

Warranty:

- 1、 Warranty term: the warranty term is 12 months, which is calculated from delivery date of the company for a user buying tester from the company; from the delivery date of the marketing department for a user buying tester from the marketing department.
- 2、 Warranty: the warranty card for the tester shall be produced for warranty. The company provides lifelong repair services for all testers delivered.
- 3、 The user shall bear the repair expenses arising from damage of tester due to improper operation of the user in the warranty term.

- 测试时间、测试电流和接地电阻值同时显示
- 报警电阻值可连续预置，更加方便用户测试，全国首创
- 采用四端测量法，消除接触电阻对测试的影响，测试精度高
- 新增开路报警选择功能，用户可自由选择是否需要开路报警
- 采用除法器电路显示电阻，有效消除电网电压波动的影响，对电源依赖程度低

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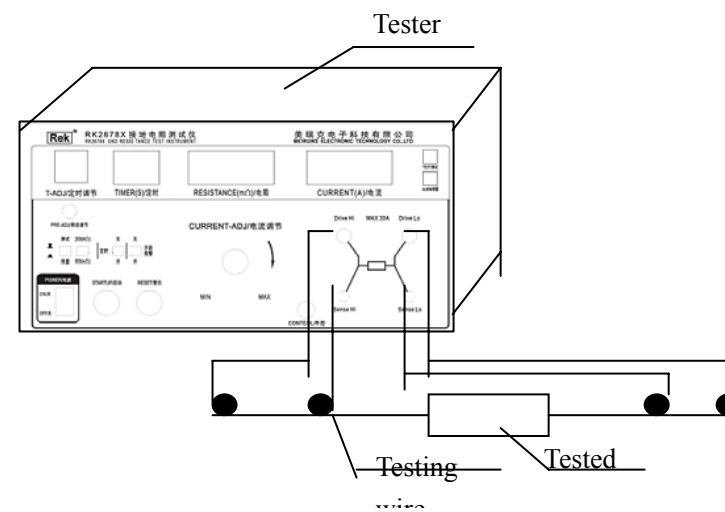


Fig. 3

VII. Accessories and warranty

Accessories:

1. Earthing test clamp	1 PC
2. Instructions for operation	1 copy
3. Certificate of quality	1 copy
4. Power cable	1 PC
5. Document bag	1 PC

A user shall open the package to check the above content after receiving tester, and contact the marketing department of the company immediately if finding any loss.

2) Accurate test: complete wiring according to Fig. 3, and connect four-end testing line respectively to the tested appliance.

(8) This tester has optional function of open circuit warning. If the earthing circuit is open circuit or the testing clamp does not clamp the tested object, it can select whether to give out

audible and visible warning according to actual demand.

(9) This tester has overcurrent protection function. When the current in circuit is more than 30A, the tester gives out audible and visible warning for overcurrent, and the overcurrent lamp keeps shining, the beeper continually beeps and the current in circuit is automatically cut off. Press "RESET" to eliminate warning status, turn the "CURRENT ADJUST" anti-clockwise for next measurement.

(10) The tester utilizes principle of divider to measure low resistance, i.e. $R=U/I$. When the tester is in status of "RESET", for $I = 0$, the resistance display window of tester shows unstable status, which is normal.

3. Example:

(1) Common test: connect wires as shown in Fig. 2, put one test clamp at general earthing end and another clamp at the tester's metallic part that can be touched.

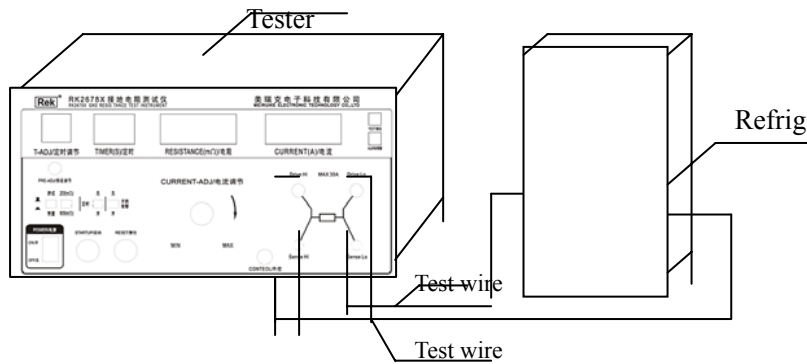


Fig. 2

一、简介

接地电阻测试仪是用来测量电气设备内部的接地电阻，它所反映的是电气设备的各处外露可导电部分与电气设备的总接地端子之间的(接触)电阻。接地电阻测试仪为了消除接触电阻对测试的影响，采用了4端测量法，即在被测电器的外露可导电部分和总接地端子之间加上电流(一般为25A左右)，然后再测量这两端的电压，算出其电阻值。

