

preface

welcome to

Thank you for choosing our products, so you will receive our comprehensive technical support and service guarantee.

Before using this product, please read this manual carefully and keep it for reference for future use. If you have any questions during your use, please contact us in time.

About this instrument

According to the requirements of the power equipment preventive test regulation "DL / T 596-2004", the DC resistance of the transformer winding must be measured in the transformer handover, overhaul, minor repair, changing the joint position, fault inspection and pre-test.

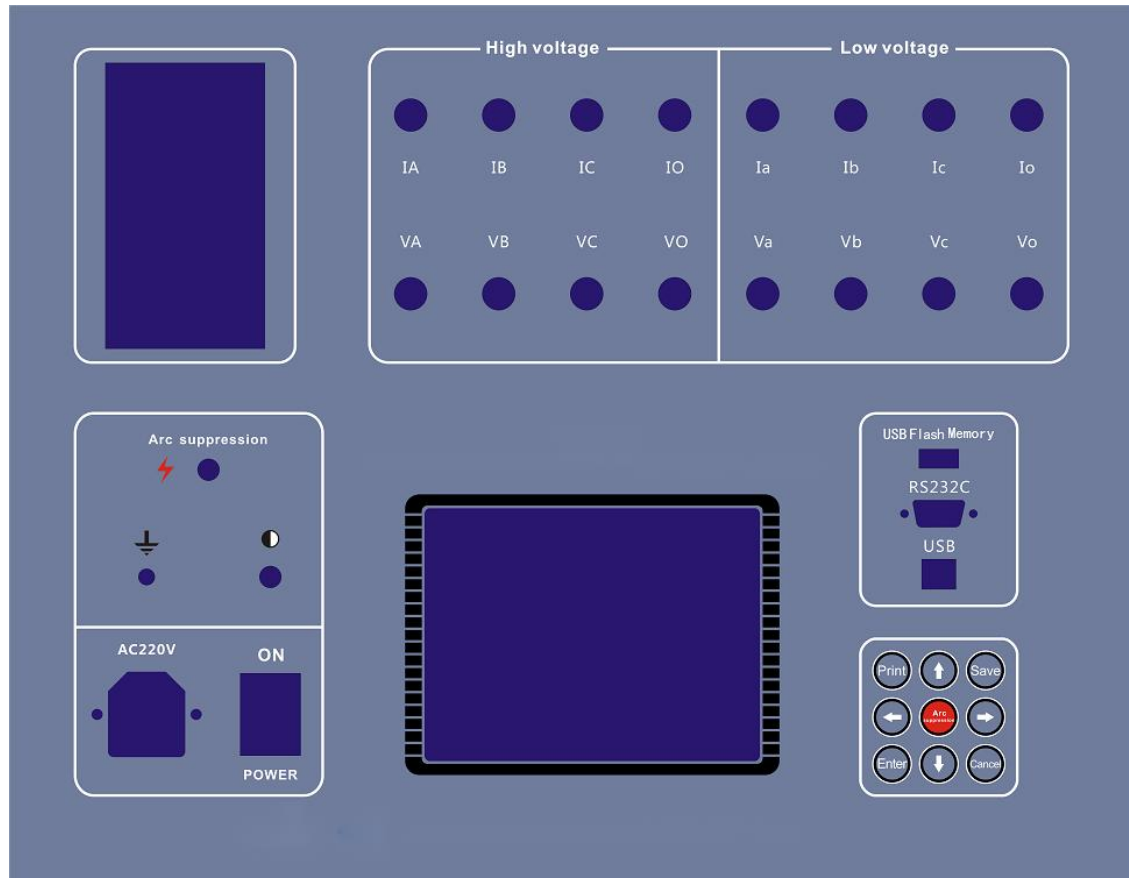
Intelligent three-channel auxiliary magnetic DC resistance tester is a new generation of transformer DC resistance test instrument, is a single phase test and three identical test and integrated intelligent test instrument. The instrument does not introduce the center point and can automatically calculate the phase resistance of D transformer; and it has the demagnetization function, the whole process of the instrument test is controlled by the single controller, the test data is stable and accurate, has perfect reverse potential protection function and field anti-interference ability, which is suitable for the rapid test of DC resistance of large power transformer.

