

Note: leakage current measurement is made on live line and the shell of the tested appliance is with charge, therefore measurement persons shall be careful and comply with corresponding safety operation regulations. Before power interruption, any person shall not touch the tested appliance or otherwise electrical shock may occur.

V. Attention for operation:

1. Operator shall wear latex gloves and stamp on rubber mat to prevent electrical shock.
2. The tester shall be ground reliably.
3. The tester shall be guaranteed at the status of “RESET” while connection of the tested appliance.
4. The externally connected and separated transformer is recommended for testing so that the tested appliance is separated with AC power (electric supply). If it truly has no condition to use externally connected and separated transformer, the tested appliance shall be insulated with the ground or otherwise short circuit between phase wire and ground wire may be caused and thus danger may be caused.
5. Test lamp and excessive leakage lamp, once damaged, shall be replaced immediately so as to prevent wrong judgment.
6. The tester shall avoid direct sunshine and shall not be used or stored in high temperature, wet or dusty environment.
7. After one-year use, the tester shall be tested as eligible by a metering institution or the manufacturer according to the requirements of the national technical supervision department before continual use.

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.
4. 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.

目 录

一、简介	2
二、技术规格	2
三、工作原理和方框图	3
四、使用说明和操作步骤	4
五、使用注意事项	8

一、简介:

泄漏电流测试仪又称接触电流测试仪用于测量电器的工作电源（或其它电源）通过绝缘或分布参数阻抗产生的与工作无关的泄漏电流，其输入阻抗模拟人体阻抗，满足 GB4706.1-2002 要求 RK 系列泄漏测试仪产品是按照 IEC、ISO、BS、UL、JIS 等国际国内的安全标准要求而设计。本机由于不带隔离电源，因此原则上可不受被测电器的功率限制，适用范围广，本机内置一个电压表，测量范围 0~250V，适合各种家用电器、电源、电机、洗碟机、洗衣机、离心式脱水机、微波炉、电磁炉、电烤箱、电火锅、电饭锅、电风扇、医疗、化工、电子仪器、仪表、整机等，以及强电系统的泄漏电流的测试，同时也是科研实验室、技术监督部门不可缺少的泄漏电流检测试验设备。

RK 系列泄漏测试仪产品是在吸收、消化国际先进泄漏测试仪的基础上，结合我国众多用户的实际使用情况加以提高完善的。RK2675W 型泄漏测试仪是我厂最近推出的一台全数显改进型新产品，能同时显示测试电压、泄漏电流和测试时间（均为数字显示），可根据不同安全标准以及用户的不同需求连续任意设定泄漏电流报警值，在时间测试方面一改原产品指示误差偏大的不足之处，由倒计时数字显示，使测试时间精度提高到±1%以上，而且测试范围提高到 99 秒（本公司可以根据用户的不同需求更改测试时间范围，最大可到 99 分钟），功能更加丰富实用。与以往不同的是，改进型泄漏电流测试仪在电压取样上采用线性整流电路，以改过去一贯使用的桥式整流方法，使测试电压的指示值更确切的反映被测负载上的实际测试电压，误差更小，线性更好，精度更高。仪器具有自动相位转换功能，每 2 秒切换一次相位。通过泄漏电流显示可以反映被测体泄漏电流的实际值，比较同类产品不同批次或不同厂家产品泄漏电流的好坏程度，确保产品安全性能万无一失。

二、技术规格:

- 1、泄漏测试工作电压：AC 50~250±（5%+1%满度值）
- 2、泄漏电流测试范围：AC 0~2 mA /2mA~20 mA 二档±（5%+1.5 % 满度值）

