OPERATION MANUAL

JK2511/2512/2512A

DC low-ohm test instrument

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Warning

This instrument is not allowed to measure the electrified object.

Cautions in the test

1.Warm-up: boot the instrument , and must be warmed up before the test more than 10 minutes, in order to wait for the electrical parameters of the instrument's internal wiring stable ,then begin to measure.

2.Zero point and zero clearing: when using the range of Ω 20 m and 200 m Ω to measure, it should be zero clearing the instrument before the test first but no need to zero clearing the other ranges generally .When measuring, the user should select the range first, and then clamp the test clip to make the direct contact with S - and S + end, D - and D + end, keep the good contact of them, if the the instrument do not display to zero, please press the reset button "reset"at the front panel, then reset ON indicator, the instrument will reset.

3. As the instrument adopts the four-end test, so the user must be insure the S+ and S - end ,D + and D - end are direct connected while reset the instrument, you must see to it that the instrument S + end, direct contact with .Specifically: make two pieces of sheet metals direct contact which the test line has lead to and the no lead-to direct contact together.Otherwise the instrument will display very unstable base numbers as it gained too high at the ranges of Ω in 20 m and 200 m Ω

4. All The instrument's internal calibration parameters are stored within the integrated circuit of AT28C16EEPTOM , so please don't change or move the integrated circuit and electronic components in the instrument don't literally change, or it will conflict with the storage parameters in AT28C16 and cause the test error.

Comment1:*If the instrument crashes or its data is unstable or happens any unreasonable condition during booting or using ,please press Reset--turn off the instrument ,then press set button and boot the machine at the same time.*

Chapter one : **introduction**

features

JK2511 series intelligent automatic sorting dc resistance tester using digital tube display, can test all kinds of wires, transformers, motors, switches, relays, etc, the measuring range is 10 u Ω to Ω 2.00 k/u Ω u Ω Ω / 1 ~ 200.00 k ~ 200.00 k Ω The instrument produces high precision constant current through the measured to measure in the four endpoints(ends) , excluding the lead error effectively, suitable for users for high accuracy test;Due to using dc power to measure, it is particularly suitable for measuring the copper resistance of all kinds of transformers and inductors .the instrument extends the functions of similar testers, using nothing relay to switch the range with short data protection function.

Functions

1. The test values display,: it can display five-digit numbers ,maximum 19999 words, LED screen .

Sorting result display:it displays in the sorting instruction box

It can be set by pressing 〖↑〗、〖↓〗 button to "＋ or －" the count value of the sorting gears.

2. The measuring range: 1 u Ω ~ 200.00 k Ω (eight test ranges).

3.Over-range display: **HIGH** light, **PASS** light, **LOW** light will display the sorting result of"over -upper -limit", "qualified", "over -lower -limit".

4.The test speed: 10 ~ 15 times per second

5. Numbers of sorting gears: 3 gears:

6.Zero calibration :The instruments has been calibrated the zero base number of every range, when the zero base number changes for some reasons,this function will calibrate the instrument.

7.Select the Ranges (Range) :

1 >. Automatic (Auto)

2 >. Range :in setting mode as a function button to set the parameters , it can be switch the measuring range in the sorting test.In sorting test,the instrument can not automatically selected the range, but can be switched by "range"button at this time.Press "range" button one time, the range will add one gear, when in the seventh gear, the range transform for the first gear.

3 >. Hold : select 1 ~ 5 gear, corresponding range is 200mΩ～2kΩ (2511D)
select 1 ~ 7 gear, corresponding range is 200mΩ～200kΩ(2512)
Select1 ~ 8 gear, corresponding range is 20mΩ～200kΩ (2512A)
(with signal output interface) select 1 ~ 9 gear, corresponding range is 20mΩ～2MΩ (2512B)

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Working Condition

1. Power:power voltage:

AC 220V±10% Power frequency:50Hz±5%

2.Temperature,humidity:

When Temperature up to 20～26℃、humidity≤75RH,it will meet the test requests.

When Temperature up to 10～35℃、humidity≤85RH，It can be used for operation and measure.