This instrument adopts top open type or vehicle-mounted structure, small volume, light weight, strong function, simple operation, specially designed for production and field testing personnel. Large screen 320240 LCD Chinese display, especially suitable for multi-junction on-load switch continuous flow continuous test, measurement process dynamic prompt, automatic arc elimination current indication and sound and light indication alarm, test records can be edited user information to save and print. The test results adopts the table mode, which can display the direct resistance of each transformer with tap switch at the same time and automatically calculate the imbalance rate, which can greatly shorten the measurement time and improve the work efficiency. Such as the data management software, the saved data is transmitted to the U disk through USB, saving, printing, emptying and other operations, or directly through the host computer operation test, the saved file format is Excel or txt file format.

catalogue

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1. face-plate:



explain:

1. wiring terminal:

High voltage current voltage terminal: connected to the high voltage side or medium voltage test of the tested transformer

Low voltage current voltage terminal: connected to the low voltage side of the transformer under test

2. Ground column: Instrument protection grounding.

3. Arc elimination: arc elimination current indication and sound and light indication alarm.

4. Power socket: AC220 AC power input (built-in standby 10A fuse).

5. Power switch: the AC power supply is on / off.

6. Contrast: a word slot in the rotating hole to adjust the contrast.

7. USB socket: U disk.

8. RS232 socket: data communication. Operating the instrument with the PC software.

9. Key Settings: used to control instrument menu options and important function shortcuts.

10. LCD screen: set up, display, and save the test data.

11. Printer: Print the test data.

12. Arc elimination button: During the test, press the arc elimination button and immediately enter the arc elimination state.

matters need attention:

1. The instrument shall be reliably grounded, and connect the test line. During the output current test, never remove the test line to avoid accidents. After the test, stop the power after the sound and light alarm stop the test line and remove the test line.
2. Use the three-channel mode to measure the on-load voltage regulating transformer, which can switch the junction with load and save the charging time.
3. When measuring the no-load voltage regulating transformer, the discharge instructs the alarm to stop to switch the tap and switch the gear.
4. The magnetic test is mainly for three-phase five-column transformer, the low voltage winding is triangular connection; (if the low voltage winding triangular connection is found, the charging is slow, the magnetic test can be used)

2. Wiring and operation

1. Connect the instrument with the external AC 220 power supply with the power cord, and connect the grounding terminal with the earth with the grounding wire.
2. During the test of the two winding transformers, the four test pliers (yellow, green, red and black) of the high voltage test line shall be connected to the A, B, C and O sleeves on the high voltage side. If there are only three sleeves of A, B and C, the black test pliers can be suspended; the other end of the test line shall be connected corresponding to the wiring terminal of the instrument. Connect the four test pliers (yellow, green, red and black) of the low pressure test line to the a, b, c, o sleeve on the low pressure side. If there are only three sleeves of a, b and c, the black test pliers can be suspended; the other end of the test line is connected to the wiring terminal of the instrument.

Note: The entire test process is not inverted.

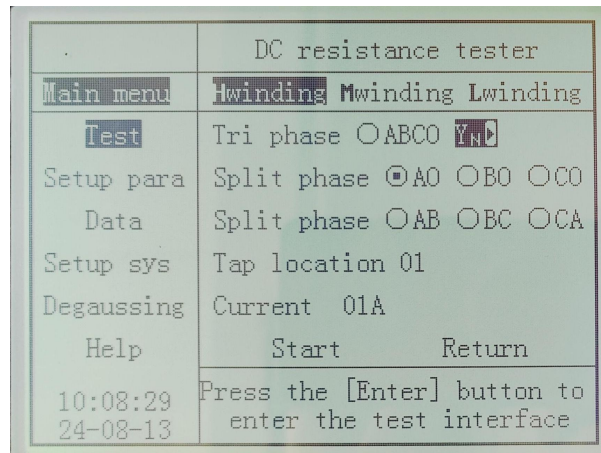
3. the three-winding transformer can connect the four test pliers of the high-voltage test line after the test of the high-voltage winding to the medium-voltage side.
4. Single-phase transformer connects the yellow and black test pliers in the high-voltage test line to the high voltage side of the single-phase transformer, and the yellow and black test pliers in the low-voltage test line are connected to the low voltage side of the single-phase transformer.
5. The special test line supporting the instrument has designed the current and voltage line to the same jaw, and the wiring is simple and convenient.

3. direction for use

1. Instrument operation mode: key, upper and lower keys to select the main menu and change the option value; left and right keys to select the submenu; confirm the cancellation key to return to the front level; press the confirmation button to pause; pause the confirmation button to continue the test; press the arc elimination button to eliminate the arc.
2. Menu: The instrument mainly includes: test interface, parameter setting interface, data interface, system

setting interface and help interface.