RK2678X 接地电阻测试仪是按照 GB、IEC、ISO、BS、UL、JIS 等国际国内的安全标准要求而设计的，接地电阻的指标是衡量各种电器设备安全性能的重要指标之一。它是在大电流(25A 或 10A)的情况下对接地回路的电阻进行测量，同时也是对接地回路承受大电流指标的测试，以避免在绝缘性能下降(或损坏)时对人身伤害。本测试仪是为满足以上要求为生产车间及实验部门提供高性能测试仪器而开发生产的。本仪器对供电电压要求不高，测量精度高，速度快，使用方便，特别适用于要求高的实验室和自动检测线上使用。新增断线报警选择功能(即开路报警)可以非常方便地知道仪器是否工作在正常测试状态，用户可以根据实际需要选择是否需要此项功能。本仪器采用 3½ 位数字显示，读数方便，采用优化设计，整机具有极高的可靠性和稳定性。本测试仪适合于不同的国家标准：如符合 GB 4706.1-1998 家用和类似用途电器的安全标准中，通用要求有关条款规定(其中 RK 2678 Y 符合 GB 9706.1 医用标准要求)。

二、技术规格

- | | |
|--------|---------------------------------|
| 1、测量范围 | 0 ~ 200 mΩ ± (5% + 2个字) (25A) |
| | 200 ~ 600 mΩ ± (5% + 2个字) (10A) |

- | | |
|--------|----------------|
| 2、测试时间 | 0 ~ 99s (连续可调) |
|--------|----------------|

- 3、 测试电压 \leq AC 12V/6V (RK2678Y)
- 4、 测试电流 AC 5~30A \pm 5 %
- 5、 过流报警 $>$ AC 30A
- 6、 报警电阻值 0 ~200m Ω \pm (5 % + 2 个字) (AC 2.5A) 连续可调
200~600 m Ω \pm (5 % + 2 个字) (AC 10A) 连续可调
- 7、 使用条件
 - (1) 温度 0 ~ 40 $^{\circ}$ C
 - (2) 相对湿度 \leq 80%RH
 - (3) 供电电源 AC 220V \pm 10% 50Hz
- 8、 外形尺寸 315mm \times 250mm \times 165mm
- 9、 重量 15kg

三、工作原理和方框图

接地电阻测试仪是由测试电源、测试电路、指示器和报警电路组成。测试电源产生测量电流，测试电路将电流信号和流经被测电阻上电流所产生的电压信号进行处理，完成交直流转换，进行除法运算，指示器指示电流值和电阻值，若被测电阻大于报警值，仪器发出连续的声光报警，若测试电流大于 30A，则发出连续的声光报警，并切断测试电流，以保证被测电器的安全。

current value, and read the resistance shown on the display. When the earthing resistance of the tested object is larger than the earthing resistance setting warning value, the tester will give out the intermittent audible and visible warning, or otherwise it will not give out warning. If you want to stop testing, you can press “RESET”, “test” lamp will be off, and the current in the circuit will be cut off. Take down the testing clamp from the tested object for next measurement.

(7) Timing measurement

- a. Put the tester at “RESET” status.
- b. Press “TIMING” to the position “ON”, and preset the desired testing time upon demand.
- c. Check the steps 2 (3) ~2 (5) correctly, press “START”, the “test” lamp turns on, the time counter of display starts countdown, adjust “CURRENT ADJUST” and observe the current value on display to the selected current value.
- d. Put “PRESET/TEST” at the status “PRESET”, adjust the potentiometer for “adjustment of warning resistance”, and preset warning resistance value. (Note: set warning resistance value in the condition of current output).
- e. Press “RESET” button to cut off output current, and turn “CURRENT ADJUST” to the least; open the test clamp and connect the clamp with the testing point on the tested object.
- f. Read the resistance reading shown in the display. When the earthing resistance of the tested object is larger than the warning value of earthing resistance, the tester will give out intermittent audible and visible warning, or otherwise, it will not give out warning. When the testing time closes, the current on the circuit will be automatically cut off, then the testing clamp can be taken from the tested object for next measurement.