- (1) Press the presetting switch for leakage current;
 - (2) Adjust leakage current button to the desired value. The leakage current display window indicates the warning setting value at this time;
 - (3) After setting, press the presetting switch for leakage current once again to make it in test status.
- 5、 5. Select working voltage for test, press “START”, adjust input voltage for test to make the working voltage for test indicated as 242V or the voltage value stated in the technical product standard;
- 6、 6. Manual test
- (1) Put the timing switch at OFF, press “START”, the test lamp is on, the tester enters into the status of leakage test. Switch the polarity switch, leakage current indicator displays the leakage current value between phase wire end and wire end of power source under test, and the shell respectively.
 - (2) After test, press “RESET”, the test lamp is off, and the tested object is eligible.
 - (3) If the tested object exceeds leakage current warning value, the tester will automatically cut off the working voltage for test, and the test lamp is off, the excessive leakage lamp is on, and the beeper gives out warning. The tested object is ineligible. Press “RESET” to clear off the warning.
 - (4) If the apparatus under test will be connected according to the connection style III, it is unnecessary to press “START” for test. If the tested object exceeds the warning value of leakage current, the excessive leakage lamp is on, the beeper gives out warning, the tested object is ineligible. Press “RESET” to clear off the warning.
- 7、 Timing test:
- (1) When the timing switch is on, set the desired test time with time presetting panel.
 - (2) Press “START”, the test lamp is on, the apparatus enters into leakage test status, and the timer starts countdown, when time display is zero, the test lamp goes out, the tested object is eligible; if leakage current exceeds the warning setting value, the tester will automatically cut off working voltage for test, and the test lamp is off, the excessive leakage lamp is on, the beeper gives out beep, the tested object is ineligible. Press “RESET” to clear off the warning.
8. Automatic test:
- (1) Timing switch can be set as ON or OFF by the user. The polarity “AUTO/MANUAL” switch is preset as “AUTO”.
 - (2) Press “START”, the test lamp is on, the tester enters into leakage current test status, and the polarity phase switching device inside the apparatus automatically makes polarity phase switching. If leakage current exceeds the warning setting value, the tester automatically cuts off the working voltage for test, and the test lamp is off, the excessive leakage lamp is on, the beeper gives out beep, the tested object is ineligible. Press “RESET” to clear off the warning.

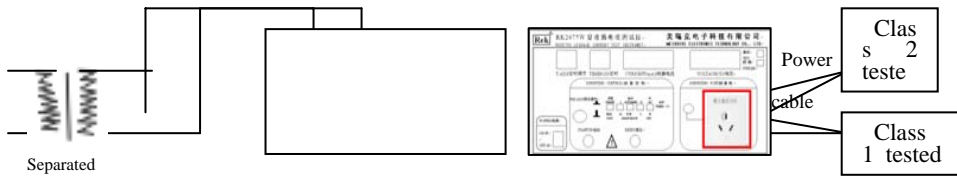


Fig. 3 Wiring method 1 (load <2KVA)

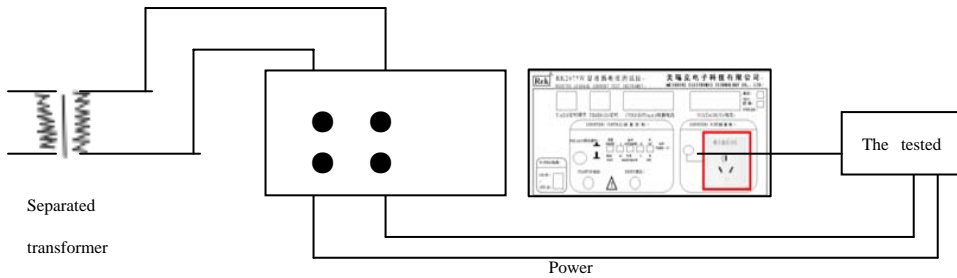


Fig. 4 Wiring method 2 (1KVA < load < 5KVA)

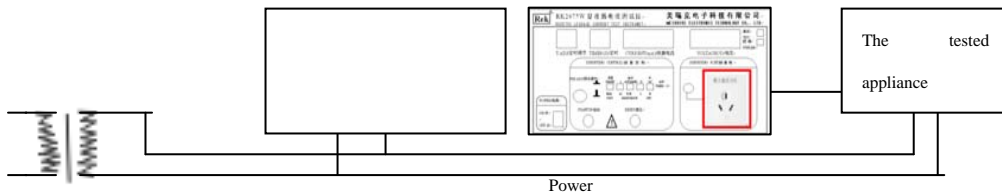


Fig. 5 Wiring method 3 (load > 5KVA)