◇ Test interface: (high pressure side, medium pressure test, low pressure side)



High pressure winding (medium pressure winding) -corresponding high pressure side terminals

Three-phase test: divided into center point lead and center point does not lead and D type transformer.

Note: Three-channel test can be conducted simultaneously at the center point.

When the center point is not lead and the D-type three-channel test, the test should be manually judged. The instrument is divided into three tests to automatically calculate the resistance of each phase or line.

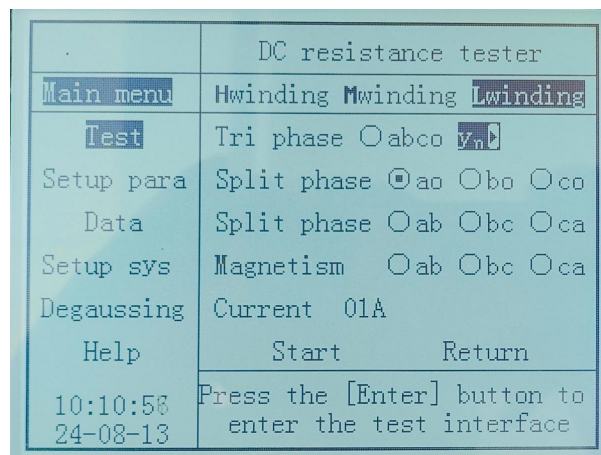
Phasing test: the single-phase test

Tap position: Tap position (1-39)

Test current: 1A, 5A, 10A, and 20A (Model 20A)

Test start: Press the confirmation key to enter the test interface

Return: Press the confirm key to return to the main interface



Low voltage winding-corresponding to low pressure side terminals

Three-phase test: divided into center point lead and center point does not lead and D type transformer.

Note: The center point lead can be tested in three channels simultaneously.

When the center point is not lead and the D-type three-channel test, the test should be manually judged. The instrument is divided into three tests to automatically calculate the resistance of each phase or line.

Phasing test: the single-phase test.

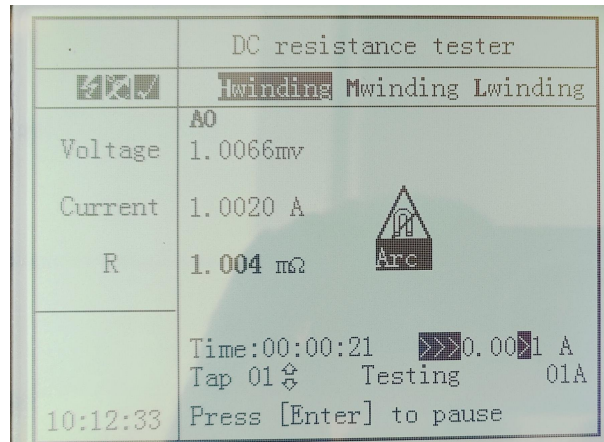
Magnetic aid test: mainly for the three-phase five-pillar low-voltage internal low-voltage side, greatly shorten the test time.

Test current: 1A, 5A, 10A / 20A;

Test start: Press the confirmation key to enter the test interface

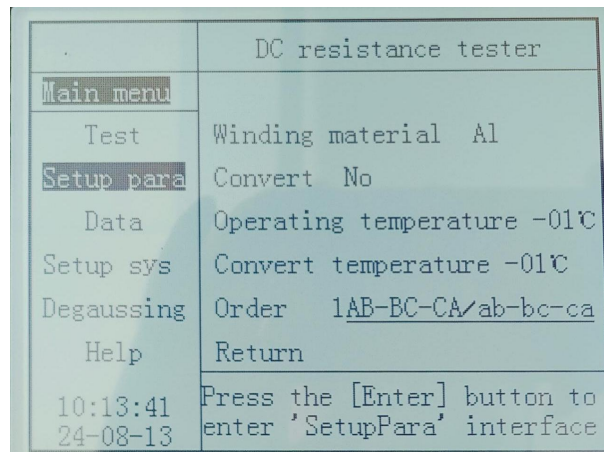
Return: Press the confirm key to return to the main interface

Test progress interface:



The interface in the test mainly includes voltage, current, resistance, current carrying time, separation and gear position and other parameters

◇ **Parameter setting interface:**



Winding material: copper and aluminum are two options

Temperature conversion: mainly used for the temperature conversion of the transformer winding resistance at different temperatures

Test temperature: Current ambient temperature, can be artificially set (no external sensor)

Conversion temperature: the temperature value that needs to be converted to

Test order: divided into three 1AB-BC-CA / ab-bc-ca; 2BC-CA-AB / bc-ca-ab; and 3CA-AB-BC / ca-ab-bc