(1) This tester is attached with a pair of measuring wires, the thick measuring wire of red wire group connects with red current wiring pole of tester, and the thin measuring wire of red wire group connects with red wiring pole for resistance testing; the thick measuring wire connects with black current wiring pole of the tester. The thin measuring wire of black group connects with black wiring pole for resistance testing.

(2) Turn on the power and power switch, and digital tube on display panel is lightened.

(3) Select testing range switch 200 mΩ or 600 mΩ upon demand. When the switch is pressed, the range is 600 mΩ, the resistance measurement scope shown at this time is 0~600 mΩ; when the switch is popped out, the range is 200 mΩ. The resistance measurement scope shown at this time is 0~199.9 mΩ.

(4) Turn the current adjust button anti-clockwise to zero.

(5) Make short circuit of clamp end of the above two groups of measuring wires.

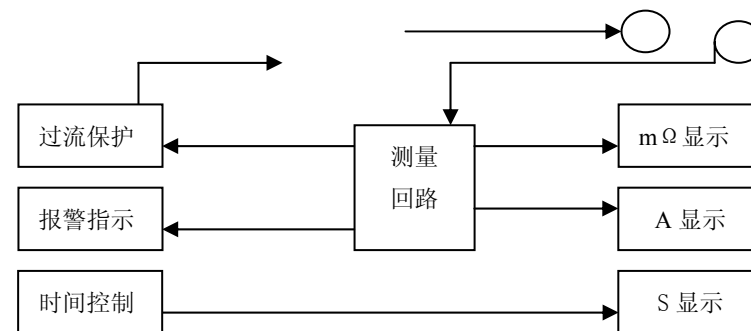
(6) Manual measurement

a. Put "TIMING" at "OFF" status.

b. Check the steps 2 (3) ~2 (5) correctly, press "START", the "test" lamp turns on, adjust "CURRENT ADJUST" and observe the current value on display to the selected current value.

c. Put "PRESET/TEST" at the status "PRESET", adjust the potentiometer for "adjustment of warning resistance", and preset warning resistance value.

d. Press "RESET" button to cut off output current, and turn "CURRENT ADJUST" to the least; open the test clamp and connect the clamp with the testing point on the tested object.



四、特点

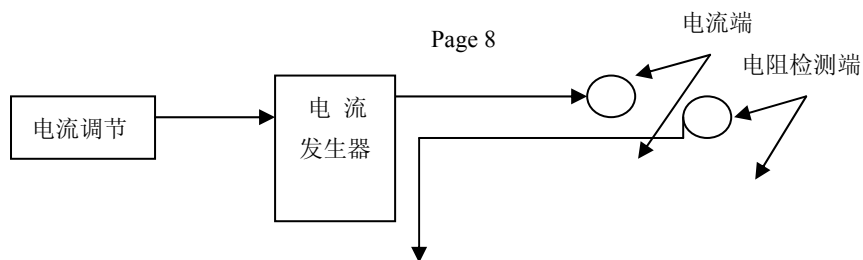
RK2678X 型接地电阻测试仪适用于测量各种电机、电器、仪器仪表、家用电器等电网供电的电气设备外壳易解件的金属部件与其保护接地端子之间的电阻值。本仪器具有两档测试阻值（200 mΩ或600 mΩ），测试时间可在 0~99s 之间设定。当被测阻值大于所预置的电阻值时，具有声光报警功能，并有过电流（>AC30A）保护功能，本仪器采用除法器的原理进行测量，测试电流的波动不会对测量精度造成影响，因此具有测量准确，操作方便，体积小，对电源要求不高等优点。本仪器使用 3½位数字显示，读数方便直观，可靠性极高，新增断线报警选择功能（即开路报警）可以非常方便地知道仪器是否工作在正常测试状态，用户可以根据实际需要选择此项功能。

五、使用注意事项

- 1、操作人员一定要熟悉该测试仪器的操作程序方可使用。
- 2、在整个测试过程中，不能随意调节其它按钮。
- 3、测试电流需大于 5A 才能报警。
- 4、为保证测试稳定，建议使用交流稳压电源。