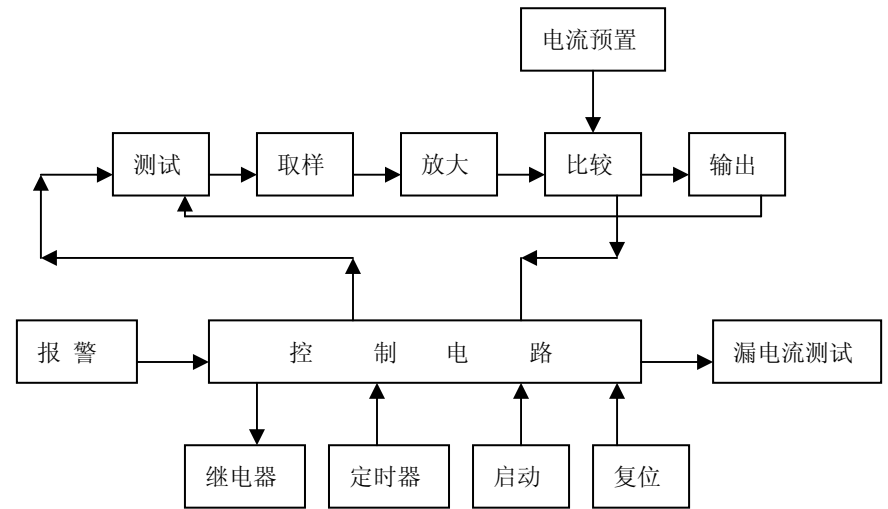
Operation procedures:

1. Turn on the power switch and make the tester in ON status.
2. Select wiring method according to the power scope of tested appliance (see wiring method 1, 2, 3 in Fig. 3, 4, 5 respectively), connect the tested appliance according to the selected wiring method when the test indicator goes out. Note: when the tested appliance is connected according to the wiring method 3, the tested appliance is out of control of the tester, namely, its power on/off is not controlled by the key "START", "RESET".
3. Select leakage current testing range according to demand (2 or 20mA).
4. Set leakage current warning value.

- 3、泄漏电流报警值：AC 0.1 mA~2 mA/2 mA~20 mA± (5%+1.5%满度值) (可连续任意设置报警值)
- 4、时间范围：1~99s, 连续设定和手动±1%
- 5、工作条件：环境温度 0~40℃
- 6、相对湿度：<75%
- 7、大气压力：101、25kpa.
- 8、体积：390mm×190mm×280mm
- 9、重量：8kg
- 10、电源：220V±10% 50Hz±2Hz
- 11、附件：测试说明书一份、保修卡一张、电源线一根

三、工作原理和方框图：

泄漏电流测试仪主要由电阻变换、量程变换、交直流转换、指示装置和超限报警电路。阻抗变换部分主要模拟人体对泄漏电流的感知特性，完全模拟人体阻抗；量程交换部分可方便用户根据实际负载大小选择合适的量程；交直流转换部分将交流电压和电流信号转换成支流电压电流信号；指示装置显示测试电压和实际泄漏电流以及测试时间；超限报警电路完成对不合格产品的报警和指示并自动切断高压。



RK2675W 型泄漏测试仪工作原理框图

四、使用说明和操作步骤:

RK2675W 型泄漏测试仪各部分名称及使用说明(如图一、图二)