Mainly for center point (Y, y, d, D)

◇ **data interface:**

DC resistance tester	
Main menu	No. Storage time
Test	001 24-08-13 08:18:47 01A
	002 24-08-13 08:19:28 01A
Setup para	003 24-08-13 08:23:01 01A
Data	004 24-08-13 08:25:41 01A
	005 24-08-13 08:27:18 01A
Setup sys	006 24-08-13 10:14:58 01A
Degaussing	
Help	[Arc]:Deposit to USB Disk
10:16:15	Data:006 used,094 remaining
24-08-13	Press the [Cancel] to go back

The data interface is mainly used to save the test data, but you can also store the data into the U disk, press the print button to delete all the data, and press the right button to delete a single data.

◇ **System setup interface:**

DC resistance tester	
Main menu	
Test	Date&time 24-08-13 10:16:20
Setup para	settings CODE enter
Data	Device number _____
Setup sys	Language English
Degaussing	Return
Help	
10:16:38	Press the [Enter] button to
24-08-13	enter 'SetupSys' interface

Date and time: used for setting and modifying the system time

Accuracy calibration: for the precision calibration of the instrument, non-professionals do not enter;

Device number: letters and numbers

Return: Press confirm to return to the main menu.

◇ **Demagnetization function interface:**

	DC resistance tester
Main menu	I: progress %
Test	Current terminals AB
Setup para	Current 5A
Data	method standard
Setup sys	Current level drops 5%
Degaussing	Current drops 5%
Help	Start
10:17:00 24-08-13	Press the [Enter] button to enter 'Degaussing' interface

◇ **Help interface:**

Include precautions and operating guidelines (brief).

4. Use instances

The test site shall be reliably ground together before using together.

When the instrument is started, the relay will switch, which is mainly used to judge the high and low voltage side discharge and enter the test interface.

Single-channel test process

	DC resistance tester
Main menu	Hwinding Mwinding Lwinding
Test	Tri phase <input type="radio"/> ABC <input checked="" type="radio"/> YN
Setup para	Split phase <input checked="" type="radio"/> AO <input type="radio"/> BO <input type="radio"/> CO
Data	Split phase <input type="radio"/> AB <input type="radio"/> BC <input type="radio"/> CA
Setup sys	Tap location 01
Degaussing	Current 01A
Help	Start Return
10:08:29 24-08-13	Press the [Enter] button to enter the test interface



	DC resistance tester
Main menu	Hwinding Mwinding Lwinding
Test	Tri phase <input type="radio"/> ABC <input checked="" type="radio"/> YN
Setup para	Split phase <input checked="" type="radio"/> AO <input type="radio"/> BO <input type="radio"/> CO
Data	Split phase <input type="radio"/> AB <input type="radio"/> BC <input type="radio"/> CA
Setup sys	Tap location 01
Degaussing	Current 01A
Help	Start Return
10:55:18 24-08-14	



DC resistance tester	
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Hwinding Mwinding Lwinding
Voltage	A0 1.0066mv
Current	1.0020 A
R	1.004 mΩ
Time:00:00:21 >>>0.001 A Tap 01 Testing 01A 10:12:33 Press [Enter] to pause	


Three-channel (YN) test process:

DC resistance tester	
Main menu	Hwinding Mwinding Lwinding
Test	Tri phase <input type="radio"/> abco <input checked="" type="radio"/> Yn
Setup para	Split phase <input type="radio"/> ao <input type="radio"/> bo <input type="radio"/> co
Data	Split phase <input type="radio"/> ab <input type="radio"/> bc <input type="radio"/> ca
Setup sys	Magnetism <input type="radio"/> ab <input type="radio"/> bc <input type="radio"/> ca
Degaussing	Current 01A
Help	Start Return
11:08:16 24-08-14	




DC resistance tester	
Main menu	Hwinding Mwinding Lwinding
Test	Tri phase <input type="radio"/> abco <input checked="" type="radio"/> Yn
Setup para	Split phase <input type="radio"/> ao <input type="radio"/> bo <input type="radio"/> co
Data	Split phase <input type="radio"/> ab <input type="radio"/> bc <input type="radio"/> ca
Setup sys	Magnetism <input type="radio"/> ab <input type="radio"/> bc <input type="radio"/> ca
Degaussing	Current 10A
Help	Start Return
11:08:28 24-08-14	