3. volume：300×110×280mm

4. Weight：2.5kg

Technical parameters

NO.	Range	test Range	resolution	current	Open current	Accuracy
1	20 mΩ	1uΩ～20mΩ	1uΩ	1A	< 5.0V	±0.05%+3 words
2	200mΩ	10uΩ～200mΩ	10uΩ	100mA		
3	2Ω	100uΩ～2Ω	100uΩ	100mA		
4	20Ω	1mΩ～20Ω	1mΩ	10mA		
5	200Ω	10mΩ～200Ω	10mΩ	1mA		
6	2KΩ	100mΩ～2kΩ	100mΩ	100uA	< 1.0V	
7	20KΩ	1Ω～20kΩ	1Ω	100 uA		
8	200KΩ	10Ω～200kΩ	10Ω	10 uA		

Range	20mΩ	200mΩ	2Ω	20 mΩ	200mΩ	2Ω	20KΩ	200KΩ	2 MΩ	9-RANGE

temperature coefficient	100ppm	50ppm	50ppm	Error

2.Measuring pattern:5 ports they are HD、HS、LS、LD、GND

3.Measuring speed:10~20 times/second

Comment:Actual measuring speed is also related to the measuring values, sorting, zero calibration,measuring range,etc.

Five、structure:

NO.	Name	in
1	Power switch	power on or power off 220V DC
2	Set up	A, ”display” screen the measuring values display 5-digit numbers 〖↑〗、〖↓〗 button can set upper limit and lower limit numbers:it can also select the measuring range in sorting condition.left or right button to set the gear number. B,”set” button It can be selected multiple setting menus by setting button,they are,to set upper and lower limits,(press “set” button one time to set lower limits values,press it again to set upper limits values,press the third time to exit,press on” set” button,then press power button,it will reset the instrument.This method can be used for troubleshooting if the instrument have some troubles on test. If the instrument have HANDLER interface,press “set”button three times to set the trigger mode, press it four times to exit; press on “up”button and boot the instrument to restore factory Settings)
3	Sorting instructions	If the sorting results are over the upper limits setting,”HIGH”light will twink. If the sorting results are qualified,”PASS”light will twink If the sorting results are over the upper limits setting,”LOW”light will twink.
4	Range	The range locking functional button,in the sorting test,the instrument will not choose the range automatically,so it can be switch the range by”up”and “low” buttons. *There are totally 5 ranges to select ,2kΩ， 200Ω， 20Ω， 2Ω， 200mΩ in turn.*
5	test end	HD：current excitement high-end HS：Voltage sampling high-end LD:current excitement low-end LS：Voltage sampling low-end

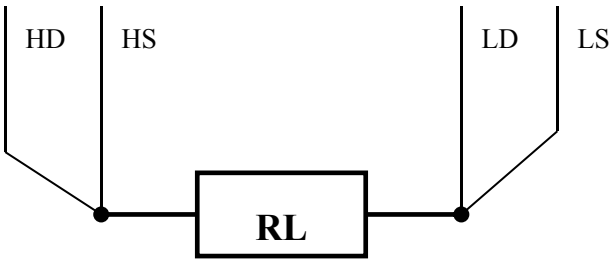
		GND： shield ground

Zero clearing

In order to insure the accuracy of the instrument, eliminate the influence that the measuring clamp or wire or resistance on test accuracy, it must be correctly"zero clearing" while measuring (especially important for measuring small resistance).Every range of the instruments has been zero calibration, but for some reasons ,the zero base number has changed it can use "zero clearing" function to calibrate the instrument, Please see the operation as following

In order to reduce the influence of temperature and humidity on the test results, please warm-up for 20 minutes after boot the instrument, insert the five-end test clamp, **keep the range which to be zero calibration**, make the test ends be correct short circuit as following picture, the test clamp which cable end must be on the same side (HD and LD) the clamp should be approached each other as far as possible,press reset button,,the numbers will display (zero a low number), and display the basic of "0".