- 1、电源开关;
- 2、启动钮: 按下时, 测试灯亮, 接通“测试电源输入”与“测试电源输出(泄漏测试插座)”;
- 3、复位钮: 按下时, 测试灯灭, 断开“测试电源输入”与“测试电源输出(泄漏测试插座)”;
- 4、泄漏电流测试输入接线柱;
- 5、测试电源输出(泄漏电流测试插座测试)(小于 10A);
- 6、泄漏电流超漏指示灯, 此灯亮表示泄漏电流超漏;
- 7、测试状态指示灯: 此灯亮表示仪器正处在测试状态;
- 8、电压显示值指示窗口;
- 9、泄漏电流显示值指示窗口;
- 10、测试时间显示值指示窗口;
- 11、时间预置拨盘;
- 12、定时开关; 开时为 1s~99s 内任意设定(倒计时), “关”时为手动;
- 13、极性转换开关; 利用极性转换开关, 实现手动极性的转换;
- 14、自动极性转换功能开关; 按下为自动转换极性, 反之手动转换极性;
- 15、泄漏电流量程转换开关; 按下时为 0~2mA, 弹出时为 0~20mA;
- 16、泄漏电流测试与预置转换开关; 按下时结合泄漏电流预置钮可设定并显示泄漏电流报警值, 常态时可测得并显示实际泄漏电流值; 泄漏输出接口; 泄漏电流测试附件插入该接口;
- 17、泄漏电流预置调节钮; 按下泄漏电流预置开关可设定 0.1~20mA 任意报警值;
- 18、测试电源输入柱(零线);
- 19、测试电源输入柱(零线);
- 20、测试电源输出柱(火线);
- 21、测试电源输出柱(火线);
- 22、电源插座。