第 5 页

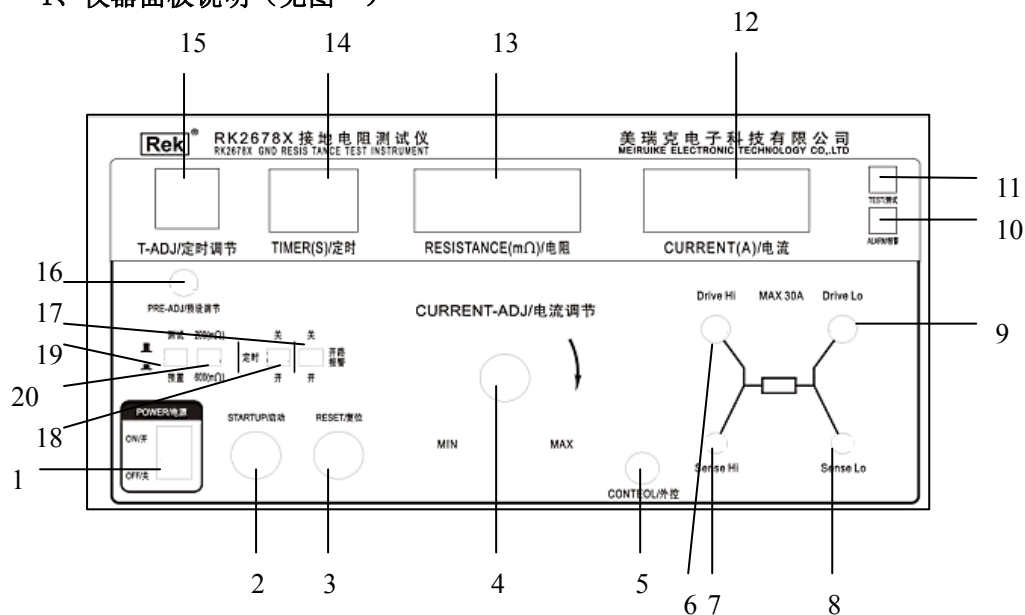
- 5、测试完毕后，须处于“复位”状态，方可取下接线。



6、本机电流输出端子上短接的短路片是用来设置报警电阻时用的，测量时要将其取下。

六、使用说明及操作步骤

1、仪器面板说明（见图一）



图一：RK2678X 型面板示意图

- (1) 电源开关，用来控制是否接通电源。
- (2) 启动钮：按下时，测试灯亮，此时仪器工作。
- (3) 复位钮：按下时，测试灯灭或超阻报警、过流报警停止，此时无电流输出。
- (4) 电流调节钮：调节此钮使电流输出为 5A—30

- (5) Remote control interface: connect with remote control testing gun (equipped upon

client's demand)

(6) Current output end. If remote control testing gun is used, this end will be connected with the end of testing gun (end of thick wire).

(7) Resistance testing end.

(8) Resistance testing end. If remote control testing gun is used, this end will be connected with the resistance end of testing gun.

(9) Current output end. If remote control testing gun is used, this end will be connected with the resistance end of testing gun.

(10) Overresistance and overcurrent warning indicator: when the measured resistance exceeds the warning setting value, this indicator will flash, and the beeper will beep intermittently; when overcurrent appears, the indicator shines and the beeper continually beeps.

(12) Current display (0~30A)。

(13) Resistance display: 0~199.9mΩ(25A)/0~600mΩ(10A)。

(14) Time display: 1~99s under countdown.

(15) Time presetting panel: can set the desired testing time.

(16) Warning presetting adjustment potentiometer: adjust this potentiometer in the status of presetting to set warning resistance value.

(17) Open circuit warning switch: if pressed, it has the function of open circuit warning; it has no such function if popped out.

(18) Timing switch: perform timing test when it is "ON", and the test time can be set in the range 1-99s; perform manual test when it is "OFF".

(19) TEST/PRESET: when you press this key, you can set and display warning resistance value if you start and adjust the key CURRENT ADJUST to the stated output current; if it is popped out, the tester is in normal test status.

(20) 200 mΩ/600 mΩ selection switch: it is the scale of 600 mΩ when this switch is pressed, and the measurement range is 0~600 mΩ, the warning value is 0~600 mΩ; it is the scale of 200 mΩ when this switch is released, and the measurement range is 0~199.9 mΩ, the warning value is 0~200 mΩ.

