



GREWIN INDUSTRIAL GROUP CO.,LTD.

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Precision miniature current transformer tester (current three-piece set)



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I.Summarize:

This set of instruments is used for error testing of miniature current transformers. It adopts the principle of comparison method. The whole set of test instrument includes electric ascender, miniature standard current transformer, miniature transformer calibrator and the supporting power cord, connecting cable and so on. Integral good, easy to operate. The instrument is designed with reference to the miniature current transformer JB/T10665-2006 standard, which meets the needs of error measurement of miniature current transformers of 0.02 level and the following levels.

The new calibrator is superior to the characteristics of similar products:

1. Test response speed is greatly improved. At the same time increase the fast and slow speed switching function, to meet the different requirements of the test speed of the customer.
2. Touch screen display and control, simple operation and intuitive display.
3. Increase the alarm setting function switch, open and log in to set their own data collection percentage points, angular difference and than the difference of the alarm prompt range. According to the set accuracy range, the error will be judged whether it is qualified or not, and the red color will be displayed when it exceeds the tolerance and accompanied by an alarm tone.

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4. At the same time to increase the loudness alarm and switch, according to the user site environment to open the loudness alarm, while adjustable size. Meet the site environment of noisy users.

5. Increase the automatic collection function, set the percentage point to be collected by yourself, enter the data collection interface, save the data automatically after meeting the test requirements, and the data can be exported to excel document with USB flash disk.

6. Add control output function, according to the setting to judge whether it is qualified or not and then give the corresponding signal, it can be connected with the automatic platform to realize automatic control.

7. 485 communication can be connected to the computer or the console to realize automatic control.

II.Main technical indicators

1. Primary rated current:

a: 100, 75, 30, 25, 20, 15, 10, 6, 5, 3, 2.5, 1.5, 1, 0.6, 0.3

2. Secondary rated current:

mA: 60, 50, 40, 30, 25, 20, 50/3, 15, 10, 7.5, 20/3, 6, 5, 4, 10/3, 3, 2.5, 2, 1.5, 1

3. Multi-range standard current transformer accuracy: 0.005 level.

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4. Measuring line accuracy: display value error: $\leq \pm 2\%$ phase error: $\leq \pm 2\%$ radian

5. power supply: maximum output power: 300VA, with fine-tuning.

6. load resistance: 0Ω, 5Ω, 10Ω, 15Ω, 20Ω, 25Ω, 30Ω, 40Ω, 50Ω, 60Ω, 70Ω, 75Ω, 80Ω, 100Ω, 150Ω, 200Ω, 250Ω, 500Ω, 1KΩ, 1.5KΩ, 2KΩ, external.

7. Conditions of use:

(1) Power supply: utility 220V, 50Hz and 60Hz

(2) Use of the environment: temperature 10-----40 °C; humidity $\leq 80\%$

III.Structural description

This instrument is a vertical three-box structure.

The lower box is the booster, i.e. power supply box. The output current has 1A, 5A and 100A gears. According to the primary current of the measured transformer to choose the output gear of the booster. It is also equipped with coarse and fine regulator for current adjustment.

It is strictly prohibited to use the power supply box to exceed the current limit, otherwise it may cause permanent damage to the

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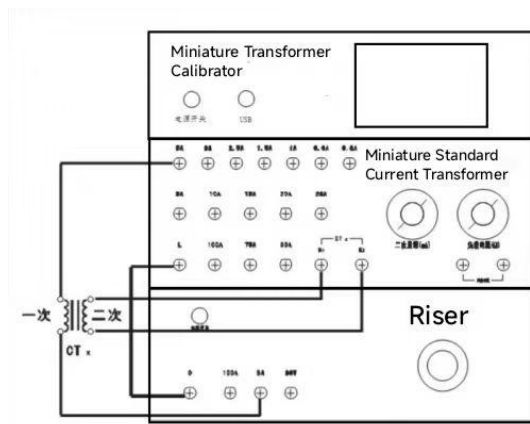


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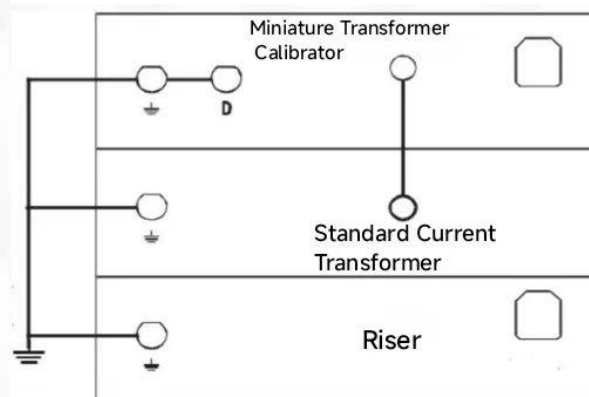
instrument!