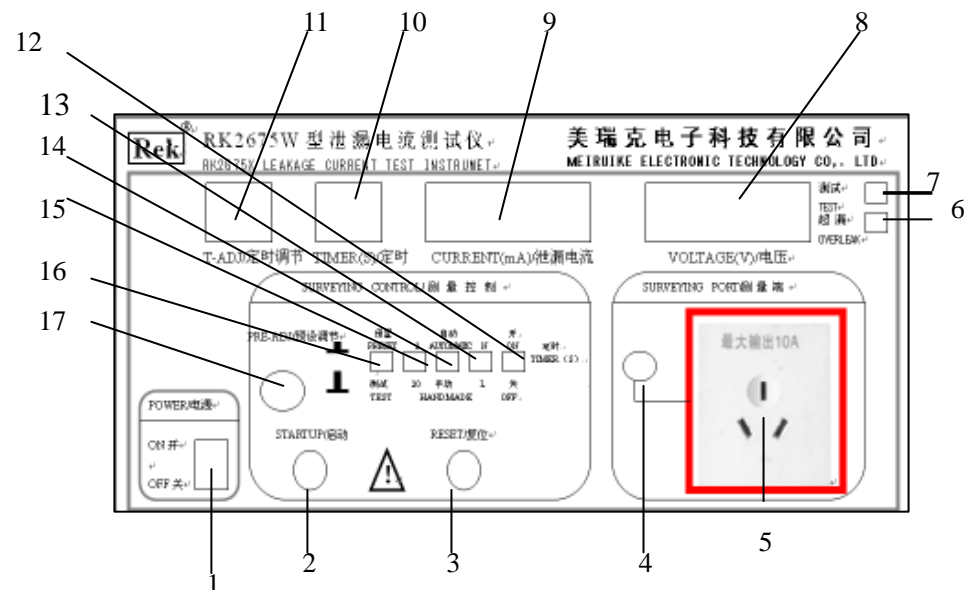


Fig. 1 Schematic chart of panel of RK2675W leakage current tester

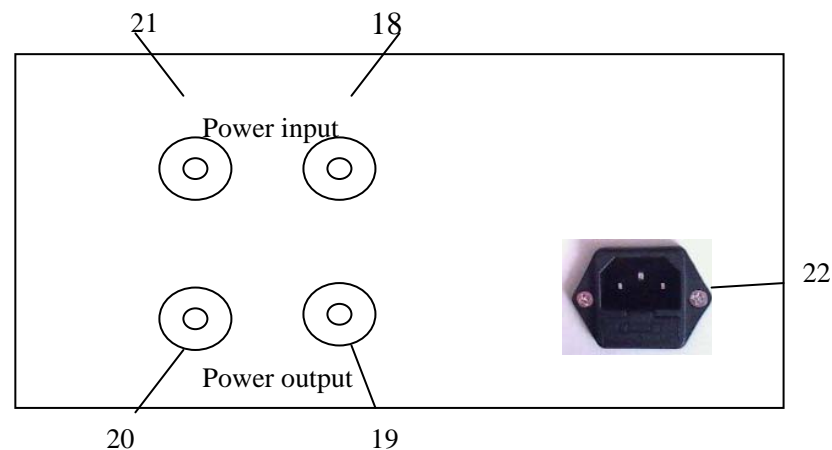
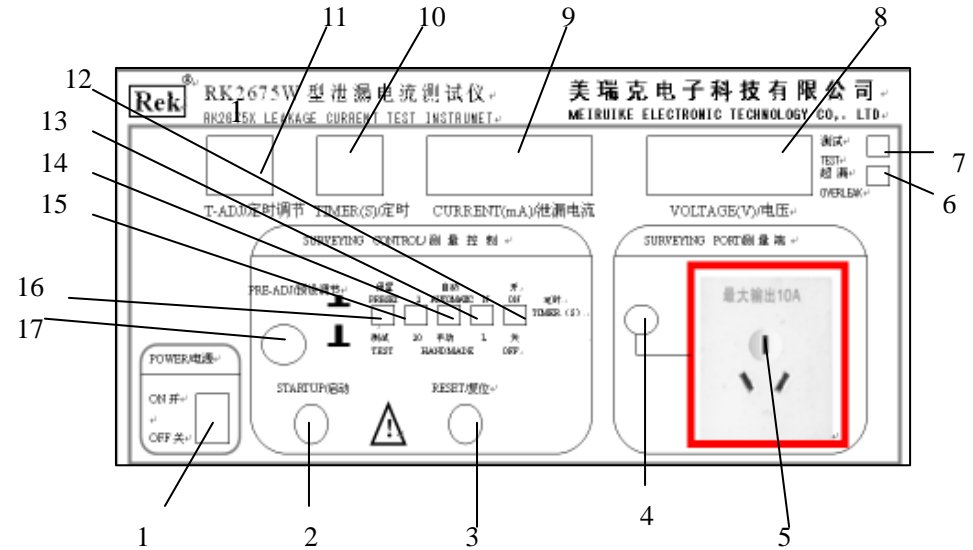


Fig. 2 Schematic chart of rear cover of RK2675W leakage current tester

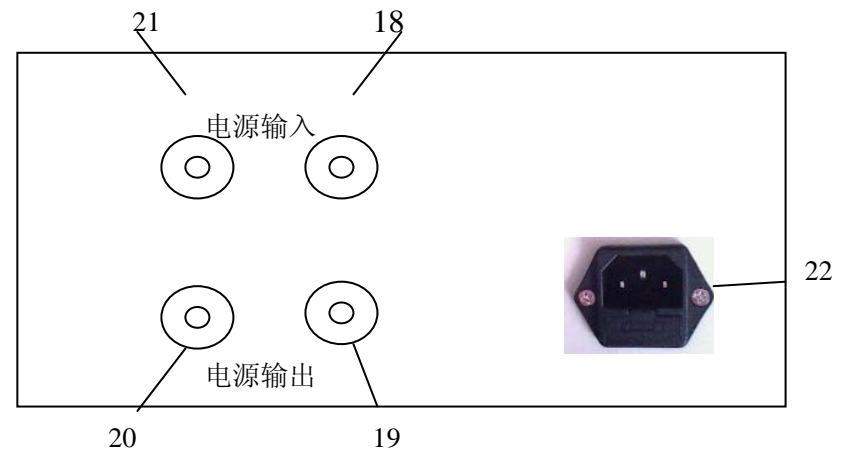
IV. Instructions for operation and operating processes

Name of each part of RK2675W type leakage tester and instructions for operation (see Fig. 1 and 2)