The key to the correct short circuit make the test ends --HD, HS and LD, LS be short circuit on the two test points of the load to be tested separately.



connection diagram between test port and load group

A. The process of accuracy calibration

Calibration equipment: standard resistance 10 mΩ±0.05%10ppm/℃0.1W、100 mΩ、1 Ω、10 Ω、1KΩ、10KΩ、100KΩ、1MΩ±0.01%ppm\℃0.1W.

Calibration process:

(1) The instrument will self-check after the boot and please warm up for 10 minutes,

then to set the instrument at 20 m Ω gear.

(2) Put the test wire connect to the instrument test base, clamp the test clip each other(ensure that S+ and S-, D + and D - are direct connected each other or the base number will be instability), if the base number is not zero, please press the reset button to reset the instrument.

(3) after the reset, use the test clip to clamp 10 m Ω standard resistance, and record the instrument test results.

(4) Switch the range from 20 m Ω to 200 m Ω gears, after the reset again , measuring 100 m Ω standard resistance, and record the result.

(5) repeat the switch, to test 1Ω 10 Ω Ω 1 k, 10 k Ω, 100 k Ω, 1 m Ω standard resistance in turn , and record the results.

standard resistance	test ranges allowed	2512A measured value	2512 measured value	Error(%)
10mΩ	9.989-10.011	——		
100mΩ	99.94-100.06			
1Ω	0.9994-1.0006			
10Ω	9.994-10.006			
100Ω	99.94-100.06			
1KΩ	0.9994-1.0006			
10KΩ	9.994-10.006			
100KΩ	99.94-100.06			
1MΩ	0.9994-1.0006	——		

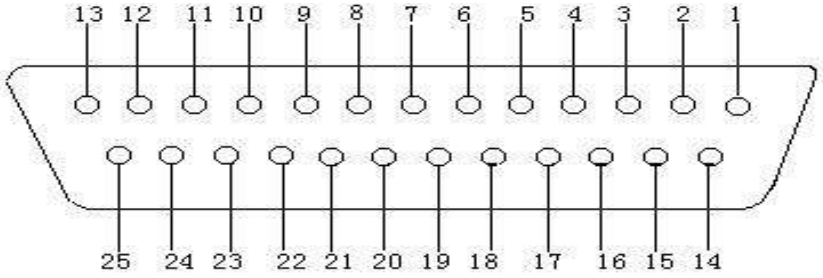
Optional HANDLER interface

HANDLER interface (optional) can make JK2511 Synchronous working with the mechanical equipment of one component .This interface receives an outside signal of "start" and send the signal to the CPU to start the instrument test, instrument through the interface to output the sorting results.

HANDLER interface setting instructions

Press “set” button three times on test interface,the screen will display PLC - y, by the up and low button to change to PLC - n, and then press the set button again, back to the test interface, it can open the external trigger function.

2. 1 HANDLER pins connector instructions



HANDLER interface uses the 25 pins connector, as the following picture

Pin list：

Pin	Function
1	Over- upper -limit
2	qualified
3	Over -lower -limit
4~19	NC
20	Instrument ground
21	Eoc signal output
22	Start signal input
23	Outside ground
24	Internal 5Voutput，normal hanging
25	NC
22-23	Trigger test signal input(short circuit trigger)
1-24	over -lower- limit signal output
2-24	Qualified signal output
3-24	over -upper- limit signal output