DC resistance tester			
Hwinding Mwinding Lwinding			
	ao	bo	co
Voltage	513.99mv	909.21mv	
Current	10.057 A	20.082 A	
R	45.27 $\mu\Omega$	45.27 $\mu\Omega$	
Imbalance	12.3 %		
	Time:00:00:58 		
	Testing 10+10A		
11:09:29	Press [Enter] to pause		


During the three-channel YN test, the AO is tested first (mainly to determine whether the central lead is in good contact), and will automatically enter the three-channel test after the data is stable

DC resistance tester			
Hwinding Mwinding Lwinding			
	ao	bo	co
Voltage	513.99mv	909.21mv	454.34mv
Current	10.057 A	20.082 A	10.022 A
R	45.27 $\mu\Omega$	45.27 $\mu\Omega$	45.33 $\mu\Omega$
Imbalance	12.3 %		
	Time:00:00:58 		
	Testing 10+10A		
11:09:29	Press [Enter] to pause		

Three-channel (Y or D) test process

DC resistance tester	
Main menu	Hwinding Mwinding Lwinding
Test	Tri phase <input checked="" type="radio"/> ABC <input type="radio"/> Y
Setup para	Split phase <input type="radio"/> AO <input type="radio"/> BO <input type="radio"/> CO
Data	Split phase <input type="radio"/> AB <input type="radio"/> BC <input type="radio"/> CA
Setup sys	Tap location 01
Degaussing	Current 01A
Help	Start Return
11:05:09 24-08-14	Order: AB-BC-CA



DC resistance tester			
	<u>Mwinding</u>	Mwinding	Lwinding
	AB	BC	CA
Voltage	28.729 v	28.870 v	28.931 v
Current	0.3004 A	0.2999 A	0.3004 A
R-line R-phase Imbalance	<u>95.63</u> Ω	<u>96.26</u> Ω	<u>96.30</u> Ω
Time:00:00:26 			
Tap 01 ⚙ Testing 01A			
11:06:54 Press [Enter] to finish			

After the CA data is stable, press the confirmation key to complete the test; the black test data is RAO, RBO and RCO, and the corresponding imbalance rate is also underlined;

In general, the imbalance rate of transformer three-phase resistance is generally better than 2%, and the calculation formula is the maximum difference value of three-phase resistance divided by the average of the three-phase resistance * 100. At the end of the test, the test line can be removed at the end of the arc suppression sound and light indication;

5. Technical indicators

1. Classification environment group: belongs to the group instrument in GB6587.1-86 General Test of Electronic Measurement Instruments (can be used in the field environment).

2. Structure, form and size: portable type

- ◇ Type: portable type
- ◇ Main engine overall dimensions: 410320185 mm
- ◇ Packaging: aluminum alloy chassis
- ◇ Mass: 10 Kg

3. Use power supply: ◇ working power supply: voltage AC220V± 10%, frequency 50Hz ± 10%

◇ current output:

1) 10A model: three channels: 5A + 5A, 1A + 1A

Single channel: 10A, 5A, and 1A

2) Model 20A: three channels: 10A + 10A, 5A + 5A, 1A + 1A

Single channel: 20A, 10A, 5A, and 1A

3) Model 40A: three channels: 20A + 20A, 10A + 10A, 5A + 5A, 1A + 1A

Single channel: 40A, 20A, 10A, 5A, and 1A

4) Model 50A: three channels: 25A + 25A, 10A + 10A, 5A + 5A, 1A + 1A

Single channel: 50A, 25A, 10A, 5A, and 1A

4. Use environment: ◇ Ambient temperature: $-20^{\circ}\text{C} \sim 50^{\circ}\text{C}$

◇ Relative humidity: 80%

◇ Working mode: air-cooling

5. Test index: ◇ Temperature: $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$

◇ Test range: $1\text{m}\Omega \sim 200\Omega$

50A: $1\text{m}\Omega \sim 0.5\Omega$

25A: $1\text{m}\Omega \sim 1\Omega$

20A: $1\text{m}\Omega \sim 1\Omega$ (20A model)

10A: $1\text{m}\Omega \sim 2\Omega$

5A: $10\text{m}\Omega \sim 5\Omega$

1A: $1\Omega \sim 200\Omega$

◇ Accuracy: 0.2% reading ± 2 words

◇ Highest resolution: $0.1\mu\Omega$

6. Box list

1. 1 host unit
2. Attachment 1 set
3. Manual: 1 book
4. One letter of guarantee is issued

7. After-sales Service:

This product from the sale date of three years, if there are quality problems to be free warranty, lifelong maintenance.