Operation manual of Digital Insulation Resistance Tester

First Overview

Insulation series digital tester which adopts low loss high ratio of inductance energy storage DC voltage converter can change 12V voltage into 250V / 500V / 1000V / 2500V DC voltage. It uses digital LCR Bridge for resistance measurement and the insulation resistance test. It has many advantages such as light, wide measuring range, backlight display, test lock, auto power off (only for MAX DC1000V OUT function) and other functions. It can also be used for electricity measurement with great advanced appearance, stable performance. Based on straps design, you can operate with both hands .It can be applied in motors, cables, mechanical and electrical equipment, telecommunications equipment, power facilities and other insulation resistance testing areas.

Second. Safety precautions

This series instruments' design comply with the terms of IEC1010 (safety standards issued by International Electro technical Commission).Please read the safety precautions carefully before use.

1. When measuring voltage, please do not set limit voltage above 750V AC (please note that the input and output measurements are two completely different ports).

2. Voltage below 36V voltage is the safety voltage. When test 25V AC voltage, please check whether the probe contact safely, whether it is connected properly, whether the insulation is good, etc., for electric shock avoidance.

3. When changed function and range, the probe should leave the test point.

4. Please select the correct function and measuring range. Be aware of wrong operation. For security, please pay more attention on the operation although the instrument series have full range of protection.

6. Safety Symbol means " ⚠ " Exist Dangerous voltage, " ⏚ " Grounding " ⚠ " Operator must refer to instruction manual, " + - " Low voltage

Third. Feature

1. General characteristics

（1）Display: 90 × 48mm LCD display, the maximum display is "1999".

（2）Over range indication: Only the highest digit shows "1" when the upper limit is exceeded.

（3）Measurement method: Double integral type A / D conversion.

（4）Sampling rate: About 3 times /second.

（5）Power supply: 5 # battery LR6 (1.5V) × 8 (with external power adapter) .It contains lack of voltage indication when the voltage is not enough. With automatic shutdown function (only for MAX DC1000V OUT function, about 15 minutes after machine start).

（6）Power consumption: Power consumption of empty load test <300mw.

（7）Using environment: Temperature 0 ℃ -40 ℃, humidity 30% RH-85% RH.

（8）Alarm function: The meter will alarm automatically when the measured resistance is lower than the lower limit of measuring range, and the reading is invalid (only for only for MAX DC2500V OUT function).

（9）Dimensions：175（L）x110（W）x70（D）mm.

（10）Weight：750g（Battery included）.

（11）Attachment: 1 no Manual, 1 no Insulation meter, 1 no certificate, 1 no package box, one pair of 10A testing pen (60B +), 5 # battery LR6 (1.5V) × 8 (external power adapter), one pair of crocodile clip . 1 set of Test cable and silicone rubber test line (MAX DC2500V OUT function).

2、MAX DC1000V OUT function Technology Parameters

Basic functions		Measuring range	Basic accuracy
Output voltage		250V/500V/1000V	±10%
Short circuit current		<1.6mA	
Test current		250V(R=250kΩ) 1mA 500V(R=500kΩ) 1mA 1000V(R=1MΩ) 1mA	±10%
RANGE Insulation resistance		250V : 0.1MΩ—20MΩ 500V : 0.1MΩ—50MΩ 1000V : 0.1MΩ—100MΩ	±（4% readings±2 unit）
		250V : 20MΩ—500MΩ 500V : 50MΩ—1000MΩ 1000V：100MΩ—2000MΩ	±（4% readings±2 unit）
Short circuit current		<1.6mA	
Median resistance		250V/500V : 2 MΩ 1000V: 5MΩ	
Voltage measurement		AC750V	±（1% readings+6 unit）
Hole plug position		Insulation resistance: L.E AC750V: ACV G	

AC750V Input resistance： 1MΩ. AC750V Frequency response：（50～200）Hz

Note：Median resistance——Ensure that the measurement two end voltage is not lower than the lower limit of the resistance measurement of 90% of the nominal value of the test voltage.