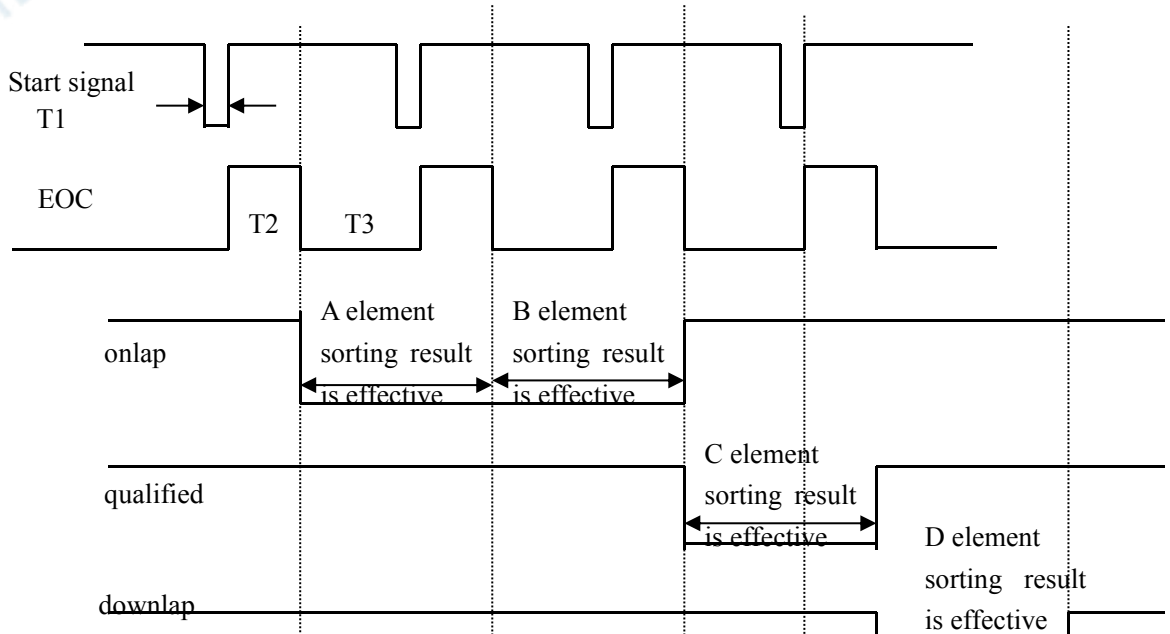
Comment:The output of every signal is OC output, the conduction effectively.

2.2 Pin instructions

1 >. Start: input, low level effectively.The signal is provided by external to the input end of the HANDLER, maintain time should be > 2 ms.

2 >. EOC, leg output signals: output end is open collector gate (OC), maximum absorption current is 30 mA.when OC gate turn-on, the sorting output effectively.

2.3 work timing sequence of HANDLER interface



The working time sequence of HANDLER interface is as the following picture

A, B, C, D is the first, second, third, forth under measured component, A and B component sorting is upper limit;C component sorting is qualified;D component sorting is lower limit