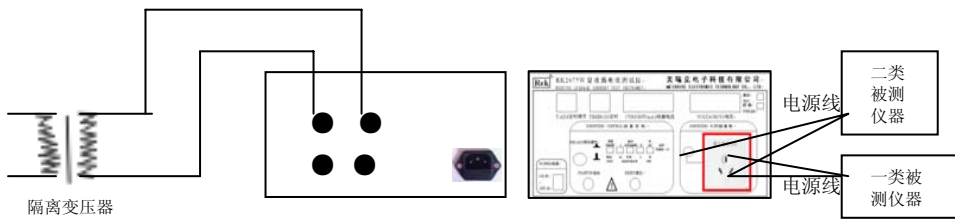
1. Power switch
2. START: if you press this key, the test lamp is on, "test power input" and "test power output" (leakage testing socket) are turned on.
3. RESET: if you press this key, the test lamp is off, "test power input" and "test power output" (leakage testing socket) are turned off.
4. Input connection for leakage current test:
5. Test power output (testing of leakage current testing socket) (less than 10A):
6. Leakage current excessive leakage indicator, if it is on, the leakage current has excessive leakage;
7. Test status indicator: this indicator is on, showing the tester in testing status;
8. Indication window of voltage display value;
9. Indication window of leakage current display value;
10. Indication window of test time display value;
11. Time presetting panel:
12. Timing switch: arbitrary setting in the range of 1s-99s if turned on (countdown), manual if turned off.
13. Polarity conversion switch: utilize polarity conversion switch to realize manual polarity conversion;
14. Automatic polarity conversion switch: enter into automatic polarity conversion mode if pressed, or otherwise, enter into manual polarity conversion mode;
15. Leakage current range conversion switch: range 0-2mA if pressed, range 0-20mA if popped out;
16. Leakage current test and presetting conversion switch: can set and display leakage current warning value with leakage current presetting button if pressed, and can measure and display actual value of leakage current in normal status; leakage output interface; leakage current test inserter is inserted into this interface;
17. Leakage current presetting adjustment button: press leakage current presetting switch to set any warning value in the range 0.1-20mA;
18. Test power input pole (zero line);
19. Test power input pole (zero line);
20. Test power output pole (power line);
21. Test power output pole (power line);
22. Power socket.