Micro standard current transformer. The panel has a primary current terminal, secondary current transfer switch; the upper box for the measurement error line box: miniature transformer calibrator. On the panel there is a touch screen, set the function and display data; the measured transformer secondary terminals K1,K2; the measured transformer load (resistance) changeover switch, external load terminals. When the secondary load of the measured transformer is a load other than the designed load, the external load terminal can be connected to the required load value. In this case, the load knob should be placed in the external position.

The connections on the front and back of the three boxes are shown in the following diagram.



Picture a



Picture b

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IV.Usage

1. according to the above figure after connecting the cable line, according to the measured transformer range, select the corresponding standard transformer range.

2. the lower box regulator is placed in zero position, turn on the power. Adjust the regulator to the required current value, read f, δ error.

3. the specific method of measuring the number of turns, the primary current is indicated in amperes, the secondary current is indicated in milliamps. First of all, according to the size of the primary current of the measured transformer in the standard selection of the corresponding wiring jack, and then the formula: “primary rated current * primary turns * 1000 / secondary turns” to get the size of the output secondary current, the secondary switch to the corresponding gear calculated.

For example: a current transformer primary current of 3A, primary turns for 1 turn, secondary turns for 50 turns, then the primary jack should be selected 3A gear, calculated secondary switch gear $3 * 1 * 1000 / 50 = 60\text{mA}$. secondary switch should be dialed to 60mA gear. Other small transformer turns measurement and so on. Based on the above method, we can measure many kinds of turns of the transformer, the fundamental approach to

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calculate the turns of the corresponding relationship, if the primary 40A1N current transformer, secondary turns for 1000N, we conclude that the secondary current should be 40mA, but the standard primary wiring jacks do not have 40A, we will be commuted to the other corresponding gear to measure, only need to satisfy the corresponding relationship between the number of turns can also be used. Can be, for example, with the primary 30A (see the maximum range), secondary 30 mA to measure, but also with the primary 20A, secondary 20 mA to measure, but pay attention to the current operating range.

V.Precautions

1. access to the measured transformer, should be connected to the secondary first, and then connected to the primary. When removing the transformer, the primary should be removed first, then the secondary. And pay attention to whether the polarity is correct or not.

2. When measuring the error, the grounding wire of the instrument must be firmly grounded in the lower left part of the rear panel of the instrument, see Picture b.

Note: Please pay attention to the power supply access, L,N (fire wire, zero wire), must not be connected to the opposite.

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VI.Touch screen operating instructions

1, the touch screen boot 3 seconds automatically enter the main interface, as Picture 1.



Picture 1

When the communication is normal, it displays the real-time data of the percentage meter, ratio difference and angle difference. At the same time, it displays the wiring status of the transformer, if the transformer is normally wired, it displays “working normally”; if the transformer is incorrectly wired, it will prompt the secondary open circuit/polarity error/measurement range error.

Click “Menu” and “Description” to enter the corresponding interface;

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“Tone on/off” button to switch on/off;

“Unit of Angular Difference” button to switch the unit of angular difference to be displayed in minutes or %;

“Digit +” button increases the display digit by 1 digit;

“Digit -” button to decrease the display digit by 1 digit;

“Speed +” measurement data stabilization time is 0.1S, long press 2S switch;

“Speed -” measurement data stabilization time is 0.5S, long press 2S switch;

2、 Menu

As in Picture 2, click “Menu” to enter the corresponding interface.



Picture 2

3、 Alarm Setting

As in Picture 3, you can set the accuracy of the transformer, as well as the percentage range of the measured transformer, and the upper and lower limits of the angular and specific difference errors.

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Picture 3



Picture 4

When you use it for the first time, first turn on the switch of alarm function, at this time, the upper and lower limits of percentage, angular difference and ratio difference are all 0. Click “Administrator Login” to enter the setting mode and log in as the person in charge (password 1), then press the “Restore Initial Values” button to set the upper and lower limits and the initial values of percentage, angle difference and ratio difference. Initial value.

According to the accuracy of the transformer, press the corresponding accuracy button at the bottom of the screen to display the upper and lower limit values of ratio difference and angular difference under the accuracy.

When the percentage test range needs to be modified, click on the percentage position to enter the percentage meter setting interface, click on the measurement point position to directly input the desired measurement point, and at the same time, set the upper and lower limit ranges of the point, as in Figure IV. If the upper and lower limits of angular difference and specific difference need to be modified, click the corresponding position to modify,

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and finally press the “Confirm Modification” button. Return to the main test interface, adjust the regulator, the collected ratio difference and angle difference value exceeds the set error range, then the data display red alarm, at the same time, the buzzer emits an alarm tone, “Tone Switch” can turn off the alarm tone. Meanwhile, the loud alarm tone can be adjusted by the volume knob on the front panel.