5. The connection wire can be taken down after test only when it is in "RESET" status.

6. The short circuit piece connected on the current output terminal of the tester is used for setting the warning resistance, and shall be taken down while measurement.

VI. Instructions for operation and operating processes

1. Description of panel (see Fig. 1)

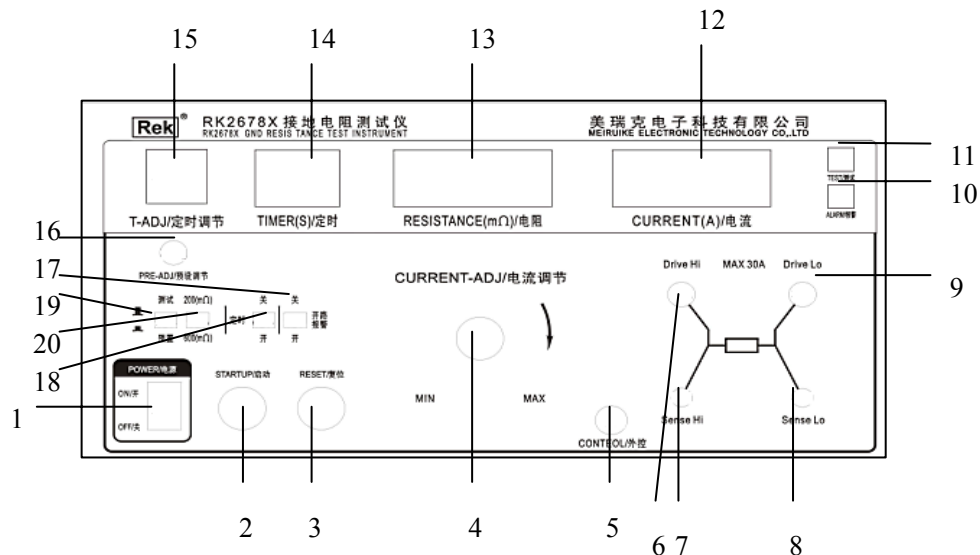


Fig. 1: Schematic chart of RK2678X panel

- (1) Power switch is used for controlling whether the power is turned on or not.
- (2) START: if you press this key, the test lamp is on, and the tester works.
- (3) RESET: if you press this key, the test lamp is off or excessive resistance warning and overcurrent warning stop. There is no current output this time.
- (4) CURRENT ADJUST: adjust this key to make current output as 5A—30A.

(5) 遥控接口：接遥控测试枪（按用户要求进行配备）。

(6) 电流输出端，若用遥控测试枪，此端接测试枪电流端（粗线端）。

(7) 电阻检测端。

(8) 电阻检测端，若用遥控测试枪，此端接测试枪电阻端。

(9) 电流输出端，若用遥控测试枪，此端接测试枪电流端。

(10) 超阻和过流报警指示灯：当被测电阻超过设定报警值时，此灯闪烁，

同时蜂鸣器断续讯响；当出现过流时，此灯连续亮，蜂鸣器持续讯响。

(12) 电流显示（0~30A）。

(13) 电阻显示：0~199.9mΩ（25A）/0~600mΩ（10A）。

(14) 时间显示：1~99s 倒计时。

(15) 时间预置拨盘：可设定所需测试时间值。

(16) 报警预置调节位器：在预置状态下调节此电位器，可设置报警电阻值。

(17) 开路报警开关：按下具有开路报警功能，弹出时没有开路报警功能。

(18) 定时开关：“开”时，为定时测试，测试时间在1~99s内任意设定；

“关”时，为手动测试。

(19) 测试/预置键：按下时，在启动并调节电流调节旋钮到规定输出电流时，可设置并显示报警电阻值；弹出时，为正常测试状态。

(20) 200 mΩ /600 mΩ 档选择开关：按下时，600 mΩ 档，测量范围为0~600 mΩ，报警值为0~600 mΩ；弹出时为200 mΩ 档，测量范围为0~199.9 mΩ，报警值为0~200 mΩ。

2、使用与操作：

(1) 本仪器配备一付（两组）测量线，红线组粗测量线，接入测试仪红色电流接线柱，红线组细测量线，接入测试仪红色电阻检测接线柱；黑线粗测量线，接入测试仪黑色电流接线柱，黑线组细测量线，接入测试仪黑色电阻检测接线柱。