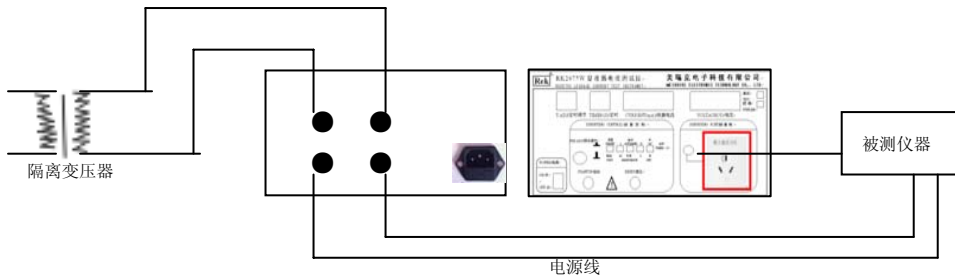
图一、RK2675W 型泄漏电流测试仪面板示意图



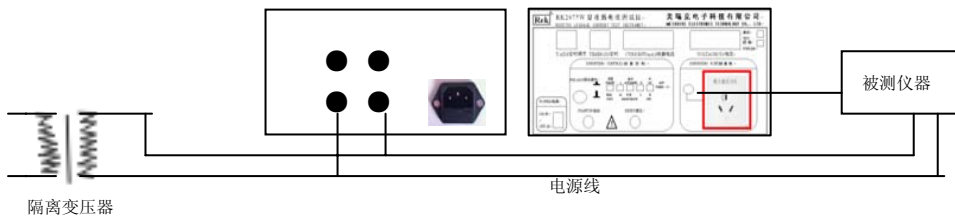
图二、RK2675W 型泄漏电流测试仪后盖板示意图



图三：接线方式一（负载<2KVA）



图四：接线方式二（1KVA<负载<5KVA）



图五：接线方式三（负载>5KVA）

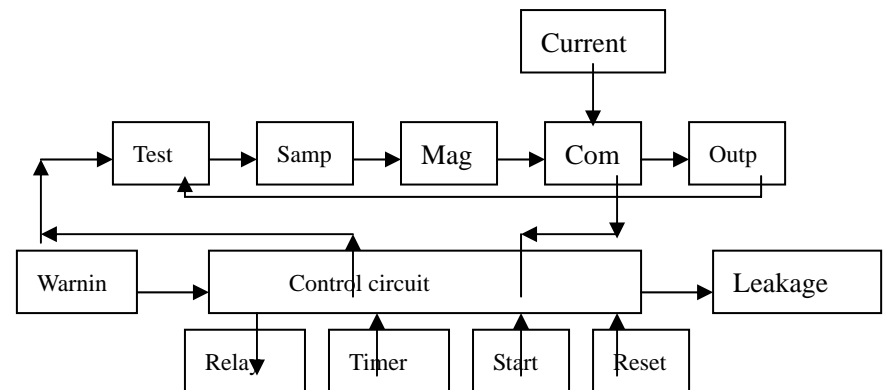
操作步骤：

- 1、电源开关使仪器处于开机状态。
- 2、根据被测电器的功率选择接线方式（见图 3、图 4、图 5 接线方式一、接线方式二、接线方式三）测试指示灯熄灭时按所选择的接线方式连接被测电器，注：其中按接线方式三连接被测电器时，被测电器不受本仪器控制，即其电源的通断不受“启动”、“复位”键控制。
- 3、根据需要选择泄漏电流测试量程(2 或 20 mA)；
- 4、定泄漏电流报警值；

1. Leakage current warning value: AC 0.1 mA~2 mA/2 mA~20 mA±(5%+1.5% full value)
2. Time range: 1-99s, continual setting and manual ±1%
3. Working conditions: environmental temperature 0~40℃
4. Relative humidity: <75%
5. Atmospheric pressure: 101.25kpa
6. Volume: 390mm×190mm×280mm
7. Weight: 8kg
10. Power: 220V±10% 50Hz±2Hz
11. Accessories: one copy of test manual, a piece of warranty card, one piece of power cable

III. Principle of operation and block diagram:

Leakage current tester mainly includes resistance change, range change, AC/DC transformation, indicator and warning circuit for exceeding the limit. The part of resistance change mainly simulates the apperceiving characteristics of body to leakage current and fully simulates body's resistance; the part of range change can be convenient for users to select proper range according to load; the part of AC/DC transformation converts AC voltage and current signals into branch voltage and current signals; the indicator displays testing voltage, actual leakage current and test time; the warning circuit for exceeding the limit completes warning and indication to ineligible products and automatically cuts off high voltage.



Block diagram of principle of operation of RK2675W leakage tester

I. Introduction:

Current leakage tester (contact current tester) is used for testing the leakage current, not relating with work, which the working power source (or other power source) of electrical appliance occurs through insulated or distributed parameter impedance. Its input impedance simulates body's impedance and meets the requirements of GB4706.1-2002. RK series leakage tester is designed according to the following safety standards: IEC, ISO, BS, UL, JIS. This unit is not attached with separated power source, therefore, it is not limited by the power of the electrical appliance under test and has wide applicable scope. The voltage meter built in this unit can measure voltage 0-250V. This unit is suitable for testing various household electrical appliances, power sources, electrical motors, dish washing machine, washing machine, centrifugal spin-drier, microwave oven, induction cooker, electrical oven, electrical chafing dish, electric cooker, fanner, medical treatment, chemical, electronic apparatus, meters, whole machines, and current leakage of strong current system, and it is also necessary for testing current leakage for laboratory or technical supervision department.

RK series leakage tester is improved on the basis of absorbing internationally advanced technology and in consideration of actual operation conditions of users in China. RK2675W type leakage tester is a new product currently developed by our company, which can synchronously display voltage, leakage current and testing time (digital display). It can be set with leakage current warning value according to different safety standard and user's different demands. In time test, it reduces the error of past products and displays in countdown manner. Its time test accuracy is improved up to 1%, and the test scope can be improved to 99s (the company can change scope of test time upon user's demand and the maximum can reach 99 min). The new product has more functions. The improved leakage current tester uses linear rectification circuit for voltage sampling other than bridge type rectification method used in the past, so that the indication value of test voltage can more accurately reflect actual test voltage of the load under test. It has smaller error, better linearity and higher accuracy. The unit has automatic phase conversion function and switches phase once every 2s.