Click “Current” button, current CT part of the red box prompts, click “Voltage” button, voltage PT part of the red box prompts.

4、 Measuring point setting

As shown in Picture 5, set the alarm prompts and data saved over the difference between the measurement point, selected green prompts, click on the “data acquisition” to enter the automatic acquisition and storage interface, as shown in Picture 6, from 0 slowly adjust the regulator to the maximum measurement point, the left side of the data is automatically collected, if beyond the scope of the setup of the red and the alarm prompts, the selection of all the measurement points collected! After finishing, the percentage meter exceeds the maximum measurement point, prompting the data to be saved successfully, the sample number is automatically added 1, the number needs to be recounted every time the power is turned on, and the number can be set by yourself according to your needs. If there is a missed measurement

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point, it will prompt the data collection is incomplete and re-measurement.

After the data is saved successfully, it can be queried through the history, and it needs to be exported directly by clicking the data exported to U disk, as in Picture 7.



Picture 5



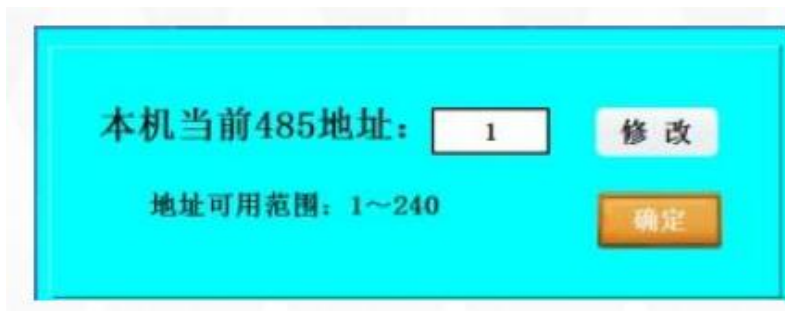
Picture 6



Picture 7

5、485 Setting

As in Picture 8, you can modify the 485 address, “OK” button to save and return to the “485 Settings” interface.



Picture 8

6、Calibration

Enter the calibration interface, such as Picture 9, the “secondary range”

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switch to “calibration” file, K1, K2 terminals are disconnected, the primary line in series with the standard ammeter, monitor the primary current value; adjust the ascender knob, so that the standard ammeter shows 5A, at this time! Percentage meter, ratio difference, angle difference should be displayed 100%, -1.000%, 0.00, if the gap between the displayed values is large, press the “Calibration” key to calibrate the instrument;



Picture 9

Press “Save” key to save the calibration data, if you do not need to save the calibration data directly press “Return”.

VII.485 Serial Communication

(I), serial port output format

Baud rate = 9600, 8 data bits, 1 stop bit, no parity.

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(II), COM1 port 485 communication protocol

Execute Modbus protocol, the upper computer is the master, read and write to the touch screen.

1、 Sending code format: station number + function code + start address + number of registers + CRC checksum Receiving code format: station number + function code + number of bytes + register value + CRC checksum

Station number: 0X01 Function code: 0X03

Starting address: 100 (2 bytes)

Number of registers: 8 (2 bytes)

Number of bytes: 16 (1 byte)

Register value: Percentage meter (4 bytes) + Ratio difference (4 bytes) +

Angle difference (4 bytes) + Operating status (2 bytes) + Communication

normal mark (2 bytes), where the data high byte is in the front and the low byte is in the back.

CRC checksum: low 8 bits + high 8 bits

Remarks: working state: indicated by 0-10, 16-bit positive integer

0: working normally;

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- 1: out of the applicable range, do not continue to raise the test current; 2: the transformer range error;
- 3: Transformer polarity error;
- 4: Transformer polarity error, range error;
- 5: secondary open circuit of the measured transformer;
- 6: instrument failure, can not work;
- 7: serious wiring error, do not continue to raise the test current; 8: primary current exceeds the equipment limit;
- 9: error qualified;
- 10: error beyond the setting range.

2、 The upper computer reads the current measured value.

Register address 100[4 bytes]: percentage scale (unit %, 32-bit floating point number)

Register address 102[4 bytes]: ratio difference value (unit %, 32-bit floating point number)

Register address 104 [4 bytes]: angular difference value (unit %, 32-bit floating point number)

Register address 106 [2 bytes]: operating status (16-bit positive integer)

Register address 107 [2 bytes]: communication normal mark, cycle +1, range

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1-9999, (16-bit positive integer)

3、 Local station number: according to the requirements of the host computer, the instrument interface operation change, range 1-240, the default station number is 1.