(2) 接通电源，开启电源开关，显示屏数码管点亮。

(3) 按需要选择测试量程开关 200 mΩ 或 600 mΩ。当开关按下时为 600 mΩ 量程，此时显示电阻测量范围为 0~600 mΩ；当开关弹出时为 200 mΩ 量程，此时显示电阻测量范围 0~199.9 mΩ。

(4) 将电流调节旋钮逆时针旋至零位。

(5) 将上述两组测量线的夹子端相互短路。

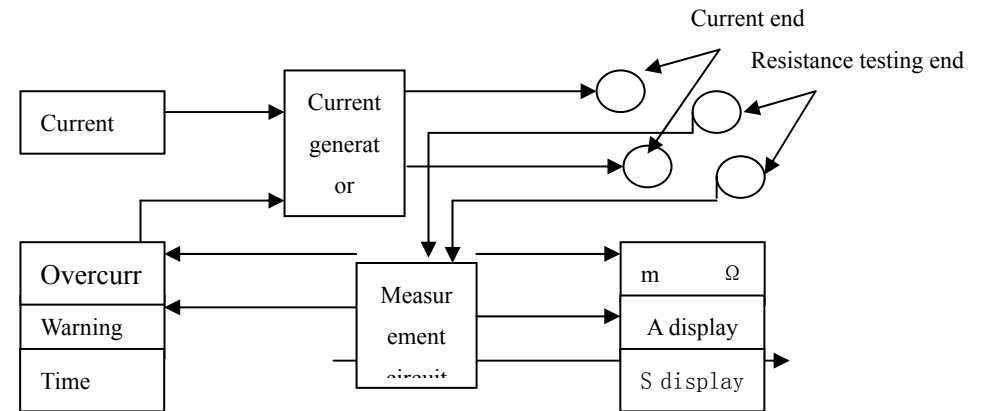
(6) 手动测量

a、将“定时”开关置“关”状态。

b、检查 2（3）~2（5）步骤无误之后，按动“启动”按钮，“测试”灯亮，调节“电流调节”旋钮并观察显示屏电流值至所选择的电流值。

c、将“预置/测试”开关置“预置”状态，调节“报警电阻调节”电位器，预置报警电阻值。

d、按动“复位”钮，切断输出电流，同时将“电流调节”旋钮旋至最小；将测试夹分开，分别接到被测物的测试点。



IV. Features

RK2678X earthing resistance tester is suitable for measuring the resistance value between metallic part of motors, appliances, instruments, meters, domestic apparatuses that are supplied power with power grid, and their protective earthing terminal. The tester has two scales of testing resistance value (200 mΩ or 600 mΩ). The testing time can be set between 0~99s. when the measured resistance value is larger than the preset resistance value, it has audible and visible warning function, and overcurrent (>AC30A) protection function. This tester uses the principle of divider for measurement, and fluctuation of testing current cannot affect measurement accuracy, therefore, it has the following advantages: accurate measurement, convenient operation, small volume and low requirement to power. The tester uses 3½ digital display and the reading is convenient and simple, and reliability is very high. The new optional function of broken wire warning (i.e. open circuit warning) can be very easy to know whether the tester is working in normal test status, and a user can select this function upon actual demand.

V. Attention for operation

1. Operator shall be familiar with the operation procedures of this tester before operation.
2. Shall not adjust other keys at will in the whole testing course.
3. Warning shall be given out only when the test current is larger than 5A.
4. In order to ensure stable test, it is suggested use of AC power with stabilized voltage.