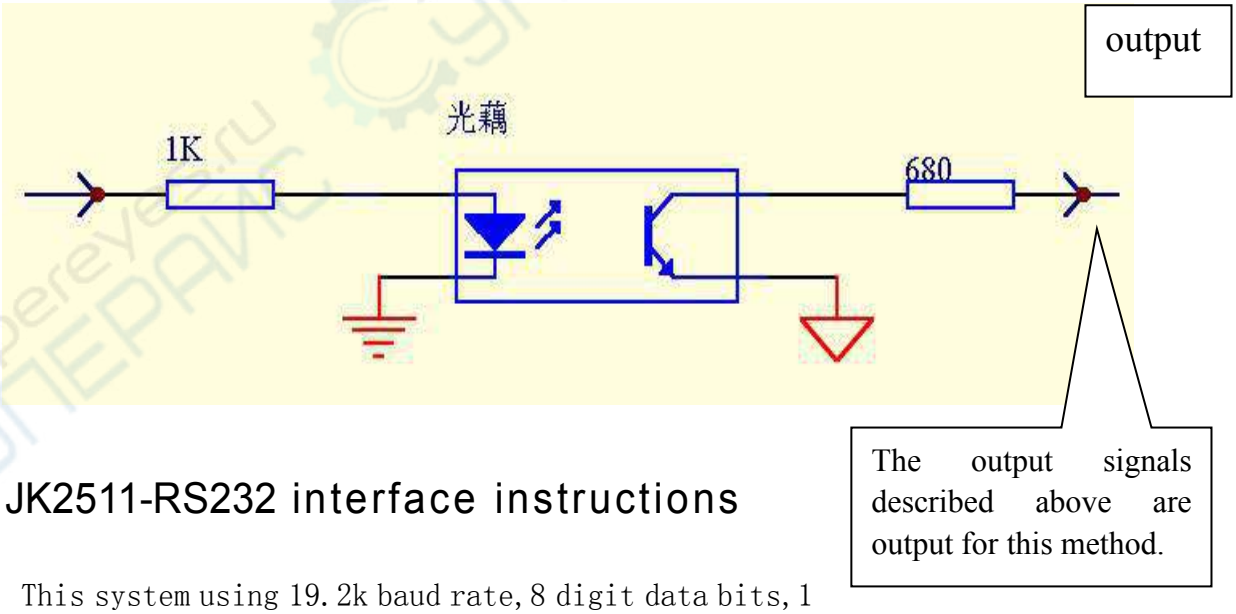
2.4 work timing sequence instructions

T1: starting signal is rising edge effectively , low level time should > 2 ms.begin to measure the instrument while “start” shows high.

T2: The invalid time of EOC signal is T2 > 30 ms.

T3: The instrument’s measuring and computing time depend on the working condition of the instrument, the continuous measuring T3 < 60 ms, T2 will send the results to the HANDLER interface at the end .

2．5 HANDLER The interface output circuit , as shown in the figure:



JK2511-RS232 interface instructions

This system using 19.2k baud rate, 8 digit data bits, 1 stop bit

Data format:the data will send as data packet to PC

Every data packet contains of 34 bytes data, the data

format is:

34 bytes data is DBO~DB33

total;

The sign of the beginning of data

packet

DB0: D1H

Date packet counter DB1~DB3:as the data counter,DB1~ DB3 means how much data packet had the instrument sent,maximum is 999999

Sorting values: DB4: 00H-- LOW;

01H--PASS; 02H--HIGH;

Range values: DB5 (D7~ D4):

200mΩ - 7;

2Ω- 6;

20Ω-5;

200Ω- 4;

2kΩ-3;

test data: DB5(D3~D0):The first digit of the data; (The top digit,binary data)

test data: DB6(D7~D4):The second digit of the data(binary data);

test data DB6(D3~D0):The third digit of the data(binary data);

test data DB7(D7~D4):The forth digit of the data(binary data);

test data DB7(D3~D0):The fifth digit of data(binary data);

Comment:The instrument display" ------- "test data is "D";

Reserve data

DB8~DB32;

The sign of the
ending of
dataDB33:EEH

For example: data packet: 1.2345kΩ (range keep 2kΩ, sorting gear is PASS)

D1 * * * 01 31 23 45 *EE

Comment; the setting of RS232 interface

Chapter Three :Unpack the instrument

Unpack the instrument and the cautions:

1. check its consistency while unpack The instrument according to the packing list when unpacking the case in accordance with the instrument of the packing list,.

2. Please read the manual carefully or under the guidance of the personnel to operate before using the instrument

3. The power supply

The instrument should use the power supply for 220 v + 10% / 50 hz + / - 5% , make sure if the power supply and the power wiring are good before boot the instrument. Null wire N ,Phase wire L, and earth wire E should be correctly connected , earth wire E should be connected in the reliable and correct grounding , otherwise the instrument will have numbness electricity phenomenon on the surface, even have produce shock endanger the safety of life, please be cautious!Power socket cannot share one socket with high-power electrical equipment, in order to avoid interference the instrument' s using or electric shock to damage the instrument.

4. Instruments shall be used in the good condition that the regulation of the technical indicators appointed , the instrument especially the test ends which be connected to the test components should be far away from strong

electromagnetic field, in order to affect the test.

5. When troubleshooting, it needs to turn off the instrument ,remove the power plug,then open the instrument's shell, but do not change or remove any of the internal chip.

6. Please warm up the instrument for 30 minutes when boot the instrument then begin to measure.

Chapter Four : A complete set and Warranty

A complete set of the instrument should contains of:

1 DC low ohm test instrument	1
2、test clip	1
3、three-phase power wire	1
4、1A fuse	2
5、manual	1
6、test report	1

Warranty

Warranty: The Warranty period will be 18 months for the user who purchases the instrument from our company counted from the date of delivery or who purchases from the agents counted from the delivery date. When it needs to be repaired under warranty period ,please send us the instrument with the warranty card.Our company is implemented for all sold instrument maintenance service forever. In Warranty period, due to the user's improper operation and damage the instrument, the maintenance fee shall be borne by the user.