(III) COM2 port 485 communication protocol

The instrument sends data through the serial port after each measurement. It supports Modbus protocol or free serial port, and the free serial port intercepts the 8th to 23rd bit of data for display after receiving.

1. Communication code format: station number + function code + start address + number of registers + number of bytes + register value + CRC checksum

Station number: 0X01

Function code: 0X10

Start address: 100 (2 bytes)

Number of registers: 8 (2 bytes)

Number of bytes: 16 (1 byte)

Register value: working status (2 bytes) + percentile meter (4 bytes) + ratio difference (4 bytes) + angle difference (4 bytes) + communication normal mark (2 bytes), where the high byte of data is in the front and the low byte is in the back.

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CRC checksum: low 8 bits + high 8 bits

Remarks: Measurement status: indicated by 0-10, 16-bit positive integer

0: working normally;

1: out of the applicable range, do not continue to raise the test current;

2: Wrong transformer range;

3: Transformer polarity error;

4: Transformer polarity error, range error;

5: secondary open circuit of the measured transformer;

6: instrument failure, can not work;

7: Serious wiring error, do not continue to raise the test current;

8: Primary current exceeds the equipment limit;

9: error qualified;

10: the error exceeds the setting range.

Percentage meter: unit %, 32-bit floating point number;

Ratio difference table: unit %, 32-bit floating point number;

Angular difference meter: unit %, 32-bit floating point number;

Communication normal mark: cycle +1, data range 1-9999, (16-bit positive integer)

2、 Example of communication data

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01 10 00 64 00 08 10 00 00 3F 7F BE 77 BD FC B9 24 3F 2D CC 64 00 09 91
C8

Indicates: operating status 0 working normally, percentage meter 0.999%,
ratio difference meter -0.1234%, angle difference meter 0.6789%,
communication normal mark 9.

3、Contents corresponding to Modbus standard protocol address.

Register address 100 [2 bytes]: operating status (16-bit positive integer)

Register address 101-102 [4 bytes]: Percentage table (unit %, 32-bit floating
point number)

Register address 103-104 [4 bytes]: ratio difference value (unit %, 32-bit
floating point number)

Register address 105-106 [4 bytes]: angular difference value (unit %, 32-bit
floating point number)

Register address 107 [2 bytes]: communication normal flag, cycle +1, range
1-9999 (16-bit positive integer)

(iv) Pin Definitions

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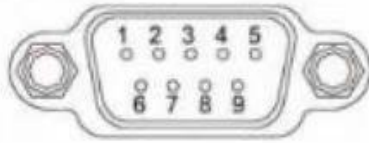
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Serial Port Pin Definitions

Interface	PIN	Pin Definition
COM1	7	RS485+
	8	RS485-
COM2	4	RS485+
	9	RS485-

VIII.Control output

There are control output terminals on the rear panel, according to the alarm setting range to read whether the error is qualified, the working status prompts “error qualified” that is, qualified output terminals have signal output, the working status prompts “error exceeds the setting range” that is, unqualified corresponding terminals have signal output. Output.

IX.Attachment

- 1,Power cord: two three-core;
- 2, standard transformer and calibrator connection line: 1;
- 3, primary connecting line:
 - 16mm² *0.2m one article;
 - 16mm² *0.8m two (socket);
 - 16mm² *0.8m two strips (gun head with 2 crocodile clips);

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4,Secondary connecting line: 1 shielded line (with 2 crocodile clips);

5,Ground wire: 2.5mm² *0.4m two, 2.5mm*0.8m two

6,Communication line: 1 piece;

7, a manual.

PRACTICAL APPLICATION:

TRAINING CUSTOMER TO OPERATE WINDING MACHNE :

1.All service engineers with 10 years experience are gotten special technology training, who can deal with various breakdown problem.

2.Guide the user to use accurately and how to maintain the product.

Provide free consultation about production process technology of electronic products.

3.In order to guarantee the machine used normally, we'd have training on how to operate, use and maintain our product by English manual, video, guiding on line.

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PACKAGING:

Packaging Material: Carton/Wooden case with foam inside.

1. General package(Paper carton or plastic bag): For small equipped parts for Toroidal Transformer Winding Machine , Package it with form and pack paper to guarantee unbroken during the transport.

2.Wooden case package: For larger scale Toroidal Winding machine ,we have special skilled carpenter, who would make the proper wooden case with exact thickness,density,length. The up arrow ↑marked on the outer wooden case. Buffer material would be put in the wooden case to prevent crack and shock.



Below is the name of all listed accessories for the machine and construction diagram.

(Note:Different machines have different equipped parts)

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FACTORY:

We-GREWIN INDUSTRIAL GROUP is expert in winding machines lines for 28Years. Our Grewin have ISO9001:2015,CE approvals,Machines'Patents,"high-tech enterprises"by the government.



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