3. Testing voltage \leq AC 12V/6V (RK2678Y)
4. Testing current AC 5~30A \pm 5 %
5. Overcurrent warning $>$ AC 30A
6. Warning resistance value 0~200m Ω \pm (5 % + 2 scales) (AC 25A) continually adjustable
200~600 m Ω \pm (5%+2 scales) (AC 10A) continually adjustable
7. Operating conditions
- (1) Temperature 0 ~ 40°C
- (2) Relative humidity \leq 80%RH
- (3) Power supply AC 220V \pm 0% 50Hz
8. Overall size 315mm \times 250mm \times 165mm
9. Weight 15kg

III. Principle of operation and block diagram

Earthing resistance tester consists of testing power source, testing circuit, indicator and warning circuit. Testing power source generates measuring current, testing circuit handles current signal and voltage signal generated when current goes through the measured resistance, completes AC/DC transformation, and performs operation of division. Indicator indicates value of current and resistance. If the measured resistance is larger than warning value, the tester gives out continuous audible and visible warning. If the testing current is larger than 30A, it will give out continual audible and visible warning, and the testing current will be cut off so as to ensure safety of the tested appliance.

e、按动“启动”按钮，“测试”灯亮，调节“电流调节”旋钮至所需的电流值，然后读下显示屏显示之电阻读数，当被测物的接地区域电阻大于所设定的接地电阻报警，仪器即发出断续声光报警，反之，则不报警。如需停止测试按动“复位”按钮，“测试”灯熄灭，回路电流即可切断，将测试夹从被测物上取下，以备下次测量。

(7) 定时测量

- a、将仪器置“复位”状态。
- b、按下“定时”开关至“开”位置，根据需要预置所需的测试时间。
- c、检查2(3)~2(5)步骤无误之后，按动“启动”按钮，“测试”灯亮，显示屏时间计数器开始倒计时，调节“电流调节”旋钮并观察显示屏电流值至所选择的电流值。
- d、将“预置/测试”开关置“预置”状态，调节“报警电阻调节”电位器，预置报警电阻值。(注：必需在有电流输出的情况下，再设置报警电阻值)
- e、按动“复位”钮，切断输出电流，同时将“电流调节”旋钮旋至最小；将测试夹分开，分别接到被测物的测试点。
- f、然后读下显示屏显示之电阻读数，当被测物的接地电阻大于所设定的接地电阻报警值时，仪器即发出断续声光报警，反之，则不报警。测试时间终了，自动切断回路电流，即可将测试夹从被测物上取下，以备下次测量。

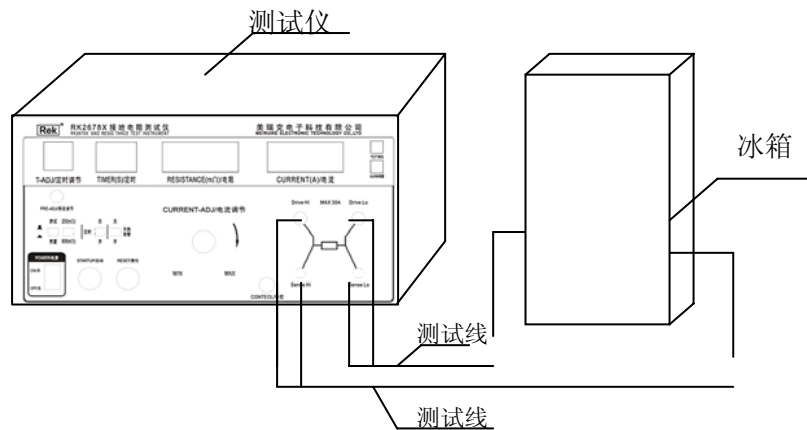
(8) 本仪器具有开路报警选择功能，若接地回路开路或测试夹与被测物没有夹好，根据实际需要可选择是否发出声光报警。

(9) 本仪器具有过电流保护功能，当回路电流超过 30A 时，仪器发出过电流声光报警，过电流灯持续亮，蜂鸣器持续发声，并自动切断回路电流，按动“复位”按钮，可取消报警状态，并将“电流调节”旋钮逆时针旋小一些，以备下次测量。

(10) 本仪器采用除法器的原理测量低电阻，即 $R=U/I$ 。当仪器处于“复位”状态时，因 $I=0$ ，所以仪器电阻显示窗口显示为不定态为正常现象。

3、应用举例：

(1)、一般测试：如图二所示接线，将测试夹一个夹在机器总接地端，另一个接在机器可触及金属部分。



图二

I. Introduction

Earthing resistance tester is used for measuring internal earthing resistance of electrical equipment, which reflects the (contact) resistance between exposed conductive part at each position of electrical equipment and general earthing terminal of electrical equipment. Earthing resistance tester uses 4-end measurement method in order to eliminate the influence of contact resistance to test, namely, a current (generally about 25A) is applied between the exposed conductive part of tested appliance and general earthing terminal and the voltage between these two ends is then measured and its resistance value is calculated.