II. Technical specifications

1. Working voltage of leakage test: AC 50~250 \pm (5%+1% full value)
2. Test scope of leakage current: AC 0~2 mA /2mA~20 mA, two scales \pm (5%+1.5 % full value)

- (4) 按下泄漏电流预置开关;
 - (5) 调节泄漏电流钮至所需值, 此时泄漏电流显示窗口指示所设定的报警值;
 - (6) 设定完毕后, 再按一下泄漏电流预置开关使之处于测试状态。
- 5、选择测试工作电压, 按下“启动”键, 调节测试输入电压使测试工作电压指示为 242V 或技术产品标准所规定的电压值;
- 6、手动测试;
- (5) 将定时开关置为关, 按下“启动”键, 测试灯亮, 此时仪器进入泄漏、测试状态, 切换极性开关, 泄漏电流指示窗口分别显示被测体电源相线端和电线端分别与外壳的泄漏电流值。
 - (6) 测试完毕后, 按下“复位”键, 测试灯熄灭, 此时被测体为合格。
 - (7) 如果被测体超过泄漏电流报警值, 则仪器自动切断测试工作电压, 同时测试灯熄灭、超漏灯亮, 蜂鸣器报警, 此时被测体为不合格, 按下“复位”键, 即可清除报警声。
 - (8) 若按接线方式三连接被测电器时, 则不需要按下“启动”键即可测试, 如果被测体超过泄漏电流报警值, 超漏灯亮, 蜂鸣器报警, 此时被测体为不合格, 按下“复位”键, 即可清除报警声。
- 7、定时测试:
- (1) 定时开关为开时, 拨时间预置拨盘, 设定所需测试时间。
 - (2) 按下“启动”键, 测试灯亮, 仪器进入泄漏测试状态, 同时定时器开始倒计时, 当时间显示为零时, 测试灯熄灭, 被测体为合格; 若泄漏电流超过所设定的报警值, 此时仪器自动切断测试工作电压, 同时测试灯熄灭, 超漏灯亮, 蜂鸣器发出响声, 被测体为不合格, 按下“复位”键, 即可清除报警声。
- 8、自动测试;
- (1) 定时开关可由用户自行设置成开或关, 极性“自动/手动”转换按预置“自动”状态。
 - (2) 按下“启动”键, 测试灯亮, 仪器进入泄漏电流测试状态, 仪器内部极性相位转换装置自动进行极性相位切换。若泄漏电流超过所设定的报警值, 此时仪器自动切断测试工作电压, 同时测试灯熄灭、超漏灯亮, 蜂鸣器发出响声, 被测体为不合格, 按下“复位”

键，即可清除报警声。

注意：泄漏电流测量是带电进行测量的，被测电器外壳是带电的，因此，测试人员必须注意安全，制定相应的安全操作规程，在没有切断电源前，务必不能触摸被测电器，以防被电击，发生危险！

五、使用注意事项：

- 1、操作者必须戴绝缘橡皮手套，脚下垫绝缘橡皮垫，以防电击造成生命危险。
- 2、仪器必须可靠接地。
- 3、在连接被测电器时，必须保证在“复位”状态。
- 4、测试时推荐采用外接隔离变压器，将被测电器与交流电源（市电）隔离，如实在无条件采用外接隔离变压器时，切记应将被测电器与大地绝缘，否则会造成相线对地线短路，造成危险。
- 5、测试灯、超漏灯一旦损坏，必须立即更换，以防造成误判。
- 6、仪器避免阳光正面直射，不要在高温潮湿多尘的环境中使用和存放。
- 7、仪器使用一年后，必须按照国家技术监督部门要求计量部门或回厂检定合格后，方可继续使用。

保修：

- 1、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，从经销部门发运日期起计算，保修期 12 个月。
- 2、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。
- 3、保修期内，由于使用者操作不当而损坏仪器者，维修费由用户承担。
- 4、用户收到仪器后，应开箱检查核对上述内容，若发生遗失，请即与本公司可经销部门联系。

Table of Contents

I. Introduction	2
II. Technical specifications	2
III. Principle of operation and block diagram	3
IV. Instruction for operation and operating processes	4
V. Attention for operation	8

RK2675W型

泄漏电流测试仪