3、MAX DC2500V OUT function Technology Parameters

Basic functions	Measuring range	Basic accuracy
Output voltage	1000V/2500V	±10%
Short circuit current	<4mA	
Insulation resistance 1000V	200MΩ:6-199.9MΩ	±(5%±5 unit）
	2GΩ:0.06-1.999GΩ	
	20GΩ:0.6-19.99GΩ	
Insulation resistance 2500V	200MΩ:5-199.9MΩ	
	2GΩ:0.05-1.999GΩ	
	20GΩ:0.5-1.999GΩ	
Voltage measurement	AC750V	±(1%±6 unit)
Hole plug position	Insulation resistance：L、E AC750V:ACV 、G	

ACV750V Input resistance： 1MΩ.

ACV750V Frequency response：（50～200）Hz

Fourth. Control panel instructions（Photo MAX DC1000V OUT function）

1. E-end high-voltage output test terminal.

2. Positive input of AC voltage measurement.

3 G: terminal plug hole. When the tested object was asked to add guard ring to eliminate the leakage effect, the guard ring electrode wire will be connected to the "G" terminal .

4. Power adapter hole plug DC12V

5. L-side high-voltage output test terminal.

6. Instrument model.

7. LCD Monitor: Display measurement data and unit symbol.

8. Power switch: Self-locking power switch（POWER）.

9. Measurement indicator will become red when measure resistance under high voltage, while the backlight will light.

10. Test button.

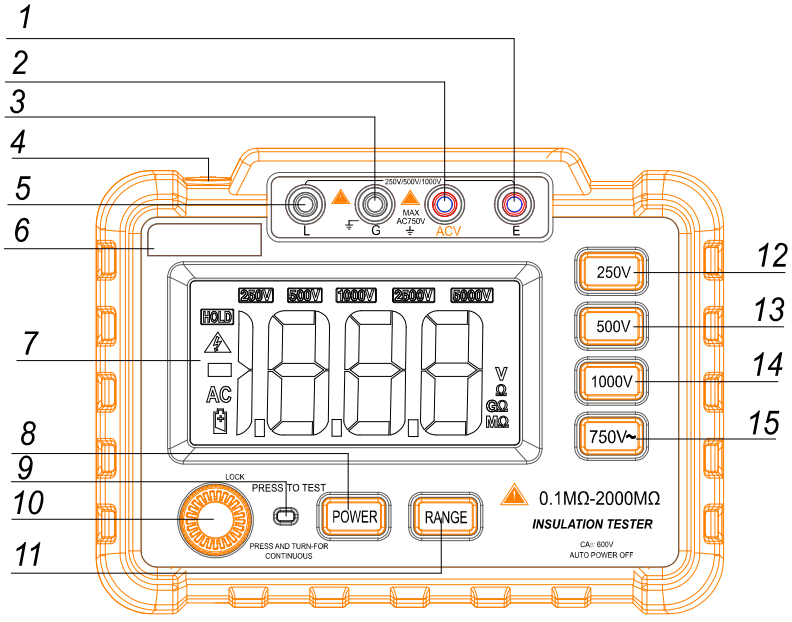
11. Resistance measuring range selection switch（RANGE）.

12. 250V Power switch.

13. 500V Power switch.

14 .1000V Power switch.

15. AC750V AC voltage measurement switch.



MAX DC1000V OUT function

Fifth. Control panel instructions（ Photo MAX DC2500V OUT function）

1. E-end high-voltage output measurement positive.

2. AC voltage measurement positive input.

3 G： Protection end plug hole. When the tested object was asked to add guard ring to eliminate the leakage effect, the guard ring electrode wire will be connected to the "G" terminal .

