the grounding resistance and cable resistance determined)
	Live identification: The coil can detect pulse signals with a loop resistance of $0\Omega \sim 200\Omega$; when the detection loop resistance is 200Ω , the transmitter battery must be guaranteed to be above 11V (generally it can reach a cable length of 0-5 kilometers, mainly due to the grounding resistance and cable resistance determined)
Measuring range	AC voltage: $0.00V \sim 600V(50Hz/60Hz)$
	AC current: $0.00A \sim 5000A(50Hz/60Hz)$
	Current frequency: $45Hz \sim 70Hz$
Precision	AC voltage: $\pm 2\% \pm 3dgt$
	AC current: $\pm 2\% \pm 3dgt$
	Current frequency: $\pm 2\% \pm 3dgt$
Identification signal	Color signal amplitude and digital display
Detection rate	About 1 time/sec
Gain adjustment	In the test interface, press the left and right arrow keys to adjust the signal magnification, the best signal amplitude bar is at 10~100
Backlight control	In the boot function selection interface, press the up and down arrow keys to adjust the brightness of the LCD backlight
Automatic shut-down	About 30 minutes after power on, the meter will automatically shut down to reduce battery consumption
battery voltage	When the battery voltage is lower than 6.5V, the battery voltage low icon is displayed, reminding to charge the battery
Charger	9V DC charger

Charging port	USB charging port
Working temperature and humidity	-10℃~40℃; below 80%Rh
Storage temperature and humidity	-10℃~50℃, ≤95%RH, no condensation
Receiver quality	Current clamp 172g; receiver 370g (with battery)
Withstand voltage	AC2000V/rms(before the front and rear ends of the housing)
Suitable for safety regulations	IEC61010-1 CAT III 600V, IEC61010-031, IEC61326, pollution degree 2