RK2678X earthing resistance tester is designed according to the following safety standards: GB, IEC, ISO, BS, UL, JIS, etc. The earthing resistance is one of important indicators for assessing safety performance of electrical equipment. It measures the resistance of earthing circuit in the condition of high current (25A or 10A), and also tests high current bearing indicator of earthing circuit to avoid body hurt when insulation performance falls down (or is damaged). This tester is developed for supplying high-performance testing devices for workshop and laboratory according to the above requirements. This tester has low requirements to voltage of power supply, high measurement accuracy, fast speed and convenient operation, especially suitable for use in high-end laboratory and on automatic testing line. The new function, interruption warning optional function (i.e. warning on open circuit), can be very convenient to know whether the tester is in normal testing status, and a user can select this function or not according to actual demand. This tester adopts $3\frac{1}{2}$ digital display and it is easy to read the value. The whole tester has very high reliability and stability for optimised design is used. This tester is suitable for different standards: for example, in accordance with the safety standard of China G B 4706.1-1998 Safety Standard for Domestic Appliances and Appliances with Similar Purposes; RK 2 6 7 8 Y tester is in accordance with GB 9 7 0 6.1 Medical Standard.

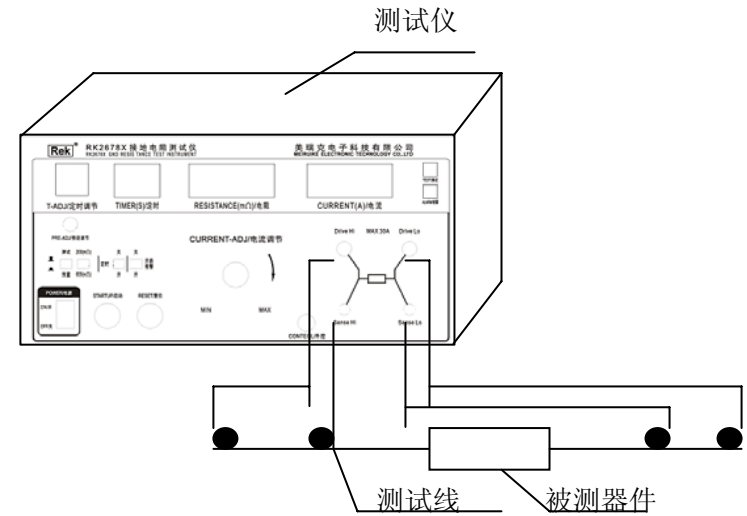
II. Technical specifications

1. Range of measurement $0 \sim 2000 \text{ m}\Omega \pm (5\% + 2 \text{ scales}) (25 \text{ A})$
 $2000 \sim 6000 \text{ m}\Omega \pm (5\% + 2 \text{ scales}) (10 \text{ A})$

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2) 精确测试：如图三所示接线，四端测试线分别接到被测器件上。



图三

七、附件及保修

附件：

- | | |
|---------|-----|
| 1、接地测试夹 | 1 付 |
| 2、使用说明书 | 1 份 |
| 3、产品合格证 | 1 份 |
| 4、电源线 | 1 根 |
| 5、资料袋 | 1 个 |

用户收到仪器后，应开箱检查核对上述内容，若发生短缺，请即与本公司或经销单位联系。

保修:

- 4、 保修期: 使用单位从本公司购买仪器者, 自本公司发运日期起计算, 从经销部门购买者, 从经销单位发运日期起计算, 保修期 12 个月。
- 5、 保修: 保修时应出具该仪器的保修卡。本公司对所有发外仪器实行终生维修的服务。
- 6、 保修期内, 由于使用者操作不当而损坏者, 维修费由用户承担。

MEIRUIKE ELECTRONIC TECHNOLOGY CO., LTD

- Synchronously display testing time, testing current and earthing resistance
- Warning resistance value can be continuously preset, more convenient for user's test, which is innovative over China
- Use four-end measurement method to eliminate the influence of contact resistance to test, and test accuracy is high
- New function of open circuit warning can be optional. A user can freely select whether he (she) needs open circuit warning.
- Use division circuit to show resistance, effectively eliminate voltage fluctuation of power grid, with low dependence to power

RK2678\78X型

接地电阻测试仪