4. L-side high-voltage output measurement output negative terminal.

5. Power adapter DC12V.

+ —⊙— −

6. Instrument model

7. LCD Display: Display measurement data and unit symbol.

8. Measurement indicator will become red when measure resistance under high voltage, while the backlight will light.

9. Power Switch: Self-locking power switch (POWER)

10. Test button.

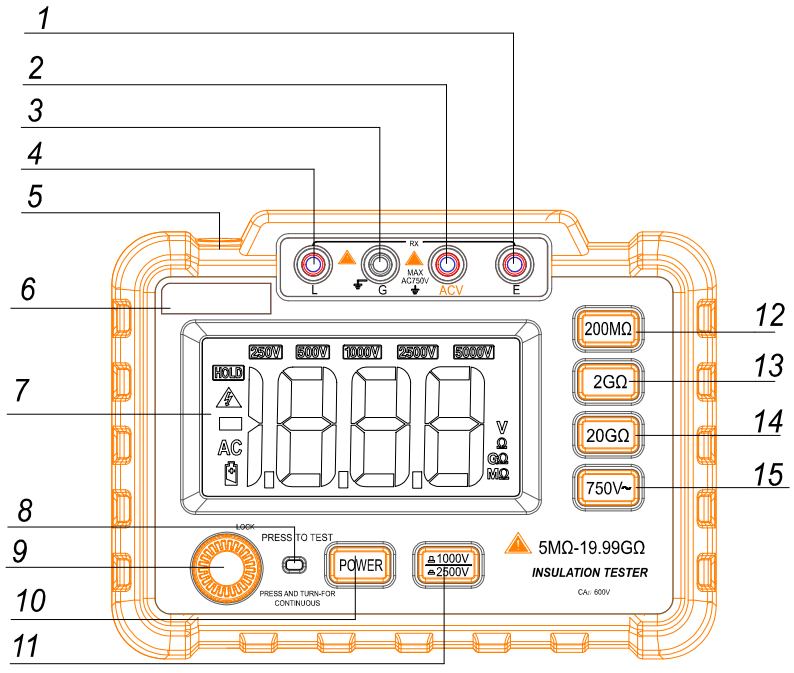
11. 1000/2500V High-voltage output measurement conversion button.

12. 200MΩresistance measurement button

13． 2GΩresistance measurement button

14 .20GΩresistance measurement key

15. AC750V AC voltage measurement transfer switch。



MAX DC2500V OUT function

Fourth .Operation Instructions：

1、**Put 8 pcs 5# battery inside after open the back side of the battery box. Please pay attention to the battery pole. Do not take the opposite pole; DC12V adapter can also be used to measure the power supply, Pay attention to the polarity of the adapter when buying “ + ⊙ − ”**

2、**Press the "POWER" switch button .**

3、**AC750 was used for AC voltage measurement. When measured operator should press this button , the LCD screen is AC000V, the red probe is inserted into the ACV hole, black probe is inserted into the G-hole . The probe should contact to the test point properly and the measured voltage is displayed on screen (Figure 1).**

4、**MAX DC1000V OUT function: output test voltage is 250V / 500V / 1000V; Select measuring range 200MΩ / 2000MΩ according to measurement needs. Change the voltage value according to the button of the screen; MAV DC2500V OUT function: output voltage is**

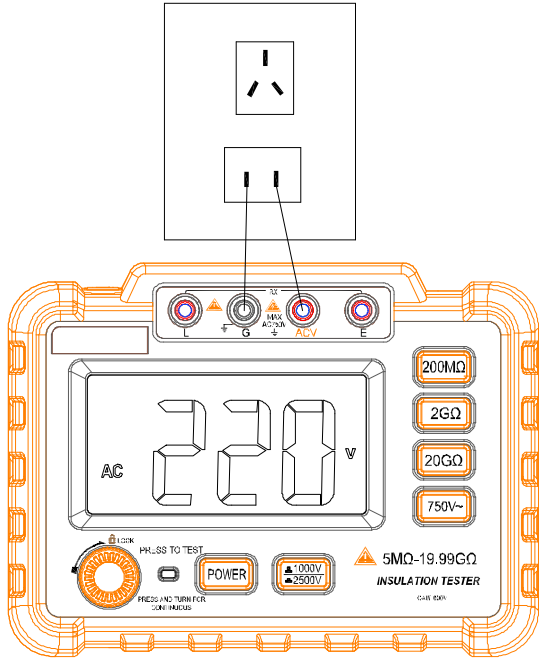


Figure 1

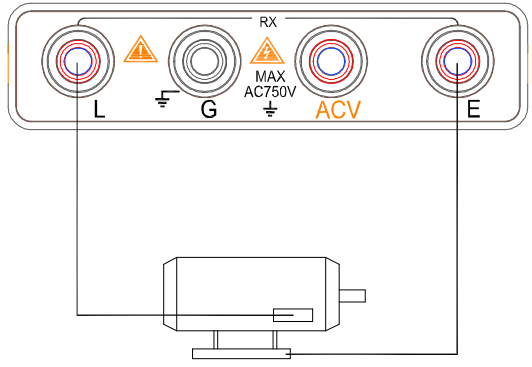


Figure 2

1000V / 2500V, and MAX DC2500V OUT function has 3 resistance files to choose for 200MΩ / 2GΩ / 20GΩswitch according to screen voltage value.

5、The input line "E" is connected to the measured object ground side, "L" is connected to the measured line side. It requires "L" lead should not touch anything as much as possible.

6、 If only the highest digit shows "1", it means over range and you can take the number based on high Range files; when the range button is " ", it means insulation resistance pass more than

7、When testing the cable, plug hole G is connected to the guard ring.

8、The test will be carried out when press the test switch. Turn right can lock the button switch; when the display value is stable, you can read the numbers.

9、Insulation resistance measurement method: (As Figure 2)

Sixth Safety Precautions

1、If the test voltage selection button have not been pressed, the output voltage plug hole will have high voltage output.

2、You should first check the test voltage selection and whether LCD test voltage tips and the required voltage is consistent before test.

3、The measured object should be separated from the power supply of the power grid completely, and proved that there is no danger of electricity through short-circuit discharge before being operated to ensure safe operation.

4、It is not allowed to hold the test side when do testing to ensure accurate readings and personal safety.

5、Instrument should not be kept under high temperature for storage thus avoiding direct sunlight so as not to affect the life of the liquid crystal display.

6、Insufficient battery display symbol "  **",please replace the battery in time. You should promptly remove the battery when not use for Long-term to avoid battery leakage damage to the instrument.**

7、It is a normal phenomenon when have digital display under empty-load. It will not affect the test.

8、During the MΩ test, if the displayed reading is unstable, it may be caused by environmental interference or unstable insulation material. In this case, you can stabilize the reading by connecting "G" to the shield end of the tested object.

9、The test line uses silicone rubber material to ensure test safety and interference reduction. Please do not change the test line arbitrarily.

10、When connect with external adapter for power supply, the internal battery will become disconnected and the battery can not be charged at this time. Note: Please select (+ **–) power supply mode.**

Seventh .Troubleshooting

Trouble phenomenon	Tested position & method
No Display	• Power is not connected; • Change the battery.
Low battery symbol appears	• Change the battery.

If your meter does not work properly, the following methods can help you resolve common problems quickly. If

If your meter does not work properly, the following methods can help you resolve common problems quickly. If the fault still can not be resolved, please contact with the service center or the dealer.

Make apologize for not to inform you the changed parameters in the future.

The contents of this manual are considered to be correct. Please contact the manufacturer if the user finds errors, omissions, etc.,.

Company does not assume the responsibility of accidents and hazards that caused by user's wrong operation.

The functions described in this manual were not the reason for using the product for special purposes.

6000-60BD-00ZJ

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